AGENDA

COUNTY OF OXFORD

COUNCIL MEETING

WEDNESDAY, MAY 9, 2018        9:30 A.M.

COUNCIL CHAMBER, OXFORD COUNTY ADMINISTRATION BUILDING, WOODSTOCK

MEETING #9

1. CALL TO ORDER

   Time ______

2. APPROVAL OF AGENDA

   Note: The motion to approve the Agenda will propose changing the order of business by bringing forward 10. Unfinished Business after 7. Consideration of Delegations and Presentations.

3. DISCLOSURES OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF

4. ADOPTION OF COUNCIL MINUTES OF PREVIOUS MEETING

   April 25 2018

5. PUBLIC MEETINGS

6. DELEGATIONS AND PRESENTATIONS

   1. Glen Gilvesy
      Helen and Linda Chipps
      Residents of Potters Road, Tillsonburg
      Re: Potters Road - Water and Wastewater Servicing
      *See Deferred Report No. CS 2018-11 and By-law No. 6012-2018
      Potters Road - Water and Wastewater Servicing By-law Pres

   2. Lynn Beath, Former CEO, Oxford County Public Health
      Cynthia St. John, CEO, Southwestern Public Health
      Re: Southwestern Public Health – Update on Merger
      Southwestern Public Health Pres - 050918

7. CONSIDERATION OF DELEGATIONS AND PRESENTATIONS

   Resolution

   That the information provided in the delegation regarding Potters Road, Tillsonburg, water and wastewater servicing be received as information and referred for consideration during deliberation on Report No. CS 2018-11 and associated By-law No. 6012-2018.
Resolution

That the presentation given on behalf of Southwestern Public Health, providing an update on the merger of the Oxford County Health Unit with the Elgin St. Thomas Health Unit, be received as information.

8. CONSIDERATION OF CORRESPONDENCE

1. Township of Norwich, April 24, 2018
   Re: High Speed Rail Environmental Assessment Terms of Reference
   Twp of Norwich - 042418

   Resolution

   That the correspondence from the Township of Norwich, supporting the County's position on the High Speed Rail Environmental Assessment Terms of Reference, be received with thanks.

9. REPORTS FROM DEPARTMENTS

CORPORATE SERVICES

CS 2018-14
Re: 2017 Audited Financial Statements

Recommendations

1. That the Oxford County Consolidated Financial Statements and the County of Oxford Trust Funds Statements for the year ended December 31, 2017 be accepted;

2. And further, that the Auditor’s letter of independence for the year ended December 31, 2017 be received.

CAO/CLERK

CAO 2018-08
Re: Electric Vehicle Charger Feasibility Study and Electric Vehicle Accessibility Plan

Recommendation


CAO 2018-07
Re: Notice of Intent to Consider Procedure By-law Amendments - 2018 Updates - Part 2

Recommendation

1. That County Council hereby serves notice that it will consider, at its May 23, 2018 meeting, proposed amendments to Procedure By-law No. 5852-2016 as amended by By-law No. 6007-2018.
COMMUNITY AND STRATEGIC PLANNING

**CP 2018-88**
Re: Party Status for a Local Planning Appeal Tribunal Hearing
Applications for Consent & Minor Variance
B17-02-8 to B17-04-8; A17-10-8 – 1266639 Ontario Inc. (Ray Losee)

**Recommendations**

1. That County Council seek party status before the Local Planning Appeal Tribunal for the hearing regarding Consent and Minor Variance Applications B17-02-8 to B17-04-8; A17-10-8 (1266639 Ontario Inc., c/o Ray Losee);

2. And further, that County Council uphold the staff recommendations presented to, but not supported by, Land Division Committee, as contained in Planning Report CP 2018-18 (Attachment 1).

**CP 2018-124**
Re: Application for Draft Plan of Subdivision
SB 17-07-8 – 2593636 Ontario Inc.

**Recommendation**

1. That Oxford County Council grant draft approval to a proposed subdivision submitted by 2593636 Ontario Inc. (SB 17-07-8); prepared by Paul J. Benedict, OLS; dated March 5, 2018, for lands legally described as Part of Lots 15, 17 & 18, Registrar’s Compiled Plan 1600, in the City of Woodstock, subject to the conditions attached as Schedule “A” to this Report being met prior to final approval.

PUBLIC WORKS

**PW 2018-19**
Re: Revised Township of Perth East Water Supply Agreement

**Recommendation**

1. That the Chief Administrative Officer and the Director of Public Works be authorized to sign a revised agreement with the Township of Perth East for the continued supply and distribution of drinking water to certain properties on Perth Road 107 (formally Highway 59), Perth-Oxford Road (Hope Street East) and Perth Line 29.

**PW 2018-20**
Re: Pilot Testing of Automated Vehicles - Draft Road Network

**Recommendations**


2. And further, that County Council endorse the draft Automated Vehicle network of preferred routes in Oxford County, as attached to Report No. PW 2018-20, for pilot testing of Level 4/5 Automated Vehicles as part of a Windsor to Ottawa network.
10. UNFINISHED BUSINESS

CORPORATE SERVICES

CS 2018-11 Deferred from the April 25, 2018 Meeting

CS 2018-11
Re: Potters Road Sanitary Sewer Watermain Project

Recommendation

1. That By-law No. 6012-2018, being a by-law to authorize the funding sources and mandatory connection for the Potters Road Sanitary Sewer and Watermain Project, be presented to Council for enactment.

Pending Items

11. MOTIONS

12. NOTICE OF MOTIONS

13. NEW BUSINESS/ENQUIRIES/COMMENTS

14. CLOSED SESSION (Room 129)

15. CONSIDERATION OF MATTERS ARISING FROM THE CLOSED SESSION

16. BY-LAWS

BY-LAW NO. 6012-2018
Deferred from the April 25, 2018 Meeting
Being a By-law to mandate connection to and impose the cost of the water and sanitary sewage system to the area designated and referred to as the Potters Road Sanitary Sewer and Watermain Project.

BY-LAW NO. 6017-2018
Being a By-law to remove certain lands from Part Lot Control.

BY-LAW NO. 6018-2018
Being a By-law to amend By-law No. 5936-2017, being a By-law to remove certain lands from Part Lot Control.

BY-LAW NO. 6019-2018
Being a By-law to amend By-law No. 5725-2015, as amended, to revise the times when the reduced speed limit is in effect within the designated school zone on a section of Oxford Road 59 (Stover Street South) in the Township of Norwich.

BY-LAW NO. 6020-2018
Being a By-law to confirm all actions and proceedings of the Council of the County of Oxford at the meeting at which this By-law is passed.

17. ADJOURNMENT

Time _______
MEETING #8

Oxford County Council meets in regular session this twenty-fifth day of April 2018, in the Council Chamber, County Administration Building, Woodstock.

1. CALL TO ORDER:

7:00 p.m., with Warden Mayberry in the chair.

All members of Council present except Councillors Molnar and Tait.

Councillor Molnar arrives at 7:03 p.m.

Staff Present:  P. M. Crockett, Chief Administrative Officer  
L. Beath, Director of Public Health and Emergency Services  
P. D. Beaton, Director of Human Services  
L. S. Buchner, Director of Corporate Services  
C. Fransen, Director of Woodingford Lodge  
G. K. Hough, Director of Community Planning  
D. Simpson, Director of Public Works  
A. Smith, Director of Human Resources  
B. J. Tabor, Clerk  
C. J. Senior, Deputy Clerk

2. APPROVAL OF AGENDA:

RESOLUTION NO. 1:

Moved by: Margaret Lupton  
Seconded by: Ted Comiskey

That the Agenda be approved as amended by changing the order of business by bringing forward 14. Closed Session and 15. Consideration of Matters Arising from the Closed Session after 7. Consideration of Delegations and Presentations.

DISPOSITION: Motion Carried

3. DISCLOSURES OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF:

NIL

4. ADOPTION OF COUNCIL MINUTES OF PREVIOUS MEETING:

Council Minutes of April 11, 2018
RESOLUTION NO. 2:

Moved by: Margaret Lupton
Seconded by: Ted Comiskey

That the Council Minutes of April 11, 2018 be adopted.

DISPOSITION: Motion Carried

5. PUBLIC MEETINGS:

RESOLUTION NO. 3:

Moved by: Don McKay
Seconded by: Margaret Lupton

That Council rise and go into a public meeting pursuant to Section 51(20) of the Planning Act, R.S.O. 1990, as amended, to consider an application for approval of a draft plan of subdivision, and that the Warden chair the public meeting.

DISPOSITION: Motion Carried (7:02 p.m.)

1. Application for Draft Plan of Subdivision
2593636 Ontario Inc. - SB 17-07-8
to facilitate the development of a 6-unit, street-fronting townhouse dwelling
- subject lands are described as Part of Lots 15, 17 & 18, Registrar's Compiled Plan 1600, located on the west side of Lampman Place, north of Juliana Drive, in the City of Woodstock

The Chair asks G. Hough, Director of Community Planning, to come forward to present the application. G. Hough summarizes the application for Draft Approval of a Plan of Subdivision as is contained in Report No. CP 2018-114.

The Chair opens the meeting to questions from members of Council. There are none.

The Chair asks if the applicant wishes to speak. Speaking from the gallery, a representative indicates that they are in agreement.

The Chair asks if there are any members of the public wishing to speak in favour of or in opposition to the application. No one indicates such intent.

RESOLUTION NO. 4:

Moved by: Don McKay
Seconded by: Margaret Lupton

That Council adjourn the public meeting and reconvene as Oxford County Council with the Warden in the chair.

DISPOSITION: Motion Carried (7:04 p.m.)

CP 2018-114
Re: Application for Draft Plan of Subdivision
SB 17-07-8 – 2593636 Ontario Inc.
RESOLUTION NO. 5:

Moved by: Don McKay
Seconded by: Margaret Lupton


DISPOSITION: Motion Carried

Recommendation Contained in Report No. CP 2018-114:

1. That Oxford County Council refer Application File No. SB 17-07-8 submitted by 2593636 Ontario Inc. for draft approval of a residential plan of subdivision proposing 1 block to facilitate the development of a 6 unit, street-facing townhouse dwelling on lands described as Part Lots 15, 17 & 18, Registrar’s Compiled Plan 1600, on the west side of Lampman Place, north of Juliana Drive, in the City of Woodstock, to Council’s regular meeting of May 9, 2018 for final consideration.

RESOLUTION NO. 6:

Moved by: Trevor Birtch
Seconded by: Larry Martin

That Council rise and go into a public meeting pursuant to County of Oxford Disposal of Land Policy, and that the Warden chair the public meeting.

DISPOSITION: Motion Carried (7:05 p.m.)

2. Declaration of Surplus Lands – located on the western and southern periphery of 300 Juliana Drive, legally known as Part Lot 17, Plan 1616, being Part 2 on Reference Plan 41R9614, City of Woodstock

At the request of the Chair, P. Beaton, Director of Human Services, using a PowerPoint presentation, speaks regarding the property located on the western and southern periphery of 300 Juliana Drive which is the subject of the declaration of surplus lands.

The Chair opens the meeting to questions from members of Council.

P. Beaton responds to a question from Councillor McKay explaining that access to the property will be by Southwood Way.

The Chair asks if there are any members of the public wishing to speak in favour of or in opposition to the declaration of surplus lands. No one indicates such intent.

RESOLUTION NO. 7:

Moved by: Trevor Birtch
Seconded by: Larry Martin

That Council adjourn the public meeting and reconvene as Oxford County Council with the Warden in the chair.

DISPOSITION: Motion Carried (7:08 p.m.)

HS 2018-04
Re: Disposal of Surplus Land – 300 Juliana Drive, Woodstock
RESOLUTION NO. 8:

Moved by: Trevor Birtch
Seconded by: Larry Martin

That the recommendations contained in Report No. HS 2018-04, titled "Disposal of Surplus Land - 300 Juliana Drive, Woodstock", be adopted.

DISPOSITION: Motion Carried

Recommendations Contained in Report No. HS 2018-04:

1. That County Council hereby declares Part Lot 17, Plan 1616 being Part 2 on Reference Plan 41R9614, City of Woodstock as surplus to the needs of the County of Oxford, and authorizes staff to proceed with disposal in accordance with Disposal of Land Policy 6.15 and Housing First Policy 9.7;

2. And further, that the necessary by-law to declare the above mentioned lands as surplus to the needs of the County of Oxford be raised.

6. DELEGATIONS AND PRESENTATIONS:

1. Tim Lobzun
   Resident of Ingersoll
   Re: Official Plan Amendment No. 197

   Tim Lobzun, a resident of Ingersoll, comes forward to speak regarding Official Plan Amendment No. 197 as it relates to a settlement reached on Local Planning Appeal Tribunal File PL160706. He proceeds using speaking notes which he provides to the Clerk for the record. T. Lobzun expresses frustration that the Hearing did not proceed in its entirety and additional frustration over closed door meetings and associated disclosure. He wonders what was actually gained by this settlement and what affect it will have going forward to a subsequent Hearing.

Warden Mayberry opens the meeting to questions from Council. There are none.

7. CONSIDERATION OF DELEGATIONS AND PRESENTATIONS:

RESOLUTION NO. 9:

Moved by: Trevor Birtch
Seconded by: Larry Martin

That the information provided in the delegation from Tim Lobzun, regarding Official Plan Amendment No. 197, be received.

DISPOSITION: Motion Carried

As was provided for in Resolution No. 1, 14. Closed Session and 15. Consideration of Matters Arising from the Closed Session are brought forward in the meeting.
14. **CLOSED SESSION:**

**RESOLUTION NO. 10:**

Moved by: Larry Martin  
Seconded by: Marion Wearm

That Council rise and go into a Closed session for the purpose of hearing a delegation from Peter Pickfield, Solicitor, Garrod Pickfield LLP, regarding matters that have not been made public concerning the receiving of advice that is subject to solicitor-client privilege, including communications necessary for that purpose, providing an update on the Local Planning Appeal Tribunal File PL160706 – County of Oxford Official Plan Amendment Number 197.

**DISPOSITION:** Motion Carried (7:19 p.m.)

Oxford County Council meets in Closed session, as part of a regular meeting, this twenty-fifth day of April, 2018 in Room 129, County Administration Building, Woodstock.

A. **CLOSED SESSION COMMENCEMENT TIME:**

7:19 p.m., with Warden Mayberry in the chair.

All members of Council present except Councillor Tait.

Staff Present: P. M. Crockett, Chief Administrative Officer  
L. S. Buchner, Director of Corporate Services  
G. K. Hough, Director of Community Planning  
D. Simpson, Director of Public Works  
B. J. Tabor, Clerk  
C. J. Senior, Deputy Clerk

B. **DISCLOSURES OF PECUNIARY INTEREST AND THE GENERAL NATURE THEREOF:**

NIL

C. **DELEGATIONS AND PRESENTATIONS:**

1. Peter Pickfield, Solicitor  
   Garrod Pickfield LLP  
   Re: Advice that is subject to Solicitor-Client Privilege, including Communications necessary for that Purpose – Update on the Local Planning Appeal Tribunal File PL160706 – County of Oxford Official Plan Amendment Number 197

Peter Pickfield, Solicitor, Garrod Pickfield LLP, presents to Council. P. Pickfield, G. Hough, Director of Community Planning, and P. Crockett, Chief Administrative Officer, respond to questions from Council members.

D. **CONSIDERATION OF CORRESPONDENCE:**

NIL

E. **REPORTS FROM DEPARTMENTS:**

NIL

F. **UNFINISHED BUSINESS:**

NIL
G. NEW BUSINESS/ENQUIRIES/COMMENTS:
NIL

H. TIME OF COMPLETION OF CLOSED SESSION:
7:59 p.m.

RESOLUTION NO. 11:
Moved by: Larry Martin
Seconded by: Marion Wearn
That Council rise and reconvene in Open session.
DISPOSITION: Motion Carried (7:59 p.m.)

Council members and staff return to the Council Chamber.
8:02 p.m. with Warden Mayberry in the chair.

All members of Council present except Councillor Tait.

Staff Present: P. M. Crockett, Chief Administrative Officer
L. Beath, Director of Public Health and Emergency Services
P. D. Beaton, Director of Human Services
L. S. Buchner, Director of Corporate Services
C. Fransen, Director of Woodingford Lodge
G. K. Hough, Director of Community Planning
D. Simpson, Director of Public Works
A. Smith, Director of Human Resources
B. J. Tabor, Clerk
C. J. Senior, Deputy Clerk

15. CONSIDERATION OF MATTERS ARISING FROM THE CLOSED SESSION:

DELEGATIONS AND PRESENTATIONS

RESOLUTION NO. 12:
Moved by: Larry Martin
Seconded by: Marion Wearn
That the information provided in the delegation from Peter Pickfield, Solicitor, Garrod Pickfield LLP, regarding matters that have not been made public concerning the receiving of advice that is subject to solicitor-client privilege, including communications necessary for that purpose, providing an update on the Local Planning Appeal Tribunal File PL160706 – County of Oxford Official Plan Amendment Number 197, be received.

DISPOSITION: Motion Carried

8. CONSIDERATION OF CORRESPONDENCE:

1. Township of Blandford-Blenheim, April 5, 2018
Township of East Zorra-Tavistock, April 6, 2018
City of Woodstock, April 6, 2018
Town of Ingersoll, April 10, 2018
Town of Tillsonburg, April 11, 2018
Re: High Speed Rail Environmental Assessment Terms of Reference
RESOLUTION NO. 13:

Moved by: Trevor Birtch
Seconded by: Larry Martin

That the correspondence from the Townships of Blandford-Blenheim and East Zorra-Tavistock, the City of Woodstock, and the Towns of Ingersoll and Tillsonburg, supporting the County’s position on the High Speed Rail Environmental Assessment Terms of Reference, be received with thanks.

DISPOSITION: Motion Carried

2. Glen and Julie Gilvesy
   Helen Chipps
   Potters Road, Tillsonburg
   April 19, 2018
   Re: Potters Road – Water and Wastewater Servicing

RESOLUTION NO. 14:

Moved by: Trevor Birtch
Seconded by: Larry Martin

That the correspondence from Glen and Julie Gilvesy and Helen Chipps, dated April 19, 2018 regarding Potters Road - Water and Wastewater Servicing, be received as information and referred for consideration during deliberation on Report No. CS 2018-11 and associated By-law No. 6012-2018.

DISPOSITION: Motion Carried

9. REPORTS FROM DEPARTMENTS:

COMMUNITY PLANNING

CP 2018-114
Re: Application for Draft Plan of Subdivision
   SB 17-07-8 – 2593636 Ontario Inc.

The Report was dealt with under Public Meetings.

HUMAN SERVICES

HS 2018-04
Re: Disposal of Surplus Land – 300 Juliana Drive, Woodstock

The Report was dealt with under Public Meetings.

HS 2018-03
Re: Special Needs Resourcing Service Agreement

RESOLUTION NO. 15:

Moved by: Sandra Talbot
Seconded by: Ted Comiskey

That the recommendations contained in Report No. HS 2018-03, titled “Special Needs Resourcing Service Agreement”, be adopted.

DISPOSITION: Motion Carried
Recommendations Contained in Report No. HS 2018-03:

1. That County Council authorize staff to execute a Service Provider Agreement between the County of Oxford and Good Beginnings Day Nursery for the provision of Special Needs Resourcing;

2. And further, that staff be authorized to terminate the contractual agreement with Community Living Tillsonburg specific to Special Needs Resourcing;

3. And further, that the CAO and Director be authorized to execute all related documents.

HS 2018-02
Re: Operation Sharing – Inn Out of the Cold Operating Agreement

RESOLUTION NO. 16:

Moved by: Sandra Talbot
Seconded by: Ted Comiskey


DISPOSITION: Motion Carried

Recommendations Contained in Report No. HS 2018-02:

1. That Council authorize staff to amend the operating agreement with Operation Sharing to allow for the year round operation of the Inn Out of the Cold Homeless Shelter;

2. And further, that Council authorize the Chief Administrative Officer and the Director of Human Services to sign all documents related thereto.

CORPORATE SERVICES

CS 2018-11
Re: Potters Road Sanitary Sewer and Watermain Project

RESOLUTION NO. 17:

Moved by: Sandra Talbot
Seconded by: Ted Comiskey

That the recommendation contained in Report No. CS 2018-11, titled "Potters Road Sanitary Sewer and Watermain Project", be adopted.

DISPOSITION: See Resolution No. 18 for Action of Council

RESOLUTION NO. 18:

Moved by: Stephen Molnar
Seconded by: Larry Martin

That consideration on Report No. CS 2018-11 and By-law No. 6012-2018 be deferred until May 9, 2018 to allow Mr. G. Gilvesy to appear as a delegation.

DISPOSITION: Motion Carried
Recommendation Contained in Report No. CS 2018-11:

1. That By-law No. 6012-2018, being a by-law to authorize the funding sources and mandatory connection for the Potters Road Sanitary Sewer and Watermain Project, be presented to Council for enactment.

CS 2018-12
Re: Devonshire Ave and County Road 4 Sanitary Sewer and Watermain Project

RESOLUTION NO. 19:

Moved by: Marion Wearn
Seconded by: Larry Martin

That the recommendation contained in Report No. CS 2018-12, titled “Devonshire Ave and County Road 4 Sanitary Sewer and Watermain Project”, be adopted.

DISPOSITION: Motion Carried

Recommendation Contained in Report No. CS 2018-12:

1. That By-law No. 6013-2018, being a by-law to authorize the funding sources and mandatory connection for the Devonshire Ave and County Road 4 Sanitary Sewer and Watermain Project, be presented to Council for enactment.

CS 2018-13
Re: OILC Debenture Issues – Zorra

RESOLUTION NO. 20:

Moved by: Marion Wearn
Seconded by: Don McKay


DISPOSITION: Motion Carried

Recommendation Contained in Report No. CS 2018-13:

1. That By-law No. 6014-2018, being a by-law to authorize the borrowing by issuing debentures, for a term of 5 years, in the amount of $165,200.00, for the purposes of the Township of Zorra, be presented to Council for enactment.

CS 2018-10
Re: 2018 Tax Policy By-laws

RESOLUTION NO. 21:

Moved by: Ted Comiskey
Seconded by: Margaret Lupton


DISPOSITION: Motion Carried
Recommendations Contained in Report No. CS 2018-10:

1. That By-law No. 6010-2018, being a by-law to establish tax ratios and levy tax rates for upper-tier purposes for the year 2018, be presented to Council for enactment;

2. And further, that By-law No. 6011-2018 to establish tax capping calculation options and to set a lower limit for applying tax to new construction properties, be presented to Council for enactment.

PUBLIC WORKS

PW 2018-17
Re: Woodstock Street South Reconstruction, Tavistock

RESOLUTION NO. 22:

Moved by: Ted Comiskey
Seconded by: Margaret Lupton

That the recommendation contained in Report No. PW 2018-17, titled “Woodstock Street South Reconstruction, Tavistock”, be adopted.

DISPOSITION: Motion Carried

Recommendation Contained in Report No. PW 2018-17:

1. That County Council authorize a transfer of $60,000 from the Tavistock Wastewater reserves to address the budget shortfall for sanitary sewer replacements that will be included in the Woodstock Street South Road Reconstruction, Tavistock project.

PW 2018-18
Re: Oxford Road 59 Reduced Speed Zone Modifications

RESOLUTION NO. 23:

Moved by: Ted Comiskey
Seconded by: Margaret Lupton

That the recommendations contained in Report No. PW 2018-18, titled “Oxford Road 59 Reduced Speed Zone Modifications”, be adopted.

DISPOSITION: Motion Carried

Recommendations Contained in Report No. 2018-18:

1. That a By-law be enacted to amend By-law No. 5725-2015 Schedule “A” to revise the times when the reduced speed limit is in effect within the designated school zone on Oxford Road 59 (Stover Street South) in the Township of Norwich;

2. And further, that the Ontario Provincial Police and Township of Norwich be advised of the amendment to By-law No. 5725-2015.

10. UNFINISHED BUSINESS:

Pending Items

No discussion takes place regarding the Pending Items list.
11. MOTIONS: 
NIL

12. NOTICE OF MOTIONS:
NIL

13. NEW BUSINESS/ENQUIRIES/COMMENTS:
NIL

14. CLOSED SESSION:
Closed session occurred earlier in the meeting.

15. CONSIDERATION OF MATTERS ARISING FROM THE CLOSED SESSION:
Consideration of matters arising from the Closed session occurred earlier in the meeting.

16. BY-LAWS:

BY-LAW NO. 6010-2018
Being a By-law to establish tax ratios and levy tax rates for upper-tier purposes for the year 2018.

BY-LAW NO. 6011-2018
Being a By-law to Adopt Municipal Options related to Part IX of the Municipal Act, 2001; "Limitation on Taxes for Certain Property Classes".

BY-LAW NO. 6012-2018 (Deferred by Resolution No. 18)
Being a By-law to mandate connection to and impose the cost of the water and sanitary sewage system to the area designated and referred to as the Potters Road Sanitary Sewer and Watermain Project.

BY-LAW NO. 6013-2018
Being a By-law to mandate connection to and impose the cost of the water and sanitary sewage system to the area designated and referred to as the Devonshire Ave and County Road 4 Sanitary Sewer and Watermain Project.

BY-LAW NO. 6014-2018
Being a By-law of the County of Oxford to authorize the borrowing upon amortizing debentures in the principal amount of $165,200.00 towards the cost of a capital work of the Corporation of the Township of Zorra set out in Schedule "A" to this By-law.

BY-LAW NO. 6015-2018
Being a By-law to declare real property located on the western and southern periphery of 300 Juliana Drive, in the City of Woodstock, as surplus to the needs of the County.

BY-LAW NO. 6016-2018
Being a By-law to confirm all actions and proceedings of the Council of the County of Oxford at the meeting at which this By-law is passed.
RESOLUTION NO. 24:

 Moved by: Stephen Molnar  
 Seconded by: Larry Martin  


 DISPOSITION: Motion Carried  

 RESOLUTION NO. 25: 

 Moved by: Stephen Molnar  
 Seconded by: Larry Martin  


 DISPOSITION: Motion Carried  

 17. ADJOURNMENT: 

 Council adjourns its proceedings until the next meeting scheduled for Wednesday, May 9, 2018 at 9:30 a.m.  

 8:15 p.m.  

 Minutes adopted on by Resolution No. 

__________________________________________  
WARDEN  

__________________________________________  
CLERK
Potters Road-Water and Wastewater Servicing
By-Law No. 6012-2018

Delegation of Glen & Julie Gilvesy (80 B Potters Road) and Mrs. Helen Chipps (80 Potters Road)
NOTES:
- EXISTING SANITARY SEWER ON HARVEST AVENUE AND POTTERS ROAD TO LORRAINE AVENUE INSTALLED BY DEVELOPER IN 2011
- EXISTING WATERMAIN ON HARVEST AVENUE AND WESTTOWN LINE TO SIMCOE STREET INSTALLED BY DEVELOPER IN 2011

LEGEND
- NEW SANITARY MANHOLE
- FUTURE SANITARY MANHOLE
- EXISTING SANITARY MANHOLE
- NEW SANITARY SEWER
- NEW SANITARY LATERAL
- FUTURE SANITARY SEWER
- EXISTING SANITARY SEWER
- NEW WATERMAIN
3 Independent Projects – Each of Which could have been performed completely independent of each other

• Completely New Sanitary Main Line and individual property service to 8 homes between Hillyndale and Lorraine

• Completely new main sanitary line and home service from Harvest to 82 Potters Road – at the request of the Owners of 82 Potters Road

• Installation of a very short home servicing line from an existing main Sanitary Line Tee (Installed by Harvest developers in 2011/2012) to 80 & 80B Potters Road – not requested by the owners of 80 & 80B Potters Road
The Actual Cost of Each Independent Project was Vastly Different

- The **most expensive** independent project was the brand new Main Sanitary line and 8 individual property servicing lines between Hillyndale and Lorraine.

- The **second most expensive** independent project would be adding to the Sanitary Main line east of Harvest and the servicing line to 82 Potters Road.

- The **least expensive** projects would be simply connecting to an existing Tee on and existing main sanitary line and attaching a short piece of line directly across the road to either 80 Potters Road or 80B Potters Road. To be clear, these 2 short lines were NOT part of any road reconstruction but rather **one off Dig, Install, Backfill and Patch**.
Dig, Install, Backfill and Patch

Potters Road looking west from 80B Potters Road. Right side of picture Trenched from railroad tracks for water service ending in front of 80 B Potters Road so as to cross the road to provide water service for Harvest/Potters Gate development (first patch across width of road). The second patch across width of road just in front of the white truck) is the sanitary line from existing (2011) sanitary main line to the property line for 80B Potters Road. The third patch (past white truck before the car) across width of road is the sanitary line from existing (2011) sanitary main to property line for 80 Potters Road.
Cost to Install a short line from an existing Tee on and existing sanitary main line to either 80 or 80 B Potters Road

• While we have not had time to research the cost to complete the Hillyndale/Lorraine major new installation or the new main line and service line to 82 Potters Road, we have researched an estimate of the cost to install a short (22.7 m long 100 mm dia) service line from and existing Tee on and existing main Sanitary line to a property line directly across the road (both 80 and 80 B).
Estimated Cost to a short (22.7 m long 100 mm dia) service line from and existing Tee on and existing main Sanitary line to a property line

• Consulting engineers with vast experience in these types of municipal projects roughly estimate that the cost to the municipality for this very minor **Dig, Install, Backfill and Patch** would be approximately $3,000 - $3,500 (use $3,250).

• The Community Service Assistance Reserve as set out in Mr. Simpson’s April 13, 2018 correspondence to me is 25 % or $812.50.

• This would indicate that the assessment to the property owner’s of 80 and 80B Potters Road should be $2,437.50 each.
Other Considerations

Prior to construction Glen and Julie Gilvesy had discussions with individuals at the public meeting as well as with Mr. Jesse Keith, P. Eng, Project Engineer.

• We indicated that we had invested very extensively in our water supply, water treatment and Septic Systems. They were modern, properly engineered systems that functioned extremely well. As such we asked that we not be provided water or sanitary from the town.

We were told that:

• The road was being reconstructed and because of this the water and sewer had to be installed at this time.
Other Considerations....

• We were told that the development across the road wanted another point of access to the water (however not Sanitary because the developer had already installed that connecting to Lorraine in 2011/2012)

• We were never advised that we would be assessed a cost for being provided access to these services

• We advised that we have very good and very expensive systems in place which we paid for and as such we had no intention of connecting. We were told that eventually, maybe 2 or 3 years down the road, we would be subject to a monthly standby charge even if we did not connect
Other Considerations....

• In the end, as seen in the previous picture, the road was NOT reconstructed east of the Rail Road tracks.

• As such, there was no reason to Dig, Install, Backfill and Patch for the Sanitary service to the property line at this time.
In Conclusion

Given all of this we respectfully request that at the maximum, we only be assessed 75% of the cost of the installation of the short line from the existing Tee on the existing main Sanitary line to our property line.

THANK YOU
FORGING A NEW PATH

Benefits

• Efficiency of pooling resources to help maintain the level of program and service delivery
• Ability to respond to the unique needs of our small urban and rural communities

Commitment

• A strong community presence and effective relationships with community partners
• A strong advocacy voice for public health in Ontario
THE PAST SIX MONTHS...

Timeline

November 10, 2017
Elgin St. Thomas Public Health and Oxford County Public Health announce their intent to merge into a single health unit serving the communities of Oxford, Elgin and St. Thomas, a combined population of about 204,000.

November 15, 2017
A delegation from the two health units appears before the Standing Committee on Bill 160, the Strengthening Quality and Accountability for Patients Act, 2017, to ask for the removal of special distinctions for Oxford County under the Health Protection and Promotion Act. This marks the first procedural step allowing the merger to proceed.

December 12, 2017
The Strengthening Quality and Accountability for Patients Act, 2017, receives Royal Assent with the Oxford County amendment.

January 10, 2018
Health unit boards for Elgin St. Thomas and Oxford County approve reports at their respective meetings to advance the next procedural step in the merger: a petition for changes to regulations under the Health Protection and Promotion Act that will set out the new health unit’s legal name, boundaries, municipal board membership, and merger date.

February 28, 2018
The Transition Governance Committee is announced to provide oversight on governance tasks directly related to the merger.

April 4, 2018
Regulatory changes to the Health Protection and Promotion Act are approved and posted on the Government of Ontario’s e-Laws website.

May 1, 2018
Effective date of the legal merger of the two health units, although the process of merging operations will continue over the following year.
BOARD OF HEALTH MEMBERS

Heather Jackson  
St. Thomas

David Marr  
Elgin County

Larry Martin  
Oxford County

David Mayberry  
Oxford County

Margaret Lupton  
Oxford County

Lee Rowden  
Order in Council

Sandra Talbot  
Oxford County

Bernie Wiehle  
Elgin County

Steve Wookey  
St. Thomas
INAUGURAL BOARD MEETING

May 1, 2018

• Election of Chair and Vice Chair
• Appointment of MOH(A)
• Appointment of CEO
• Board bylaws and policies approved
EXECUTIVE LEADERSHIP

Dr. Joyce Lock
Medical Officer of Health

Cynthia St. John
Chief Executive Officer
Medical Officer of Health and Chief Executive Officer work in collaboration with each other to carry out specific responsibilities:

**Medical Officer of Health**
- Community leadership in public health and responsible for the execution of public health legislation
- Advisor to health care providers, agencies, staff and the public on issues of public health importance

**Chief Executive Officer**
- Accountable for the overall operation and performance of Southwestern Public Health
- Oversee the establishment of a long term strategic vision, keeping in mind the mission, vision and values of the health unit
Ontario Public Health Standards 2018

- Define work of the health unit through Protocols and Guidelines
ACCOUNTABILITY FRAMEWORK

Four Domains

- Delivery of programs and services
- Fiduciary requirements
- Good governance and management practice
- Public health practice
OPHS 2018

Programs & Services Standards

Chronic Disease Prevention & Wellbeing
Substance Use & Injury Prevention
Safe Water
Healthy Environments
Food Safety
School Health
Immunization
Healthy Growth & Development
Infectious Disease

Foundational Standards

Population Health Assessment
Health Equity
Effective Public Health Practice
Emergency Preparedness
NEW NAME, SAME QUALITY SERVICES

- Common programs and services offered across the entire health unit geography with some variations based on local need and priorities

- Unique programs continue to be offered in specific geographic areas, e.g., on-site sewage system management program in Oxford, active transportation in St. Thomas
BUILDING HEALTHY COMMUNITIES

- Southwestern Landfill Proposal
- Beachville & Area Air Quality
- Zero Poverty Oxford
- Community Leaders’ Cabinet
- Community Oxford Committee (Future Oxford)
- Membership on both Oxford & Elgin SWLHIN Sub-Region Integration Tables
- Public Health Membership on Local Emergency Control Groups
- Several active community partnership tables
- Health Status reports
- Continue to facilitate and/or participate on various health and social services committees such as:
  - Community drug strategies
  - Community injury prevention strategies
  - Promoting health in all decisions
  - Health Links
  - Immigration Partnerships
  - Situation Tables
  - Active transportation
  - Child & Youth networks
  - Falls Prevention for senior
NEXT STEPS

Merger Day: May 1, 2018

• Regulations came into force to create the new health unit
• First meeting of new Board of Health
• Board bylaws and policies approved
• Soft launch of new health unit
• Transition message on home pages of both Oxford and Elgin St. Thomas websites
• Staff continues to deliver same programs and services

May and June 2018

• Transition of all current IT infrastructure and phone systems to harmonized system across all office locations
NEXT STEPS

June 2018

• Public launch of new health unit, including new phone number, emails

• Common landing page at swpublichealth.ca, followed by migration of Oxford content to the new website

Summer & Fall 2018

• Integration of new organizational structure and new Ontario Public Health Standards
  – Draft 2019 Annual Service Plan and Budget

2019 and beyond

• Ongoing planning and implementation of programs and services across the new health unit geography

• New Strategic Plan
CONTACT INFO: MAY 2018

Contacting staff

- Employees will continue to use their pre-merger email until IT transition is complete
- All current staff cell phone numbers will be maintained

WOODSTOCK SITE
519.539.9800 ext. 3410
1-800-755-0394
410 Buller Street, Woodstock
(93 Graham Street, Woodstock)

ST. THOMAS SITE
519.631.9900
1-800-922-0096
1230 Talbot Street, St. Thomas
Dear Madam

Re: High Speed Rail

At their meeting held Tuesday April 10, 2018, the Council of the Township of Norwich passed the following resolution:

"That the Request for Support from Oxford County Warden Mayberry Re: High Speed Rail Environmental Assessment Terms of Reference, be received as information;

And Further That Council request the Province of Ontario commit to a High Speed Rail Environmental Assessment Terms of Reference that, as required under the Environmental Assessment Act, explicitly include the full and comparative assessment of alternatives to HSR including the optimization of existing rail corridors such as the High Performance Rail (HPR) alternative;

And further, that the Premier of Ontario, the Minister of Transportation, the Minister of Environment and Climate Change and the Executive Director, High Speed Rail Programs, MTO be so advised."

Thank you for taking the time to consider this matter. Should you have any questions with respect to this issue, please do not hesitate to contact me.

Sincerely

[Signature]

Kimberley Armstrong
Deputy Clerk

cc. Honourable Kathryn McGarry, Minister of Transportation
Honourable Chris Ballard, Minister of Environment and Climate Change
Ms. Jennifer Graham-Harkness, Director, High Speed Rail, MTO
Warden Mayberry, Oxford County
To: Warden and Members of County Council
From: Director of Corporate Services

2017 Audited Financial Statements

RECOMMENDATIONS

1. That the Oxford County Consolidated Financial Statements and the County of Oxford Trust Funds Statements for the year ended December 31, 2017 be accepted;

2. And further, that the Auditor’s letter of independence for the year ended December 31, 2017 be received;

REPORT HIGHLIGHTS

- Auditor to present the 2017 consolidated financial statements, Letter of Independence and Management Letter
- Long Term Financial Sustainability Plan sustainability measures for 2013 to 2017
- 2017 year end budget surplus is $2,522,614

Implementation Points

Staff will take the appropriate measures to remedy the weaknesses identified in the Auditor’s Management Letter, if any are provided and will post the Audited Financial Statements on the County’s website for public information.

Financial Impact

2017 year end budget surplus from general purposes has been transferred to the corporate general reserve for tax stabilization purposes in accordance with Reserve Policy No. 6.20.

2017 year end surpluses from water/wastewater systems have been transferred to the respective water or wastewater reserve in accordance with Reserve Policy No. 6.20.

The Treasurer has reviewed this report prepared on the basis of the audited 2017 consolidated financial statements and agrees with the financial impact information.
Risks/Implications

There are no risks or implications that could result by adopting the recommendations contained within this report.

Strategic Plan (2015-2018)

County Council adopted the County of Oxford Strategic Plan (2015-2018) at its regular meeting held May 27, 2015. The initiative contained within this report supports the Values and Strategic Directions as set out in the Strategic Plan as it pertains to the following Strategic Directions:

4. ii. A County that Informs and Engages - Inform the public about County programs, services and activities through planned communication that includes:
   - A County Report Card that engages and informs our community and celebrates our successes and our history

DISCUSSION

Background

For the 2017 fiscal year, Council appointed Scrimgeour & Company, Chartered Accountant, as auditor for the financial statements for the County of Oxford including its local boards.

Attached as Attachments 1 and 2 are copies of the County of Oxford Consolidated Audited Financial Statements and Audited Woodingford Lodge Resident Trust Fund Statements for the year ended December 31, 2017.

Comments

In September 2011, County Council adopted a Long Term Financial Sustainability Plan that sets out sustainability measures based on "Indicators of Government Financial Condition", defined and approved by the Public Sector Accounting Board. They include a core set of indicators for assessing financial condition of the government entity based on financial statements prepared on the full accrual basis of accounting. Financial condition is health measured in terms of ability to meet obligations in respect of service commitments and financial commitments, using elements of sustainability, flexibility and vulnerability and provides an overall assessment of the municipality’s financial condition.

Sustainability measures the degree to which a government can maintain its existing service and financial commitment. Table 1 provides a list of sustainability measures based on the County’s 2013 - 2017 financial statements.

Performance regarding 2017 achievements with respect to projects and advancement of the County's strategic plan will form part of the 2017 Annual Report which will be published within a few weeks.
Table 1 – Sustainability Indicators

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial assets to liabilities</td>
<td>1.98</td>
<td>1.88</td>
<td>1.77</td>
<td>1.57</td>
<td>1.28</td>
</tr>
<tr>
<td>Total cash and temporary investments to operating expenses</td>
<td>1.18</td>
<td>1.09</td>
<td>1.03</td>
<td>0.96</td>
<td>0.94</td>
</tr>
<tr>
<td>Net working capital to operating expenses</td>
<td>1.01</td>
<td>0.96</td>
<td>0.92</td>
<td>0.86</td>
<td>0.76</td>
</tr>
<tr>
<td>Net debt to total operating revenue</td>
<td>0.25</td>
<td>0.28</td>
<td>0.31</td>
<td>0.37</td>
<td>0.40</td>
</tr>
<tr>
<td>Net debt to taxable assessment</td>
<td>0.0030</td>
<td>0.0035</td>
<td>0.0040</td>
<td>0.0046</td>
<td>0.0049</td>
</tr>
<tr>
<td>Accumulated surplus to taxable assessment</td>
<td>0.039</td>
<td>0.040</td>
<td>0.040</td>
<td>0.040</td>
<td>0.035</td>
</tr>
<tr>
<td>Total debt per household</td>
<td>$1,007</td>
<td>$1,118</td>
<td>$1,220</td>
<td>$1,321</td>
<td>$1,407</td>
</tr>
</tbody>
</table>

Notes:
1. current assets/current liabilities - ability to meet short term debt obligations
2. total tax revenue/total expenses - ability to cover its costs through tax revenue
3. earnings before interest/borrowing costs - ability to pay interest on outstanding debt
4. capital expenditures/amortization - net increase or decrease in the asset base

Flexibility Indicators measure the degree to which a municipality can change its debt or tax burden to meet its existing service and financial commitments. Table 2 presents flexibility indicators based on the County’s 2013 - 2017 financial statements.

Table 2 – Flexibility Indicators

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt charges to total revenues</td>
<td>0.01</td>
<td>0.01</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Net book value of capital assets to cost of capital assets</td>
<td>0.63</td>
<td>0.64</td>
<td>0.65</td>
<td>0.65</td>
<td>0.66</td>
</tr>
<tr>
<td>Total reserves to operating expenses</td>
<td>1.04</td>
<td>0.97</td>
<td>0.93</td>
<td>0.87</td>
<td>0.74</td>
</tr>
<tr>
<td>Total revenue to taxable assessment</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Vulnerability indicators measure the degree to which a government is dependent on sources of funding from outside its control or influence or the extent to which it is exposed to risks that could impair its existing ability to meet service and financial obligations. Table 3 exhibits a vulnerability indicator based on the County’s 2013 - 2017 financial statements.

Table 3 – Vulnerability Indicators

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Government transfers to total revenues</td>
<td>0.29</td>
<td>0.29</td>
<td>0.30</td>
<td>0.28</td>
<td>0.28</td>
</tr>
</tbody>
</table>
The Financial Statements include a Consolidated Statement of Financial Position which identifies the assets, liabilities and accumulated surplus as of December 31, 2017. Note 10 to the Financial Statements provides a breakdown of the components of the accumulated surplus which includes investment in tangible capital assets, the Library surplus (budget to actual) discretionary reserves and special purpose reserves. The accumulated surplus at December 31, 2017 totals $612,960,744 ($580,248,372 – 2016). The overall 2017 budget surplus was $2,522,614 ($1,942,850 – 2016). The Library surplus of $270,090 ($157,183 – 2016) forms part of the following year’s budget. The remaining $2,252,524 of the surplus was transferred to, and forms part of, the corporate general reserve balance in accordance with Reserve Policy No. 6.20. The 2017 budget surplus is explained in Table 4.

Table 4 – Budget Surplus

<table>
<thead>
<tr>
<th>Description</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxation</td>
<td>In-year property assessment adjustments</td>
</tr>
<tr>
<td>Interest income</td>
<td>Enhanced investment activity</td>
</tr>
<tr>
<td>Interest reserve allocation</td>
<td>Increase in reserve earning balances</td>
</tr>
<tr>
<td>Future Oxford</td>
<td>Lower costs than budgeted</td>
</tr>
<tr>
<td>Corporate Services</td>
<td>Staffing vacancies and sick leaves</td>
</tr>
<tr>
<td>Provincial Offences Administration</td>
<td>Adjudication and interpreter fees</td>
</tr>
<tr>
<td>Waste Management</td>
<td>Higher recycling revenues due to increase in market price</td>
</tr>
<tr>
<td>Capital Projects</td>
<td>Reserve allocation for capital (CS-2017-38)</td>
</tr>
<tr>
<td>Woodingford Lodge</td>
<td>Greater increase in resident rates and provincial funding than anticipated</td>
</tr>
<tr>
<td>Woodingford Lodge</td>
<td>Repair and maintenance and supplies expenses lower than budget</td>
</tr>
<tr>
<td>Woodingford Lodge</td>
<td>Lower increase in utilities costs than expected</td>
</tr>
<tr>
<td>Human Services</td>
<td>Community services – change is estimates for subsidy claims reconciliation and lower claim costs</td>
</tr>
<tr>
<td>Human Services</td>
<td>Housing - County housing rent surplus over budget</td>
</tr>
</tbody>
</table>
### Description

<table>
<thead>
<tr>
<th>Description</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Services</td>
<td>Housing - Affordable housing reserve contribution for housing surplus as per the Reserve Policy</td>
</tr>
<tr>
<td>Public Health</td>
<td>Salaries and benefits – position vacancies</td>
</tr>
<tr>
<td>Public Health</td>
<td>Advertising, supplies, purchased services and travel</td>
</tr>
<tr>
<td>Public Health</td>
<td>Oxford County Public Health Reserve contribution for surplus as per the Reserve Policy</td>
</tr>
<tr>
<td>Emergency Services</td>
<td>Higher net cross border proceeds than anticipated</td>
</tr>
<tr>
<td>Miscellaneous other savings</td>
<td></td>
</tr>
<tr>
<td>Library</td>
<td>Higher surplus than budgeted for 2016</td>
</tr>
<tr>
<td>Library</td>
<td>Salaries and benefits – position vacancies</td>
</tr>
<tr>
<td>Library other</td>
<td>Other expenses and reserve transfers not made</td>
</tr>
<tr>
<td>Budget Surplus</td>
<td>$2,522,614</td>
</tr>
</tbody>
</table>

### Conclusions

The five years of financial indicator comparatives suggest that the County is well positioned in the short and mid-term to meet its service and financial obligations.

Attached to this report as Attachment 3 is a Letter of Independence for the year ended December 31, 2017.

Overall the 2017 financial statements, supported by unqualified Auditor’s Reports and stable financial indicators, reaffirms the County’s ability to continue to maintain its strong liquidity position with a moderate debt burden – key strengths necessary for financial sustainability.
SIGNATURES

Report Co-authors:

Original signed by:

Carolyn King, CPA, CA
Manager of Corporate Services

Departmental Approval:

Original signed by:

Lynn S. Buchner, CPA, CGA
Director of Corporate Services

Approved for submission:

Original signed by:

Peter M. Crockett, P.Eng.
Chief Administrative Officer

ATTACHMENTS

Attachment No. 1 – Consolidated Financial Statements – December 31, 2017
Attachment No. 2 – Woodingford Lodge Resident Trust Fund Statements – December 31, 2017
Attachment No. 3 – Scrimgeour & Company – Letter of Independence
Consolidated Financial Statements
December 31, 2017
INDEPENDENT AUDITOR'S REPORT

To the Members of Council, Inhabitants and Ratepayers of the County of Oxford

We have audited the accompanying consolidated financial statements of the County of Oxford, which comprise the consolidated statement of financial position as at December 31, 2017 and the consolidated statements of operations and accumulated surplus, change in net financial assets and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Consolidated Financial Statements
Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility
Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion
In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the County of Oxford as at December 31, 2017 and its financial performance and its change in net financial assets and cash flows for the year then ended in accordance with Canadian public sector accounting standards.

London, Canada
May 9, 2018
LICENSED PUBLIC ACCOUNTANT
## County of Oxford
### Consolidated Statement of Financial Position
#### As at December 31, 2017 (comparative balances as at December 31, 2016)

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>$120,855,723</td>
<td>$103,517,220</td>
</tr>
<tr>
<td>Short term investments (Note 1)</td>
<td>62,323,586</td>
<td>63,542,348</td>
</tr>
<tr>
<td>Accounts receivable (Note 3)</td>
<td>14,749,151</td>
<td>12,981,444</td>
</tr>
<tr>
<td>Loans receivable (Note 4)</td>
<td>5,593,616</td>
<td>5,986,517</td>
</tr>
<tr>
<td><strong>Total Financial assets</strong></td>
<td>203,522,076</td>
<td>186,027,529</td>
</tr>
<tr>
<td><strong>Liabilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts payable and accrued liabilities</td>
<td>30,485,158</td>
<td>25,737,065</td>
</tr>
<tr>
<td>Deferred revenue (Note 5)</td>
<td>16,193,304</td>
<td>13,286,821</td>
</tr>
<tr>
<td>Post retirement and employee future benefits (Note 6)</td>
<td>4,972,613</td>
<td>4,694,072</td>
</tr>
<tr>
<td>Net long term liabilities (Note 8)</td>
<td>46,580,811</td>
<td>51,234,500</td>
</tr>
<tr>
<td>Landfill closure and post closure liabilities (Note 9)</td>
<td>4,331,162</td>
<td>4,110,835</td>
</tr>
<tr>
<td><strong>Total Liabilities</strong></td>
<td>102,563,048</td>
<td>99,063,293</td>
</tr>
<tr>
<td><strong>Net financial assets</strong></td>
<td>100,959,028</td>
<td>86,964,236</td>
</tr>
<tr>
<td><strong>Non financial assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tangible capital assets (Schedule 1)</td>
<td>489,014,892</td>
<td>479,798,363</td>
</tr>
<tr>
<td>Capital work in progress</td>
<td>22,615,409</td>
<td>13,090,170</td>
</tr>
<tr>
<td>Inventories</td>
<td>59,671</td>
<td>74,619</td>
</tr>
<tr>
<td>Prepaid and deferred charges</td>
<td>311,744</td>
<td>320,984</td>
</tr>
<tr>
<td><strong>Total Non financial assets</strong></td>
<td>512,001,716</td>
<td>493,284,136</td>
</tr>
<tr>
<td><strong>Accumulated surplus (Note 10)</strong></td>
<td>$612,960,744</td>
<td>$580,248,372</td>
</tr>
</tbody>
</table>

The accompanying summary of significant accounting policies and notes are an integral part of these financial statements.
County of Oxford
Consolidated Statement of Operations and Accumulated Surplus
For the year ended December 31, 2017 (comparative balances for year ended December 31, 2016)

<table>
<thead>
<tr>
<th></th>
<th>Budget 2017</th>
<th>Actual 2017</th>
<th>Actual 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(Note 11)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Revenues</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property taxes</td>
<td>$59,009,106</td>
<td>$59,678,637</td>
<td>$57,549,632</td>
</tr>
<tr>
<td>User fees and charges</td>
<td>63,306,302</td>
<td>63,474,141</td>
<td>61,673,540</td>
</tr>
<tr>
<td>Government transfers (Note 15)</td>
<td>62,418,613</td>
<td>54,874,272</td>
<td>52,298,098</td>
</tr>
<tr>
<td>Investment income</td>
<td>2,200,000</td>
<td>2,646,487</td>
<td>2,352,614</td>
</tr>
<tr>
<td>Development charges</td>
<td>5,804,032</td>
<td>4,988,154</td>
<td>4,894,730</td>
</tr>
<tr>
<td>Provincial offences (Note 17)</td>
<td>1,860,000</td>
<td>1,856,518</td>
<td>1,802,328</td>
</tr>
<tr>
<td>Other</td>
<td>37,000</td>
<td>423,808</td>
<td>2,448,375</td>
</tr>
<tr>
<td><strong>Total Revenues</strong></td>
<td>$194,635,053</td>
<td>$187,942,017</td>
<td>$183,019,317</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General government</td>
<td>6,800,409</td>
<td>6,381,727</td>
<td>6,552,826</td>
</tr>
<tr>
<td>Protection to persons and property</td>
<td>2,571,671</td>
<td>2,410,936</td>
<td>2,312,369</td>
</tr>
<tr>
<td>Transportation services</td>
<td>17,485,266</td>
<td>19,617,561</td>
<td>18,366,952</td>
</tr>
<tr>
<td>Environmental services</td>
<td>39,367,607</td>
<td>38,080,461</td>
<td>37,722,627</td>
</tr>
<tr>
<td>Health services</td>
<td>20,912,544</td>
<td>20,655,462</td>
<td>20,195,693</td>
</tr>
<tr>
<td>Social and family services</td>
<td>54,316,499</td>
<td>50,446,538</td>
<td>50,050,880</td>
</tr>
<tr>
<td>Social housing</td>
<td>15,019,651</td>
<td>10,882,227</td>
<td>11,314,755</td>
</tr>
<tr>
<td>Recreation and cultural development</td>
<td>3,770,116</td>
<td>3,796,186</td>
<td>3,727,563</td>
</tr>
<tr>
<td>Planning and development</td>
<td>3,827,518</td>
<td>3,333,664</td>
<td>3,366,412</td>
</tr>
<tr>
<td><strong>Total Expenses</strong></td>
<td>$164,071,281</td>
<td>$155,604,762</td>
<td>$153,610,077</td>
</tr>
<tr>
<td><strong>Excess revenues over expenses before other</strong></td>
<td>30,563,772</td>
<td>32,337,255</td>
<td>29,409,240</td>
</tr>
<tr>
<td><strong>Other revenues (expenses)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gain (loss) on disposal of capital assets</td>
<td>1,281,000</td>
<td>375,117</td>
<td>(1,094,804)</td>
</tr>
<tr>
<td><strong>Excess revenues over expenses</strong></td>
<td>31,844,772</td>
<td>32,712,372</td>
<td>28,314,436</td>
</tr>
<tr>
<td><strong>Accumulated surplus, beginning of year</strong></td>
<td>580,248,372</td>
<td>580,248,372</td>
<td>551,933,936</td>
</tr>
<tr>
<td><strong>Accumulated surplus, end of year (Note 10)</strong></td>
<td>$612,093,144</td>
<td>$612,960,744</td>
<td>$580,248,372</td>
</tr>
</tbody>
</table>

The accompanying summary of significant accounting policies and notes are an integral part of these financial statements.
County of Oxford  
Consolidated Statement of Change in Net Financial Assets  
For the year ended December 31, 2017 (comparative balances for year ended December 31, 2016)

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excess revenues over expenses</td>
<td>$ 32,712,372</td>
<td>$ 28,314,436</td>
</tr>
<tr>
<td>Acquisition of tangible capital assets</td>
<td>(28,670,477)</td>
<td>(26,143,929)</td>
</tr>
<tr>
<td>Amortization of tangible capital assets</td>
<td>18,010,411</td>
<td>17,407,712</td>
</tr>
<tr>
<td>Loss (gain) on sale of tangible capital assets</td>
<td>(375,117)</td>
<td>1,094,804</td>
</tr>
<tr>
<td>Proceeds from the sale of tangible capital assets</td>
<td>1,818,654</td>
<td>123,326</td>
</tr>
<tr>
<td>(Increase) in capital work in progress</td>
<td>(9,525,239)</td>
<td>(9,274,963)</td>
</tr>
<tr>
<td>Decrease (increase) in inventory</td>
<td>14,948</td>
<td>(341)</td>
</tr>
<tr>
<td>Decrease in prepaid and deferred charges</td>
<td>9,240</td>
<td>207,656</td>
</tr>
<tr>
<td><strong>Increase in net financial assets</strong></td>
<td>13,994,792</td>
<td>11,728,701</td>
</tr>
<tr>
<td><strong>Net financial assets, beginning of year</strong></td>
<td>86,964,236</td>
<td>75,235,535</td>
</tr>
<tr>
<td><strong>Net financial assets, end of year</strong></td>
<td><strong>$100,959,028</strong></td>
<td><strong>$ 86,964,236</strong></td>
</tr>
</tbody>
</table>

The accompanying summary of significant accounting policies and notes are an integral part of these financial statements.
### County of Oxford

**Consolidated Statement of Cash Flows**

*For the year ended December 31, 2017 (comparative balances for year ended December 31, 2016)*

<table>
<thead>
<tr>
<th>Description</th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excess revenues over expenses</td>
<td>$32,712,372</td>
<td>$28,314,436</td>
</tr>
<tr>
<td>Non-cash changes to operations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amortization of tangible capital assets</td>
<td>18,010,411</td>
<td>17,407,712</td>
</tr>
<tr>
<td>Loss (gain) on disposal of capital assets</td>
<td>(375,117)</td>
<td>1,094,804</td>
</tr>
<tr>
<td>Post retirement and employee future benefits</td>
<td>278,541</td>
<td>247,170</td>
</tr>
<tr>
<td>Landfill closure and post closure liabilities</td>
<td>220,327</td>
<td>148,658</td>
</tr>
<tr>
<td>Changes in non-cash operating balances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>(1,767,707)</td>
<td>(2,460,910)</td>
</tr>
<tr>
<td>Loans receivable</td>
<td>392,901</td>
<td>1,097,604</td>
</tr>
<tr>
<td>Accounts payable and accrued liabilities</td>
<td>4,748,093</td>
<td>2,966,500</td>
</tr>
<tr>
<td>Deferred revenue</td>
<td>2,906,483</td>
<td>1,970,027</td>
</tr>
<tr>
<td>Inventories</td>
<td>14,948</td>
<td>(341)</td>
</tr>
<tr>
<td>Prepaid and deferred charges</td>
<td>9,240</td>
<td>207,656</td>
</tr>
<tr>
<td><strong>Net change in cash from operating</strong></td>
<td>57,150,492</td>
<td>50,993,316</td>
</tr>
<tr>
<td><strong>Capital activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquisition of tangible capital assets</td>
<td>(28,670,477)</td>
<td>(26,143,929)</td>
</tr>
<tr>
<td>Proceeds from the sale of tangible capital assets</td>
<td>1,818,654</td>
<td>123,326</td>
</tr>
<tr>
<td>(Increase) in work in progress</td>
<td>(9,525,239)</td>
<td>(9,274,963)</td>
</tr>
<tr>
<td><strong>Net change in cash from capital</strong></td>
<td>(36,377,062)</td>
<td>(35,295,566)</td>
</tr>
<tr>
<td><strong>Financing activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proceeds from long term debt</td>
<td>793,924</td>
<td>1,928,762</td>
</tr>
<tr>
<td>Long term debt principal repayments</td>
<td>(5,447,613)</td>
<td>(5,860,091)</td>
</tr>
<tr>
<td><strong>Net change in cash from financing</strong></td>
<td>(4,653,689)</td>
<td>(3,931,329)</td>
</tr>
<tr>
<td>Increase in cash and cash equivalents</td>
<td>16,119,741</td>
<td>11,766,421</td>
</tr>
<tr>
<td><strong>Cash and short term investments, beginning of year</strong></td>
<td>167,059,568</td>
<td>155,293,147</td>
</tr>
<tr>
<td><strong>Cash and short term investments, end of year</strong></td>
<td><strong>$183,179,309</strong></td>
<td><strong>$167,059,568</strong></td>
</tr>
<tr>
<td><strong>Comprised of:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>120,855,723</td>
<td>103,517,220</td>
</tr>
<tr>
<td>Short term investments</td>
<td>62,323,586</td>
<td>63,542,348</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$183,179,309</strong></td>
<td><strong>$167,059,568</strong></td>
</tr>
</tbody>
</table>

The accompanying summary of significant accounting policies and notes are an integral part of these financial statements.
Basis of Consolidation

The County of Oxford ("County") is an upper-tier municipality in the Province of Ontario, Canada. It conducts its operations guided by the provisions of provincial statutes such as the Municipal Act, Municipal Affairs Act and related legislation. The consolidated financial statements of the County of Oxford are the representation of management prepared in accordance with Canadian public sector accounting standards established by the Public Sector Accounting Board ("PSAB") of the Chartered Professional Accountants of Canada ("CPA Canada"). The County of Oxford is comprised of the City of Woodstock, Towns of Ingersoll and Tillsonburg and the Townships of Blandford-Blenheim, East Zorra-Tavistock, Norwich, South-West Oxford and Zorra.

(i) The consolidated financial statements reflect the assets, liabilities, revenues and expenses and changes in investment in tangible capital assets of the County. These statements comprise all services and enterprises accountable to the County and which are owned or controlled by the County. Oxford County Library is the only board consolidated in these financial statements.

All assets, liabilities, revenues and expenses between consolidated entities have been eliminated.

(ii) Trust funds and their related operations administered by the County are not consolidated, but are reported separately on the "Woodingford Lodge Resident Trust Fund Financial Statement".

Accrual Basis of Accounting

The consolidated financial statements are prepared using the accrual basis of accounting. The accrual basis of accounting records revenue as it is earned and measurable. Expenses are recognized as they are incurred and measurable based upon receipt of goods or services and/or the creation of a legal obligation to pay.

Cash and Cash Equivalents

Management considers all highly liquid investments with maturity of 90 days or less at acquisition or redeemable on demand to be cash equivalents.

Short Term Investments

Portfolio investments are recorded at cost, unless there has been a decline in the market value which is other than temporary in nature, in which case the investments are written down to market value.

Non-Financial Assets

Non-financial assets are not available to discharge existing liabilities and are held for use in the provision of services. They have useful lives extending beyond the current year and are not intended for sale in the ordinary course of operations. The change in non-financial assets during the year, together with the excess of revenues over expenses, determines the change in net financial assets for the year.
Government Transfer

Government transfers from the province or federal government are recognized in the consolidated financial statements in the period in which events giving rise to the transfers occur, providing the transfers are authorized, any eligibility criteria have been met, and reasonable estimates of the amount can be made.

Investment Income

Investment income earned on available funds and accumulated surplus is reported as revenue in the period earned. Investment income earned on development charges, reserve funds, water and wastewater reserves and the insurance reserve are added to the fund balance and forms parts of the deferred revenue and reserve balances.

Revenue Recognition

Taxation revenues are recognized when the tax is authorized and the taxable event has occurred. Additional property tax revenue can be added throughout the year, related to new properties that become occupied, or that become subject to property tax, using property assessments for billing purposes. Property taxes for these supplementary/omitted amounts are then billed according to the approved tax rate for the property class. Taxation revenues in any year may also be reduced as a result of reductions in assessment values arising from assessment and/or tax appeals. These assessment changes are recorded in the year the change is settled.

Charges for sewer and water usage are recorded as user fees when billed. Connection fee revenues are recognized when the connection has been established.

Deferred Revenue

In accordance with PSAB requirements, obligatory reserve funds are reported as a component of deferred revenue. Development charge collections have been segregated, as required by the Development Charges Act, to finance a portion of the cost of growth-related capital projects. Revenue recognition occurs when the County has incurred the expenditure for the capital works for which the development charges were collected.

Revenues received for specific purposes which are externally restricted by legislation, regulation or agreement and are not available for general municipal purposes are accounted for as deferred revenue. The revenue is recognized in the year in which it is used for the specified purpose.

Loans Receivable

Loans receivable are recorded at cost less any amount for valuation allowance. Valuation allowances are made when collection is in doubt. Interest is accrued on loans receivable to the extent it is deemed collectable.
Tangible Capital Assets

Tangible capital assets are recorded at cost less accumulated amortization. Cost includes all costs directly attributable to acquisition or construction of the tangible capital asset including transportation costs, installation costs, design and engineering fees, legal fees, and site preparation costs. Contributed tangible capital assets are recorded at fair value at the time of the donation, with a corresponding amount recorded as revenue. Amortization is recorded on a straight-line basis over the estimated life of the tangible capital asset commencing once the asset is available for productive use as follows:

**General Capital:**
- Land: No amortization
- Land Improvements: 30 to 40 years
- Buildings: 30 to 40 years
- Furnishings and fixtures: 10 years
- Library books: 7 years
- Machinery and equipment: 10 to 30 years
- Computer hardware and software: 4 years
- Vehicles: 5 to 20 years

**Infrastructure Capital:**
- Land: No amortization
- Land Improvements: 30 to 40 years
- Buildings: 30 to 99 years
- Machinery and equipment: 10 to 30 years
- Linear:
  - Water and wastewater infrastructure: 10 to 99 years
  - Roads and bridges: 7 to 99 years

Assets under construction are not amortized until the asset is available for use.

Tangible capital assets received as contributions are recorded at their fair value at the date of receipt.

**Inventories**

Inventories held for consumption are recorded at the lower of cost and net realizable value.

**Use of Estimates**

The preparation of consolidated financial statements in conformity with Canadian public sector accounting standards requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements, and the reported amounts of revenues and expenses during the period. Actual results could differ from management's best estimates as additional information becomes available in the future. Adjustments, if any, will be reflected in operations in the period of settlement. Significant estimates include liability for Workplace Safety and Insurance Board, landfill closure and post-closure costs and historical cost and useful lives of tangible capital assets.
1. Short Term Investments

The County's investment activities are governed by the Municipal Act and the County's investment policy. The short term investments of $62,323,586 (2016 - $63,542,348) are recorded at cost. The investments have a market value of $61,743,077 (2016 - $63,391,326). The market value represents the realizable value of the investments if they were sold on December 31, 2017. Accordingly, only realized gains and losses are recognized in the financial statements.

2. Trust Funds

Trust funds administered by the County of Oxford amounting to $23,018 (2016 - $28,298) have not been included in the Consolidated Statement of Financial Position nor have their operations been included in the Consolidated Statement of Operations and Accumulated Surplus.

3. Accounts Receivable

Accounts Receivable are reported net of allowance for doubtful accounts of $173,706 (2016 - $119,909).

4. Loans Receivable

The County has issued loans to properties for the extension of water and/or wastewater services. Interest rates range from 2.60% to 5.20%, and have repayment terms continuing until 2027. Property owners have assumed responsibility for paying the interest and principal charges for the debt.

5. Deferred Revenue

The deferred revenue balance is comprised of the following:

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development charges</td>
<td>$ 11,584,097</td>
<td>$ 9,339,253</td>
</tr>
<tr>
<td>Economic development grant</td>
<td>2,933,542</td>
<td>3,062,770</td>
</tr>
<tr>
<td>Federal Gas Tax</td>
<td>50,893</td>
<td>50,231</td>
</tr>
<tr>
<td>Other</td>
<td>1,624,772</td>
<td>834,567</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 16,193,304</strong></td>
<td><strong>$ 13,286,821</strong></td>
</tr>
</tbody>
</table>
6. Post Retirement and Employee Future Benefits

The County provides certain employee benefits which have been funded as noted below:

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workplace Safety &amp; Insurance Board</td>
<td>$4,914,290</td>
<td>$4,620,669</td>
</tr>
<tr>
<td>Post retirement benefits</td>
<td>58,323</td>
<td>73,403</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$4,972,613</strong></td>
<td><strong>$4,694,072</strong></td>
</tr>
</tbody>
</table>

Liability for Workplace Safety & Insurance (WSIB)

The County is a Schedule 2 employer under the Workplace Safety and Insurance Act. As a Schedule 2 employer, the County assumes the liability for any award made under the Act. A comprehensive actuarial valuation of the future liability for WSIB benefits was conducted as at December 31, 2014 and has been extrapolated to estimate the liability for the 2015 to 2017 period. The next required valuation will be conducted in 2018 for the period ending December 31, 2017, and any change in this estimate will be recorded in 2018.

The significant actuarial assumptions adopted in estimating the County's WSIB liabilities are as follows:

- Discount rate: 4.25%
- Expected future WSIB payments per lost time injury:
  - County: 178%
  - Woodingford Lodge: 120%
- Health care inflation: CPI plus 4%
- WSIB Administration Rate: 38%
- Lost time injury count:
  - County: 8
  - Woodingford Lodge: 5

Information about the County's WSIB liability is as follows:

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accrued benefit obligation, beginning of year</td>
<td>$4,620,669</td>
<td>$4,350,904</td>
</tr>
<tr>
<td>Current service cost</td>
<td>726,694</td>
<td>697,793</td>
</tr>
<tr>
<td>Interest expense</td>
<td>227,513</td>
<td>220,642</td>
</tr>
<tr>
<td>Actuarial loss</td>
<td>641,268</td>
<td>757,816</td>
</tr>
<tr>
<td>Benefits paid</td>
<td>(777,134)</td>
<td>(765,218)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$5,439,010</td>
<td>$5,261,937</td>
</tr>
<tr>
<td>Unamortized net actuarial gain</td>
<td>(524,720)</td>
<td>(641,268)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$4,914,290</strong></td>
<td><strong>$4,620,669</strong></td>
</tr>
</tbody>
</table>
6. Post Retirement and Employee Future Benefits Continued

Information about the County’s WSIB expenses recognized in the period is as follows:

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current period benefit cost</td>
<td>$726,694</td>
<td>$697,793</td>
</tr>
<tr>
<td>Amortization of net actuarial loss</td>
<td>$116,548</td>
<td>$116,548</td>
</tr>
<tr>
<td>Interest expense</td>
<td>$227,513</td>
<td>$220,642</td>
</tr>
<tr>
<td><strong>Total expenditure</strong></td>
<td><strong>$1,070,755</strong></td>
<td><strong>$1,034,983</strong></td>
</tr>
</tbody>
</table>

A reserve has been accumulated to fund this obligation. It is funded as follows:

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workplace Safety and Insurance Board (Note 10)</td>
<td>$3,718,975</td>
<td>$4,002,348</td>
</tr>
</tbody>
</table>

**Liability for Post Retirement Benefits**

The municipality provides retirement benefits consisting of health care benefits and life insurance to qualifying members.

7. Pension Contributions

The County makes contributions to the Ontario Municipal Employees Retirement Fund (OMERS), which is a multi-employer plan, on behalf of members of its staff. The plan is a defined benefit plan which specifies the amount of the retirement benefit to be received by the employees based on the length of services and rates of pay. The amount contributed to OMERS for 2017 was $3,886,440 (2016 - $3,752,233) for the current service and is included as an expenditure on the Consolidated Statement of Operations and Accumulated Surplus. The County had no obligation, as at December 31, 2017, under the past service provisions. The OMERS funding ratio for 2017 is 94.2% (2016 - 93.4%), with the goal of being fully funded by 2025.
8. **Net Long Term Liabilities**

(a) The balance of long term liabilities reported on the Consolidated Statement of Financial Position is made up of the following:

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total long term liabilities incurred by the County at various rates of interest ranging from 1.62% to 7.00% (2016 - 1.62% to 7.00%) with maturity dates ranging from August 2018 to December 2040</td>
<td>$85,763,460</td>
<td>$91,724,479</td>
</tr>
<tr>
<td>Of the long term liabilities shown above, the responsibility for payment of principal and interest charges has been assumed by other municipalities</td>
<td>(38,822,029)</td>
<td>(39,974,949)</td>
</tr>
<tr>
<td>Of the long term liabilities shown above, the responsibility for payment of principal and interest charges for tile drainage has been assumed by individuals</td>
<td>(360,620)</td>
<td>(515,030)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 46,580,811</strong></td>
<td><strong>$ 51,234,500</strong></td>
</tr>
</tbody>
</table>

(b) Of the net long term liabilities reported in (a) of this note, the minimum principal repayments required are estimated as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>$5,367,200</td>
</tr>
<tr>
<td>2019</td>
<td>5,489,462</td>
</tr>
<tr>
<td>2020</td>
<td>5,583,900</td>
</tr>
<tr>
<td>2021</td>
<td>5,337,633</td>
</tr>
<tr>
<td>2022</td>
<td>5,320,375</td>
</tr>
<tr>
<td>Thereafter</td>
<td>19,482,241</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$ 46,580,811</strong></td>
</tr>
</tbody>
</table>

(c) The net interest expense for the year ended December 31, 2017 was $2,285,478 (2016 - $2,544,011).
8. Net Long Term Liabilities Continued

(d) The net long term liabilities in (a) issued in the name of the County have received approval of the Ontario Municipal Board for those approved on or before December 31, 1992. Those approved after January 1, 1993 have been approved by by-law. The annual principal and interest payments required to service these liabilities are within the annual debt repayment limit prescribed by the Ministry of Municipal Affairs and Housing.

(e) The County is contingently liable for long term liabilities with respect to tile drainage, and of those for which the responsibility for the payment of principal and interest has been assumed by other municipalities. The total amount outstanding as at December 31, 2017, was $39,182,649 (2016 - $40,489,979) and is not recorded on the Consolidated Statement of Financial Position.

9. Landfill Closure and Post Closure Liabilities

The Public Sector Accounting Handbook Section 3270: Solid Waste Landfill Closure and Post-Closure Liability, establishes standards on how to account for and report liability for closure and post-closure care of a solid waste landfill site. The Sanitary Closure costs include final cover and vegetation, completing facilities for drainage control features, leachate monitoring, water quality monitoring, and monitoring and recovery of gas. Post-closure care activities include all activities related to monitoring the site once it can no longer accept waste, including acquisition of any additional land for buffer zones, treatment and monitoring of leachate, monitoring ground water and surface water, gas monitoring and recovery, and ongoing maintenance of various control systems, drainage systems, and final cover. The estimated liability for the care of landfill sites is the present value of future cash flows associated with closure and post-closure costs.

The County owns and operates one open landfill site and it owns and monitors two closed landfill sites. The open site has a remaining capacity of 2,849,434 (2016 - 2,917,829) cubic metres with an estimated life expectancy of 46 years (2016 - 47 years). The present value of the expected closure and post closure costs of the open landfill site have been estimated using a discount factor of 2.5% and an annual inflation rate of 2.5% (2016 - 2.5%). The estimated expenses for closure and post closure care at December 31, 2017 are $4,331,162 (2016 - $4,110,835), and has been reported on the Consolidated Statement of Financial Position. The estimated length of time required for post-closure care is 25 years.
10. Accumulated Surplus

Accumulated surplus consists of individual fund surpluses and reserves as follows:

<table>
<thead>
<tr>
<th>Surpluses (deficits)</th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating fund</td>
<td>$(14,359,378)</td>
<td>$(11,226,431)</td>
</tr>
<tr>
<td>Invested in tangible capital assets</td>
<td>465,608,116</td>
<td>442,384,749</td>
</tr>
<tr>
<td>Library</td>
<td>270,090</td>
<td>157,183</td>
</tr>
<tr>
<td></td>
<td>451,518,828</td>
<td>431,315,501</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reserves</th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working capital</td>
<td>6,100,000</td>
<td>6,100,000</td>
</tr>
<tr>
<td>General</td>
<td>16,073,489</td>
<td>12,344,973</td>
</tr>
<tr>
<td>Water and wastewater systems</td>
<td>77,924,332</td>
<td>69,166,517</td>
</tr>
<tr>
<td>Waste collection and disposal</td>
<td>2,468,482</td>
<td>2,290,735</td>
</tr>
<tr>
<td>Ambulance services</td>
<td>1,060,689</td>
<td>952,620</td>
</tr>
<tr>
<td>Social housing</td>
<td>8,577,413</td>
<td>6,322,299</td>
</tr>
<tr>
<td>Library</td>
<td>383,302</td>
<td>569,066</td>
</tr>
<tr>
<td>Workplace Safety and Insurance Board (WSIB)</td>
<td>3,718,975</td>
<td>4,002,348</td>
</tr>
<tr>
<td>Planning</td>
<td>693,349</td>
<td>693,349</td>
</tr>
<tr>
<td>Other purposes and capital expenses</td>
<td>19,174,680</td>
<td>20,266,500</td>
</tr>
<tr>
<td></td>
<td>136,174,711</td>
<td>122,708,407</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special Purpose Reserves</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Landfill</td>
<td>25,267,205</td>
<td>26,224,464</td>
</tr>
</tbody>
</table>

$612,960,744   $580,248,372
11. Budget

The Financial Plan (Budget) By-Law adopted by Council on January 11, 2017 was prepared on a modified accrual basis consistent with the requirements of Section 289 of the Municipal Act, 2001. The 2017 actual balances, in accordance with the Canadian Public Sector Accounting Standards, are reported on a full accrual basis which includes; amortization of, gains and losses on disposal of and certain revenues related to, capital assets, but excludes debt repayment, capital asset costs and transfers of accumulated surplus. As a result, the budget figures presented in the Consolidated Statement of Operations and Accumulated Surplus represent the Financial Plan adopted by Council on January 11, 2017 with adjustments as follows:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Plan (Budget) By-Law surplus for the year</td>
<td>$ -</td>
</tr>
<tr>
<td>Add:</td>
<td></td>
</tr>
<tr>
<td>Tangible capital assets</td>
<td>67,957,385</td>
</tr>
<tr>
<td>Debt principal repayment</td>
<td>6,113,503</td>
</tr>
<tr>
<td>Less:</td>
<td></td>
</tr>
<tr>
<td>Amortization</td>
<td>16,863,345</td>
</tr>
<tr>
<td>Issuance of long term liabilities</td>
<td>15,425,000</td>
</tr>
<tr>
<td>Transfers from accumulated surplus</td>
<td>9,937,771</td>
</tr>
<tr>
<td></td>
<td>$ 31,844,772</td>
</tr>
</tbody>
</table>

12. Public Sector Salary Disclosure

In 2017, as defined in the Public Sector Disclosure Act 1996, 42 employees were paid a salary of $100,000 or more by the County of Oxford.

13. Contingent Liabilities

A long standing legal claim against the County concerning the expropriation of land for industrial development purposes is waiting decision of the Ontario Municipal Board. Costs associated with this claim will be funded from reserves the County received from a third party having interest in the matter.

Property assessment appeals have been filed by a property owner for years 2013 through to 2017 under the Assessment Act and the Municipal Act that, in the event they are successful, would be funded from the County's Corporate General reserve.

14. Liability for Contaminated Sites

The County has adopted PSAB 3260 standard for the purpose of disclosing liabilities associated with remediation of contaminated sites. Accordingly, there is nothing to report for the purposes of these financial statements.
15. Oxford County Library Board

In 2017, the Oxford County Library Board received $135,675 (2016 - $135,675) from the Ministry of Tourism and Culture for the public library operating grant program and pay equity funding of $3,229 (2016 - $3,229). These amounts are included in government grants on the Consolidated Statement of Operations and Accumulated Surplus.

16. Subsequent Event

On April 4, 2018, the Government of Ontario announced regulatory changes to the Health Protection and Promotion Act to approve the merger of Oxford County Public Health with Elgin St. Thomas Public Health effective May 1, 2018. As of May 1, 2018, the County of Oxford’s public health assets and operations will transfer to the new entity and will operate under the legal name of Oxford Elgin St. Thomas Public Health.

17. Provincial Offences Administration

The County of Oxford is responsible for the administration of fines arising under the Provincial Offences Act ("POA"). The County performs court support, administration and collection functions for all related fines and fees and prosecutes matters under the POA. The POA is a procedural law for administering and prosecuting provincial offences, including but not limited to, those committed under the Highway Traffic Act, Compulsory Automobile Insurance Act, Trespass to Property Act, Liquor Licence Act and municipal by-laws. Offenders may pay fines at any Provincial Offences Administration office in Ontario, at which time the receipts are recorded in the Integrated Courts Operation Network system ("ICON"). The County recognizes fine revenue when the receipt of funds is recorded in ICON. Gross revenue for 2017 totals $1,856,518 (2016 - $1,802,328).

18. Oxford County Housing Debt Obligations

On January 1, 2000, the Province of Ontario transferred ownership of housing units to the County. Prior to 2000, the Province issued debentures related to housing properties now owned by the County. The debt obligation for these debentures remains with the Province and has varying maturity dates. The outstanding debt at December 31, 2017 is $1,999,897 and the principal repayments are scheduled as follows:

<table>
<thead>
<tr>
<th>Years</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018 to 2022</td>
<td>$1,431,770</td>
</tr>
<tr>
<td>2023 to 2025</td>
<td>568,127</td>
</tr>
</tbody>
</table>

19. Comparative Balances

The Consolidated Schedule of Tangible Capital Assets has been reclassified to align with the Ministry of Municipal Affairs's Financial Information Return, and does not represent a change in accounting policy.
20. Segmented Information

General Government
General government is comprised of Council and general administration. These areas include CAO/Clerk, Council, Facilities, Fleet, Finance, Information Services and Human Resources.

Protection to Persons and Property
Provincial Offences Administration is responsible for providing administrative support for the Ontario Court of Justice. The Provincial Offences Act applies to all Ontario statutes (and regulations), municipal by-laws, and some federal contraventions. Protection to persons and property also includes flood control from conservation authorities.

Transportation Services
Transportation is responsible for the delivery of municipal public works services related to the planning, development and maintenance of roadway systems.

Environmental Services
The environmental services include water supply and distribution, wastewater treatment and collection, and waste diversion, collection and disposal.

Health Services
Health services are comprised public health and emergency medical services. Public health services work to improve the overall health of the population and overcome health inequalities by providing services to individuals and communities. Emergency medical services provides the County and surrounding areas with pre-hospital medical care and transportation services to the ill and injured in the community.

Social and Family Services
Social Services include social assistance, long-term care and child care services. Social assistance services provide financial, social and employment assistance to those that are less fortunate. Long-term care service provides health services for seniors who can no longer live at home. Child care services provide subsidized child care spaces and wage subsidies.

Social Housing
Social Housing is provided to help shelter individuals, families and elderly in need.

Oxford County Public Library Board
Oxford County Public Library Board provides services meant to improve the health and development of the citizens of the County.

Planning and Development
Planning and development provides services related to property development within the County.
Tangible capital assets are recorded at cost on the Consolidated Statement of Financial Position. The County has tangible capital assets with a net book value of $22,615,409 (2016 - $13,090,170) that are not being amortized as they are under construction. During the year there were no write-downs of assets (2016 - $nil). Underground water and sewer systems in the amount of $339,967 (2016 - $2,311,804) were contributed to County and were recorded at their fair value at the time of contribution. The County has no tangible capital assets recognized at a nominal value. There was no interest capitalized during the year (2016 - $nil). The County owns various works of art and historical treasures that have not been included as tangible capital assets. These items are categorized as Archival Materials.

The following charts summarize tangible capital asset balances by category for the year ended December 31, 2017:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td>$19,409,013</td>
<td>$246,934</td>
<td>$187,421</td>
<td>$19,468,526</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$19,468,526</td>
</tr>
<tr>
<td>Land improvements</td>
<td>1,422,936</td>
<td>864,660</td>
<td>13,855</td>
<td>2,273,741</td>
<td>368,086</td>
<td>82,882</td>
<td>7,159</td>
<td>443,809</td>
<td>1,829,932</td>
</tr>
<tr>
<td>Buildings</td>
<td>92,809,753</td>
<td>1,892,143</td>
<td>412,586</td>
<td>94,289,310</td>
<td>30,813,970</td>
<td>2,634,122</td>
<td>185,875</td>
<td>33,262,217</td>
<td>61,027,093</td>
</tr>
<tr>
<td>Vehicle</td>
<td>12,112,911</td>
<td>2,409,025</td>
<td>1,291,390</td>
<td>13,230,546</td>
<td>6,546,363</td>
<td>1,199,133</td>
<td>1,246,223</td>
<td>6,499,273</td>
<td>6,731,273</td>
</tr>
<tr>
<td>Furniture and fixtures</td>
<td>4,997,792</td>
<td>138,090</td>
<td>73,653</td>
<td>5,062,229</td>
<td>4,431,206</td>
<td>154,309</td>
<td>73,097</td>
<td>4,512,418</td>
<td>954,046</td>
</tr>
<tr>
<td>Machinery and equipment</td>
<td>5,686,425</td>
<td>1,200,408</td>
<td>229,674</td>
<td>6,675,159</td>
<td>2,951,159</td>
<td>613,062</td>
<td>210,728</td>
<td>3,005,719</td>
<td>549,811</td>
</tr>
<tr>
<td>Library books</td>
<td>1,698,771</td>
<td>216,369</td>
<td>230,411</td>
<td>1,684,729</td>
<td>718,412</td>
<td>242,682</td>
<td>230,411</td>
<td>730,683</td>
<td>954,046</td>
</tr>
<tr>
<td>Computer hardware</td>
<td>1,432,888</td>
<td>197,415</td>
<td>278,841</td>
<td>1,351,462</td>
<td>898,582</td>
<td>343,675</td>
<td>278,841</td>
<td>963,416</td>
<td>388,046</td>
</tr>
<tr>
<td><strong>Total General Capital</strong></td>
<td><strong>139,570,489</strong></td>
<td><strong>7,165,044</strong></td>
<td><strong>2,717,831</strong></td>
<td><strong>144,017,702</strong></td>
<td><strong>46,727,778</strong></td>
<td><strong>5,269,865</strong></td>
<td><strong>2,232,334</strong></td>
<td><strong>49,765,309</strong></td>
<td><strong>94,252,393</strong></td>
</tr>
<tr>
<td>Infrastructure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td>$7,006,959</td>
<td>$18,208</td>
<td>$517,437</td>
<td>$6,507,730</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$-</td>
<td>$6,507,730</td>
</tr>
<tr>
<td>Land improvements</td>
<td>11,664,953</td>
<td>50,647</td>
<td>5,675</td>
<td>11,709,925</td>
<td>2,803,102</td>
<td>203,350</td>
<td>733</td>
<td>3,005,719</td>
<td>8,704,206</td>
</tr>
<tr>
<td>Buildings</td>
<td>132,949,471</td>
<td>165,864</td>
<td>37,522</td>
<td>133,077,803</td>
<td>38,938,214</td>
<td>2,063,375</td>
<td>5,089</td>
<td>40,996,500</td>
<td>92,081,303</td>
</tr>
<tr>
<td>Machinery and equipment</td>
<td>20,859,001</td>
<td>105,547</td>
<td>-</td>
<td>20,964,548</td>
<td>11,314,782</td>
<td>411,457</td>
<td>-</td>
<td>11,726,239</td>
<td>9,238,309</td>
</tr>
<tr>
<td>Bridges</td>
<td>33,738,768</td>
<td>2,794,948</td>
<td>200,674</td>
<td>36,333,042</td>
<td>11,065,346</td>
<td>535,266</td>
<td>141,596</td>
<td>11,459,016</td>
<td>24,874,026</td>
</tr>
<tr>
<td>Water and Wastewater</td>
<td>228,652,111</td>
<td>7,818,836</td>
<td>672,645</td>
<td>235,798,302</td>
<td>71,020,033</td>
<td>2,908,742</td>
<td>337,949</td>
<td>73,590,826</td>
<td>162,207,476</td>
</tr>
<tr>
<td>Roads</td>
<td>177,291,352</td>
<td>10,551,383</td>
<td>253,817</td>
<td>187,588,918</td>
<td>90,065,486</td>
<td>6,618,356</td>
<td>244,373</td>
<td>96,439,469</td>
<td>91,149,449</td>
</tr>
<tr>
<td><strong>Total Infrastructure Capital</strong></td>
<td><strong>612,162,615</strong></td>
<td><strong>21,505,433</strong></td>
<td><strong>1,687,780</strong></td>
<td><strong>631,980,268</strong></td>
<td><strong>225,206,963</strong></td>
<td><strong>12,740,546</strong></td>
<td><strong>729,740</strong></td>
<td><strong>237,217,769</strong></td>
<td><strong>394,762,499</strong></td>
</tr>
<tr>
<td><strong>Total Tangible Capital Assets</strong></td>
<td><strong>$751,733,104</strong></td>
<td><strong>$28,670,477</strong></td>
<td><strong>$4,405,611</strong></td>
<td><strong>$775,997,790</strong></td>
<td><strong>$271,934,741</strong></td>
<td><strong>$18,010,411</strong></td>
<td><strong>$2,962,074</strong></td>
<td><strong>$286,983,078</strong></td>
<td><strong>$489,014,892</strong></td>
</tr>
</tbody>
</table>
# County of Oxford
## Consolidated Schedule of Segmented Disclosure
### For the Year Ended December 31, 2017 (comparative balances for year ended December 31, 2016)

**Schedule 2**

<table>
<thead>
<tr>
<th>Revenues</th>
<th>General Government</th>
<th>Protection to Persons and Property</th>
<th>Transportation Services</th>
<th>Environmental Services</th>
<th>Health Services</th>
<th>Social and Family Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property taxes</td>
<td>$5,444,307</td>
<td>$842,974</td>
<td>$18,913,407</td>
<td>$2,096,642</td>
<td>$8,055,180</td>
<td>$12,429,848</td>
</tr>
<tr>
<td>User fees and charges</td>
<td>1,351,473</td>
<td>-</td>
<td>541,627</td>
<td>50,462,338</td>
<td>449,297</td>
<td>7,852,763</td>
</tr>
<tr>
<td>Government transfers</td>
<td>5,197</td>
<td>9,300</td>
<td>4,442,385</td>
<td>1,926,848</td>
<td>12,859,163</td>
<td>31,580,507</td>
</tr>
<tr>
<td>Investment income</td>
<td>646,332</td>
<td>-</td>
<td>176,722</td>
<td>1,747,479</td>
<td>15,048</td>
<td>-</td>
</tr>
<tr>
<td>Development charges</td>
<td>42,008</td>
<td>-</td>
<td>1,456,810</td>
<td>3,371,136</td>
<td>40,000</td>
<td>-</td>
</tr>
<tr>
<td>Provincial offences</td>
<td>-</td>
<td>1,856,518</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
<td>5,503</td>
<td>2,512</td>
<td>-</td>
<td>339,967</td>
<td>23,039</td>
<td>19,049</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7,494,820</strong></td>
<td><strong>2,711,304</strong></td>
<td><strong>25,530,951</strong></td>
<td><strong>59,944,410</strong></td>
<td><strong>21,441,727</strong></td>
<td><strong>51,882,167</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expenses</th>
<th>General Government</th>
<th>Protection to Persons and Property</th>
<th>Transportation Services</th>
<th>Environmental Services</th>
<th>Health Services</th>
<th>Social and Family Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages and benefits</td>
<td>5,575,859</td>
<td>399,650</td>
<td>4,666,800</td>
<td>6,934,186</td>
<td>15,794,831</td>
<td>21,534,393</td>
</tr>
<tr>
<td>Materials and supplies</td>
<td>7,129,009</td>
<td>95,977</td>
<td>3,075,840</td>
<td>8,956,999</td>
<td>1,903,005</td>
<td>2,985,467</td>
</tr>
<tr>
<td>Contracted services</td>
<td>3,848,615</td>
<td>324,960</td>
<td>726,577</td>
<td>10,985,860</td>
<td>406,576</td>
<td>2,057,697</td>
</tr>
<tr>
<td>Rents and financial expenses</td>
<td>355,467</td>
<td>-</td>
<td>22,240</td>
<td>1,855</td>
<td>4,561</td>
<td>45,361</td>
</tr>
<tr>
<td>External transfers</td>
<td>279,500</td>
<td>1,362,382</td>
<td>5,000</td>
<td>-</td>
<td>40,000</td>
<td>19,859,231</td>
</tr>
<tr>
<td>Interfunctional transfers</td>
<td>(13,663,332)</td>
<td>198,739</td>
<td>3,791,187</td>
<td>4,711,995</td>
<td>1,789,826</td>
<td>1,894,261</td>
</tr>
<tr>
<td>Interest on long term debt</td>
<td>289,561</td>
<td>29,228</td>
<td>42,401</td>
<td>954,897</td>
<td>48,178</td>
<td>739,477</td>
</tr>
<tr>
<td>Amortization</td>
<td>2,567,048</td>
<td>-</td>
<td>7,287,516</td>
<td>5,534,669</td>
<td>668,485</td>
<td>1,330,651</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>6,381,727</strong></td>
<td><strong>2,410,936</strong></td>
<td><strong>19,617,561</strong></td>
<td><strong>38,080,461</strong></td>
<td><strong>20,655,462</strong></td>
<td><strong>50,446,538</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Excess revenues over (under) expenses before other</th>
<th>General Government</th>
<th>Protection to Persons and Property</th>
<th>Transportation Services</th>
<th>Environmental Services</th>
<th>Health Services</th>
<th>Social and Family Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,113,093</td>
<td>300,368</td>
<td>5,913,390</td>
<td>21,863,949</td>
<td>786,265</td>
<td>1,435,629</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other revenues (expenses)</th>
<th>General Government</th>
<th>Protection to Persons and Property</th>
<th>Transportation Services</th>
<th>Environmental Services</th>
<th>Health Services</th>
<th>Social and Family Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain (loss) on disposal</td>
<td>893,707</td>
<td>-</td>
<td>(75,901)</td>
<td>(367,138)</td>
<td>55,949</td>
<td>(112,019)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Excess revenues over (under) expenses</th>
<th>General Government</th>
<th>Protection to Persons and Property</th>
<th>Transportation Services</th>
<th>Environmental Services</th>
<th>Health Services</th>
<th>Social and Family Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2,006,800</td>
<td>$300,368</td>
<td>$5,837,489</td>
<td>$21,496,811</td>
<td>$842,214</td>
<td>$1,323,610</td>
<td></td>
</tr>
</tbody>
</table>
# County of Oxford
## Consolidated Schedule of Segmented Disclosure
### For the Year Ended December 31, 2017 (comparative balances for year ended December 31, 2016)

<table>
<thead>
<tr>
<th>Revenues</th>
<th>Social Housing</th>
<th>Oxford County Public Library Board</th>
<th>Planning and Development</th>
<th>Total</th>
<th>Total 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property taxes</td>
<td>$4,981,215</td>
<td>$3,604,321</td>
<td>$3,310,743</td>
<td>$59,678,637</td>
<td>$57,549,632</td>
</tr>
<tr>
<td>User fees and charges</td>
<td>2,464,250</td>
<td>59,050</td>
<td>293,343</td>
<td>63,474,141</td>
<td>61,673,540</td>
</tr>
<tr>
<td>Government transfers</td>
<td>3,882,651</td>
<td>165,242</td>
<td>2,979</td>
<td>54,874,272</td>
<td>52,298,098</td>
</tr>
<tr>
<td>Investment income</td>
<td>59,907</td>
<td>999</td>
<td>-</td>
<td>2,646,487</td>
<td>2,352,614</td>
</tr>
<tr>
<td>Development charges</td>
<td>-</td>
<td>78,200</td>
<td>-</td>
<td>4,988,154</td>
<td>4,894,730</td>
</tr>
<tr>
<td>Provincial offences</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1,856,518</td>
<td>1,802,328</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
<td>33,738</td>
<td>-</td>
<td>423,808</td>
<td>2,448,375</td>
</tr>
</tbody>
</table>

| Total | 11,388,023 | 3,941,550 | 3,607,065 | 187,942,017 | 183,019,317 |

<table>
<thead>
<tr>
<th>Expenses</th>
<th>Social Housing</th>
<th>Oxford County Public Library Board</th>
<th>Planning and Development</th>
<th>Total</th>
<th>Total 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages and benefits</td>
<td>177,396</td>
<td>2,117,766</td>
<td>2,445,904</td>
<td>59,646,785</td>
<td>58,106,482</td>
</tr>
<tr>
<td>Materials and supplies</td>
<td>3,202,516</td>
<td>376,749</td>
<td>362,212</td>
<td>28,087,774</td>
<td>27,584,875</td>
</tr>
<tr>
<td>Contracted services</td>
<td>796,823</td>
<td>21,905</td>
<td>188,499</td>
<td>19,357,512</td>
<td>18,876,020</td>
</tr>
<tr>
<td>Rents and financial expenses</td>
<td>-</td>
<td>-</td>
<td>4,164</td>
<td>433,648</td>
<td>462,794</td>
</tr>
<tr>
<td>External transfers</td>
<td>6,194,581</td>
<td>-</td>
<td>42,460</td>
<td>27,783,154</td>
<td>28,628,181</td>
</tr>
<tr>
<td>Interfunctional transfers</td>
<td>177,549</td>
<td>809,350</td>
<td>290,425</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Interest on long term debt</td>
<td>149,780</td>
<td>31,956</td>
<td>-</td>
<td>2,285,478</td>
<td>2,544,013</td>
</tr>
<tr>
<td>Amortization</td>
<td>183,582</td>
<td>438,460</td>
<td>-</td>
<td>18,010,411</td>
<td>17,407,712</td>
</tr>
</tbody>
</table>

| Total | 10,882,227 | 3,796,186 | 3,333,664 | 155,604,762 | 153,610,077 |

| Excess revenues over (under) expenses before other | 505,796 | 145,364 | 273,401 | 32,337,255 | 29,409,240 |

| Other revenues (expenses) | | | | | |
| Gain (loss) on disposal | - | (19,481) | - | 375,117 | (1,094,804) |

| Excess revenues over (under) expenses | $505,796 | $125,883 | $273,401 | $32,712,372 | $28,314,436 |
INDEPENDENT AUDITOR'S REPORT

To the Members of Council, Inhabitants and Ratepayers of the County of Oxford

We have audited the accompanying financial statements of the County of Oxford – Woodingford Lodge Resident Trust Fund which comprise the statement of financial position as at December 31, 2017 and the statements of operations and accumulated surplus and cash flows for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Financial Statements
Management is responsible for the preparation and fair presentation of these financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility
Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion
In our opinion, the financial statements present fairly, in all material respects, the financial position of the County of Oxford – Woodingford Lodge Resident Trust Fund as at December 31, 2017 and its financial performance and its change in cash flows for the year then ended in accordance with Canadian public sector accounting standards.

London, Canada
May 9, 2018

LICENSED PUBLIC ACCOUNTANT
## County of Oxford

**Woodingford Lodge Resident Trust Fund**

**Statement of Operations and Accumulated Surplus**

For the year ended December 31, 2017 (comparative balances for year ended December 31, 2016)

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenues</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital</td>
<td>$49,441</td>
<td>$60,757</td>
</tr>
<tr>
<td><strong>Expenses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident withdrawals</td>
<td>54,721</td>
<td>55,019</td>
</tr>
<tr>
<td><strong>Excess revenues over expenses</strong></td>
<td>(5,280)</td>
<td>5,738</td>
</tr>
<tr>
<td>(expenses over revenues)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Accumulated surplus, beginning of year</strong></td>
<td>28,298</td>
<td>22,560</td>
</tr>
<tr>
<td><strong>Accumulated surplus, end of year</strong></td>
<td>$23,018</td>
<td>$28,298</td>
</tr>
</tbody>
</table>

The summary of significant accounting policies are an integral part of this financial statement.
## County of Oxford
### Woodingford Lodge Resident Trust Fund
#### Statement of Cash Flows
For the year ended December 31, 2017 (comparative balances for year ended December 31, 2016)

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excess revenues over expenses</td>
<td>$(5,280)</td>
<td>$5,738</td>
</tr>
<tr>
<td>Increase (decrease) in cash</td>
<td>(5,280)</td>
<td>5,738</td>
</tr>
<tr>
<td><strong>Cash, beginning of year</strong></td>
<td>28,298</td>
<td>22,560</td>
</tr>
<tr>
<td><strong>Cash, end of year</strong></td>
<td>$23,018</td>
<td>$28,298</td>
</tr>
</tbody>
</table>

The summary of significant accounting policies are an integral part of this financial statement.
Basis of Consolidation

The County of Oxford is an upper-tier municipality in the Province of Ontario, Canada. It conducts its operations guided by the provisions of provincial statutes such as the Municipal Act, Municipal Affairs Act and related legislation. The trust fund's financial statements are the representation of management prepared in accordance with Canadian public sector accounting standards established by the Public Sector Accounting Board ("PSAB") of the Chartered Professional Accountants of Canada ("CPA Canada").

(i) The trust fund's financial statements reflect the assets, liabilities, revenues and expenses of the County's Woodingford Lodge Resident Trust Fund.

Accrual Basis of Accounting

The financial statements have been prepared using the accrual basis of accounting in accordance with Canadian public sector accounting standards established by the PSAB of the CPA Canada.

Use of Estimates

The preparation of financial statements in conformity with Canadian public sector accounting standards requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the period. Actual results could differ from management's best estimates as additional information becomes available in the future.
May 9, 2018

County of Oxford
21 Reeve Street
Woodstock, Ontario
N4S 7Y3

Dear Sirs:

We have been engaged to audit the financial statements of the County of Oxford for the year ending December 31, 2017.

Canadian generally accepted auditing standards requires that we communicate at least annually with you regarding all relationships between the County and ourselves that, in our professional judgment, may reasonably be thought to bear on our independence.

In determining which relationships to report, the standards require us to consider relevant rules and related interpretations prescribed by the appropriate provincial institute/order and applicable legislation, covering such matters as:

- Holding a financial interest, either directly or indirectly, in a client;
- Holding a position, either directly or indirectly, that gives the right or responsibility to exert significant influence over the financial or accounting policies of a client;
- Personal or business relationships of immediate family, close relatives, partners or retired partners, either directly or indirectly, with a client;
- Economic dependence on a client; and
- Provision of services in addition to the audit engagement

We are not aware of any relationship between County and ourselves that, in our professional judgment, may reasonably be thought to bear on our independence, that have occurred from January 1 to December 31, 2017.

Canadian generally accepted auditing standards require that we confirm our independence to management or persons having oversight responsibility for the financial reporting process. However, since the Rules of Professional Conduct of the CPA Ontario deal with the concept of independence in terms of objectivity, our confirmation is to be made in that context. Accordingly, we hereby confirm that we are objective with respect to the County within the meaning of the Rules of Professional Conduct of the CPA Ontario as of May 9, 2018.
This report is intended solely for the use of the Council and should not be used for any other purposes.

Sincerely,

Scrimgeour & Company
CPA Professional Corporation
To: Warden and Members of County Council
From: Chief Administrative Officer

Electric Vehicle Charger Feasibility Study and Electric Vehicle Accessibility Plan

RECOMMENDATION


REPORT HIGHLIGHTS

- On February 10, 2016, County Council approved the Electric Vehicle Accessibility Plan and following MTO funding approval, 8 EV charging stations in four locations within Oxford County were installed;
- Recognizing the need to ensure optimal placement of future EV charging stations, Oxford County engaged the Canadian Urban Transit and Innovation Consortium (CUTRIC) to study existing and projected EV traffic within and through Oxford County;
- On February 2, 2018, Oxford County released the study for public comment and as a guide for future EVSE station development throughout Oxford County.

Implementation Points

The EVSE Feasibility Study is intended to serve as a guide for public and private investment and appropriate placement of future EV charging stations throughout Oxford County. The study proposes the installation of various charging station types and recommends locations based on existing traffic patterns.

This report is meant to be a guide and it is understood that locations and charging technology applications will be reassessed from time to time as technology, traffic patterns and vehicle types evolve in coming years.
Financial Impact

This Study provides guidance to both private and public sector players with a goal of investing EVSE resources in the best locations around the County. The study does not make a request for funding of additional stations.

The Treasurer has reviewed this report and agrees with the financial impact information.

Risks/Implications

Prior to investment in new EV charging infrastructure, variables such as EV ownership, traffic patterns and other forces that may influence location and type of charger should be re-assessed. This report seeks to remove some of the risks associated with the investment of new EVSE equipment. The transition to non-carbon emitting transportation is considered a key part of the Oxford County Community Sustainability Plan.

This Study seeks to remove some of the uncertainty surrounding EVSE investment, while projecting local and transient EV traffic in our community by predicting EV mobility as a percent of total traffic volume.

Strategic Plan (2015-2018)

County Council adopted the County of Oxford Strategic Plan (2015-2018) at its regular meeting held May 27, 2015. The initiative contained within this report supports the Values and Strategic Directions as set out in the Strategic Plan as it pertains to the following Strategic Directions:

3. iii. A County that Thinks Ahead and Wisely Shapes the Future - Demonstrated commitment to sustainability by:
   - Ensuring that all significant decisions are informed by assessing all options with regard to the community, economic and environmental implications including:
     o Responsible environmental leadership and stewardship
     o Supporting the community implementation of the Community Sustainability Plan

DISCUSSION

Background

In 2016, an Electric Vehicle Accessibility Plan was developed to determine the best Electric Vehicle Service Equipment (EVSE) locations around Oxford County. The study was created in response to the Ministry of Transportation (MTO) EVSE funding announcement that did not allow time for a full study.
At that time, a basic study of Oxford County traffic patterns and population density provided an idea of the best locations for EVSE investment, however there was not time to properly research variables such as EV ownership numbers, actual traffic patterns and volume (local and through-traffic) and placement of the most appropriate rate of charge technologies (Level 1, 2 or 3).

EVSE’s require a substantial investment of equipment (civil and electrical servicing) and often disrupt existing parking patterns. The implications of cost can range from a few hundred dollars to potentially hundreds of thousands of dollars. Furthermore, failure to place the most effective equipment in the most appropriate location can potentially strand the investment by creating a charge location that is not optimal to traffic flow.

The Feasibility Study combines mapping, traffic patterns, existing electric vehicle technologies and projected growth, and seeks to remove as much uncertainty from an investment decision in EVSE infrastructure as possible.

Comments

Elements of the Plan

The Study includes three sections supported by various tables, figures, definitions and recommendations. While the bulk of the study seeks to illustrate growth in personal electric vehicle transportation, a section on hydrogen fueling and public transit opportunities is also included.

Section 1: Background, variables and case studies across North America
Section 2: Existing and projected usage of EV’s and EVSE networks
Section 3: Visualization tools used to illustrate existing and future EVSE locations and traffic
Section 4: Recommendations

Status of Public Chargers in Oxford County

An objective of this Study is to inventory EVSE’s by type and location, which is proving to be a challenge. By far, online via EV-enthusiast Internet sites is the best means of identifying EV charging stations. Internet resources such as Plugshare.com and CAA provide excellent detail of location, size and type and in some cases, user ratings.
At the time of writing, there were 48 EVSE units in service in Oxford, including:

<table>
<thead>
<tr>
<th>Current Number of Chargers</th>
<th>Type of Charger</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Tesla superchargers (480 volt, limited to Tesla vehicles)</td>
</tr>
<tr>
<td>5</td>
<td>Level 3 Chargers (480 volt, typically located in commercial areas)</td>
</tr>
<tr>
<td>30</td>
<td>Level 2 (208/240 volt typical of homes and small business)</td>
</tr>
<tr>
<td>5</td>
<td>Level 1 (120 volt, typical of any device outlet capable of up to 1500 watts)</td>
</tr>
</tbody>
</table>

To put this number of chargers into perspective, the Study suggests that we have a shortage of available EVSE’s based on current EV ownership and traffic patterns. At 0.8% EV ownership (present condition) and based on current traffic patterns, the following number and type of EVSE’s are required now:

<table>
<thead>
<tr>
<th>Required Number of Chargers</th>
<th>Type of Charger</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Tesla superchargers (480 volt, limited to Tesla vehicles)</td>
</tr>
<tr>
<td>12</td>
<td>Level 3 Chargers (480 volt, typically located in commercial areas)</td>
</tr>
<tr>
<td>54</td>
<td>Level 2 (208/240 volt typical of homes and small business)</td>
</tr>
<tr>
<td>163</td>
<td>Level 1 (120 volt, typical of any device outlet capable of up to 1500 watts)</td>
</tr>
</tbody>
</table>
Workplace EVSE Incentive Program

On March 28 2018, County Council received Report No: PW 2018-10, announcing the opportunity to participate in the Ministry of Transportation Workplace incentive program.

Following this report, Council approved a Public Works request to install an additional 13 Level 2 EVSE units at various locations in the County. The rules of this funding agreement require the chargers to be reserved for employees, however employers are able to make the EVSE’s available to the public during non-working hours.

Cost to Charge

In the early stages of EV ownership, EVSE’s began to show up at places of business or other willing host sites as a means of promoting personal business, or to simply support the emergence of EV’s in Ontario.

Most of these early EVSE’s were installed at the proprietor’s expense and at no cost to the user for the electricity consumed during the charging event.

While most EV owners appreciated the service and access to free electricity, the absence of a business case for a dependable EVSE network often resulted in poor location, limited access to chargers and substandard maintenance of EVSE infrastructure.

With the launch of the MTO Electric Vehicle Incentive Program, willing hosts were provided capital and limited operational support and were encouraged to create a business case for ongoing expenses associated with the EVSE units.

Oxford County stations that are open 24/7 to the public charge a nominal fee of $2/hour (Level 2) and $15/hour (Level 3), prorated to the minute. Our costs associated with maintenance, communication and electricity are being monitored against monthly and annual income.

The charts below provide an example of electricity consumption at EV charging stations located in Woodstock and Ingersoll. Electricity consumption and costs will be compared against income from EV charging events in a future report.
Hydro One (Woodstock)

<table>
<thead>
<tr>
<th>Account No.</th>
<th>Reading Period</th>
<th>Electricity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Start Date</td>
<td>End Date</td>
</tr>
<tr>
<td>200216366248</td>
<td>17-Mar-17</td>
<td>29-Mar-17</td>
</tr>
<tr>
<td>200216366248</td>
<td>29-Mar-17</td>
<td>1-May-17</td>
</tr>
<tr>
<td>200216366248</td>
<td>1-May-17</td>
<td>31-May-17</td>
</tr>
<tr>
<td>200216366248</td>
<td>31-May-17</td>
<td>30-Jun-17</td>
</tr>
<tr>
<td>200216366248</td>
<td>30-Jun-17</td>
<td>1-Aug-17</td>
</tr>
<tr>
<td>200216366248</td>
<td>1-Aug-17</td>
<td>30-Aug-17</td>
</tr>
<tr>
<td>200216366248</td>
<td>30-Aug-17</td>
<td>5-Oct-17</td>
</tr>
<tr>
<td>200216366248</td>
<td>5-Oct-17</td>
<td>31-Oct-17</td>
</tr>
<tr>
<td>200216366248</td>
<td>31-Oct-17</td>
<td>29-Nov-17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Erie Thames Power (Ingersoll)

<table>
<thead>
<tr>
<th>Account No.</th>
<th>Reading Period</th>
<th>Electricity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Start Date</td>
<td>End Date</td>
</tr>
<tr>
<td>00204200-00</td>
<td>1-Feb-17</td>
<td>24-Feb-17</td>
</tr>
<tr>
<td>00204200-00</td>
<td>24-Feb-17</td>
<td>24-Mar-17</td>
</tr>
<tr>
<td>00204200-00</td>
<td>24-Mar-17</td>
<td>13-Apr-17</td>
</tr>
<tr>
<td>00204200-00</td>
<td>13-Apr-17</td>
<td>13-May-17</td>
</tr>
<tr>
<td>00204200-00</td>
<td>13-May-17</td>
<td>13-Jun-17</td>
</tr>
<tr>
<td>00204200-00</td>
<td>13-Jun-17</td>
<td>13-Jul-17</td>
</tr>
<tr>
<td>00204200-00</td>
<td>13-Jul-17</td>
<td>13-Aug-17</td>
</tr>
<tr>
<td>00204200-00</td>
<td>13-Aug-17</td>
<td>13-Sep-17</td>
</tr>
<tr>
<td>00204200-00</td>
<td>13-Sep-17</td>
<td>13-Oct-17</td>
</tr>
<tr>
<td>00204200-00</td>
<td>13-Oct-17</td>
<td>13-Nov-17</td>
</tr>
<tr>
<td>00204200-00</td>
<td>13-Nov-17</td>
<td>12-Dec-17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Electric mobility and Smart Meter data

In 2016, Oxford County joined the Independent Electricity System Operator (IESO) Data Strategy Advisory Council as one of two municipal members in Ontario. The goal of this Council is to explore third party access to Ontario’s wealth of Smart Metering data and furthermore, to explore opportunities to utilize this data to the advantage of Ontarians.

Oxford County will play host to one of six provincial demonstrations as we seek to improve our understanding of our community energy usage and specifically, our community electricity baseline. Monitoring of EV charging cycles via hourly Smart Meters presents a unique opportunity for Oxford County to partner with IESO and other stakeholders as we learn about the challenges and opportunities of EV ownership within and outside of our community.
Electric Vehicles and Renewable Energy

Electric mobility presents yet another opportunity for Oxford County to demonstrate the value of a 100% renewable energy by 2050 goal. Transitioning our transportation and mobility requirements in Oxford County to 100% renewable energy relies largely on electric mobility. As we convert from inefficient Internal Combustion Vehicle technology to electric drive, our energy efficiency outcomes improve several times.

Combine this improvement in overall efficiency with the ability to ‘refuel’ directly from renewable electricity resources presents immediate economic and environmental advantage for Oxford residents and businesses.

Conclusion

The Study suggests that Oxford County is aligned with the Provincial EV ownership statistic of 0.8%. This translates into 163 electric vehicles owned by Oxford residents. The Province of Ontario is hoping to see that number rise to 5% by 2020, which translates to just over 1000 EV vehicles in Oxford County. While this goal is not expected to be met, we expect the number of EV’s in Oxford to rise significantly over the next five years.

Oxford County continues to demonstrate leadership in low-carbon transportation solutions, and this Study will serve as an ongoing guide as we seek to transition our personal and fleet vehicles to electric and other forms of low-carbon mobility solutions.

SIGNATURES

Report Author:

Original signed by

Jay Heaman
Manager, Strategic Initiatives

Approved for submission:

Original signed by

Peter M. Crockett, P.Eng.
Chief Administrative Officer

ATTACHMENTS

Attachment No. 1   Oxford County EVSE Feasibility Study
Oxford County Feasibility Study:
EVSE Data Mapping & Analysis in Support of Oxford County’s Electric Vehicle Accessibility Plan (EVAP)

Final Report subject to one revision upon Oxford County request
January 2018

Authored by:
Dr. Josipa G. Petrunic
Dr. Anahita Jami
Dr. Garret Duffy
Anaissia Franca
Alyona Ivanova
Executive Summary

Oxford County aims to achieve ubiquitous accessibility for electric vehicle (EV) charging within all communities via the County’s Electric Vehicle Accessibility Plan (EVAP). To achieve this target, the County partnered with CUTRIC to conduct a study to map strategic locations for electric vehicle supply equipment (EVSEs) installation across the region.

First, the report provides a review of criteria that have determined EVSE infrastructure location selections in other jurisdictions. The report reviews the case studies of Tompkins County, San Joaquin Valley, and Uppsala to provide insight into the processes other jurisdictions have undertaken when determining EV charging station placement.

Secondly, the report uses original methodological insights to determine potentially optimal EVSE locations for Oxford County residents, commuters and through-traffic based on descriptive methods using Voronoi polygons, grid partitions, and household activity data, as well as predictive assessments based on a linear model of EV adoption rates assuming 1%, 5%, 10% and 25% adoption of EVs among car owners in and around the Oxford community.

Based on descriptive assessments using GIS-based models, the report concludes that Level 1 and Level 2 chargers should be placed in popular parking locations to serve Oxford residents best, including shopping malls, public parking lots, restaurants, service locations, and hospitals. These locations fill gaps currently demonstrated in the charging network within the Oxford County. The report also concludes Level 2 and Level 3 EV charging stations are best suited to transitory and through-way traffic commuters along highways in and around Oxford, and should be installed near busy highway exits that would be suitable for throughway traffic where demand is demonstrated by existing traffic flows.

Based on predictive assessments using linear models of adoption rates, the report concludes that a total of 163 Level 1, 54 Level 2 and 12 Level 3 chargers will need to be placed in suitable parking locations (i.e., employment workplace parking lots, public parking lots near workplaces, and long-stay public parking spots, such as shopping malls) to serve Oxford residents who adopt EVs in the future and who may or may not have access to home charging units throughout the evening and nighttime for recharging purposes.

In addition, the County intends to continue supporting its tourism industry within rural areas by ensuring adequate EV charging availability for travel to, from, and within the County. This report concludes that charging stations will need to be strategically placed nearby tourism destinations and/or outdoor recreation areas to allow for EV charging while tourists explore the area.

More detailed and granular data analysis on a community-by-community basis could be performed to support Oxford’s electrification strategy; however, several data sources cannot be accessed today based on access restrictions imposed by Tesla Motors and the Ontario Ministry of Transportation (MTO) with relation to Tesla-funded and MTO-funded EVSEs and usage profiles in the community. Data utilized in this study have, therefore, been accessed via public sources or provided through the facilitated support of Oxford County directly.

Guiding variables utilized to support the predictive and descriptive assessment portion of this study are heavily based on prominent studies performed in the U.S. Department of Energy’s two plug-in electric vehicle infrastructure studies and demonstrations: The EV Project and the ChargePoint America Project. Specifically, descriptive analysis here is influenced by three categories of variables, including optimal location variables, installation costs variables, and EV driver charging patterns needs. Three key variables have also shaped specific siting choices in this report, namely long-term parking opportunities (Level 1 & 2), special applications for Level 2, and highway intersectionality (Level 3).
Guiding variables utilized to support the predictive assessment portion of this study include empirical outputs and performance (i.e., range capability) associated with two exemplar vehicle types: (1) Nissan Leaf 2017 and (2) Chevy Bolt 2017. These vehicle models were selected to guide the predictive assessments based on linear adoption rates of EVs in Oxford County due to their “affordability” as vehicles with a starting ticket price in the $30,000-$45,000 CAD, the availability of maximum Ontario government rebates for these model types which reduce their upfront costs to mid-$20,000-mid-$30,000 CAD in Ontario, and their significantly differing driving ranges as a comparative (experimental) variable that generates differing charging system needs within Oxford. In this section of the report, CUTRIC has adopted a “Best Case - Worst Case” scenario assessment, in which the total number of chargers required at a given location or within a given area to fully satisfy charging needs is based on the range capabilities of the vehicle, the drive cycle of the EV driver (as a commuter or otherwise), and the minimum required charger to “return to home base” for overnight charging. These assumptions generated a set of predictive “EV owner profiles” or typologies, labelled Types A to Type D, which demonstrate differing charging needs and therefore differing quantities of chargers within Oxford to satisfy all potential EV driver needs in the future.

The results of these predictive analyses demonstrate that Oxford County could address a large portion of commuter EVSE needs through the installation of workplace Level 1 chargers, which also constitutes the cheapest EVSE installation option for private and public sector workplace hosts, along with strategically placed Level 2 chargers in parking lots around the community which serve commuter parking purposes specifically. Meanwhile, out-of-town commuter traffic and tourist traffic will require a combination of Level 2 and Level 3 clusters of chargers.

In a final section of this report, ArcGIS software was used to map the results from both the predictive and descriptive analyses to determine optimal EVSE locations in both publicly- and privately-held parking locations. Because of the contrasting geographic controls on location of low-powered (Level 1) and high-powered (Level 2 and Level 3) EVSE, two distinct GIS approaches were adopted. Voronoi polygons were used to optimally locate high-powered EVSEs in relation to distribution of existing EVSEs. Also, a cluster of work places in close proximity with publicly-owned property were used to locate low-powered EVSEs.

Based on these analyses, CUTRIC has prioritized four charging station locations as “in need of upgrading” to address immediate EV charging needs in the community: (1) The Oxford County Administration Building, (2) The ONRoute charger at Ingersoll Travel Plaza, (3) The Ingersoll Comfort Inn, and (4) The charger at George’s Auto Repair at 10 Bridge St., Tillsonburg. However, for the latter location, there is also the alternative option of installing new EVSEs at nearby municipal parking lots 6A and 7A in Tillsonburg.

In addition, CUTRIC has recommended specific and general locations for new EVSE installation locations to accommodate predicted EVSE demand growth based on 1%-25% adoption rate assumptions, as shown in the map below. The report concludes with a descriptive overview of potential EVSE locations as judged using key variables for optimal EVSE locations (derived from literature sources mentioned above).
Given that over 90 per cent of EV charging occurs at home for EV owners with home garages (The Economist, 2017), it is sensible to target future low-cost EVSE installations at workplaces so that residents can use workplaces in lieu of home charging if and when no garage option exists (e.g., condominium or apartment dwellers, or home basement renters) or use workplace charging to maximize the daily range of their vehicles when using a shorter-range vehicle (such as a Nissan Leaf 2017) to achieve multiple personal and family-life duties outside of the workplace and after work hours. Meanwhile, it is sensible to target future high-cost EVSE installations (i.e., Level 2 chargers) in densely populated urban areas where EV drivers may access charging systems for periods of 1 to 4 hours typically. Lastly, it is sensible to target high-usage highway intersections with the highest cost EVSE installations (i.e., Level 3 chargers) where drivers expect sub 20-minute stop overs.
Appendix I includes a techno-economic modeling conducted on the transit system in Woodstock, Ontario, with the aim of emphasizing the benefits of clean propulsion systems. Three different buses were used to model an interlined route 3/route 5 – a Nova Bus (76 kWh) and New Flyer Bus (200 kWh) with 450 kW chargers and a typical diesel bus. Light-, medium-, and heavy-duty cycles were simulated to determine edge cases of cost calculations and emissions. Routes were modelled based on topography and length, including exact locations of stops along a bi-directional route.

A typical diesel bus model based on road load calculations was developed to examine the fuel consumption and carbon dioxide emissions of the current diesel fleet using Advanced Vehicle Simulator (ADVISOR) 2002 and MATLAB. The electric buses were also modelled to determine energy consumption and regenerative breaking capacity using MATLAB and Python. Varying grid-to-battery efficiencies, electricity costs, and $CO_2eq$ for electricity generation were then incorporated into the models where appropriate.

The modeling outcomes showed both environmental and economic benefits for electrifying route 3/route 5 within Woodstock’s public transit system. The electric buses showed cost savings of between $57,613 to $88,945 and emissions reductions of between 191.12 $CO_2eq$ to 372.28 $CO_2eq$. It is therefore recommended that Woodstock transit electrify their fleet due to impactful cost savings and environmental benefits.

Appendix II documents a short literature review describing possible variables determining installation of a hydrogen fuelling stations, reviewing the likelihood of H2 fuelling usage within a given community, and defining optimal locational variables to consider in such an installation.
**Table of Contents**

Executive Summary .................................................................................................................................................. 2

Introduction............................................................................................................................................................ 8

Definitions............................................................................................................................................................... 9

   Level 1 EVSE ......................................................................................................................................................... 9
   Level 2 EVSE ......................................................................................................................................................... 9
   Level 3 EVSE ......................................................................................................................................................... 9

Section 1: Literature Review .................................................................................................................................. 10

   Variables that optimize EVSE locational choices: A global review of variables identified as critical in the assessment of EVSE siting locations ...................................................................................... 12
   Distance considerations in EVSE placement in local communities: Voronoi diagram methodology and outputs ............................................................................................................................................................... 13
   Grid partition considerations in EVSE placement in local communities .............................................................. 14
   Household activity data considerations in EVSE placement in local communities ........................................... 14
   EVSE usage in small communities: Key outcomes to consider in making EVSE placement choices ............... 15
      Tompkins County: An example of installation cost considerations in EVSE siting choices 15
      San Joaquin Valley: An example of ad hoc EV driver needs in EVSE siting criteria and considerations 16
      Uppsala: An application of GIS modelling in predicting optimal EVSE siting locations 17

Other U.S. examples of optimal EVSE location selection criteria ........................................................................ 17

   Optimal location considerations .......................................................................................................................... 18
   Installation costs assessment .................................................................................................................................. 18
   Charging patterns assessments .............................................................................................................................. 18

Summary .................................................................................................................................................................... 19

Section 2: Assessment of EVSE Usage and EVSE Network Gaps in Oxford County .................................................. 20

   Data collection opportunities and challenges ....................................................................................................... 20
   Descriptive analysis considerations based on literature ....................................................................................... 24
   Predictive analysis: Assessing future EV adoption impacts on EVSE needs in Oxford County ......................... 25
      Driver typologies: Type A – Type D EV Owners and Drivers .............................................................................. 25
      Vehicle make and model technical specifications and assumptions ........................................................................ 26
      Current and future EV ownership for Type A1 ....................................................................................................... 27
      Current and future EV ownership for Type C ......................................................................................................... 28
      Current and future EV ownership for Type A3 & D ................................................................................................. 28
      Usable battery range assumptions ........................................................................................................................ 29
   Summary .................................................................................................................................................................... 37

Section 3: GIS Mapping Methodology – Geographical Distribution Drivers for EVSE Upgrades and Extended Installations ........................................................................................................................................... 38

   Recommendations for new EVSE locations ........................................................................................................... 42
      Summary: Recommended Locations and Quantity of EVSEs ............................................................................. 46

Concluding Remarks ................................................................................................................................................ 49

General recommendations ......................................................................................................................................... 50

   Charging Systems dedicated to condominium and high-rise buildings ................................................................ 50

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d'innovation en transport urbain au Canada (CRITUC). All rights reserved.
Workplace charging systems ................................. 50
Innovative solutions............................................. 50
Ownership models.............................................. 50
Tariff models.................................................... 51

Works Cited.................................................................. 53

Appendix I: Techno-Economic Modeling of an Electric Bus Demonstration Project in
Woodstock (Route #3 & #5)............................................ 56
  Duty cycle generation............................................... 56
  Fuel consumption simulation and cost analysis for a typical transit diesel bus .......... 60
  Electric bus energy consumption and charging power calculation......................... 61
  Conclusion.................................................................. 69

Appendix II: A Literature Review of Factors Determining Siting of Hydrogen Fueling
Stations ...................................................................... 70
  Works Cited .............................................................. 72

Appendix III: Individual Voronoi maps for Existing Level 1, Level 2, Level 3, and Tesla
chargers in Oxford County.................................................. 73
Introduction

Oxford County aims to become a fully accessible electric vehicle (EV) community equipped with ubiquitous charging opportunities in the near-term future. This objective will be reached through the deployment of the County’s Electric Vehicle Accessibility Plan (EVAP).

To successfully achieve the County’s EVAP goals, it is necessary to map, analyze and strategically locate electric vehicle supply equipment (EVSEs) going forward. The installation of these systems – if properly done – could encourage the uptake of EVs in and across Oxford County in the future. It could also support new incoming traffic based on the charging needs among long-distance commuters travelling along nearby highway routes.

In general, the EVAP aims to promote the practicality and acceptability of EVs as a mainstream mode of personal transportation to, from, and within Oxford County, which requires an informed and strategic EVSE plan. Oxford County partnered with CUTRIC to assist in this planning process.

Oxford County recognizes the environmental implications of continued fossil fuel use and the growing impacts of climate change. The County is therefore developing a 100 per cent Renewable Energy Action Plan intended to:

(1) Catalyze environmental changes in Oxford;
(2) Create opportunities for renewable energy investment in Oxford; and,
(3) Position Oxford as a renewable energy center of excellence and home for renewable energy education, research and development.

Oxford County has begun to address the challenges of energy sustainability through critical first steps in energy conservation and demand management, as well as demonstrated community leadership in the advancement of renewable energy technologies and their applications. This zero emissions electricity generation and distribution system renders the County an ideal energy/electrical “fuel” landscape for the electrification of transportation (including transit) vehicles, as part of a long-term strategy to reduce transportation-related GHG emissions.

Currently, 48 charging stations including 12 Tesla Superchargers, four Level 3 chargers, 23 Level 2 chargers, four home-share Level 2 chargers, and five Level 1 chargers are located across 22 locations within Oxford County. These charging systems encompass a range of manufacturing makes and models. They have been purchased and installed by a variety of private sector interests (e.g., hotel owners, utility owners, etc.). In some cases, the stations installed have been purchased with support from the Province of Ontario via its Electric Vehicle Charging Ontario (EVCO) 1.0 program, which launched in 2016.

The installation of EVSEs across Oxford has resulted, therefore, in an ad hoc distribution of assets. No significant predictive analysis occurred before the purchase and/or installation of these system to determine the best possible locations for EVSEs based on EV-owner usage requirements. Subsequently, little analysis of actual usage rates has been completed, which would help to inform future policies vis-à-vis the optimal location of chargers in the future across the community.

The current feasibility study aims to address persistent data gaps. In doing so, the second aim of the study is to support the County in its efforts to encourage private sector investment into EVCO 2.0 – a provincial funding program expected to launch in the Fall of 2017/Winter 2018 with deployments likely to occur throughout 2018.

Third, the Study is intended to help increase the overall number of available EVSEs across Oxford County in the near-term and to render Oxford a provincial champion of EVs, by making it
a known “charging hub” for local and out-of-County residents and transitory drivers. The current feasibility study will assess current EVSE locations and usage rates, and predictively assess future optimal locations of for EVSEs based on empirically evidenced EVSE usage in the County and in comparative communities.

Fourth, the Study assesses the viability of electric transit options in the community of Woodstock, which is currently among the communities with a traditional transit fleet (Appendix I). The Future Oxford Community Sustainability Plan states that electrification of transit vehicles is considered a part of the County’s long-term strategy to reduce transportation-related greenhouse gas (GHG) emissions.

Finally, the Study also reviews hydrogen fuel cell vehicle pilot projects active in North America. The purpose is (1) to explore the development, launch and commercial outcomes associated with H2 fuel cell pilots; and (2) to assess the likelihood of H2 fuelling usage and optimal locational variables to consider in such an installation (Appendix II).

Definitions

**Electric vehicle supply equipment (EVSEs)** is an intermediary between a power source and the vehicle’s charging port. Its role is to simply transfer the electric power to the vehicle safely (FleetCarma, 2017).

**Level 1 EVSE**

Level 1 equipment provides charging through a 120 Volt (V), alternating-current (AC) plug. Level 1 is the slowest form of charging that uses a standard household outlet. Level 1 charging equipment is standard for different vehicle, which is portable and does not require the installation of charging equipment.

Depending on the battery technology used in the vehicle, Level 1 charging equipment generally takes 8 to 12 hours to completely charge a fully depleted battery. The most common place to use a Level 1 EVSE is at the vehicle owner’s home, which charging could be conducted overnight (EVTown, 2017).

**Level 2 EVSE**

Level 2 equipment provides charging through a 240V, AC plug and requires installation of home charging or public charging equipment. Level 2 charging equipment is compatible with all electric vehicles and plug-in electric hybrid vehicles.

Depending on the battery technology used in the vehicle, Level 2 charging equipment generally takes 4 to 6 hours to completely charge a fully depleted battery. Charging time can increase in cold temperatures. Level 2 EVSEs are commonly used in residential settings, public parking areas, places of employment and commercial settings (EVTown, 2017).

**Level 3 EVSE**

Level 3 equipment is often called *DC Fast Charger* that uses a 480V, direct-current (DC) plug. In this case, the charger is a gas pump-sized machine. Most Level 3 EVSEs provide an 80% charge in 30 to 45 minutes. Cold weather can lengthen the time required to charge (EVTown, 2017).

This type of Level 3 equipment is not compatible with all vehicles; only fully electric cars have access to it. There are three standards for Level 3 EVSEs (Plug ‘N Drive’, 2017):

- **CHAdemo** is an Asian standard used by Hyundai, Nissan, Kia and Mitsubishi.
• **SAE Combo** is a European/North American standard used by BMW, Chevrolet, Ford and Volkswagen.

• **Supercharger** is a Tesla-only standard. All Tesla vehicles can be purchased with adapters for the other two.

**Section 1: Literature Review**

Vehicle owners have historically relied on long ranges due to the high energy density associated with petroleum fuels in gasoline and diesel vehicles. The low-cost of carbon-based fuels (especially in jurisdictions that do not price carbon) combined with more than a century of development and now ubiquitous fueling/gas station networks across the developed world has ensured drivers can travel far distances with relatively little planning required to ensuring fuel availability (Delmas *et al.*, 2016; Langer *et al.*, 2017).

The rise of electric vehicles (EVs) – due to a combination of U.S. Corporate Average Fuel Economy Standards (CAFÉ) and European Fuel Standards over the past 15 years, combined with nascent carbon pricing regimes and gasoline/diesel punitive measures intended to reduce emissions from greenhouse gases (GHGs) in the transportation sectors in North America, Europe and Asia today – has resulted in a budding need for new “fueling”, i.e., “charging”, infrastructure.

Municipal, regional and federal governments are therefore struggling against the private market pull of ongoing gasoline and diesel car demand (which protects the status quo in petroleum fueling infrastructure) with public pressures to reduce emissions by encouraging fuel switching and EV adoption whereby EVs are charged from renewable power sources (e.g., hydro, wind and solar power, among other renewables) overtime.

This tug-of-war between the status quo and a necessary low-carbon future of transportation has produced demands for electric vehicle supply equipment (EVSE) – or “charging station” – optimization analyses that assess where, when and to what extent governments and private sector entities should be investing in or be forced to invest in charging system infrastructure to enable EV adoption for both light-duty vehicles (e.g., passenger cars and light trucks) and heavy-duty vehicles (e.g., heavy-duty trucks, buses, shuttles, and coaches).

The financial investments associated with these choices are enormous. Thus, a paradigm shift in transportation and mobility thinking towards a low-carbon future requires the most optimal, strategic and efficient investments into EVSEs as possible. This is a complex process given the current lack of general EV adoption today (EVs still represent less than 1% of all new vehicle purchases in North America, including Canada, today), which means there is precious little descriptive and empirical data demonstrating how human drivers behave when the range of vehicles is limited by the lesser energy density associated with relatively expensive battery technologies compared to relatively cheap petroleum fuels in propulsion applications.

Prospective EV adopters will need to perceive EV technologies as suitable to existing or desired lifestyles, while private sector stakeholders will require a reasonable return-on-investment (ROI) for upfront investments into new vehicle fueling technologies as a push out market shift strategy.

To encourage the uptake of EVs and their market economic viability, visibility and access to essential charging infrastructure has been cited as a critical factor to consider from a public policy and private investment perspective (Sierzchula *et al.*, 2014). Yet, many programs – including Ontario’s own first round of “Electric Vehicle Charging” funding, has proceeded with mostly ad hoc installations of EVSEs leading to the concern that trivial or non-optimal implementations of the technology can hinder EV adoption rather than support it by negatively influencing public perception towards the value of EVSE investments and EVs in general.
Often left unacknowledged or underappreciated in this dialogue (including in Canada today) is the significant difference between EV driver and conventional gasoline or diesel vehicle driver fueling/behavioral patterns. As documented and assumed in this report, a majority of households in Canada with EVs as primary or secondary vehicles will support home-charging at a Level 1 and/or Level 2 capacity (Axsen & Kurani, 2012). With recent legislation passed in British Columbia (2014) and proposed in Ontario (2017) that mandates condominium developers install EVSE capabilities in condo buildings, this likelihood is expanding to include condo dwellers as well as detached or semi-detached home owners (Government of Ontario, 2017; Plug in BC, 2014).

Therefore, the placement of gasoline or diesel fueling stations today does not constitute a primary variable to consider or utilized when determining where EVSEs ought to be placed for optimal usage in the future (given that most home owners do not own gasoline or diesel fueling stations at home, and therefore engage in differing fuelling behaviours compared to EV drivers).

In addition, given that the time necessary for an EV to acquire a full battery charge is significantly longer than the time it requires to fuel a petroleum-based conventional car that relies on an internal combustion engine (ICE) (time-to-charge ranging from 20 minutes with a Level 3 charger to more than 48 hours with a Level 1 charger, depending on battery size and onboard charging capabilities (i.e., the vehicle’s on-board AC/DC converter), as well as the specifications of the off board circuit delivering power to the charging station, charging station networks will need to be designed in alignment with long-term stop-over strategies for many EV drivers, rather than solely the quick-stop strategy associated with the design of contemporary gasoline and diesel fueling station networks.

These substantial differences in fueling strategies and EV driver behaviors need to be considered in future decision-making (public and private sector) to ensure the effectiveness of location prediction tools to justify the initial costs of infrastructure (including installation).

The placement of a charging station is worth deep strategic consideration. Jurisdictions invested in the uptake of EVs in the market should concern themselves with placement of the stations in locations that will result in the greatest most efficient (i.e., optimal) usage. Other areas of relevant inquiry include determining the number of charging stations that should be present to achieve supplemental social goals (such as accessibility, as opposed to optimization of usage solely), as well as necessary power requirements (minimal or desired) that impact grid-side investments required, and open or closed communications standards that digitally network or isolate charging station visibility, management and accessibility by drivers (Brooker & Qin, 2015).

Charging profiles for visitors to fast food establishments, for example, might merit higher-cost Level 3 EVSE installations, as opposed to the overnight charging profiles describing the patterns of charging behavior for visitors to hotels – the latter of which might merit lower-cost Level 2 or Level 1 installations. Some establishments might also merit two differing charging strategies – hospitals, for example, might be well-suited to explore higher cost Level 2 chargers for visitors, but lower-cost Level 1 installations for employees (such as nurses and doctors) whose "stay" period might range from 8 to 24 hours. In sum, private or public institutions and organizations that are planning to install EVSEs are best guided to consider the visitation profile, and therefore the charging profile, of EV drivers who visit respective establishments to determine the optimal level of charging required and associated costs for installation and maintenance overtime to optimize user experiences and satisfaction.
Variables that optimize EVSE locational choices: A global review of variables identified as critical in the assessment of EVSE siting locations

One indicator to evaluate EVSE placement is “EV adoption behaviour” which refers to the process in which a jurisdiction may target areas with known higher rates of EV uptake to drive the clustering or initial installation choices for EVSEs. This methodology is based on sociodemographic characteristics associated with “early adopter” EV owner profiles. These characteristics have typically demonstrated that EV owners as “early adopters” are predominantly male, highly educated, and high income earners (ethnic or racial information is not typically available). Problematically, therefore, an EVSE deployment strategy that focuses solely or primarily on the areas within which “early adopters” reside or charge their vehicles will tend to favour privileged sectors of the highly educated male population rather than society at large.

In addition, “early adopter” characteristics may not relate in any causal or systematic fashion to the characteristics defining “average adopters” or typical car drivers in the future – i.e., generalized characteristics defining the overall car driving population. In brief, due to the immense knowledge gaps and informational voids that currently hinder EV adoption predictions globally (i.e., knowledge gaps related to which variables drive forward adoption at the greatest rate, such as carbon prices, road pricing, punitive gasoline taxes, or EV incentives, etc.), analysts and public policy makers are hindered in their ability to accurately assess the state of the EVSE market based on early adoption characteristics primarily. The expansion of consideration to include other key variables extracted from public and private data sources related to mobility patterns and mobility needs, in general, may enable more informed evidence-based EVSE siting choices, therefore.

Useful transportation data sets that document mobility patterns can be assessed alongside EV sales data to inform and shape potential EVSE infrastructure placement choices. Such a holistic and comprehensive methodology would integrate considerations of sociodemographic data that predict the likelihood of EV adoption in given communities (given employment and household income) alongside driving and mobility variables for households (such as the number of commuters in a household, and the number of children or family members accessing extra-curricular or personal matters outside of the home). These sociodemographic household details help to clarify the nature of a community’s daily commute patterns, daily driving range requirements, and potential charging access points (e.g., garages at home, at workplaces, or elsewhere). These data may shape the type of electrified vehicle (i.e., hybrid, plug-in hybrid, or fully battery electric) a household is likely to adopt given charging network options locally in the near-term, mid-term and long-term future. Collecting this type of robust socio-demographic data for Oxford County would require a comprehensive household survey of car owners and potential car owners in the community. Without these data sets currently, CUTRIC has adopted a model that utilizes general typologies of driver and car owner “types” which span the sociodemographic possibilities for daily and ad hoc drivers into and out of Oxford County.

Several of the assumptions made in the predictive model utilized in this report build upon empirical variables identified in the assessment of EV drivers or potential drivers in other communities globally. In this section, we will review a series of those studies to clarify the assumptions embedded in Section Three of this report. A limited number of studies have attempted to evaluate critical EVSE placement variables in a comprehensive manner to optimize or potentially streamline decision-making processes among public and private sector investors (i.e., governments, property and retail owners, etc.). This sub-section details examples of studies that have attempted to identify optimal locations for EVSE placement in communities across North America, Europe and Asia.
Currently, there are several competing schools of thought as to how to best approach the issue of EVSE infrastructure placement within local communities; there are also competing views as to which key variables are the most important in such considerations, and which variables should receive the greatest weighting in the decision-making process. The unifying theme across this varied body of research is that EVSE placement decision making, which considers variables other than “early adopter” variables defining current EV drivers, produce better localized dialogue and a greater likelihood of scaled-up, mass adoption of EVs which extends beyond the privileged class of current EV owners, in general.

Distance considerations in EVSE placement in local communities: Voronoi diagram methodology and outputs

One of the initial infrastructural location studies produced in the field of EVSE placement research was an analysis of Musashino, Japan (in the Greater Tokyo Metropolitan area) (Koyanagi & Yokoyama, 2010). To identify the optimal places for implementing charging stations, researchers implemented a Voronoi diagram methodology, which is a topological technique that demonstrates the equi-distant layout of equipment after taking into account the following factors (ibid.):

1. The actual ability of an EVSE owner to install equipment in existing facilities (i.e., ownership rights, electrical capacity, etc.).
2. The availability of at least two parking lots as a base minimum for EVSE installation.

The purpose of this methodology is to fill gaps in an EVSE network; this methodology assumes that it is best to place EVSEs at equi-distances from one another to the extent possible to ensure drivers have access to EVSEs throughout a community and never find themselves too far away from an EVSE to make longer range driving infeasible.

For the 33 prospective locations that met the initial two criteria identified above, researchers used a weighting methodology to account for public transportation connections, main road intersections and ramps, multi-entrance availability, and the convenience of the facilities from a user or customer perspective. This method for selecting refined or idealized sites resulted in three priority locations, as identified through Voronoi and perspective demand measurements. The locations included a department store mall and two supermarket areas in Musashino for EVSE installations as priorities.

A follow-on study built up the Voronoi model designed for Musashino by integrating deeper considerations of traffic flow intersection nodes to represent existing road traffic patterns (Feng et al., 2012). The study calculated the users’ minimum loss of time on the way to the charging station as a variable driving the optimal placement of a charging station. Similar to other similar studies, the coverage of each partition and the locations of charging stations were adjusted repeatedly to locate optimal sites based on time parameters. A limited number of more contemporary studies have also implemented or repeated references to the methodology developed here to further develop the field of EVSE siting (Brooker & Qin, 2015; Mehar et al., 2015; Shareef et al., 2016; Sheppard et al., 2016). These studies suggest that Oxford County could locate optimal locations for EVSE placement by identifying “gaps” in the EVSE network that are equi-distance from one another, roughly, and which constitute accessibility points based on time parameters (i.e., a 10-minute walking distance limit from major sites of employment to EVSEs, or a maximum 20 minute driving distance from other chargers, etc.).

In the outputs prepared below, CUTRIC has assumed, for example, a walking parameter limit of 150 meters from the site of EVSEs. By imposing this distance limitation, the Voronoi method produces a series of parking lot sites that would be “optimal” from the perspective of enabling
drivers to park and walk with relative ease to nearby locations for extended stop overs (e.g., workplaces).

Grid partition considerations in EVSE placement in local communities

A separate type of study has been proposed as a method for locating and sizing EVSEs based on “grid partition” variables. Instead of focusing on a concentrated area or cluster of EVSEs, researchers used a hypothetical scenario that could be broadly applied to any urban environment in which they proposed a partition method that would minimize users’ loss on route to the charging station, while also integrating considerations of traffic density and the charging station’s capacity constraints (Ge et al., 2011). The coverage of each partition and the sites of the charging stations were repeatedly amended to develop a feasible output of the charging station area (ibid.). Similar to the Voronoi area models above, the grid partition approach is a stochastic methodology, which means it integrates a series of randomly selected variables as defining parameter conditions (e.g., distance to EVSE from starting point, availability of EVSE during certain hours, desirability of EVSE due to other social factors such as amenities nearby). This type of methodology has been used to generate exploratory research in differing EV fleet scenarios (Rahman et al., 2016; Wang et al., 2016; Mohsenzadeh et al., 2017). For example, a facility location model for electric taxi charging stations in Seoul, South Korea considered the placement of EVSEs assuming key variables dividing the jurisdiction ought to include itinerary-interception and queue delay; this approach was adopted as an innovative approach suggesting EVSE locations on the basis that an emerging shared mobility economy will alter charging needs among drivers and users of shared EVs (Jung et al., 2014).

In the outputs prepared below, CUTRIC has adopted a stochastic approach in some respective, integrating the random parameter of a 150 metre walking limit for employees as well as a ranking of “rich” versus “poor” amenities nearby to proposed EVSE locations. These parameters have helped to identify “optimal” charging locations across Oxford based on the needs of drivers rather than the driving ranges of cars, or other technical car-related needs.

Household activity data considerations in EVSE placement in local communities

Household activity data have also been used to determine optimal EVSE site location planning in some jurisdictions. A study in Seattle, Washington followed respondents over two consecutive weekdays in which the respondents had to keep a travel diary. Diary documentation collected thereafter resulted in 3,700 traffic analysis zones generated based on people’s actual travel patterns (Chen et al., 2013) (ibid.). Parking locations (by parcel, then aggregated by traffic analysis zones) and durations of parking periods were determined for all trips away from home and for all stops that were at least 15 minutes in duration (as research assumed a 15-minute stop over period as a base minimum justifying a potential EVSE installation in the future). Parking duration information was used to formulate demands for land-use and parking to frame individual trip characteristics (ibid.).

The outcome of this study resulted in a computer-generated map with areas demonstrating the highest “demand” potential for charging stations for the 80 allocated stations across 900 traffic analysis zones within 10 miles of the city’s downtown core (ibid.).

A similar study could be completed in the Oxford County jurisdictions. It would require a survey-based methodology in which residents are asked to keep travel logs and diaries over an extended period of time to generate evidence of mobility, traffic and transportation patterns. Such a study is outside the scope of the present Report, but it is certainly worth considering as a future empirical exercise in the County if officials require additional evidence to justify publicly-funded EVSE installations in the future.
EVSE usage in small communities: Key outcomes to consider in making EVSE placement choices

Electric vehicle uptake in some urban communities (including Toronto) has grown exponentially over the past 36 months. In addition, new makes and models by various automotive manufacturers are being released on a near quarterly basis as of late-2017, which has resulted in more consumer choice in battery technologies, range performance, and vehicle characteristics overall.

The following sub-section provides a few examples of the EVSE deployment in small communities similar to Oxford County. The purpose of this section is to explore the costs associated with chargers and other installation considerations that drive municipal siting criteria.

Tompkins County: An example of installation cost considerations in EVSE siting choices

Tompkins County is located in the state of New York and has a population of approximately 105,000 residents (United States Census Bureau, 2016). Installation costs for an EVSE at different sites around Tompkins County were found to vary from $2,000 to $12,500 USD depending on site-specific characteristics and installation variables (Energetics, 2017).

Charging stations can either be mounted on a concrete base for a free-standing pedestal unit or mounted onto an existing structure for a wall unit. The material the charging station is installed upon will affect cost (e.g., pavement, concrete sidewalk, dirt) based on the ease for which the EVSE conduit can be built. Increased distances between the charging station location and electric box will increase the costs through additional construction requirements. The state of the electrical service or panel must also be assessed and upgraded to support EVSE’s where necessary (ibid.).

Tompkins County also installed preventative measures against accidental vehicular damage when installing EVSEs. Existing structures could be utilized, such as curbs, or charging stations could be mounted at an elevated spot on the wall. In some cases, Tompkins County opted to install either a tire stop (costing approximately $350 USD per space) or bollards ($1,000 USD each) in front of the charging station to protect it (ibid.).

Advertisement and signage to users should also be considered when installing EVSEs. Adequate signage is necessary to regulate how charging stations are used, by clearly marking the spot as an EV-only parking spot, advertising who sponsors the station. Businesses could use this to their advantage to attract EV customers to demonstrate sustainability objectives, and to create awareness for non-EV drivers. Signage of this nature was found to add up to an additional $500 to the total station cost (ibid.).

Most commercial charging station models can be networked, which means the station utilizes cellular communications to report and track real-time data from the charging station. Networked stations cost more to purchase due to additional cellular communication modules which allow for the sending and receiving of information. This feature adds $1,000 USD to the installation cost to verify the site has sufficient cellular signal and the activation and verification of proper communication (ibid.).

Following installation, EVSEs require ongoing expenses, which include network fees, electricity, and maintenance. Networking fees cover the required cellular data plan and services to maintain the networking features, and are approximately $300 USD per charging port per year. Additional transaction fees for billing EV drivers are not included in the $300 USD estimation. Ongoing station maintenance costs are unique to each location and usage patterns, but if properly cared for (e.g., coiling the cord, occasionally wiping it clean, and clearing and snow or
debris accumulated around the base) only minor repairs should be required costing less than $1,000 USD over the 10-year lifespan of the station (ibid.).

Preliminary monitoring data from installed EVSEs in Tompkins County showed that on average, one charge event dispensed about $1.00 USD of electricity to an EV, which equals to approximately 7.7 kWh at an electricity rate of $0.13 USD per kWh. In the state of New York, 700 charging ports are monitored by the New York State Energy Research and Development Authority, and findings conclude there is an average of 2.5 charging events per week per port. This frequency translates into approximately 150 charging events per year, costing each site $150 USD in electricity (ibid.).

The Tompkins County study estimates total costs for the installation of Level 2 charging stations for the first year at different sites with varying characteristics and found costs ranging between $11,250 and $23,400 USD (ibid.). Given the variance in the costs, it becomes evident that optimal EVSE installation is not only dependent upon broader criteria, but is also very dependent upon placement at a given location based on existing infrastructures.

San Joaquin Valley: An example of ad hoc EV driver needs in EVSE siting criteria and considerations

The San Joaquin Valley Air Pollution Control District and the San Joaquin Valley Plug-in Electric Vehicle Coordinating Council (PEVCC) have identified optimal locations for public EVSEs in ten Valley cities based on three different siting categories: fast charging infrastructure, public access charging, and workplace charging (San Joaquin Valley Air Pollution Control District, 2014).

To determine optimal locations for fast charging, sites had to be located within a half-mile of a highway exit, easily accessible, well-lit, offering facilities and shelters for drivers while charging along with a “destination” point. The types of destinations chosen based on those criteria were supermarkets, department stores, shopping malls, restaurants and short-term parking spots at airports. The locations should also be equipped with transformers with a capacity to support fast chargers alongside existing parking availability (ibid.).

Public access charging sites were chosen in urban areas and destinations where drivers could park their vehicle for more than one hour. This assessment included locations that attract out-of-town visitors (e.g., art galleries, zoos, museums and amusement parks) and places where community members often visit (e.g., libraries, universities and parks). After assessing travel survey data, the following places were determined to attract drivers to travel “medium-to-long” distances from their home, and remain parked for at least one hour, which was deemed to be generally sufficient time to charge an EV using a Level 2 charger to complete a return trip home (ibid.). Examples of locations that involve a service or entertainment worthy of an extended (i.e., one hour or more) wait time may include:

- Airport
- Amusement park
- Aquarium
- Art gallery
- Campground
- Hospital
- Library
- Local government office
- Lodging
- Movie theater
- Casino
- Dentist’s office
- Department or big-box store
- Doctor’s office
- Grocery store or supermarket
- Restaurant
- Shopping mall
- Stadium
- Train station
- University
Workplace charging stations were sited by assessing the number of employees within travel analysis zones, where zones with more employees were assumed to contain higher numbers of current or future EV drivers at the workplace (ibid.).

**Uppsala: An application of GIS modelling in predicting optimal EVSE siting locations**

A thesis study conducted in the City of Uppsala, Sweden, used GIS mapping to determine optimal EVSE locations for three cases: slow charging stations, fast charging stations and charging alongside roads. Slow charging stations were assumed to provide public charging within city regions while cars were parked for elongated periods. Demand for this type of charging would be in pre-existing parking lots close to where residents live or work. Input data to ArcGIS include road grids, parking areas, and residential statistics (Lindblad, 2012).

Fast charging stations are assumed to have the highest suitability when located close to heavily trafficked roads. The input data for this case included road grids, electric grids (to assess capacities to support fast charging), suitable stops, and traffic density. Medium to fast charging systems were sited based on their ability extend EV range alongside roads and key highway routes and roads. The input data for this case included road grids, electric grids, suitable stops, and popular EV model ranges (ibid.).

Another example of GIS site suitability analysis emanates from the Los Angeles County GIS analysis. The study identified the most efficient placement of Level 3 stations included government offices, public libraries, and public parks within a half-mile radius of a highway. This siting criterion enabled easy travel from one end of the county to the other and an ability to ease range anxiety for interregional and intraregional commutes (Shengji Jin, 2016).

Optimal locations for Level 2 chargers at public libraries and parks have been derived from demographics related to EV owners indicating a majority of EV owners are middle-aged, possess a bachelor's degree or higher, and have a relatively high household income. Therefore, public libraries and parks within neighborhoods of residents fitting this demographic profile were chosen as ideal for Level 2 charger installation (ibid.).

Lastly, Level 2 chargers have been recommended for installation at Los Angeles County government offices since workplaces are the second more frequently utilized charging location (after home charging). The study recommended the Los Angeles County government could purchase and install chargers at all government offices as an exemplary workplace initiative (ibid.).

**Other U.S. examples of optimal EVSE location selection criteria**

Prominent studies emanating from the U.S. Department of Energy, as well as plug-in electric vehicle (PEV) infrastructure studies and demonstrations, include “The EV Project” and the “ChargePoint America Project” which, combined, form the largest PEV infrastructure demonstration in the world. The two projects installed 17,000 EVSEs between 2011-2013, in 22 regions across the U.S., comprised of both Level 2 and Level 3 EVSEs. The projects were not only created to install EVSEs, but to also monitor their usage patterns and develop lessons learned that could be applied to future deployment of PEVs and charging infrastructure (Francfor et al., 2015). The following is a summary of main findings, which inspired CUTRIC’s descriptive analysis.
Optimal location considerations

The study concluded that an overwhelming majority of charging was done at home and work, with about half of the project participants exclusively charging their EVs at home. Even though the vast majority of charging occurs at residential or workplace EVSEs, it does not mean that public charging stations are not necessary or desirable. Some fast charging stations experienced heavy use and allowed for intra and inter-city driving. Although these stations did not experience frequent usage, the charging provided to the driver was very important to that driver’s commute (Francfor et al., 2015).

A small number of Level 2 chargers drew consistently high usages and were located in areas where cars were parked for a while, including shopping malls, airports, commuter lots, and downtown parking lots of garages with easy access to a variety of venues. Conversely, some Level 2 EVSEs installed in locations perceived as optimal had surprisingly low usage. It was therefore very difficult to pinpoint exact criteria for optimal placement of EVSEs across regions and seemed to be more dependent upon community-specific factors (ibid.).

The stated results indicate that a ubiquitous charging network (similar to ubiquitous gasoline and diesel fueling stations) are not required in the future to support wide-spread EV adoption and/or optimized long-range driving.

The studies demonstrated charging episodes and infrastructure will be clustered at homes, workplaces, and in public “hot spots”. Installation of public charging stations were found to be more expensive than residential or workplace units with large installation cost variance in different regions and venues. The report authors conclude the cost and usage patterns associated with publicly available EVSEs underscore the fact the bulk of chargers should be installed at homes and workplaces with additional public chargers installed only at strategic points in the transportation network (ibid.).

Installation costs assessment

The installation costs for a public Level 2 charger ranged from $600 to $12,660 USD, with an average cost of $3,108 USD. The costs were primarily dependent on the distance between the facility’s electric panel and the charging station, and these costs varied regionally due to labour rates. Workplace charger installations averaged $2,223 USD per unit, which is 28 per cent less than the average public Level 2 charger cost. This difference in cost was attributed to increased flexibility at workplaces to choose optimal locations for the charging station and the type of equipment needed. However, employers found that once all of the optimal charging station installation sites were taken, prices increased quite a bit for less ideal spots (Francfor et al., 2015).

Installation costs for Level 3 chargers were between $8,500 to over $50,000 USD, with an average cost of $22,626 USD. Many of the DCFC installations required additional electrical services to support the 60-kW power rating and requirement for 480-volt outputs, creating significant increases to the installation costs (ibid.).

Charging patterns assessments

The study also monitored whether EV owners typically used Level 2 or Level 3 chargers when charging away from their home, and it was found that drivers of the Chevy Volt used Level 2 chargers half the time and Level 1 charging the other half of the time (either from a dedicated charging station or a standard 120-volt outlet). For Nissan Leaf owners, only eight per cent of charging events away from home were done using Level 3 chargers, and the rest were done with Level 1 or 2 chargers (Francfor et al., 2015).
Workplace charging behaviors were also examined and charging habits were seen to vary based on conditions such as fees and rules for use. Drivers were less likely to plug-in at work if they were required to pay for charging or if they had to move their vehicle after charging was complete. However, EV drivers did show a willingness to use communication tools (e.g., an online message board) to coordinate the use of charging stations with other employees. There was also an observed common courtesy and willingness from employees to follow practices such as plugging in a neighboring EV for charging after unplugging their own fully charged EV. These behaviors led to high charging station usage in certain workplaces and allowed for a large number of employees to regularly charge their vehicles (ibid.).

**Summary**

The studies documented above have helped CUTRIC identify several location siting variables to invoke when assessing optimal EVSE placement in Oxford County based on driving behavioural patterns (expected), EV make and model needs for charging support, and charging location appropriateness based on equi-distance or “gap” filling in an EVSE matrix locally and based on ad hoc parameters such as a walking and driving distance and/or amenities nearby.

The placement of electric vehicle supply equipment (EVSE) across the Level 1 to Level 3 system spectrum requires a comprehensive consideration of all of these variables – to the extent possible, with the data sources currently available – in Oxford County. As more data become available over time, this analysis can be reiterated to refine the locational optimization of EVSEs not yet installed in the community.

In the next sections of this Report, we document the predictive and descriptive outcomes associated with mapping EVSE siting locations based on the following factors:

1. Predicted increases in EV uptake by commuters (varied types) and tourists
2. Current EVSE usage and clustering
3. Gaps in the EVSE network in Oxford County based on distance considerations
4. Gaps in the EVSE network based on locations serving amenities and/or workplaces
Section 2: Assessment of EVSE Usage and EVSE Network Gaps in Oxford County

In reviewing the literature sources identified earlier to assess EVSE siting experiences globally, and in assessing the outcomes of the Voronoi method for mapping clusters of pre-existing and potential extended sites of EVSE installations, it is evident that an analysis of existing EVSEs in Oxford County would be – on its own – insufficient for predicting how many EVSEs need to be integrated into the community in the future, or where they ought to be optimally located given future EV adoption rates and driver usage and charging patterns.

Therefore, CUTRIC has developed here a series of predictive and descriptive outcomes that help to map gaps in the EVSE network in Oxford County and identify mechanisms going forward to fill those gaps or ensure efficient clustering of EVSEs in high-use or likely high-use areas based on varied types of commuter (employee) and/or tourist traffic.

The assessment of how many chargers may be needed in the community is followed by an assessment of where those charges may be located optimally in the future.

Data collection opportunities and challenges

Table 1 summarizes the required data to optimally locate new charging stations in Oxford County, as well as barriers CUTRIC faced in acquiring those data sets. The following targeted communities of potential EVSE users have been identified to guide the data collection process:

- Oxford residents
- Transitory and through-way traffic
- Tourists

Despite the fact Oxford County’s Manager of Strategic Initiatives is a champion in this project and has supported iterative rounds of data collection activities, CUTRIC has faced several challenges acquiring appropriate empirical data sets related to localized EV adoption and EVSE usage. Developing a robust localized predictive model would be enabled, for example, by having real-time access to EVCO and Tesla charging system databases from Oxford’s installed charging systems. Data analysis for Oxford County in this regard requires access to these data sets. Therefore, CUTRIC has identified the benefits to both the MTO (for future EVCO planning) and Tesla (for charging system optimization analysis) that would arise from allowing undisclosed access and analysis of the datasets for the purposes of this study.

Accessing these datasets proved to be challenging under current government and commercial restrictions. To clarify, (1) the Government of Ontario’s Ministry of Transportation refused to relinquish access rights to MTO EV charging data sets from chargers co-funded through the province’s EVCO 1.0 program (launched in 2016); (2) Tesla similarly refused to allow access to charging system data from Tesla chargers in the community.

Although CUTRIC intends to inform and shape public policy in an evidence-driven fashion, the lack of access to empirical evidence demonstrating real-time charging patterns in the community means the methodology adopted here is largely predictive in nature, and based on reasonable but static assumptions regarding potential EV adoption rates in the community.
### Table 1: Data Collection Outline

<table>
<thead>
<tr>
<th>Required Data</th>
<th>Source(s)</th>
<th>Data Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information about existing charging stations (i.e., location, make, model, quantity)</td>
<td>Inquiry from Oxford County</td>
<td>Received.</td>
</tr>
<tr>
<td></td>
<td>EVCO Map</td>
<td>Publicly available.</td>
</tr>
<tr>
<td></td>
<td>PlugShare Map</td>
<td>Publicly available.</td>
</tr>
<tr>
<td></td>
<td>AddEnergie Flo Map</td>
<td>Publicly available.</td>
</tr>
</tbody>
</table>
| Usage patterns of existing charging stations (i.e., number and length of daily EV charging episodes; power level and electricity demand) | Tesla charging system databases (for chargers located at the Quality Inn Hotel parking area) | 1. Hotel management does not collect EV charging data despite owning chargers on site.  
2. Tesla stated it is “unable to release any charging data for the purposes you have requested. Tesla operates under a very strict privacy policy with respect our proprietary data, which is commercially sensitive in nature.” |
<p>|                                                                              | AddEnergie Flo Database                                                   | Access provided by AddEnergie [facilitated by Oxford County].                    |
|                                                                              | Inquiry from MTO/MyEV (for EVCO funded chargers)                          | MTO stated:                                                                      |
|                                                                              |                                                                           | 1. “We will not be able to provide access to their database due to the highly sensitive nature of data and personal information of Ontarians. |
|                                                                              |                                                                           | 2. Moreover, Electric Vehicle Chargers installation was supposedly to complete in March 2017, and first usage data report is due October 31st, thus presently we do not have any information about usage patterns of electric vehicle chargers. |</p>
<table>
<thead>
<tr>
<th>Required Data</th>
<th>Source(s)</th>
<th>Data Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information about existing EVs in the County</td>
<td>Green License Plate Data (MTO)</td>
<td>Received.</td>
</tr>
<tr>
<td>Location of main parking areas for short-terms stays (1hr-3hrs) [Shopping malls, cinemas, hospitals, etc.]</td>
<td>Oxford County &amp; Municipalities Land Use Maps</td>
<td>Not available publicly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oxford County’s Manager of Strategic Initiatives requested each municipality provide an appropriate list.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Google satellite imagery data used as a complementary source.</td>
</tr>
<tr>
<td>Location of employer-owned parking areas for long-term stays (8hrs +) [Hospitals for employees, workplaces, etc.]</td>
<td>Oxford County &amp; Municipalities Land Use Maps</td>
<td>Not available.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oxford County’s Manager of Strategic Initiatives requested each municipality provide an appropriate list.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Google satellite imagery data used as a complementary source.</td>
</tr>
<tr>
<td></td>
<td>Oxford County Business Directory</td>
<td>Information retrieved from the business directory and mapped manually.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Google satellite imagery data used as a complementary source.</td>
</tr>
<tr>
<td>Required Data</td>
<td>Source(s)</td>
<td>Data Availability</td>
</tr>
<tr>
<td>---------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Oxford County population and urban density</td>
<td>2016 Census</td>
<td>Publicly available.</td>
</tr>
<tr>
<td>Events and attractions attracting outside traffic to Oxford County</td>
<td>Oxford County &amp; municipal tourist catalogues and events guides (inquiry from Tourism Oxford)</td>
<td>Received.</td>
</tr>
<tr>
<td>Highway map and traffic flow (annual average daily traffic)</td>
<td>MTO Website</td>
<td>Publicly available.</td>
</tr>
</tbody>
</table>
Descriptive analysis considerations based on literature

Three key variables guided Oxford County’s EVSE siting efforts. They include:

1. **Long-term parking opportunities** (Level 1 or Level 2 Systems)
   a. Level 1 characteristics: locations typically involving 8-24 hour stop-overs or overnight stays, such as hospitals, employment sites for employees, train stations (for commuters who park and ride), bus stations (for commuters who park and ride), hotels.
   b. Level 2 characteristic: locations typically involving 1-3 hour stop-overs, such as cinemas, shopping malls, hospitals (visitors), airports, farmers markets, etc.

2. **Special applications for Level 2**, including summer farmers’ markets, festival locations, and other tourist attraction locations that experience high-volume at non-uniform periods within the annual year cycle.

3. **Highway intersectionality (Level 3)**, including nearby highway off ramps, and “On Routes” or other similar nearby off-highway stopping points that allow for 10-30 minute stop overs for travellers and highway commuters (ideally), or incoming resident traffic.

Both cost and usage of charging stations (based on local community needs) should be considered in the decision-making process of siting new EVSEs to ensure the effectiveness in location prediction as well as choosing the right type to justify the initial costs of infrastructure depending on the locale. In the Canadian context, the cost of charging stations are as follows:

**Level 1 EVSE Costs**: The price of Level 1 chargers range from $800 to $1,200 CAD to purchase. The installation costs are [on average] between $800 and $1,000 CAD (both parts and labour), however, the installation cost varies from case to case depending on permits, garage modifications, and additional features (HomeAdvisor, 2017; Plug ‘N Drive², 2017).

**Level 2 EVSE Costs**: Established EVSE networks in Canada appear to be: Sun Country Highway, ChargePoint, and FLO.

- Sun Country Highway provides prices for Level 2 chargers ranging from $829 to $2,799 CAD depending upon the durability of the station, including warranties, weather resistance, etc (Sun Country, 2017).

- Level 2 chargers can be categorized according to whether they are “networked” or “non-networked”, i.e., smart enabled systems. Networked stations have internet connections and allow the owner to control access to the station, charge a fee for service and print usage/maintenance reports among other features. They range from $8,000 to $10,000 CAD to purchase. Non-Networked units do not have internet connections and cannot be controlled, which range from $2,000 to $4,000 CAD to purchase (Plug ‘N Drive², 2017).

- Distance to the breaker box is usually the most important factor in determining installation cost, typically ranging from 15 to 30 meters. Runs longer than 45 meters are usually too expensive to justify station installation. Parking garage installations are the easiest and most economical public charging stations. Conduit and wiring can be wall mounted. Curbside and surface lot stations tend to be much more expensive than parking garage installations because they frequently require costly trenching or directional boring to run conduit and wire to the station (CleanTechnica, 2014).

- Installing a multi-port station, or multiple stations at once, reduces the cost per charger, but demand must exist to justify the extra capacity. Cost is reduced mainly because a single trench/bore, conduit, and wire can be used to service the adjacent stations.
Multiple stations are more likely to require a breaker box upgrade, and the feeder wire that is run from the box to the stations will be slightly more expensive, but the added cost can be divided across the extra stations. There are other efficiencies in mobilization, repetition, permitting, etc (ibid).

**Level 3 EVSE Costs:** The current cost of Level 3 charger is an order of magnitude higher than a Level 2 charger, ranging from $40,000 to $100,000 CAD per station. Installation and civil works ranges from $15,000 to $60,000 CAD depending upon site complexity. There are two main contributors to their high cost: 1) expensive equipment and 2) frequently the need to install a 480V transformer (EVSE, 2017).

**Predictive analysis: Assessing future EV adoption impacts on EVSE needs in Oxford County**

Predictive analysis offered here adopts a linear model based on current and predicted future EV adoption rates, along with an integrated traffic flow analysis. Additionally, the model assumes two types of electric vehicles as “baseline” vehicle systems – namely, the Nissan Leaf 2017 and the Chevy Bolt 2017 – to determine range performance on a daily and annual basis as applied to a variety of potential in-town and out-of-town commuters and drivers.

These vehicles were selected based on the following variables:

- Price range ($37,000 – $45,000 CAD), which suggests a more affordable vehicle compared to luxury makes of fully electric vehicles (for example BMW and Tesla models);
- Government of Ontario’s rebate of $14,000 CAD for both vehicles, which reduce pricing further to a value comparable with a new hybrid vehicle, such as a Prius V, for Canadian households;
- Varying driving range capacity with the Leaf demonstrating approximately 175 km in range and the Bolt demonstrating approximately 383 km (as reported by manufacturers, and depending on ambient conditions and drive cycles).

The selection of these vehicles allows for a comparative assessment between two similarly priced vehicles that demonstrate varying driving ranges. When applied in the context of Oxford County and assumed as a proportion of all cars in the community, these vehicles create differing charging system requirements outside of homes, at workplaces, at common places of extended parking (e.g., shopping malls), and on highways and other road intersections in the community.

The following section outlines the typologies CUTRIC has created to capture potential driver “types”. These types of drivers constitute idealizations meant to capture potential categories of driver types and drive cycle requirements (i.e., range requirements among EV drivers in Oxford) that would shape EVSE needs and requirements in the community in the future. The table below outlines assumptions embedded into the definition of these driver idealizations. An optimal source of data that could be generated to justify or characterize data required to conduct the analysis and the assumptions made to assist formulating the final results are described.

**Driver typologies: Type A – Type D EV Owners and Drivers**

CUTRIC has adopted a “Best Case - Worst Case” predictive model to estimate the number of chargers that a regional location would need to host to fully satisfy charging needs based on assumptions regarding battery range, home charging, and travel patterns.
In this model, the Best Case Scenario (as judged from the perspective of an EVSE owner/host) requires the minimum number of EVSEs to be installed to serve a local community or a stakeholder sector (i.e., employee).

- **The Best Case Scenario is the least expensive scenario, as judged from the perspective of the EVSE owner, as it requires the fewest number of EVSE units and the least amount of EVSE installation and/or electricity provision.**

No assumptions have been made in this model regarding priced versus un-priced (or “free”) electricity.

The Worst Case Scenario (as judged from the perspective of an EVSE owner/host) requires the maximum number of EVSEs to be installed to serve a local community or a stakeholder sector (i.e., employee).

- **The Worst Case Scenario constitutes the most expensive scenario, as judged from the perspective of the EVSE owner, as it requires the most number of EVSE units and the most amount of EVSE installation and/or electricity provision.**

No assumptions have been made in this model regarding priced versus un-priced (or “free”) electricity.

To inform this model, CUTRIC has created a set of EV owner typologies, whose profiles can be characterized as follows:

1. **Type A**: Work Commuter (Principal Car)
   a. **Type A1**: In town commute
   b. **Type A2**: Out of town commute
   c. **Type A3**: Out of town commuting into town
2. **Type B**: Family Commuter (Secondary Car)
3. **Type C**: Tourist Commuter
4. **Type D**: Inter-city Commuter transiting through Oxford County between city locations (for work or leisure)

**Vehicle make and model technical specifications and assumptions**

Table 2 lists the technical and battery pack information for the Nissan Leaf and Chevy Bolt, which are used in this analysis. Working hours are assumed 7am - 7pm (12 hours). This section provides a short description of the other assumptions made to develop the predictive modeling.
### Table 2: Technical and Battery Pack Info

<table>
<thead>
<tr>
<th></th>
<th>Nissan Leaf 2017</th>
<th>Chevrolet Bolt 2017</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Pack (kWh)</td>
<td>30</td>
<td>60</td>
<td>Plug ’N Drive</td>
</tr>
<tr>
<td>Time to charge for L1</td>
<td>≈ 20 (1.5 kWh of</td>
<td>≈ 40-60</td>
<td>Meo Electric &amp;</td>
</tr>
<tr>
<td>Chargers (Hours)</td>
<td>charging per hour)</td>
<td>- 30 (1kWh of charging per hour)</td>
<td>ChargeHub</td>
</tr>
<tr>
<td>Time to charge for L2</td>
<td>4.5</td>
<td>9.5</td>
<td>Plug ’N Drive</td>
</tr>
<tr>
<td>Chargers (Hours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time to charge for L3</td>
<td>&lt; 30 min for 80% charge</td>
<td>&lt; 2 hours</td>
<td>Meo Electric</td>
</tr>
<tr>
<td>Chargers (Hours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Range (km)</td>
<td>172</td>
<td>383</td>
<td>Plug ’N Drive</td>
</tr>
</tbody>
</table>

### Current and future EV ownership for Type A1

Data received from MTO indicates that the total number of existing EVs in the County is 163 (as of 2017 figures). Based on the *EV Sales Report in Canada* (3rd quarter 2017), the current adoption rate of EVs across Ontario is 0.8 per cent (FleetCarma, 2017).

To generate a predictive model for this feasibility study, CUTRIC assumed an incremental linear increase in EV volumes (one per cent, five per cent, 10 per cent, and 25 per cent) to predict the number of future EVs in Oxford County, assuming 163 EVs (as of 2017) constitutes 0.8 per cent of total vehicles owned in Oxford County currently (Table 3).

### Table 3: Number of Type A1 EVs

<table>
<thead>
<tr>
<th>Adoption Rate</th>
<th>Number of EVs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8%</td>
<td>163</td>
</tr>
<tr>
<td>1%</td>
<td>204</td>
</tr>
<tr>
<td>5%</td>
<td>1019</td>
</tr>
<tr>
<td>10%</td>
<td>2038</td>
</tr>
<tr>
<td>25%</td>
<td>5094</td>
</tr>
</tbody>
</table>
Current and future EV ownership for Type C

To create a predictive tool to assess incoming EV traffic into the Oxford County community, CUTRIC explored tourist events that would attract predictable estimations of incoming traffic flow based on annual occurrences.

Tourism Oxford advises there are two rural and four urban “high attendance” venues in the County with rural events attracting approximately 4,000 people and urban events attracting 10,000 people per instance. However, there are no data identifying how many event goers constitute out-of-town travelers versus in-town visitors. Therefore, CUTRIC has utilized the general approximation provided by Tourism Oxford that 48,000 tourists visit Oxford County annually.

To generate a predictive model for incoming tourists, CUTRIC has assumed four visitors travel in each incoming vehicle (i.e., a standard family unit). This generates a value of approximately 12,000 cars traveling into the County annually, which CUTRIC has utilized as the base value to assess EVSE needs for Type C EV owners.

Considering the incremental adoption rates noted above, Table 4 demonstrates the number of Type C EVs estimated as entering Oxford annually for events and festivals.

<table>
<thead>
<tr>
<th>Adoption Rate</th>
<th>Number of EVs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8%</td>
<td>96</td>
</tr>
<tr>
<td>1%</td>
<td>120</td>
</tr>
<tr>
<td>5%</td>
<td>600</td>
</tr>
<tr>
<td>10%</td>
<td>1200</td>
</tr>
<tr>
<td>25%</td>
<td>3000</td>
</tr>
</tbody>
</table>

Current and future EV ownership for Type A3 & D

To assess EVSE requirements among commuters (both in town and out of town daily commuters), CUTRIC has leveraged Annual Average Daily Traffic (AADT) data associated with the busiest highway routes surrounding of Oxford County. The AADT for Oxford County (2017) ranges between 67,151 and 74,200 vehicles with a median value of 70,675 vehicles commuting through or into Oxford on a daily basis, as based on surrounding highway traffic flow.

Using the linear adoption rates identified above, and assuming one per cent of the AADT constitutes vehicles that actually stop in Oxford County for work/daily commuting purposes, this model estimates the number of cars entering the County as commuter vehicles is approximately 707 per day. Considering the incremental adoption rates notes above, Table 5 demonstrates the number of Type A3 EVs that may stop in Oxford County and require charging infrastructure.
Table 5: Number of Type A3 EVs

<table>
<thead>
<tr>
<th>Adoption Rate</th>
<th>Number of EVs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8%</td>
<td>6</td>
</tr>
<tr>
<td>1%</td>
<td>7</td>
</tr>
<tr>
<td>5%</td>
<td>35</td>
</tr>
<tr>
<td>10%</td>
<td>71</td>
</tr>
<tr>
<td>25%</td>
<td>177</td>
</tr>
</tbody>
</table>

In addition, assuming 99 per cent of the AADT constitute inter-city commuters who transit through or across Oxford County en route to a work location outside of or adjacent to Oxford County another estimated 69,968 vehicles may require a stop over in Oxford County along highway route intersections.

Considering incremental EV adoption rates identified above, Table 6 demonstrates the number of Type D EVs (inter-city commuters) who may require a stopover for brief “fuelling” or “charging” in Oxford County, as assumed in this model.

Table 6: Number of Type D EVs

<table>
<thead>
<tr>
<th>Adoption Rate</th>
<th>Number of EVs</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8%</td>
<td>560</td>
</tr>
<tr>
<td>1%</td>
<td>700</td>
</tr>
<tr>
<td>5%</td>
<td>3,496</td>
</tr>
<tr>
<td>10%</td>
<td>6,997</td>
</tr>
<tr>
<td>25%</td>
<td>17,492</td>
</tr>
</tbody>
</table>

Usable battery range assumptions

The predictive model presented below utilizes two electric vehicles (Nissan Leaf, 2017 and Chevy Bolt, 2017) to demonstrate possible charging requirements for Type A-D EV owners/drivers in and around the Oxford County.

Make-Model (1): Nissan Leaf 2017

Usable battery (estimated) range is calculated as follows:

- Nissan Leaf 2017 average range is approximately 172 km (in normal ambient conditions).
- Buffer/battery SOC loss assumptions:
  - Over the life of the car, approximately 25% degradation (43 km loss) in a worse
• case scenario over a 10-year lifecycle.
• Cold or extreme hot weather conditions, 30% temporary loss in range (51 km loss) in a worse case scenario.

• Total usable battery estimated range under all conditions (i.e., 10 year lifecycles, and extreme weather conditions): 78 km

**Make-Model (2): Chevrolet BOLT 2017**

Usable battery (estimated) range is calculated as follows:

• Chevy Bolt 2017 average range is approximately 383 km (in normal ambient conditions).

• Buffer/battery SOC loss assumptions:
  o Over the life of the car, approximately 25% degradation (96 km loss) in a worse case scenario over a 10-year lifecycle.
  o Cold or extreme hot weather conditions, 30% temporary loss in range (114 km loss) in a worse case scenario.

• Total usable battery estimated range under all conditions (i.e., 10-year lifecycles, and extreme weather conditions): 173 km

CUTRIC has developed a map of current usage to predict future usage in the community based on current EV sales, as well as future EV sales growth; in addition, CUTRIC has mapped current and future EV charging behavioural patterns in and around the community.

The results of these analyses are presented in Table 7 for both the Nissan Leaf estimation model, and Table 8 for the Chevy Bolt estimation model.
Table 7: Predictive Analysis for Nissan Leaf 2017 Applicability: Level 1, 2 & 3 Charger Requirements

<table>
<thead>
<tr>
<th>EV Owners Charging Profile (Nissan Leaf)</th>
<th>Base Minimum Number of Level 1 Required Chargers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type A: Work Commuter (Principal Car)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Best Case Scenario:</strong> Assume Type A1 commuter travels less than 78 kilometers per day (to and from work and in-between stops, e.g., shopping, pick ups, etc.).</td>
<td>In this case, there is no need for L1 chargers in the County because there is enough charge to complete travel based on home charging.</td>
</tr>
<tr>
<td><strong>Worst-Case Scenario:</strong> Assume Type A1 commuter travels more than 78 kilometers per day (to and from work and in-between stops, e.g., shopping, pick ups, etc.). Requires top up at work of minimum 8 hours. Assume one, 8-hour charging block over a 12-hour work day period, equates to one charging episode.</td>
<td></td>
</tr>
<tr>
<td><strong>Type A1: In town commute</strong></td>
<td></td>
</tr>
<tr>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work, but it is outside of Oxford County.</td>
<td>In this case, there is no need for L1 chargers in the County because commuters travel outside of the County.</td>
</tr>
<tr>
<td><strong>Type A2: Out of town commute</strong></td>
<td></td>
</tr>
<tr>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work.</td>
<td>In this case, there is no need for L1 chargers in the County because it is outside of Oxford County.</td>
</tr>
<tr>
<td><strong>Type A3: Out of town commuting into town</strong></td>
<td></td>
</tr>
<tr>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work.</td>
<td>In this case, there is no need for L1 chargers in the County because it is outside of Oxford County.</td>
</tr>
<tr>
<td><strong>Type B: Family Commuter (Secondary Car)</strong></td>
<td></td>
</tr>
<tr>
<td>Leaving home with 100% SOC, requiring a potential 30-45 minute top up charge.</td>
<td>In this case, there is no need for L1 chargers in the County because a 30-minute charging period with an L1 charger does not provide enough charge to justify EVSE installation.</td>
</tr>
<tr>
<td><strong>Type C: Tourist Commuter</strong></td>
<td></td>
</tr>
<tr>
<td>Leaving home with 100% SOC, requiring a full charging period upon entry to Oxford.</td>
<td>In this case, there is no need for L1 chargers in the County because a full charging episode for the Leaf takes 20-30 hours which is not practical for a tourist who may stay less than a 24-hour period.</td>
</tr>
<tr>
<td><strong>Type D: Inter-city commuter transiting through Oxford County between city locations (for work or leisure)</strong></td>
<td></td>
</tr>
<tr>
<td>Leaving home with 100% SOC, requiring a full charge period upon entry to highway location (DCFC required).</td>
<td>In this case, there is no need for L1 chargers in the County because a full charging episode for the Leaf takes 20-30 hours which is not applicable to a commuter who may spend a maximum of 30-45 minutes at a transit point on route.</td>
</tr>
</tbody>
</table>

Copyright © 2018 Canadian Urban Transit Research and Innovation Consortium (CUTRIC), Consortium de recherche et d’innovation en transport urbain au Canada (CRITUC). All rights reserved.
<table>
<thead>
<tr>
<th>Type A: Work Commuter (Principal Car)</th>
<th>Description</th>
<th>0.8%</th>
<th>1%</th>
<th>5%</th>
<th>10%</th>
<th>25%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Best Case Scenario:</strong></td>
<td>Assume Type A1 commuter travels less than 78 kilometers per day (to and from work and in-between stops, e.g., shopping, pick ups, etc.).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In this case, there is no need for L2 chargers in the County because there is enough charge to complete travel based on home charging.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mid-Case Scenario:</strong></td>
<td>Assume Type A1 commuter travels more than 78 kilometers per day (to and from work and in-between stops, e.g., shopping, pick ups, etc.). Requires top up at work of minimum one hour. No access to L1 Chargers. Chargers are smart-enabled and give warning to the drivers to move the vehicle at end-of-charge period (or face a penalty). Assume 2-hour charging blocks over a 12-hour workday period, equating to 6 charging episodes.</td>
<td>27</td>
<td>34</td>
<td>170</td>
<td>340</td>
<td>849</td>
</tr>
<tr>
<td><strong>Worst Case Scenario:</strong></td>
<td>Assume Type A1 commuter travels more than 78 kilometers per day (to and from work and in-between stops, e.g., shopping, pick ups, etc.). Requires top up at work of minimum one hour. No access to L1 Chargers. Chargers are smart-enabled and give warning to the drivers to move the vehicle at end-of-charge period (or face a penalty). Assume 4-hour charging blocks over a 12-hour work day period, equating to 3 charging episodes.</td>
<td>54</td>
<td>68</td>
<td>340</td>
<td>679</td>
<td>1,698</td>
</tr>
<tr>
<td>Type A1: In town commute</td>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work, but it is outside of Oxford County.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In this case, there is no need for L2 chargers in the County because commuters travel outside of the County.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type A2: Out of town commute</td>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work. Assume 2-hour charging blocks over a 12-hour workday period, equating to 6 charging episodes.</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>12</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>The longest route across and around Oxford County roads is 52 kilometres in length; thus, there is no need for L2 chargers within the County because</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type A3: Out of town commuting into town</td>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work. Assume 4-hour charging blocks over a 12-hour workday period, equating to 3 charging episodes.</td>
<td>2</td>
<td>2</td>
<td>12</td>
<td>24</td>
<td>59</td>
</tr>
<tr>
<td>Type B: Family Commuter (Secondary Car)</td>
<td>Leaving home with 100% SOC, requiring a potential 30-minute top-up charge within the County; assume 1% of Drivers are EV owners with after-work activity requirements.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type C: Tourist Commuter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td></td>
</tr>
<tr>
<td>Best Case Scenario: Leaving home with 100% SOC, requiring a top up charge upon entry to Oxford. Assume 2-hour charging blocks over 16 hours, equating to 8 charging episodes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>there is enough charge to complete travel based on home charging.</td>
<td></td>
</tr>
<tr>
<td>Worst Case Scenario: Leaving home with 100% SOC, requiring a full charging period upon entry to Oxford. Assume 4-hour charging blocks over 16 hours, equating to 4 charging episodes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type D: Inter-city commuter transiting through Oxford County between city locations (for work or leisure)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leaving home with 100% SOC, requiring a full charge period upon entry to highway location (DCFC required),</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>In this case, there is no need for L2 chargers in the County because a full charging episode of the Leaf takes 4.5 hours, which is not applicable to a commuter who spends a maximum 30-45 minutes at a transit point on route.</td>
<td></td>
</tr>
</tbody>
</table>

### EV Owners Charging Profile (Nissan Leaf)

<table>
<thead>
<tr>
<th>Type A: Work Commuter (Principal Car)</th>
<th>Description</th>
<th>Base Minimum Number of Level 3 Required Chargers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A1: In town commute</td>
<td>All Scenarios</td>
<td>0.8% 0 0 1 3 7</td>
</tr>
<tr>
<td>Type A2: Out of town commute</td>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work, but is outside of Oxford County.</td>
<td>Not required due to the high price and available time at work for Work Commuter to use L2 chargers.</td>
</tr>
<tr>
<td>Type A3: Out of town commuting into town</td>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work. 24 charging episodes within 12 hours (working hours).</td>
<td>In this case, there is no need for L3 chargers in the County because people travel outside of the County.</td>
</tr>
<tr>
<td>Type B: Family Commuter (Secondary Car)</td>
<td>Leaving home with 100% SOC, requiring a potential 30-minute top-up charge.</td>
<td>In this case, there is no need for L3 chargers in the County because L2 chargers would fulfill the local needs.</td>
</tr>
<tr>
<td>Type C: Tourist Commuter</td>
<td>Leaving home with 100% SOC, requiring a full charging period upon entry to Oxford.</td>
<td>In this case, there is no need for L3 chargers in the County because L2 chargers would fulfill local needs.</td>
</tr>
<tr>
<td>Type D: Inter-city commuter transiting through Oxford County between city locations (for work or leisure)</td>
<td>Leaving home with 100% SOC, requiring a full charge period upon entry to highway location (DCFC required). 48 charging episodes within 24 hours</td>
<td>12</td>
</tr>
</tbody>
</table>

**Table 8: Predictive Analysis for Chevy Bolt 2017 Applicability: Level 1, 2 & 3 Charger Requirements**

<table>
<thead>
<tr>
<th>EV Owners Charging Profile (Chevy Bolt)</th>
<th>Base Minimum Number of Level 1 Required Chargers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type A: Work Commuter (Principal Car)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>0.8%</td>
</tr>
<tr>
<td><strong>Best Case Scenario</strong>: Assume Type A commuter travels less than 173 kilometers per day (to and from work and in-between stops, e.g., shopping, pick ups, etc.).</td>
<td>In this case, there is no need for L1 chargers in the County because there is enough charge to complete travel based on home charging.</td>
</tr>
<tr>
<td><strong>Worst Case Scenario</strong>: Assume Type A commuter travels more than 173 kilometers per day to and from work and in-between stops, e.g., shopping, pick ups, etc. Assumes no Level 2 charger at home. The Bolt requires approx. 40-60 hours to charge via AC Level 1, depending upon voltage and amperage, meaning a Bolt owner cannot fully charge up over a 24-hour period at home. This may require top-up charging at the workplace, leading the Bolt owner to use or demand workplace charging to accommodate battery capacity needs. In this scenario, workplace charging allows a Bolt owner to use the workplace as a complement to home charging at AC Level 1.</td>
<td>163</td>
</tr>
<tr>
<td><strong>Type A1: In town commute</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Type A2: Out of town commute</strong></td>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work, but is outside of Oxford County.</td>
</tr>
<tr>
<td><strong>Type A3: Out of town commuting into town</strong></td>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work.</td>
</tr>
<tr>
<td><strong>Type B: Family Commuter (Secondary Car)</strong></td>
<td>Leaving home with 100% SOC, requiring a potential 30-minute top-up charge at AC Level 2.</td>
</tr>
<tr>
<td>Type C: Tourist Commuter</td>
<td>Leaving home with 100% SOC, requiring a full charging period upon entry to Oxford.</td>
</tr>
<tr>
<td>--------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Type D: Inter-city commuter transiting through Oxford County between city locations (for work or leisure)</td>
<td>Leaving home with 100% SOC, requiring a full charge period upon entry to highway location (DCFC required).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type A: Work Commuter (Principal Car)</th>
<th>Description</th>
<th>0.8%</th>
<th>1%</th>
<th>5%</th>
<th>10%</th>
<th>25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best Case Scenario: Assume Type A1 commuter travels less than 173 kilometers per day (to and from work and in-between stops, e.g., shopping, pick ups, etc.).</td>
<td>In this case, there is no need for L1 chargers in the County because there is enough charge to complete travel based on home charging.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid-Case Scenario: Assume Type A1 commuter travels more than 173 kilometers per day [which is unlikely] (to and from work and in-between stops, e.g., shopping, pick ups, etc.). Assumes no Level 2 charger at home. Bolt requires approx. 9.5 hours to charge fully via AC Level 2, depending on voltage and amperage, meaning a Bolt owner cannot fully charge up over an 8-hour work period, but could over a 12-hour work period. In this scenario, workplace charging allows a Bolt owner to use the workplace as a complement to home charging at AC Level 1, assuming 2-hour charging blocks with smart enabled chargers that penalize owners for overstaying their charge period, resulting in 6 charging episode periods in 12 hours. This assumes access to a charger for 2 hours, every second workday.</td>
<td>14</td>
<td>17</td>
<td>85</td>
<td>170</td>
<td>425</td>
<td></td>
</tr>
</tbody>
</table>
### Worst Case Scenario
Assume Type A1 commuter travels more than 173 kilometers per day (which is unlikely) (to and from work and in-between stops, e.g., shopping, pick ups, etc.). Assumes no Level 2 charger at home. Bolt requires approx. 9.5 hours to charge fully via AC Level 2, depending on voltage and amperage, meaning a Bolt owner cannot fully charge up over an 8-hour work period, but could over a 12-hour work period. In this scenario, workplace charging allows a Bolt owner to use the workplace as a replacement to home charging at AC Level 1 and/or AC Level 2. Assuming 9-hour charging blocks (does not require smart enabled charger), resulting in one charging episode in 12 hours. Assumes a full daily charging period (i.e. work period).

| Type A2: Out of town commute | Charging at home, leaving with 100% SOC, requires a full or significant charge at work, but it is outside of Oxford County. | In this case, there is no need for L2 chargers in the County because the commuter travels outside of the County. |
| Type A3: Out of town commuting into town | Charging at home, leaving with 100% SOC, requires substantial charge at work, and is located inside of Oxford County. | Assuming incoming commuter expends approx. 25% SOC upon arriving due to highway travel of up to 100 kilometers inbound, outbound and return to home, which exists within the Bolt range with no workplace top up charging required. |
| Type B: Family Commuter (Secondary Car) | Leaving home with 100% SOC. | In this case, there is no need for L2 chargers in the County because the high battery capacity and resulting range. |
| Type C: Tourist Commuter | **Best Case Scenario**: Leaving home with 100% SOC, requiring a top up charge upon entry to Oxford. Assume 4-hour charging blocks over 16 hours, equating to 4 charging episodes.  
**Worst Case Scenario**: Leaving home with 100% SOC, requiring a significant or full charging period upon entry to Oxford. Assume 8-hour charging blocks over 16 hours, equating to 2 charging episodes. |  
In this case, there is no need for L2 chargers in the County because the Bolt requires 9.5 hours to charge via AC Level 2, which is not applicable to a commuter who might spend a maximum of 30-45 minutes at a transit point on route. |
| Type D: Inter-city commuter transiting through Oxford County between city locations (for work or leisure) | Leaving home with 100% SOC, requiring a full charge period upon entry to highway location (DCFC required). |  
In this case, there is no need for L2 chargers in the County because the Bolt requires 9.5 hours to charge via AC Level 2, which is not applicable to a commuter who might spend a maximum of 30-45 minutes at a transit point on route. |
## EV Owners Charging Profile (Chevy Bolt)

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Base Minimum Number of Level 3 Required Chargers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A: Work Commuter (Principal Car)</td>
<td></td>
<td>0.8%</td>
</tr>
<tr>
<td>Type A1: In town commute</td>
<td>All Scenarios</td>
<td>Not required due to the high price of EVSE installation, and available time at work for Work Commuter to use L2 chargers.</td>
</tr>
<tr>
<td>Type A2: Out of town commute</td>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work, but is outside of Oxford County.</td>
<td>In this case, there is no need for L3 chargers in the County because the commuter travels outside of the County.</td>
</tr>
<tr>
<td>Type A3: Out of town commuting into town</td>
<td>Charging at home, leaving with 100% SOC, requires a full or significant charge at work. 6 charging episodes within 12 hours (i.e. working hours).</td>
<td>1</td>
</tr>
<tr>
<td>Type B: Family Commuter (Secondary Car)</td>
<td>Leaving home with 100% SOC.</td>
<td>In this case, there is no need for L3 chargers in the County because of the high battery capacity and resulting range.</td>
</tr>
<tr>
<td>Type C: Tourist Commuter</td>
<td>Leaving home with 100% SOC, requiring a full charging period upon entry to Oxford.</td>
<td>In this case, there is no need for L3 chargers in the County because L2 chargers would fulfill local needs.</td>
</tr>
<tr>
<td>Type D: Inter-city commuter transiting through Oxford County between city locations (for work or leisure)</td>
<td>Leaving home with 100% SOC, requiring a full charge period upon entry to highway location (DCFC required). 12 charging episodes within 24 hours.</td>
<td>47</td>
</tr>
</tbody>
</table>

### Summary

The results of CUTRIC’s predictive analysis indicates the number of required EVSEs are as follows (based on the current adoption rate, 0.8%):

- Level 1: 163
- Level 2: Min: 54 – Max: 163
- Level 3: Min: 12 – Max: 47

This aggregated estimation summarizes the results of Table 7 and Table 8 considering worst Case Scenario for all types of drivers.

Assuming an average price of $1000 CAD for Level 1, $2,500 CAD for Level 2, and $60,000 CAD for Level 3 chargers, Oxford County should invest minimum $ 1,018,000 CAD - excluding installation costs which depends on the selected location – to meet the needs of different types of EV drivers including work commuters (Type A), family commuters (Type B), tourist commuter (Type C), and inter-city commuters (Type D).
Section 3: GIS Mapping Methodology – Geographical Distribution
Drivers for EVSE Upgrades and Extended Installations

The EVSE station location methodology is separated into two processes reflecting the contrasting geographic factors that influence location of high-power (Level 1 and Level 2) and low power (Level 1) EVSE. Firstly, to ensure appropriate high-power charging accessibility across Oxford County, Voronoi polygons are used to visualise the quality of the existing high-power EVSE network in order to identify either existing EVSE upgrade candidate sites or new EVSE stations. New EVSE stations should be located to optimally densify the existing network in respect of access to amenities as well as major highways while equalising distance between adjacent chargers. This process is ideal for locating Level 2 and Level 3 chargers for Type B-D users. Locating Level 1 chargers for Type A users depends less on amenity access and more on proximity to place of work and this controls the second GIS process where clusters of places of work are identified throughout Oxford County and these clusters are used to locate those long residence time chargers.

Figure 1 demonstrates the current distribution of EVSEs in Oxford County. This EVSE distribution pattern is dominated by two clusters of EVSEs – the first in Woodstock with 6 stations and the second in Ingersoll with 8 stations, including one shared/home charger. A third loose clustering of stations exists in Tillsonburg with four stations, which includes one shared home charger made available by a private home owner for EV drivers.
Figure 1: Location of existing EVSEs with charging level.
Voronoi polygons (Appendix III) were used to define the catchment of particular stations. An EVSE ‘catchment’ is a polygon that includes all locations that are closest to that particular station. The Voronoi polygon is a standard geographic technique to optimally allocate resources and municipal assets with respect to proximity to the end-user which has been used successfully with other EVSE station siting studies (Song et al., 2015; Tang et al., 2013).

A useful corollary of Voronoi polygons is that any point on a line separating two polygons associated with two EVSEs is equidistant from the two EVSEs. Such locations are useful densifying a charging station network. New installations designed in this way will ensure that the high-powered EVSE network is adequately dispersed within populated areas and close to amenities. Clustering of high-power EVSE installations should be avoided because of anticipated extra traffic congestion but also negative effects of highly localised charging on the electric grid (Schmidt, 2017).

To quantify the charging capabilities associated with a particular station, CUTRIC formulated a “Charging Index” (CI), which is the sum of the number of chargers at a particular station weighted by the charging level. To calculate the CI, the charger weight is proportional to the charging voltage normalised by that of an L1 charger. Therefore, the Charging Index is $2*#L2+4*(#L3+#Tesla)$, where “$#L2$” means number of L2 chargers at that charging station. Note that the number of L1 chargers is not used because the Charging Index only quantifies high-powered charging.

A colour temperature scale symbolises CIs in Figure 2 with cool colours representing low values of CI scaling up to red representing high CI values. Uncoloured and dark blue polygons in Figure 2 therefore indicate gaps in EVSE coverage. In this report, CUTRIC has proposed addressing particular gaps in EVSE coverage along the 401 artery by upgrading the existing EVSE centred in those particular polygons.
Figure 2: Representation of existing EVSE spatial coverage. Locations falling inside dark blue polygons indicate that their nearest EVSE has currently very low quantities of high-power charging capability (one L2 charger). Uncoloured polygons indicated no high-powered charging facilities are present. Red area indicates that the nearest EVSE has very high charging ability (CI=40, indicating eight Tesla chargers, one L3 and two L2 chargers).
Along major transport arteries, including, Highway 401, and minor transport arteries, including Highway 19 between Ingersoll and Tillsonburg, there are seven low-CI (dark blue) and one uncoloured polygon associated with eight charging stations:

1. 807591 County Road 29 (Home/Shared Station) (One Level 2 charger);
2. Gord Anderson Automotive (One Level 2 charger);
3. Oxford County Admin Building (One Level 2 charger) (A);
4. ONRoute charger at Ingersoll Travel Plaza (Zero high-powered charging, One Level 1 charger) (B);
5. Comfort Inn at Ingersoll (One Level 2 charger) (C);
6. 5 Cedar St. (Home/Shared Station) (One Level 2 charger);
7. 204 Quarter Town Line, Tillsonburg (Home/Shared Station) (One Level 2 charger);
8. Georges Auto Repair, 10 Bridge St., Tillsonburg (One Level 2 charger) (D).

To provide adequate coverage for users of these transport arteries, all of these locations could be upgraded with installation of 54 Level 2 chargers. However, only locations 3, 4, 5, and 8 possess adequate amenities nearby; the remaining EVSEs will probably not benefit from upgrading since there are either inadequate amenities or they are within private dwellings. The four recommended upgrade sites, henceforth denoted by A, B, C, and D, are mapped in Figure 3.

Recommendations for new EVSE locations

Type B, C, and D EV Users

In addition to the latter recommendations for upgrading existing charging sites, CUTRIC recommends new locations for sites to host EVSEs to accommodate a potential increase in EV demand identified in an earlier section of the report.

These locations should be situated optimally with respect to existing charging sites in populated areas that lie along the Voronoi polygon boundaries, i.e., equidistant from the nearest two existing EVSEs, and also should be close to amenities. These locations are denoted by blue dots in Figure 3.

Locations 6, 7, and 9 in Figure 3 are municipal parking lots that have been proposed by municipal workers in their municipalities (Tavistock, Thamesford, and Tillsonburg) as being suitable for EVSE installation. Note that the latter location (Location 9) is located very close to the existing EVSE at George’s Auto Repair (Location D). In this case, either upgrading the existing EVSE or installing new EVSE will affect the same end-users. Similarly, Location 6 in Tavistock is already close to the existing EVSE at SE Mutual Insurance. Upgrading or new installation is also an option in Tavistock.

Four general areas have been proposed for new high-powered EVSE installation. Of these general areas, Drumbo is the highest priority since there is very low EV chargeability in this region through which Highway 401 passes. One option would be to upgrade the already very good EV charging service at Drumbo Truck stop where there are already two L2 and one L3 EVSEs.
Type A EV Users

Type A users have much longer residence times at the charging station because they may charge their vehicle while at work. Level 1 EVSE charging is sufficient for this type of EVSE installation and proximity to amenities is not a consideration for siting the charging installation. However, in terms of geography it is beneficial if the EVSE(s) are located within easy walking distance of more than one employer. CUTRIC’s review of studies to date demonstrates that...
easy proximity to place of work is a critical parameter in determining whether an EVSE will have impact. In this report, CUTRIC has chosen 150 metres as a reasonable estimate of whether an EVSE is considered proximal or not. Furthermore, it is assumed that publicly-, or municipally-, owned sites are preferred to sites that are privately owned in terms of ease of EVSE installation.

Figure 4 maps major private and government places of work in Oxford County that have very few, if any, amenities close-by and which are therefore not suited for Level 2 EVSE installation. Coloured circles denote clustering of places of work within a 150-metre radius. From this analysis, only one municipally owned location, Woodstock District Community Complex, serves more then two places of work and therefore seems suitable for installation of L1 chargers.

In addition to its own employees, L1 EVSE situated at Woodstock District Community Complex would also serve employees at nearby Fanshawe College and St. Mary’s Catholic School. St. Patrick’s Catholic Elementary School is also a ten-minute walk away.

Elsewhere in Woodstock, the region surrounding Woodstock Fire Station #1 is suitable for location L1 EVSE since there are many places of work clustered. However, there is probably insufficient parking at the fire station itself and safety would have to be considered with regard to ease of ingress and egress of emergency vehicles. Therefore, in this region installation of L1 EVSE would have to happen on private land.

Tillsonburg also exhibits good clustering of places of work illustrated by the yellow and red circles and hence potential for high impact of centralised L1 EVSE charging stations but there is apparently no municipally owned land on which to install L1 EVSE. New installation of L1 EVSE would have to be carried out in Tillsonburg on private lands. CUTRIC recommends concentrating in the yellow and red circles to ensure EVSE facilities are used.

Ingersoll has also good clustering of places of work and high impact potential of L1 EVSE installation but there is also no municipally owned land in this industrial area. However, station C, Ingersoll Comfort Inn, previously recommended for upgrading of its L2 capability is situated in close vicinity to places of work such as Glassford Chrysler, FreshAuto, Pow Engineering, J-Tech Design, Ingersoll Home Hardware, Hydra Dyne Tech, and Hammond Air Conditioning. CUTRIC therefore recommends L1 charging capability to be upgraded or installed at this vicinity to cater for local employees, and overnight Comfort Inn guests, in addition to upgrading L2 charging capability to cater for Type B, C, and D users of the nearby 401.

In summary, CUTRIC has identified that Level1 charging capability would have substantial impact on Woodstock District Community Complex and Ingersoll Comfort Inn. Issues concerning land ownership preclude EVSE installation at places of work in Tillsonburg, however, the maps could be used as a guide as where to install Level 1 chargers for maximum impact.
Figure 4: Oxford County Employers. Coloured circles denote how many employers within an easily-walkable 150 m radius. Siting an EV charger within areas that serve more than one employer is preferred. For reference, the EVSEs for Type B-D users from Figure 3 have been reproduced here.
Summary: Recommended Locations and Quantity of EVSEs

Based on the descriptive mappings provided above, along with the typologies provided in Section 2 of this Report, Table 9 below provides a list of recommended locations for EVSEs in which candidate locations to install new EVSEs are numbered, suggested locations to upgrade existing EVSEs are lettered, and suitable locations in general to densify the Oxford County EVSE network are labeled “G”.

The suggested number of required EVSEs identified in this table is based on the results of the predictive analysis considering only the current adoption rate of 0.8%. In other words, the number of Level 1 – Level 3 chargers required at each of these sites is based on an assessment of how many chargers are required to fully serve EV driver needs in and around Oxford today at current EV adoption rates. It is important to note that the existing number of chargers is deducted from the minimum number of required EVSEs to reach the final recommendation.

Table 9: Candidate (Numbered), Upgrade (Lettered) and General (“G”) Locations mapped in Figure 3

<table>
<thead>
<tr>
<th>#</th>
<th>Locality</th>
<th>Property Description</th>
<th>Ownership</th>
<th>Name</th>
<th>Parking spaces</th>
<th>Amenities</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ingersoll</td>
<td>Free-standing supermarket</td>
<td>Private</td>
<td>Tremblett's Grocers, 306 King St. W. Ingersoll</td>
<td>&gt;20</td>
<td>Large grocery store</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Ingersoll</td>
<td>Non-commercial sports complex</td>
<td>Private</td>
<td>Victoria Park/Cheese Museum, 290 Harris St, Ingersoll</td>
<td>&lt;20</td>
<td>Petrocanada gas station</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Norwich</td>
<td>Automotive fuel station with or without service facilities</td>
<td>Private</td>
<td>Restaurant, 593737 CR-59, Burgessville</td>
<td>&lt;20</td>
<td>One restaurant only</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Norwich</td>
<td>Service Ontario</td>
<td>Public</td>
<td>Service Ontario, 34B Main St W, Norwich</td>
<td>&gt;20</td>
<td>Many</td>
<td>-</td>
<td>2-10</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Springford</td>
<td>Free-standing supermarket</td>
<td>Private</td>
<td>Avondale Food Stores, 3 West Street N, Springford</td>
<td>&lt;20</td>
<td>Convenience Store only</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Tavistock</td>
<td>Municipal Parking</td>
<td>Public</td>
<td>18 Maria St, Tavistock</td>
<td>&lt;20</td>
<td>Canada Post, Pharmacy, Scotiabank</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>#</td>
<td>Locality</td>
<td>Property Description</td>
<td>Ownership</td>
<td>Name</td>
<td>Parking spaces</td>
<td>Amenities</td>
<td>L1</td>
<td>L2</td>
<td>L3</td>
</tr>
<tr>
<td>----</td>
<td>--------------</td>
<td>----------------------</td>
<td>-----------</td>
<td>-----------------------------</td>
<td>----------------</td>
<td>---------------------------------------------------------------------------</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>7</td>
<td>Thamesford</td>
<td>Municipal Parking</td>
<td>Public</td>
<td>112 Dundas St., Thamesford</td>
<td>24</td>
<td>RBC Royal Bank, Tim Horton's, R&amp;J Family Restaurant Bar &amp; Grill</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Thamesford</td>
<td>Public Library</td>
<td>Public</td>
<td>Thamesford Public Library</td>
<td>&gt;20</td>
<td>Many</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Tillsonburg</td>
<td>Municipal Parking 6A and 7A</td>
<td>Public</td>
<td>Intersection of Bridge St. and Lisgar St.</td>
<td>287 (6A) 243 (7A)</td>
<td>Shoppers Drugmart, Walmart</td>
<td>-</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>Woodstock</td>
<td>Neighbourhood Shopping Centre</td>
<td>Private</td>
<td>Sobey’s Plaza, 984 Devonshire Ave, Woodstock</td>
<td>&gt;20</td>
<td>Sobey's, Scotiabank, restaurants</td>
<td>-</td>
<td>2-10</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Woodstock</td>
<td>Restaurant - Fast-food, National chain</td>
<td>Private</td>
<td>Tim Horton’s, 566 Norwich Ave, Woodstock</td>
<td>&gt;20</td>
<td>Many Restaurants, Holiday Inn Express, Days Inn, Quality Hotel and Suites</td>
<td>≈40</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Woodstock</td>
<td>Automotive fuel station with or without service facilities</td>
<td>Private</td>
<td>Shell, 379 Norwich Ave, Woodstock</td>
<td>&gt;20</td>
<td>Cafe, many restaurants</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Woodstock</td>
<td>Hospital</td>
<td>Private</td>
<td>Woodstock General Hospital, 310 Juliana Dr, Woodstock</td>
<td>&gt;20</td>
<td>Hospital, Country Pride Truck Stop</td>
<td>-</td>
<td>2-10</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>Woodstock</td>
<td>Service Ontario</td>
<td>Public</td>
<td>Service Ontario, 925 Dundas St. Unit 5A, Woodstock</td>
<td>&gt;20</td>
<td>Many</td>
<td>-</td>
<td>2-10</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Woodstock</td>
<td>Woodstock District Community Complex</td>
<td>Public</td>
<td>Woodstock District Community Complex, 381 Finkle St., Woodstock</td>
<td>&gt;20</td>
<td>Few, only suitable for L1 at this site</td>
<td>≈40</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>#</td>
<td>Locality</td>
<td>Property Description</td>
<td>Ownership</td>
<td>Name</td>
<td>Parking spaces</td>
<td>Amenities</td>
<td>L1</td>
<td>L2</td>
<td>L3</td>
</tr>
<tr>
<td>----</td>
<td>----------</td>
<td>-----------------------------</td>
<td>-----------</td>
<td>-------------------------------------------</td>
<td>----------------</td>
<td>-----------------------------------------------------</td>
<td>----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>1 6</td>
<td>Woodstock</td>
<td>Neighbourhood Shopping Centre</td>
<td>Private</td>
<td>Woodstock Plaza, 645 Dundas St.</td>
<td>&gt;20</td>
<td>Goodlife Fitness, Foodland, many others</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>A</td>
<td>Woodstock</td>
<td>Municipal Building</td>
<td>Public</td>
<td>Oxford County Admin. Bldg., 21 Reeve St., Woodstock</td>
<td>&gt;20</td>
<td>Banks, Restaurants, Woodstock Museum</td>
<td>≈40</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>B</td>
<td>Foldens</td>
<td>Travel Plaza</td>
<td>Private</td>
<td>Woodstock Travel Plaza, 401223 Hwy 401 West, Ingersoll</td>
<td>&gt;20</td>
<td>Purpose-built travel plaza with Tim Hortons, Starbucks, restaurants, etc.</td>
<td>-</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>C</td>
<td>Ingersoll</td>
<td>Hotel</td>
<td>Private</td>
<td>Ingersoll Comfort Inn, 20 Samnah Crescent, Ingersoll</td>
<td>&gt;20</td>
<td>Hotel, Restaurants, CIBC, Tim Hortons</td>
<td>≈40</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>D</td>
<td>Tillsonburg</td>
<td>Auto Repair</td>
<td>Private</td>
<td>George's Auto Repair, 10 Bridge St.</td>
<td>&lt;20</td>
<td>Supermarket, Restaurants, Banks, Service Ontario</td>
<td>Either 9 or D. 9 is a better location.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Lakeside</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Embro</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Innerkip</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Drumbo</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Concluding Remarks

The electric car market has been growing exponentially in the past few years. But it is still a small percentage of the new car market in most places, typically representing less than 1% of new car sales. Currently, in Ontario the EV market share is 0.8 per cent (Canadian EV Sales, 2017).

The results of a series of EV surveys (which conducted with over 2,000 participants from the U.S., Canada, the U.K., and Australia) shows that one of the key benefits cited by EV owners was the convenience of home charging for their vehicle, and the avoidance of going to a gas station and having to refill their tank at those locations. However, EV drivers also indicated that having more abundant EV charging would be the number one way to promote EV adoption. Non-EV owners cited more abundant charging infrastructure as the second-best solution to increase EV adoption, behind better financial incentives (Shahan, 2015).

When potential EV owners were asked about factors that would increase their likelihood of purchasing an EV, 65 per cent stated that they would be significantly more attracted to a fully electric model if they had access to a fast-charging network of Level 3 charging stations (ibid.). However, it is important to note that the costs of Level 3 systems installations is around $50,000 USD, but with the inclusion of costs for project development, design, permitting, and electric system upgrades, the total costs for deployment could reach up to $300,000 USD each. The high costs limit the business argument for Level 3 or DCFC chargers, with the ability to afford such a charger being dependent upon rate design, ownership, and utilization rates. It may therefore be more beneficial for a jurisdiction to offer rebates on the installation of home or workplace Level 2 charging stations to best serve the charging patterns of EV owners (Fitzgerald & Nelder, 2017).

In addition, 26 per cent of EV owners frequently find that current charging infrastructure presents a limitation on where they may want to go with their EV, while another 29 per cent state that it is sometimes a limitation. A total of 36 per cent of EV owners indicate that charging infrastructure only becomes an issue on long trips, while only 9 per cent of EV owners indicate that EV charging infrastructure availability is never a problem or limitation on travel. It is important to note that of all respondents, approximately 30 per cent owned a Plug-In Hybrid Electric Vehicle (PHEV) or Extended Range Electric Vehicle (EREV) and 28 per cent owned a Tesla; therefore, even owners of high-capacity long-range electric vehicle models experience some limitations in available charging infrastructure (Shahan, 2015). The availability of EVSEs and improvements to current charging infrastructure constitute an important solution in addressing consumer limitations regarding EV adoption and in supporting demand growth within the EV market.

The final section of this report provides several normative recommendations that may help the County optimally locate and deploy EVSEs based on the guiding principle that increasing EV ownership and best supporting current EV owners in the community today will help to achieve Oxford’s long-term sustainability plans.
General recommendations

Charging Systems dedicated to condominium and high-rise buildings

Over 90 per cent of EV charging occurs at home for EV owners with home garages. For owners living in dwellings with parking garages or on-street parking, where the installation of a charging station is out of their control, EV adoption may be less likely without an expanded public charging network. The good news for these individuals is that the EV charging station market is growing exponentially, with carmakers, governments and commercial charging firms all investing in the installation of new EVSEs. Tesla is planning to expand its global network of 145 kW “supercharger” stations to 10,000. Nissan now has a global network of 4,000 fast chargers. In 2016, Daimler, BMW, Volkswagen and Ford also stated their intention of collectively installing 400 public charging-point in Europe delivering 350 kW (The Economist, 2017).

Therefore, for further EVSE expansion, it might be better to focus any data collection, targeted at accommodating personal vehicle use for Oxford County residents, on densely populated urban areas with condominiums and apartments. Residents within these buildings looking to purchase a personal EV are often dependent on the landlord to install EV chargers in the underground parking lot. If insufficient condominium or apartment building charging is available, then providing charging stations at workplaces could help building residents receive adequate access to charging infrastructures. The data collection may include gathering information about the location of high-rise condominiums, and whether there are any EV owners living in those buildings.

Workplace charging systems

Another opportunity to encourage EV adoption is the workplace charging stations. The U.S. Department of Energy PEV studies found that around 30 per cent of drivers almost exclusively charged up at work, showing that workplace charging availability could make EVs viable for people without access to home charging stations (Francfor et al., 2015). Chargepoint - a California-based company that runs many charging stations worldwide - encourages businesses to offer employees free [or discount rate] charging in the office car lot (ibid.).

Innovative solutions

Innovative business models and technology should also increase the availability of charging options for EV owners. For example, an app called Chargie (similar to PlugShare in Canada and U.S.) was recently launched in Britain that allows owners of home chargers to rent them to the public, similar to an Airbnb rental. Technological innovations such as wireless inductive charging from road to car is already a technically feasible, albeit expensive, but boasts strong merit for vehicles that sit idle such as taxis (ibid.).

Ownership models

There is no set EVSE ownership or billing structure as of yet, and EV owners have complained about crossing over from one network to another and needing to carry a variety of cards or accounts to charge their vehicles in different jurisdictions. When determining EVSE ownership roles, it is beneficial to assess EVSE ownerships in nearby areas or along highway routes to determine what would be most convenient for EV owners and encourage the highest usage (Fitzgerald & Nelder, 2017).

According to a report published by the Rocky Mountain Institute (RMI), there is no ideal ownership model for EVSE and jurisdictions should test various models through pilot projects to determine what works best in a given region (ibid.). Examples of different ownership models
include ownership by the state authority as a form of public utility, municipalities, charging network operators and businesses.

Most legislative and regulatory bodies are in agreement that utilities should be permitted to build and own make-ready locations (i.e., power supplied to the point where a charging station might be installed), and to recover the investments through the rate base as a general social good. Allowing utilities to create make-ready locations would align with the long-established principle of line extension, where all customers pay for extending the distribution grid, including new service for rural customers where the cost of providing that service is far greater than that for customers living in densely populated urban environments (ibid.).

Following this reasoning, the extension of the grid to support EVSEs is not justified through a cost-benefit analysis when burdened only by a specific group of customers. The value of the entire network is considered to be shared by all customers and the environmental benefits of EV will reach all customers. This reasoning allowed telephone companies to build out the pay phone network; each new phone wasn’t necessarily expected to make a profit, but installation was considered necessary to create a functional and accessible network (ibid.).

Utilities owning and installing charging stations could be the fastest way to deploy EVSEs since utilities have access to large amounts of low-cost capital and an ability to recover investments over decades. Utility ownership may also serve to regulate electricity markets and avoid overpricing by private sector companies (ibid.).

However, regulators should also be cautioned against creating a situation where a utility could leverage its low internal cost of power generation and delivery to undercut private sector competitors on retail charging prices. Full utility ownership could prevent a competitive private sector market in charging stations, and utilities may not be as innovative in terms of technology or business model design as the private sector would likely be. If regulators choose utility ownership as the primary model, they should ascertain some opportunity for private sector companies or ensure that once the EVSE market matures in an area, it is possible for private companies to re-enter the market (ibid.).

EVSEs ownership models exclusively for private sector companies would likely yield the installation of chargers since private businesses are less likely to have large amounts of patient capital and may wait for guaranteed demand of charging station and market maturation prior to installation. The California Public Utilities Commission (CPUC) exemplified this pattern. The CPUC initially thought that competitive benefits from a private market would outweigh the benefits of utility ownership and therefore deployed an exclusive private market model. However, the rate of EVSE installation was found to be too slow to meet the state’s objectives, and an alternative model with mixed utility ownership is now being tried (ibid.).

**Tariff models**

It is important for utilities to offer appropriate tariffs for EV charging early on before EV penetration is large. Once EV drivers acquire their charging habits it can be hard to break them. It is important that the tariffs are developed appropriately to guide charging towards the valley of system load profiles and away from the peaks. Field experiences studied indicate that optimal tariffs for EV charging use a time-of-use (TOU) design. Tariffs should also be lower for Level 1 and Level 2 charging than for Level 3 systems, because the cost of providing service to Level 1 and 2 chargers is lower and they are easier to manage and deliver grid services (Fitzgerald & Nelder, 2017).

To encourage off-peak charging, a business may find that a commercial tariff with a flat rate for electricity is best for its general, nondiscretionary loads, but that Level 2 charging stations installed for customers and employees should have a TOU tariff that features a large differential
between on- and off-peak rates. For this to occur, many utilities require that a charging station be connected through a dedicated meter, separated from other loads at the site, although this does incur an additional cost to the business (ibid.).
Works Cited


Appendix I: Techno-Economic Modeling of an Electric Bus Demonstration Project in Woodstock (Route #3 & #5)

This section summarizes the techno-economic modeling of the transit system in Woodstock, Ontario, which aims to emphasize the benefits of operational transit electrification. The scope of the project is as follows:

- Obtain the route topology and length
- Develop the operational duty cycles
- Model the electric bus (Ebus) energy consumption, power train and charging efficiencies
- Investigate the effect of regenerative braking on the battery state of charge (SOC)
- Perform techno-economic analysis according to jurisdictional electricity rates in Woodstock region
- Estimate the fuel consumption of a comparable diesel bus
- Calculate the annual carbon-dioxide emission and fuel cost for an Ebus and a diesel bus
- Obtain the net economic advantage of electrification of a transit system

Three different buses are chosen for this study to model an interlined route 3/route 5:

- Nova Bus (76 kWh) with a 450 kW charger
- New Flyer Bus (200 kWh) with a 450 kW charger
- Typical diesel bus

To simulate the edge cases of cost calculations and emissions three different duty cycles are defined by CUTRIC:

- **Light-duty cycle**: Assumes unloaded bus completing the route with accurate topography, however no stopping during the route or auxiliary systems are enabled.
- **Medium-duty cycle**: Assumes a half-loaded bus completing the route with accurate topography and stops at all scheduled stops. In addition, the bus stops at half of the traffic lights, stop signs and passenger cross-walks with partial auxiliary system operation.
- **Heavy-duty cycle**: Assumes a fully-loaded bus completing the route with accurate topography, stops at all scheduled stops, traffic lights, stop signs and passenger cross-walks with full-capacity operation of the auxiliary system.

**Duty cycle generation**

Firstly, a typical duty cycle for a Woodstock transit bus route was developed, which captures the changes in elevation and the exact locations of various stops associated with the bi-directional route. Using Google maps and Google Earth tools for route development, total distance of route, duration of service and number of bus stops were determined. To resolve the elevation profiles a Digital Elevation Model (DEM) database was used in combination with a Savittzky-Golay filter to smooth out the anomalies associated with the data. Figure I outlines route 3 in yellow and Figure II outlines route 5 in blue. The summary of distance and approximate time to complete each route is shown in Table I. From the bus schedules operating in Woodstock, frequency of runs was deduced for weekdays and weekends. The bus is assumed to commence the interlined route every 30 minutes and the break between route 3 and route 5 is assumed to be 30 minutes.
Figure I: Woodstock Transit Route 3

Figure II: Woodstock Transit Route 5
Table I: Estimated Length and Time of Route 3 and Route 5.

<table>
<thead>
<tr>
<th>Name of route</th>
<th>Length of the route (km)</th>
<th>Average commute time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodstock Route #3</td>
<td>10.9</td>
<td>25.5</td>
</tr>
<tr>
<td>Woodstock Route #5</td>
<td>11.4</td>
<td>25.5</td>
</tr>
</tbody>
</table>

As previously mentioned, three types of duty cycles were modeled in this work: light, medium and heavy. The light and heavy-duty cycles capture conceptual operation conditions, which are unlikely to transpire, however they define the limitations of bus operation. The medium-duty cycle represents realistic operation conditions likely to be encountered in the application. For each profile the distance traveled by the bus and duration of route were kept constant and the speed at which the bus travels was varied accordingly. Light-duty cycle addresses the driving scenario in which the bus completes the route at constant speed and without stopping as seen in Figure III.

![Figure III: Light-Duty Cycle Speed Versus Time Profile](image)

The medium-duty cycle forces the bus to operate under half-load conditions, stops at every major bus stop and half of the additional unscheduled stops, which can include traffic lights, stop signs and pedestrian cross walks. Figure IV shows a typical speed profile for a medium-duty cycle.
Figure IV: Medium-Duty Cycle Speed Versus Time Profile

During a heavy-duty cycle, the bus is fully loaded, stops at every scheduled and unscheduled stop. Typically, consecutive stops are in close range as a bus stop at a scheduled stop which is then followed up by an unscheduled stop such as a traffic light or a pedestrian crosswalk. Figure V shows a typical heavy-duty cycle speed profile. Note, the time of the route is delayed, abiding by maximum acceleration and deceleration limits of the bus.

Figure V: Heavy-Duty Cycle Speed Versus Time Profile
Fuel consumption simulation and cost analysis for a typical transit diesel bus

To contrast the benefits of electrification of route 3/route 5 in Woodstock, a typical diesel bus model was developed to examine the fuel consumption and carbon dioxide emissions of the current diesel fleet. The core of the model is based on road load calculation, which is the result of vehicle interaction with the surrounding environment as shown in Figure VI. In addition, a parametric model of engine efficiency was used to compute the fuel consumption under various operation conditions.

![Figure VI: Schematic Diagram of Physical Forces Over a Transit Bus](image)

The diesel bus model was developed in Advanced Vehicle Simulator (ADVISOR) 2002, which is a software developed by National Renewable Energy Laboratory (NREL), in conjunction with MATLAB to estimate the fuel consumption under various driving cycle conditions. The general bus model provided by ADVISOR was modified for this study. Table II shows the diesel vehicle parameters that were assumed. A total of 187 runs per week were supposed for the purposes of comparison to the electrical alternatives, which are constrained by charging time.

### Table II: Summary of Key Input Parameters for a Typical Diesel Bus

<table>
<thead>
<tr>
<th>Vehicle parameters</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vehicle curb weight</td>
<td>13,679</td>
<td>kg</td>
</tr>
<tr>
<td>Mean passenger weight</td>
<td>75</td>
<td>kg</td>
</tr>
<tr>
<td>Maximum passengers</td>
<td>66</td>
<td>-</td>
</tr>
<tr>
<td>Engine maximum power</td>
<td>205</td>
<td>kW</td>
</tr>
<tr>
<td>Engine thermal efficiency</td>
<td>47</td>
<td>%</td>
</tr>
<tr>
<td>Transmission efficiency</td>
<td>85</td>
<td>%</td>
</tr>
</tbody>
</table>
The fuel parameters assumed are listed in Table III. The emissions factors for mobile fuel combustion of diesel in heavy-duty vehicles are obtained from 2016/17 B.C. Best Practices Methodology for Qualifying Greenhouse Gas Emissions\(^1\).

**Table III: Summary of Fuel Characteristic Parameters**

<table>
<thead>
<tr>
<th>Fuel parameters</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>LHV of low sulfur diesel</td>
<td>42.6</td>
<td>MJ/kg</td>
</tr>
<tr>
<td>Diesel density</td>
<td>850</td>
<td>kg/m(^3)</td>
</tr>
<tr>
<td>CO(_2) content of fuel</td>
<td>2.630</td>
<td>kg CO(_2)e/L fuel</td>
</tr>
</tbody>
</table>

Based on the assumptions mentioned above, the fuel consumption for a typical diesel bus completing an interlined 22.3 km route 3/route 5 is listed in Table IV.

**Table IV: Fuel Consumption for a Typical Diesel Bus**

<table>
<thead>
<tr>
<th>Route 3 / Route 5</th>
<th>Light-Duty</th>
<th>Medium-Duty</th>
<th>Heavy-Duty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel used per run (round trip) per bus (L)</td>
<td>7.65</td>
<td>10.54</td>
<td>15.28</td>
</tr>
<tr>
<td>Fuel efficiency of diesel equivalent (L/100km)</td>
<td>34.30</td>
<td>47.25</td>
<td>68.45</td>
</tr>
<tr>
<td>Emitted CO(_2)e per year (Tonne)</td>
<td>196.44</td>
<td>270.61</td>
<td>392.25</td>
</tr>
<tr>
<td>Cost of diesel per year @$1/L ($)</td>
<td>$72,696</td>
<td>$100,144</td>
<td>$145,158</td>
</tr>
</tbody>
</table>

To complete a Woodstock interlined route 3/route 5 using a diesel bus, up to 392.25 tCO\(_2\)e\(eq\) is emitted and the cost of operation, based on $1/L cost of diesel, is between $72,696 and $145,158 per year.

**Electric bus energy consumption and charging power calculation**

The electric bus models were developed in MATLAB and Python for a 12 m New Flyer XE40 and 12 m Nova Bus LFSE, that account for the topography of the routes. The regenerative power split is 35% and constant accessory draw is 0 W for light-duty cycle, 5 kW for medium-duty cycle and 10 kW for heavy-duty cycle. The vehicle parameters for the two buses are listed in Table V. The main components of energy consumption in the model are identified to be due to:

- Weight of the vehicle
- Auxiliary load

- Tire rolling coefficient
- Regenerative braking
- Gear ratio

Notably, the ideal battery state of charge (SOC) is 100%, however to ensure longevity of the battery, through avoidance of premature battery degradation, a buffer is added to prevent the battery from over-depletion or over-charging which as seen in Table VI and Table VII that summarize the energy consumed by a Nova bus and a New Flyer bus for different SOCs, respectively.

**Table V: Electric Buses Parameters for the Simulation of Route 3/Route 5**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>NB LFSE</th>
<th>NFXE40</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery Capacity</td>
<td>76</td>
<td>200</td>
<td>kWh</td>
</tr>
<tr>
<td>Weight</td>
<td>13,782</td>
<td>14,864</td>
<td>kg</td>
</tr>
<tr>
<td>Frontal area</td>
<td>7.67</td>
<td>8.48 (assumed)</td>
<td>m²</td>
</tr>
<tr>
<td>Drag coefficient (assumed)</td>
<td>0.65</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Rolling coefficients</td>
<td>R0 = 0.006</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Gear Ratio</td>
<td>7.38</td>
<td>5.67</td>
<td>-</td>
</tr>
<tr>
<td>Tire radius</td>
<td>0.485</td>
<td></td>
<td>m</td>
</tr>
<tr>
<td>Transmission efficiency (assumed)</td>
<td>95</td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Converter efficiency (assumed)</td>
<td>97</td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Maximum motor torque</td>
<td>2700</td>
<td>2500</td>
<td>Nm</td>
</tr>
<tr>
<td>Charger efficiency</td>
<td>91</td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Efficiency map</td>
<td>Provided</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Maximum passengers</td>
<td>71</td>
<td>76</td>
<td>-</td>
</tr>
</tbody>
</table>
### Table VI: Energy Consumption and Final SOC for a Nova Bus After Completion of Route 3 & Route 5

<table>
<thead>
<tr>
<th>Route</th>
<th>Light-duty cycle</th>
<th>Medium-duty cycle</th>
<th>Heavy-duty cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy consumption per distance travelled (kWh/km)</td>
<td>0.38</td>
<td>1.01</td>
<td>1.8</td>
</tr>
<tr>
<td>Total energy consumed per trip (kWh)</td>
<td>4.15</td>
<td>11.1</td>
<td>19.6</td>
</tr>
<tr>
<td>SOC at completion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideal</td>
<td>94.2%</td>
<td>89.2%</td>
<td>84.2%</td>
</tr>
<tr>
<td>5% buffer</td>
<td>84.7%</td>
<td>79.7%</td>
<td>74.7%</td>
</tr>
<tr>
<td>10% buffer</td>
<td>72.8%</td>
<td>67.8%</td>
<td>62.8%</td>
</tr>
</tbody>
</table>

### Table VII: Energy Consumption and Final SOC for a New Flyer Bus after Completion of Route 3 & Route 5

<table>
<thead>
<tr>
<th>Route</th>
<th>Light-duty cycle</th>
<th>Medium-duty cycle</th>
<th>Heavy-duty cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy consumption per distance travelled (kWh/km)</td>
<td>0.53</td>
<td>1.09</td>
<td>1.81</td>
</tr>
<tr>
<td>Total energy consumed per trip (kWh)</td>
<td>6.09</td>
<td>12.48</td>
<td>20.59</td>
</tr>
<tr>
<td>SOC at completion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ideal</td>
<td>91.6%</td>
<td>82.7%</td>
<td>71.4%</td>
</tr>
<tr>
<td>5% buffer</td>
<td>86.6%</td>
<td>77.7%</td>
<td>72.7%</td>
</tr>
<tr>
<td>10% buffer</td>
<td>81.6%</td>
<td>72.7%</td>
<td>61.4%</td>
</tr>
</tbody>
</table>
The charging infrastructure implements fast chargers capable of 450 kW nominal power. However, the amount of power delivered to the battery depends on the losses incurred during power transfer from grid to battery. In this study three different grid-to-battery efficiencies are considered: ideal efficiency of 100% assumes no losses, typical efficiency of 86% assumes 91% charger efficiency and 95% battery management system efficiency, and an efficiency of 71% is considered as a worst-case scenario.

As previously mentioned, the bus remains in the depot for 30 minutes between each route and charging time does not exceed 4 minutes regardless of the scenario as summarized in Table VIII and Table IX, therefore it is worth noting that the electric buses were not constrained by charging time for this study.

**Table VIII: Charging Characteristics of a Nova Bus for Various Types of Duty Cycles**

<table>
<thead>
<tr>
<th>Route 3</th>
<th>Light-duty cycle</th>
<th>Medium-duty cycle</th>
<th>Heavy-duty cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ideal</td>
<td>Charging time (min)</td>
<td>0.55</td>
<td>1.47</td>
</tr>
<tr>
<td>efficiency</td>
<td>Energy from the grid (kWh)</td>
<td>4.16</td>
<td>11.05</td>
</tr>
<tr>
<td>(100%)</td>
<td>Typical efficiency (86%)</td>
<td>Charging time (min)</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td>Energy from the grid (kWh)</td>
<td>4.81</td>
<td>12.79</td>
</tr>
<tr>
<td></td>
<td>Worst case efficiency (71%)</td>
<td>Charging time (min)</td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>Energy from the grid (kWh)</td>
<td>5.86</td>
<td>15.57</td>
</tr>
</tbody>
</table>
### Route 5

<table>
<thead>
<tr>
<th>Ideal efficiency (100%)</th>
<th>Charging time (min)</th>
<th>Energy from the grid (kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.81</td>
<td>6.09</td>
</tr>
<tr>
<td></td>
<td>1.67</td>
<td>12.49</td>
</tr>
<tr>
<td></td>
<td>2.75</td>
<td>20.63</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Typical efficiency (86%)</th>
<th>Charging time (min)</th>
<th>Energy from the grid (kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.94</td>
<td>7.05</td>
</tr>
<tr>
<td></td>
<td>1.93</td>
<td>14.45</td>
</tr>
<tr>
<td></td>
<td>3.18</td>
<td>23.86</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Worst case efficiency (71%)</th>
<th>Charging time (min)</th>
<th>Energy from the grid (kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.14</td>
<td>8.58</td>
</tr>
<tr>
<td></td>
<td>2.35</td>
<td>17.59</td>
</tr>
<tr>
<td></td>
<td>3.87</td>
<td>29.06</td>
</tr>
</tbody>
</table>

### Route 3

<table>
<thead>
<tr>
<th>Ideal efficiency (100%)</th>
<th>Charging time (min)</th>
<th>Energy from the grid (kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.58</td>
<td>4.39</td>
</tr>
<tr>
<td></td>
<td>1.53</td>
<td>11.45</td>
</tr>
<tr>
<td></td>
<td>2.67</td>
<td>20.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Typical efficiency (86%)</th>
<th>Charging time (min)</th>
<th>Energy from the grid (kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.68</td>
<td>5.07</td>
</tr>
<tr>
<td></td>
<td>1.77</td>
<td>13.25</td>
</tr>
<tr>
<td></td>
<td>3.08</td>
<td>23.13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Worst case efficiency (71%)</th>
<th>Charging time (min)</th>
<th>Energy from the grid (kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.82</td>
<td>6.18</td>
</tr>
<tr>
<td></td>
<td>2.15</td>
<td>16.13</td>
</tr>
<tr>
<td></td>
<td>3.76</td>
<td>28.17</td>
</tr>
</tbody>
</table>

Table IX: Charging Characteristics for New Flyer Bus for Various Types of Duty Cycles
The main electricity provider for Woodstock is Hydro One, which charges General Service Demand tariff. This rate is based on a two-tier tariff system that assumes 7.7 cents/kWh for the first 750 kWh and 9.0 cents/kWh for the additional demand. Additional charges are summarized in Table X.

**Table X: Hydro One Charges for the Electricity Grid Use in Woodstock.**

<table>
<thead>
<tr>
<th>Type of Charge</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electricity rate</strong></td>
<td>7.7 cents/kWh (up to 750 kWh)</td>
</tr>
<tr>
<td></td>
<td>9.0 cents/kWh (upwards of 750 kWh)</td>
</tr>
<tr>
<td><strong>Monthly service charge</strong></td>
<td>138.56 $/month</td>
</tr>
<tr>
<td><strong>Distribution volumetric rate</strong></td>
<td>2.877 $/kW</td>
</tr>
<tr>
<td><strong>Transmission network charge</strong></td>
<td>2.7931 $/kW</td>
</tr>
<tr>
<td><strong>Transmission connection charge</strong></td>
<td>2.2465 $/kW</td>
</tr>
<tr>
<td><strong>Standard supply service administration charge</strong></td>
<td>0.25 $/month</td>
</tr>
<tr>
<td><strong>Rural rate protection charge + wholesale market service rate + CBR</strong></td>
<td>0.0039 $/kWh</td>
</tr>
<tr>
<td><strong>Debt retirement charge</strong></td>
<td>0.007 $/kWh</td>
</tr>
<tr>
<td><strong>HST</strong></td>
<td>13%</td>
</tr>
</tbody>
</table>
For this work, 2016 Hourly Ontario Energy Price (HOEP) tariff was used in conjunction with global adjustment rate \( (GA) \) that varies monthly. Cost of electricity at hour, \( h \), was calculated according to the following equation:

\[
C_{elec}(h) = (HOEP(h) + GA) \times E(h) \times (1+HST)
\]

where \( E(h) \) is the energy required to charge the bus in kWh. The regulatory cost was calculated according to the following equation:

\[
C_{reg} = E_{total} \times (r + r_d + r_1) + 12 \times r_2
\]

where \( E_{total} \) is the total energy consumption per week, \( r \) is the regulatory charges, \( r_d \) is the debt retirement charge, \( r_1 \) is the support program charge and \( r_2 \) is the administration charge. The monthly service charge (MSC) is different for each jurisdiction and was calculated as follows:

\[
C_{deliv} = 12 \times \left( MSC + 450kW \times r_d \times \frac{t_{charge}}{15min} \right)
\]

where \( r_d \) is the monthly demand charge.

The electrical generation in Ontario in 2015 is shown in Table XI. Total electricity production was 159.7 TWh, total emission was 7.1 MT \( CO_2 \) eq. Therefore, the emission factor is calculated to be 0.044 MT \( CO_2 \) eq/MWh. Table XII and Table XIII summarizes the benefits of electrifying route 3/route 5 using Nova Bus and New Flyer Ebuses, respectively. Additionally, Table XIV and Table XV quantify the emissions reduction associated with electrifying route 3/route 5 compared to a typical diesel bus, respectively.

### Table XI: Ontario Electrical Generation Composition in 2015

<table>
<thead>
<tr>
<th>Type of generation</th>
<th>Solar / Wind / Bioenergy</th>
<th>Natural Gas</th>
<th>Nuclear</th>
<th>Coal</th>
<th>Waterpower</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity production (TWh)</td>
<td>14.2</td>
<td>15.9</td>
<td>92.3</td>
<td>0</td>
<td>37.3</td>
</tr>
<tr>
<td>Percentage of the grid use (%)</td>
<td>8.89</td>
<td>9.96</td>
<td>57.80</td>
<td>0.00</td>
<td>23.36</td>
</tr>
</tbody>
</table>

---

### Table XII: Charging Costs for Nova Bus Simulated for an Interlined Route 3/Route 5

<table>
<thead>
<tr>
<th>Duty cycle type:</th>
<th>Light-duty cycle</th>
<th>Medium-duty cycle</th>
<th>Heavy-duty cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual energy consumption (MWh)</td>
<td>116</td>
<td>266</td>
<td>454</td>
</tr>
<tr>
<td>Electricity cost (CAD $)</td>
<td>$10,396</td>
<td>$23,912</td>
<td>$40,832</td>
</tr>
<tr>
<td>Regulatory cost (CAD $)</td>
<td>$1,263</td>
<td>$2,900</td>
<td>$4,949</td>
</tr>
<tr>
<td>Delivery cost (CAD $)</td>
<td>$4,339</td>
<td>$7,148</td>
<td>$10,712</td>
</tr>
<tr>
<td>Total charging cost for a year (CAD $)</td>
<td>$17,919</td>
<td>$38,035</td>
<td>$63,273</td>
</tr>
<tr>
<td>Diesel cost per year (CAD $)</td>
<td>$72,696</td>
<td>$100,144</td>
<td>$145,158</td>
</tr>
<tr>
<td>CO₂ cost per year (CAD $)</td>
<td>$3,536</td>
<td>$4,871</td>
<td>$7,061</td>
</tr>
<tr>
<td>Benefits (CAD $)</td>
<td>$54,777</td>
<td>$62,109</td>
<td>$81,885</td>
</tr>
<tr>
<td>Benefits if CO₂ cost included (CAD$)</td>
<td>$58,313</td>
<td>$66,980</td>
<td>$88,945</td>
</tr>
</tbody>
</table>

### Table XIII: Charging Costs for New Flyer Bus Simulated for an Interlined Route 3/Route 5

<table>
<thead>
<tr>
<th>Duty cycle type:</th>
<th>Light-duty cycle</th>
<th>Medium-duty cycle</th>
<th>Heavy-duty cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual energy consumption (MWh)</td>
<td>121</td>
<td>275</td>
<td>462</td>
</tr>
<tr>
<td>Electricity cost (CAD $)</td>
<td>$10,864</td>
<td>$24,705</td>
<td>$41,584</td>
</tr>
<tr>
<td>Regulatory cost (CAD $)</td>
<td>$1,320</td>
<td>$2,996</td>
<td>$5,041</td>
</tr>
<tr>
<td>Delivery cost (CAD $)</td>
<td>$4,440</td>
<td>$7,315</td>
<td>$10,888</td>
</tr>
<tr>
<td>Total charging cost per year (CAD $)</td>
<td>$18,619</td>
<td>$39,218</td>
<td>$64,414</td>
</tr>
<tr>
<td>Diesel cost per year (CAD $)</td>
<td>$72,696</td>
<td>$100,144</td>
<td>$145,158</td>
</tr>
<tr>
<td>CO₂ cost per year (CAD $)</td>
<td>$3,536</td>
<td>$4,871</td>
<td>$7,061</td>
</tr>
<tr>
<td>Benefits (CAD $)</td>
<td>$54,077</td>
<td>$60,926</td>
<td>$80,744</td>
</tr>
<tr>
<td>Benefits if CO₂ cost included (CAD$)</td>
<td>$57,613</td>
<td>$65,797</td>
<td>$87,804</td>
</tr>
</tbody>
</table>
Conclusion

In conclusion, electrifying Woodstock public transit interlined route 3/route 5 has economic and environmental benefits. The routes were modeled, and a comparison was made for the three types of buses: Nova bus with 76 kWh capacity, New Flyer bus with 200 kWh and a typical diesel bus. By implementing a fleet of Nova buses the cost savings range from $58,313 to $88,945 per year, where by electrifying the fleet with New Flyer buses the cost savings range from $57,613 to $87,804 per year. The emission reductions are 191.34 $tCO_2eq$ to 372.28 $tCO_2eq$ per year when using a Nova bus and 191.12 $tCO_2eq$ to 371.92 $tCO_2eq$ per year for New Flyer bus compared a typical diesel bus. Therefore, it is recommended for Woodstock transit to consider the electrification of their transit fleet due the impactful cost savings and environmental benefits.
Appendix II: A Literature Review of Factors Determining Siting of Hydrogen Fueling Stations

The absence of Hydrogen infrastructure in terms of Hydrogen storage, distribution and refueling capacities had been a significant barrier to the large-scale entry of hydrogen fuel cell vehicles (HFCVs) in the market and their on-road deployment. Some countries, including the U.S., U.K., Germany, Norway and Canada, have launched initiatives to develop hydrogen refueling facilities on expressways (He et al., 2017). The demonstration projects were unable to increase the rate of hydrogen vehicle adoption because the high rates of hydrogen production and resultant high cost of HFCVs remained economically unfeasible for most parties. Site selection and design of hydrogen refueling plants could reduce hydrogen delivery costs per HFCV, therefore being an important criterion for selection. Future initiatives need to focus attention on deriving maximum value from investments made to meet the capital and operation costs for refueling stations (He et al., 2017).

The California Hydrogen Highway Project was a government-sponsored project dedicated to the development of Hydrogen infrastructure to support the on-road deployment of HFCVs (California Energy Commission, 2010). Locations for refueling stations was an important component of the project to ensure that HFCV deployment could occur over an extended range. The refueling stations were initially clustered around the deployment zone (California Air Resources Board, 2008).

The station capacity, which was governed by daily fuel dispensation rate (kg/day), remains a critical characterization parameter for refueling stations. In order to account for the heightened traffic during daylight hours, which lead to underutilization and longer wait times, SAE came up with a modified dispensation rate in terms of peak kg/hour to characterize the refueling stations (Society of Automotive Engineers, 2009).

Brown et al. (2012) analyzed the operational parameters of a hydrogen refueling station, established as part of the California Hydrogen Initiative. This station had dual dispensing pressures (35 and 70 MPa) and an extended storage capacity. Due to an increased demand for refueling, this station had operated significantly above its design capacity with a long wait time. Despite the station remaining open for 24 hours, the refueling was concentrated during waking hours. The hydrogen, delivered in a liquid state, was stored in three storage tubes capable of storing a total of 52 kg hydrogen at 54 MPa by means of a compressor. For refueling 35 MPa vehicles, hydrogen was first dispensed from the lowest pressure storage tubes while the higher-pressure tubes came into operation once the pressure in the vehicle tank equalizes the pressure in the low-pressure storage tube. The refuelling of higher capacity vehicles having 70 MPa capacity required the existing low-pressure storage tube at 54 MPa to be further pressurized to 80 MPa by means of a reciprocating pump (Brown et al., 2012). The high-pressure compression requires that additional heat dissipation equipment be encompassed in the infrastructural needs.

Enhanced operation of the hydrogen refueling station during certain hours of the 24-hour operation causes the consumption rate to be higher than the average (2 kg/hr), resulting in a shortage of hydrogen. The main constraints to increasing the hydrogen dispensation included the type, rate and scheduling of filling events. Long waiting times and inadequate filling due to low pressure were key issues faced by both the 35 MPa and 70 MPa capacity vehicles. There was an additional requirement of pre-cooling for the 70 MPa capacity vehicle. Higher
temperatures from the combination of ambient and high-pressure dispensing resulted in an automatic cut-off of dispensing until the temperature cooled down (Brown et al., 2012).

A behavioural trend was observed, whereby 70 MPa capacity vehicle owners opted for lower range 35 MPa to avoid longer waiting times. From 2007-2011, there was an increase in the total hydrogen dispersed per year, average hydrogen dispersed per day, average hydrogen per fill and maximum hydrogen dispensed in one day. It was also observed that the nominal design dispensing capacity of 25 kg/day (based on compressor capacity of 2 kg/hour with 50% duty cycle) was exceeded for 40% of the working days in 2011. Various physical processes, such as compression, refrigeration, dispensing, control systems and lighting, utilized electric energy at an almost linear rate of 5.18 kWh per kg of hydrogen dispensed. In terms of the power requirements, 35 MPa and 70 MPa refilling leads to a peak load of 12 kW and 30-35 kW, respectively (Brown et al., 2012).

Melaina (2003) highlighted the key underlying factors which have remained instrumental in determining the location of refueling stations: 1) proximity to regions with high traffic volume; 2) ease of accessibility to potential first HFCV buyers; 3) ability to fuel vehicles for long distance trips; and 4) proximity to high profile areas to increase public awareness. This work demarcated the hydrogen fuel refueling stations into metropolitan oriented or interstate oriented with the realization that the metropolitan oriented stations would be the “prime” stations while the interstate oriented stations would be “placeholder” stations, ensuring hydrogen availability for rare events or long-distance trips (Melaina, 2003).

This work chronologically divided the hydrogen vehicle adoption process into two stages - the first involved the installation of enough refueling stations to support environmentally sensitive individuals adopting HFCV, and the later stage involved the installation of a larger number of refuelling stations to cater to the general public. A phased increase in the production volumes of HFCV is expected, to match the predicted high sales when Phase 2 arrives (Melaina, 2003).

Ni et al. (2005) utilized population density, car ownership, market penetration rate, and fuel use from GIS maps to estimate hydrogen demand. A clusterization approach is utilized to demarcate areas with demand density greater than a given threshold, to represent regions of high hydrogen demand (Ni et al., 2005). Melendez & Milibrandt (2005) also planned a network of hydrogen refueling stations on highways to enable interstate travel based on HFCVs. This was achieved by estimating the HFCV demand and the corresponding hydrogen refueling station requirement through literature review and through interviews with experts. Various parameters were evaluated to gauge consumer’s potential interest in buying a HFCV and were assigned weights to account for consumer’s preferences. The sum total of all weights is considered a measure of consumer’s potential interest (Melendez & Milibrandt, 2005). This technique, involving the division of geographical area into distinct entities while ensuring equal distribution of households followed by quantifying relevant numerical or behavioral parameters for assessment, has been utilized in further studies (Greene et al., 2008; Kuby et al., 2009).
Works Cited


Appendix III: Individual Voronoi maps for Existing Level 1, Level 2, Level 3, and Tesla chargers in Oxford County

The Charging Index, formulated to quantify the charging ability of a particular EVSE location,
As previously mentioned.
Figure VII: Voronoi polygon representation of L1 EVSE catchments. Polygon numbers and colours correspond to the number of L1 chargers at the nearest EVSE installation.
Figure VIII: Voronoi polygon representation of L2 EVSE catchments. Polygon numbers and colours correspond to the number of L2 chargers at the nearest EVSE installation.
Figure IX: Voronoi polygon representation of L3 EVSE catchments. Polygon numbers and colours correspond to the number of L3 chargers at the nearest EVSE installation.
Figure X: Voronoi polygon representation of Tesla EVSE catchments. Polygon numbers and colours correspond to the number of Tesla chargers at the nearest EVSE installation.
To: Warden and Members of County Council

From: Chief Administrative Officer

Notice of Intent to Consider Procedure By-law Amendments
- 2018 Updates - Part 2

RECOMMENDATION

1. That County Council hereby serves notice that it will consider, at its May 23, 2018 meeting, proposed amendments to Procedure By-law No. 5852-2016 as amended by By-law No. 6007-2018.

REPORT HIGHLIGHTS

- To request Council to serve public notice of its intent to consider proposed amendments to the County Procedure By-law, as required under Section 16.2, at its meeting on May 23, 2018.

Implementation Points

Upon approval of the recommendation contained in this report, staff will prepare a report proposing recommended changes to the Procedure By-law, to be reviewed by Gregory Stewart, Integrity Commissioner / Meeting Investigator, for consideration at the May 23, 2018 County Council meeting.

Financial Impact

There are no financial implications to the County of Oxford associated with this report. The Treasurer has reviewed this report and agrees with the financial impact information.

Risks/Implications

There are no risks or implications to the County of Oxford with regard to this report.
Strategic Plan (2015-2018)

County Council adopted the County of Oxford Strategic Plan (2015-2018) at its regular meeting held May 27, 2015. The initiative contained within this report supports the Values and Strategic Directions as set out in the Strategic Plan as it pertains to the following Strategic Directions:

4. i. A County that Informs and Engages - Harness the power of the community through conversation and dialogue by:
   - Providing multiple opportunities for public participation and a meaningful voice in civic affairs

DISCUSSION

Background


Comments

From time to time it is advantageous to review the Procedure By-law to ensure that it is current with respect to governing the calling, place and proceedings of meetings and the provision of public notice of those meetings.

Changes made to the Procedure By-law on March 28th were considered to be Part 1 updates of a two stage 2018 review. Those amendments were a result of Bill 68, the Modernizing Ontario’s Municipal Legislation Act, 2017 (MOMLA), changes to the Municipal Act, 2001, c. 25, effective January 1, 2018.

Stage 2 of the review will encompass customary housekeeping measures and will flag March 1, 2019 MOMLA phased-in changes to the Municipal Act which, although anticipated to have no consequence to the Procedure By-law will affect both County policy and the By-law. As with Part 1 updates, input with regard to Part 2 changes will be sought from Gregory Stewart, Integrity Commissioner / Meeting Investigator, as was accounted for in the 2018 budget.

Prior to considering any amendments, Section 16.2 of the Procedure By-law requires public notice.
Conclusions

This report recommends that County Council serve notice that it will consider at its May 23, 2018 meeting, proposed amendments to Procedure By-law No. 5852-2016 as amended by By-law No. 6007-2018.

SIGNATURES

Report Author:

Original Signed by

Brenda J. Tabor
Clerk

Approved for submission:

Original Signed by

Peter M. Crockett, P.Eng.
Chief Administrative Officer
To: Warden and Members of County Council  
From: Director, Community Planning 

Party Status for a Local Planning Appeal Tribunal Hearing Applications for Consent & Minor Variance B17-02-8 to B17-04-8; A17-10-8 – 1266639 Ontario Inc. (Ray Losee) 

RECOMMENDATIONS

1. That County Council seek party status before the Local Planning Appeal Tribunal for the hearing regarding Consent and Minor Variance Applications B17-02-8 to B17-04-8; A17-10-8 (1266639 Ontario Inc., c/o Ray Losee); 

2. And further, that County Council uphold the staff recommendations presented to, but not supported by, Land Division Committee, as contained in Planning Report CP 2018-18 (Attachment 1). 

REPORT HIGHLIGHTS

- The purpose of this report is to obtain Council authority to pursue party status for the County of Oxford at the upcoming Local Planning Appeal Tribunal (LPAT) hearing regarding an appeal filed by the owner/applicant against a decision of the Oxford Land Division Committee. 

Implementation Points

In accordance with Council approved procedure, the process for considering an appeal that is filed by the applicant/owner or a third party on a consent application is as follows:

- That the Land Division Committee (LDC) be notified of the LPAT appeal; 

- That staff prepare a report to County Council providing the staff Planning Report and LDC Notice of Decision and seek Council’s recommendation on whether to seek party status and what position Council wishes to have represented at the LPAT; 

- Staff implement Council’s direction arising from the report.
Financial Impact

Depending upon the course of action chosen by Council, the appeal to the LPAT may involve hiring a solicitor to represent the County at the appeal hearing. Funds have been included in the 2018 Community Planning Budget for a limited number of appeals and as such, no expenditure beyond the currently approved operating budget should be required.

For Council’s information, if the County opts to seek party status at the LPAT hearing in support of the decision of the LDC, effective representation at the hearing would involve retaining a solicitor and independent land use planning advice. Should Council choose to not support the LDC decision and direct staff to retain a solicitor in support of the recommendations made by Planning staff, it will be necessary to retain a solicitor, but not a planner, as County staff would provide the necessary evidence in support of the said recommendations.

The Treasurer has reviewed this report and agrees with the financial impact information.

Risks/Implications

There are no risks involved in this action that are not common to seeking party status at a LPAT hearing regarding a planning matter.

Strategic Plan (2015-2018)

County Council adopted the County of Oxford Strategic Plan (2015-2018) at its regular meeting held May 27, 2015. The initiative contained within this report supports the Values and Strategic Directions as set out in the Strategic Plan as it pertains to the following:

3. ii. A County that Thinks Ahead and Wisely Shapes the Future – Implement development policies, land uses and community planning guidelines that:

- Strategically grow our economy and our community
- Actively promote the responsible use of land and natural resources by focusing on higher density options before considering settlement boundary expansions
- Provides a policy framework which supports community sustainability, health and well-being
- Supports healthy communities within the built environment
- Supports and protects a vibrant and diversified agricultural industry
DISCUSSION

Background

The purpose of the Applications for Consent is to create three residential building lots and retain one lot for similar purposes. The applicant proposes to construct three single detached dwellings with attached garages with access to Sydenham Street. The applicant further proposes to maintain the existing dwelling on the retained lands and add a detached garage in front of the dwelling.

In addition to the proposed severances, the applicant has requested minor variances to recognize a reduced lot area for the most northern lot to be created from 540 m² (5,812.7 ft²) to 530 m² (5,705.1 ft²) and to recognize the reduced rear yard depth from 7.5 m (24.6 ft) to 3.7 m (12.1 ft) for the retained lot.

The proposal was considered by the City of Woodstock Council on January 11, 2018 and it was recommended that the application be deferred. Council was supportive of the applicant creating 2 lots and retaining 1 lot in addition to the most northerly lands being dedicated to the City for future parkette purposes. The recommendation for deferral would allow staff to discuss the potential acquisition of the northerly lands for a parkette and allow the applicant to revise the application. The applicant chose not to amend the application.

Subsequently, the proposal was considered and denied by the County Land Division Committee (LDC) on January 18, 2018 and an appeal was filed by the applicant on February 9, 2018. The LDC meeting was attended by the applicant and a number of neighbouring property owners who spoke in opposition to the proposal.

Planning Report CP 2018-18 and the decision of the LDC regarding the proposal are attached to this report as Attachments 1 and 2, for Council’s consideration. Council will note that while Planning staff recommended the applications for approval, the decision of the LDC was to deny the severance and variance applications.

Should Council opt to support the decision of the LDC, it is anticipated that Planning staff will be subpoenaed by the applicant to provide evidence in support of the severance and minor variance applications.

Comments

It is the opinion of the Planning Office that the County should seek party status at the LPAT regarding this matter to support the recommendations as set out in Report CP 2018-18 and that legal counsel should be retained to represent the County at the LPAT hearing. Should Council decide to uphold the staff recommendations, it is anticipated that the County Planner who authored the planning report will present evidence at the LPAT hearing. As noted previously, if Council chooses to uphold the decision of the LDC or alternatively, chooses not to be represented at the hearing, it is probable that staff will be summoned by the applicant to present evidence.
Conclusions

Planning staff are of the opinion that the proposal to create three residential lots and retain one lot for similar purposes on the subject lands is consistent with the Provincial Policy Statement and maintains the general intent and purpose of the Official Plan as it pertains to infill development.

SIGNATURES

Report Author:

Original Signed By

Andrea Hächler
Development Planner

Departmental Approval:

Original Signed By

Gordon K. Hough, RPP
Director

Approved for submission:

Original Signed By

Peter M. Crockett, P.Eng.
Chief Administrative Officer

ATTACHMENTS

Attachment No. 1: Planning Report CP 2018-18
Attachment No. 2: Land Division Decisions
To: Chair and Members of Oxford County Land Division Committee

From: Andrea Hächler, Development Planner, Community Planning

Applications for Consent & Minor Variance
B17-02-8 to B17-04-8; A17-10-8 – 1266639 Ontario Inc.

REPORT HIGHLIGHTS

- The purpose of this report is to consider an application to create three lots for residential use by consent and retain one lot for similar purposes.

- An application for minor variances has been submitted to recognize the reduced lot area for the lot to be severed by B17-04-8 (Lot C) from 540 m² (5,812.7 ft²) to 530 m² (5,705.1 ft²) and to recognize the reduced rear yard depth from 7.5 m (24.6 ft) to 3.7 m (12.1 ft) for the retained lot.

- Agency circulation resulted in no concerns with the proposed development.

- Planning staff recommend approval of the applications as they are consistent with the Provincial Policy Statement and the residential infilling policies of the Official Plan.

DISCUSSION

Background

OWNER: 1266639 Ontario Inc.
592 Adelaide Street, Woodstock ON N4S 4B9

LOCATION:

The subject lands are described as Lot 12, Park Strip, Plan 445, in the City of Woodstock. The lands are bound by Sydenham Street and Huron Street and are municipally known as 250 Huron Street.
COUNTY OF OXFORD OFFICIAL PLAN:

Schedule "W-1" City of Woodstock Land Use Plan Residential
Schedule "W-3" City of Woodstock Residential Density Plan Low Density Residential

CITY OF WOODSTOCK ZONING BY-LAW 8626-10:

Existing Zoning: Residential Zone 1 (R1)

EXISTING USE OF SUBJECT PROPERTY: Single Detached Dwelling

PROPOSED USES: Lots to be Severed – residential (single detached dwelling)
Lot to be Retained – residential (single detached dwelling)

SERVICES: Lots to be Severed – none existing; municipal water and municipal sanitary sewer proposed
Lot to be Retained – municipal water and sanitary sewer proposed

ACCESS: paved, County road (Huron Street)
paved, Municipal road (Sydenham Street)

PROPOSAL:

<table>
<thead>
<tr>
<th>Lot</th>
<th>Area</th>
<th>Frontage</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>B17-02-8 (Lot A)</td>
<td>489.3 m²</td>
<td>12.1 m (39.7 ft)</td>
<td>46.3 m (151.9 ft)</td>
</tr>
<tr>
<td>B17-03-8 (Lot B)</td>
<td>443.2 m²</td>
<td>12 m (39.4 ft)</td>
<td>36.9 m (121 ft)</td>
</tr>
<tr>
<td>B17-04-8 (Lot C)</td>
<td>580.6 m²</td>
<td>18.9 m (62 ft)</td>
<td>32.1 m (105.3 ft)</td>
</tr>
<tr>
<td>RETAINED LOT</td>
<td>498.2 m²</td>
<td>12 m (39.4 ft)</td>
<td>41.5 m (136.2 ft)</td>
</tr>
</tbody>
</table>

The purpose of the Applications for Consent is to create three residential building lots and retain one lot for similar purposes. The applicant is proposing to construct three single detached dwellings with attached garages at the rear of the dwellings with access to Sydenham Street. The applicant is further proposing to maintain the existing dwelling on the retained lands and add a detached garage in front of the dwelling.

The lot area, frontage and depth of the lots to be severed and retained are identified in the table above.
Lots A, B and the retained lot (as identified on the attached maps) are considered through lots with frontage and access to both Huron Street and Sydenham Street. Lot C is considered a corner lot with the western side of the property being identified as the front yard.

The applicant has requested minor variances to recognize a reduced lot area for Lot C from 540 m² (5,812.7 ft²) to 530 m² (5,705.1 ft²) and to recognize the reduced rear yard depth from 7.5 m (24.6 ft) to 3.7 m (12.1 ft) for the retained lot. The variances are required as the County Public Works Department has requested that a 3 m (9.8 ft) road widening along Huron Street be dedicated to the County as road allowance.

Surrounding uses are predominantly low density residential-type development with local commercial uses to the immediate south of the subject lands.

For the Committee’s information, the applicant was initially proposing to create 4 new residential building lots, however staff were not supportive of the proposal as the lots did not appear to be consistent with the character of the existing neighbourhood with regard to lot area and frontage. As such, Council deferred the decision on April 18, 2017 to allow the applicant an opportunity to revise the plan to achieve a more compatible and desirable proposal.

On August 10, 2017 an amended application proposing to create 3 residential building lots was presented to Council but was deferred in light of new comments that were provided by the City Parks Department regarding a number of trees located on the subject lands.

Subsequently, the application was presented to Council again on September 21, 2017 with comments from staff regarding the trees that were of interest. The staff report was supportive of the proposal but Council deferred the applications again, requesting that the applicant reconsider the lot configurations with a view to the character of the surrounding neighbourhood. For information, the trees discussed at previous public meetings regarding this proposal have been removed by the applicant and the proposed lot sizes have been modified in an effort to address the concerns of Council. The lot lines have been shifted since the original submission to allow the lots to meet the minimum frontage along Sydenham Street. The applicant has also determined that relief from the exterior side yard width for Lot C is no longer required as the tree has been removed.

Regarding the proposed minor variance applications that are being considered together with the applications for severance, the original proposal included an application to amend the City’s Zoning By-law to address the noted relief and included an additional request to modify the exterior side yard of the proposed northerly lot. The applicant has since withdrawn the application for zone change and amended the consent proposal to include the previously noted relief through the consent process. As the relief requested (reduced lot area of Lot C and reduced rear yard depth for the retained lot) is directly created by the consent applications, the said minor variances can be granted by the Land Division Committee through the consent process.

Plate 1, Existing Zoning & Location Map, indicates the location of the lots to be severed and lot to be retained, as well as the existing zoning in the immediate vicinity.

Plate 2, Aerial Map (2015) provides an aerial view of the subject lands and the immediate area.
Plate 3, Applicant’s Sketch, illustrates the dimensions of the severed and retained lots as well as the existing dwelling on the subject lands.

Application Review

**Provincial Policy Statement:**

Section 1.1.3.3 of the PPS directs that planning authorities shall identify appropriate locations and promote opportunities for intensification and redevelopment where this can be accommodated taking into account existing building stock or areas, including brownfield sites, and the availability of suitable existing or planned infrastructure and public service facilities required to accommodate projected needs.

Further, Section 1.4.3 of the PPS directs that planning authorities shall provide for an appropriate mix of housing types and densities to meet projected requirements of current and future residents of the regional market area by:

- establishing and implementing minimum targets for the provision of housing which is affordable to low and moderate income households;
- permitting and facilitating all forms of residential intensification and redevelopment and all forms of housing required to meet the social, health and well-being requirements of current and future residents, including special needs requirements;
- directing the development of new housing towards locations where appropriate levels of infrastructure and public service facilities are or will be available to support current and projected needs;
- promoting densities for new housing which efficiently use land, resources, infrastructure and public service facilities, and support the use of active transportation and transit areas where it exists or is to be developed; and
- establishing development standards for residential intensification, redevelopment and new residential development which minimize the cost of housing and facilitate compact form while maintaining appropriate levels of public health and safety.

**Official Plan:**

The subject property is located within the 'Low Density Residential' designation as shown on Schedule ‘W-3’, Residential Density Plan for the City of Woodstock in the County Official Plan. Low density residential areas include those lands that are primarily developed or planned for a variety of low rise, low density housing forms including single-detached dwellings, semi-detached dwellings, duplexes and converted dwellings, quadraplexes, townhouses and low-density cluster development.

The introduction of new residential housing into an established streetscape pattern will only be permitted if the proposal is deemed to be consistent with the characteristics of existing development on both sides of the same street. In order that street oriented infill projects are sensitive to the continuity of the existing residential streetscape, City Council and the County Land Division Committee will ensure that:
• the proposal is consistent with street frontage, lot area, setbacks and spacing of existing development within a two block area on the same street;

• for proposals involving more than two dwelling units, the exterior design in terms of height, bulk, scale and layout of the proposed building is consistent with present land uses in the area.

Additionally, when considering infill proposals, City Council and the Land Division Committee must be satisfied that vehicular access points are acceptable, municipal services can adequately accommodate the proposal and stormwater is adequately controlled. Further, Council must also consider the extent to which the proposed development provides for the retention of desirable vegetation that contributes to the visual character of the surrounding area, the impact on environmental constraints and heritage resources and whether the proposal complies with the Zoning By-law.

CITY OF WOODSTOCK ZONING BY-LAW:

The subject lands are presently zoned ‘Residential Zone 1 (R1)’ according to City of Woodstock Zoning By-law 8626-10, which permits single detached dwellings and requires a minimum lot area of 370 m² (3,982.8 ft²) for an interior lot and 540 m² (5,812.7 ft²) for a corner lot, a minimum lot frontage of 12 m (39.3 ft) and a minimum lot depth of 28 m (91.9 ft).

The applicant has requested relief from the R1 zoning provisions for lot area from 540 m² (5,812.7 ft²) to 530 m² (5,705.1 ft²) for Lot C and for rear yard depth from 7.5 m (24.6 ft) to 3.7 m (12 ft) for the retained lot.

AGENCY COMMENTS:

This application has been circulated to those agencies that were considered to have an interest in the proposal. The following comments were received:

The City of Woodstock Engineering Office (Building Division) provided the following comments in support of the applications:

The front yard is considered to be adjacent to Sydenham Street. Driveways will be permitted on Sydenham Street only.

With respect to the severed lots, severance agreements will be required. Lot C requires relief from the required lot area from 540 m² (5,812.7 ft²) to 530 m² (5,705.1 ft²).

With respect to the retained lot, relief is required to reduce the rear yard setback to the existing house from 7.5 m (24.6 ft) to 3.7 m (12 ft). The garage shall be removed from the site as indicated on the drawing.

If approved, please include the following conditions in the Notice of Decision for Consent:

• The applicant provides confirmation of the location of any existing overhead or underground services installed to the retained and severed lots. Services cannot traverse
the adjoining lots and any conflicts must be re-directed or an easement created. Any proposed easements shall be reviewed by the City of Woodstock.
- The owner shall agree, in writing, to satisfy all requirements, financial and otherwise, of the City of Woodstock regarding the installation of services and drainage facilities.
- The Owner will be required to enter into a severance agreement for the severed parcels with the City of Woodstock. The agreement will be registered on title by the owner.
- The applicant shall submit the draft R-plan to confirm lot sizes to the satisfaction of the City of Woodstock Engineering Department.
- The garage structure shall be removed from the site to the satisfaction of the City of Woodstock Building Department.

The City of Woodstock Engineering Office (Development Division) provided the following comments:

- If approved, the severed lots shall be serviced from Sydenham Street where municipal sanitary sewers and watermains are available. All lots shall have driveway access from Sydenham Street.
- Existing services cannot traverse one lot to service another lot. Conflicts must be re-routed or easements created to the satisfaction of the City.
- If approved, the owner shall be aware that water service to the existing house on the retained lot is from Huron Street and shall be abandoned at the main to the satisfaction of the City. A new water service to the retained lot will be required from Sydenham Street.
- If approved, we request the retained and severed lots be serviced at the same time utilizing one large road cut as opposed to several smaller road cuts.
- A 1 ft. (0.3 m) reserve is recommended along the entire length of Huron Street frontage (to County) and on the Sydenham Street frontage along the north side of severed lot C (to City).
- If approved, the driveway to the existing house off Huron Street shall be removed and boulevard restored to the satisfaction of the City and County.

The County of Oxford Public Works Department provided the following comments:

- A 1 ft. (0.3 m) reserve along each lot with frontage on to Huron Street shall be transferred to the County, at no cost to the County or City.
- A widening of Huron Street to create a 13 metre half width for the road allowance along each lot.
- The owner agrees to satisfy all the financial requirements, to the County of Oxford, regarding installation of sanitary and water services for each lot. This shall be a condition of the severance.

The City of Woodstock Parks Department indicated that the following clause will be included in the severance agreement.

“The owner agrees to plant trees on the severed private properties to the satisfaction of the City Parks Department. Further, the owner is required to plant 6 balled burlapped trees at a size of 55 mm, choosing a species following the City of Woodstock Landscape Plan Requirements and Guidelines.”
Union Gas indicated that there are service lines running within the area which may or may not be affected by the proposed severances. If the proposed severances impact these services, it may be necessary to terminate the gas service and relocated the line according to the new property boundaries. Any service relocation required due to the severances would be at the cost of the property owner.

The Upper Thames River Conservation Authority, Woodstock Police Service and Bell Canada indicated that they had no objections or concerns with the subject application.

**CITY OF WOODSTOCK COUNCIL:**

The proposed applications will be heard by the City of Woodstock Council on January 11, 2018 and the resolution will be provided to the Land Division Committee as late correspondence.

**PUBLIC CONSULTATION:**

Public Notice regarding the applications was provided to surrounding property owners on December 21, 2017. Through the previous public meetings, written and verbal communication, staff have received a number of concerns from neighbouring property owners regarding the proposed applications.

**Planning Analysis**

The purpose of the applications for consent is to create three vacant residential building lots and retain one lot for similar purposes. The severed lots are intended to accommodate single detached dwellings and the single detached dwelling on the retained lands will remain.

The applicant has requested minor variances to recognize a reduced lot area for Lot C from 540 m² (5,812.7 ft²) to 530 m² (5,705.1 ft²) and to recognize the reduced rear yard depth from 7.5 m (24.6 ft) to 3.7 m (12.1 ft) for the retained lot.

Planning staff are of the opinion that the proposal promotes residential intensification and redevelopment and will result in an efficient use of municipal services on residentially designated lands. In this respect, the development proposal is consistent with the 2014 PPS regarding intensification and redevelopment within a settlement area.

With regard to the relevant Official Plan policies for Low Density Residential areas, an analysis of the existing characteristics of residential development on Sydenham Street was completed by Planning staff. In this case, the subject lands will front on to a street that is characterized by low density residential development on a variety of lot sizes. It appears that the proposed lots will be smaller in lot area but will generally be consistent with the frontage, setbacks, configuration and characteristics of the existing development in the immediate residential area. Additionally, the proposed lots will be able to accommodate dwellings that are similar in scale and size to the 1.5 storey dwellings that are found on the majority of properties on Sydenham Street.

Further, in light of the comments provided by County Public Works, a road widening to create a 13 m (42.6 ft) half width along Huron Street will be required to be dedicated to the County. As a result of the widening, the area of the lot to be severed by B17-04-8 is reduced from
580.6 m² (6,249.7 ft²) to 530 m² (5,705.1 ft²), which creates a deficiency in area as the required lot area for a corner lot is 540 m² (5,812.7 ft²). The required relief is considered minor and the lot will continue to provide ample space for a dwelling, parking, sufficient setbacks and amenity area.

The applicant has also requested relief for the rear yard depth which will recognize the existing dwelling in relation to the rear lot line. The reduced depth will account for the 3 m (9.8 ft) road widening required along Huron Street that will be dedicated to the County. Staff are supportive of this request as the building is existing and is not anticipated to have a negative impact on neighbouring properties or sightlines. Further relief is not required for the other severed and retained lots resulting from the required road widening.

It is the opinion of this Office that the applicant’s amended proposal to create 3 residential lots is consistent with the policies of the PPS and maintains the general intent and purpose of the County Official Plan. As such, Planning staff are satisfied that the proposal can be given favourable consideration.

RECOMMENDATION

Whereas the variances requested are minor variances from the provisions of the City of Woodstock Zoning By-law No. 8626-10, is desirable for the appropriate development or use of the lands, buildings or structures, is in keeping with the general intent and purpose of the County Official Plan, and is in keeping with the general intent and purpose of the City of Woodstock Zoning By-law No. 8626-10; and

Whereas the applications for consent are consistent with the 2014 Provincial Policy Statement and complies with the County of Oxford Official Plan, we are of the opinion that the applications are acceptable from a planning perspective, and should be granted, subject to the following conditions:

B17-02-8 to B17-04-8

1. The owner shall agree, in writing to plant trees on the severed lots to the satisfaction of the City Parks Department.

2. The owner provides confirmation of the location of any existing overhead or underground services installed to the retained and severed lots. Services cannot traverse the adjoining lots and any conflicts must be re-directed or an easement created. Any proposed easements shall be reviewed by the City of Woodstock.

3. The owner shall agree, in writing, to satisfy all requirements, financial and otherwise, of the City of Woodstock, regarding the installation of services and drainage facilities.

4. A road widening to create a 13 m (42.7 ft) half width of Huron Street along the frontage of the lots to be severed and the lot to be retained be dedicated to the County of Oxford, free of all costs and encumbrances, to the satisfaction of the County of Oxford Public Works Department.
5. The owner shall dedicate a 0.3 m (1 ft) reserve along the frontage of the lots to be severed and retained along Huron Street to the County of Oxford, free of all costs and encumbrances, to the satisfaction of the County.

6. The owner shall dedicate a 0.3 m (1 ft) reserve along the north side of the lot to be severed by B17-04-8 on Sydenham Street to the City of Woodstock, free of all costs and encumbrances, to the satisfaction of the City of Woodstock.

7. The owner shall remove the driveway from Huron Street to the existing house on the retained lands and restore the boulevard to the satisfaction of the City and County.

8. The owner agrees to satisfy all the financial requirements, to the County of Oxford, regarding installation of sanitary and water services for each lot.

9. The owner shall submit a draft Reference Plan to confirm lot sizes, to the satisfaction of the City of Woodstock Engineering Department.

10. The owner shall remove the existing garage straddling the lot line between the lot to be severed by B17-03-8 and the lot to be retained, to the satisfaction of the City of Woodstock Building Department.

11. The owner shall enter into a Severance Agreement with City of Woodstock as set forth in the City of Woodstock By-law No. 5266-76, and amendments thereto. The Agreement will be registered on title by the owner.

12. The certificate for lot to be severed by B17-04-8 shall be issued and the registered transfer be provided to the Secretary-Treasurer of the Land Division Committee, prior to the issuance of the certificate for B17-03-8.

13. The Clerk of the City of Woodstock advise the Secretary-Treasurer of Land Division Committee that all requirements of the City of Woodstock have been complied with.

SIGNATURES

Authored by: "Original Signed By" Andrea Hächler, Development Planner

Approved for submission: "Original Signed By" Gordon K. Hough, RPP, Director
Plate 1: Existing Zoning & Location Map
B17-02-8 to B17-04-8; A17-10-8 - 1266639 Ontario Inc. - 250 Huron Street, Woodstock

Legend
- Parcel Lines
  - Property Boundary
  - Assessment Boundary
  - Unit
  - Road
  - Municipal Boundary
- Environmental Protection/Flood Overlay
  - Flood Fringe
  - Floodway
  - Environmental Protection (EP1)
  - Environmental Protection (EP2)
- Zoning
  - Floodlines/Regulation Limit
  - 100 Year Flood Line
  - 30 Metre Setback
  - Conservation Authority Regulation Limit
  - Regulatory Flood And Fill Lines
  - Zoning (Displays 1:16000 to 1:500)

Notes

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. This is not a plan of survey.

June 9, 2017
Plate 2: Aerial Map (2015)
B17-02-8 to B17-04-8; A17-10-8 - 1266639 Ontario Inc. - 250 Huron Street, Woodstock

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. This is not a plan of survey.

Legend
- Parcel Lines
- Property Boundary
- Assessment Boundary
- Unit
- Road
- Municipal Boundary

Notes
NAD_1983_UTM_Zone_17N

Lot to be Severed by B17-04-8; A17-10-8 (Lot C)
Lot to be Severed by B17-03-8 (Lot B)
Lot to be Retained
Lot to be Severed by B17-02-8 (Lot A)
In the case of an Application for Consent as made under Section 53 of the Planning Act, R.S.O., 1990, as amended:

The purpose of the Application for Consent is to create a residential building lot. The lot to be severed will cover an area of approximately 460.3 m² (4,954.8 ft²), with a 12.1 m (39.7 ft) frontage and a 43 m (141 ft) depth. The lot to be retained will cover an area of approximately 458.6 m² (4,936.5 ft²) with a 12.0 m (39.4 ft) frontage and a 38.2 m (125.33 ft) depth. A single detached dwelling is proposed to be constructed on the lot to be severed. The existing single detached dwelling located on the proposed retained lot will remain. The owner has applied for Partial Discharge of Mortgage.

The subject lands are described as Lot 12, Park Strip, Plan 445, in the City of Woodstock. The lands are located on the southeast corner of Sydenham Street and Huron Street, and are municipally known as 250 Huron Street.

DECISION: Not Granted on January 18, 2018

See Page 2 for Conditions and Reasons

MEMBERS concurring in the above ruling:

Gordon Read
Harvey Elliott
Brian George
Mark Hacon
Russell Jull
Tom Rock

Arend Tenhove

IF APPROVED: Is subject to the conditions and for the reasons stated herein on this Notice of Decision of the Land Division Committee

IF DENIED/DEFERRED: Is for the reasons stated herein on this Notice of Decision of the Land Division Committee

CERTIFICATION

I, LOUISE M. TASCHNER, Secretary-Treasurer of the Land Division Committee for the County of Oxford, do hereby certify that the above is a true copy of the Decision of the Land Division Committee with respect to the Application recorded herein.

DATED this 23rd day of January, 2018.

Secretary-Treasurer

NOTE:

The last date to submit an Appeal of the above Decision to the Secretary-Treasurer of the Land Division Committee is:

February 12, 2018

$300.00 is payable to the Minister of Finance, together with a written letter outlining the reasons for the appeal.
REASONS:

1. The application be denied for the reasons set out in the City of Woodstock Council resolution of January 11, 2018 which reads as follows:

   • That Woodstock City Council in a resolution advised that the City did not support the applications to sever the subject property as presented;
   • and further that City Council supported, in principle, the severance of the subject lands to be maximum of three lots, including the retained lot;
   • and further that City Council would consider the acquisition of a portion of any remaining land at the north end of the subject property for future parkette purposes subject to further discussion with the applicant; and
   • City Council requested that the applications be deferred to consider alternatives.

2. Comments received from the public were reviewed, and where appropriate, were considered in the Land Division Committee’s decision to deny the application.

DATED this 23rd day of January, 2018.

[Signature]
Secretary-Treasurer

DATE OF MAILING: January 23, 2018

Additional information regarding the application for consent will be available to the public for inspection between 8:30 am to 4:30 pm, Monday to Friday, at the Community Planning Office, 21 Reeve Street, Woodstock, Ontario N4S 3G1 (Telephone: (519) 539-8800; FAX: (519) 421-4712).

The land which is the subject of the application is the subject of an application under the Planning Act for B17-03-8 & B17-04-8; A17-10-8

You will be entitled to receive notice of any changes to the conditions of the provisional consent if you have either made a written request to be notified of the decision to give or refuse to give provisional consent, or make a written request to be notified of changes to the conditions of the provisional consent.

Only individuals, corporations and public bodies may appeal decisions in respect of applications for consent to the Ontario Municipal Board. A notice of appeal may not be filed by an unincorporated association or group. However, a notice of appeal may be filed in the name of an individual who is a member of the association or group.

Any notice of appeal must be submitted on the appropriate Appellant Form available from this Office or the Ontario Municipal Board website: www.omb.gov.on.ca. The notice of appeal accompanied by the prescribed fee under the Ontario Municipal Board Act shall be filed with the Secretary-Treasurer of the Land Division Committee. The prescribed fee is $300.00 for the first appeal and $25.00 for each subsequent appeal. Only certified cheques, money orders or solicitors’ firm cheques are acceptable and are to be made payable to the Minister of Finance.

For further information please contact
The Secretary-Treasurer, Oxford County Land Division Committee, Community Planning Office,
P.O. Box 1614, Woodstock ON N4S 7Y3
or by personal delivery to 21 Reeve Street, Woodstock ON
COUNTY OF OXFORD  
LAND DIVISION COMMITTEE  
NOTICE OF DECISION  

File No. B17-03-8  
Owner: 1266639 Ontario Inc.  

In the case of an Application for Consent as made under Section 53 of the Planning Act, R.S.O., 1990, as amended:

The purpose of the Application for Consent is to create a residential building lot. The lot to be severed will cover an area of approximately 403.8 m² (4,344.6 ft²) with a 12 m (39.4 ft) frontage and 33.6 m (110.2 ft) depth. The lot to be retained will cover an area of approximately 458.6 m² (4,936.5 ft²) with a 12.0 m (39.4 ft) frontage and a 38.2 m (125.3 ft) depth. A single detached dwelling is proposed to be constructed on the lot to be severed. The existing single detached dwelling located on the proposed retained lot will remain. The owner has applied for Partial Discharge of Mortgage.

The subject lands are described as Lot 12, Park Strip, Plan 445, in the City of Woodstock. The lands are located on the southeast corner of Sydenham Street and Huron Street, and are municipally known as 250 Huron Street.

DEcision: **Not Granted** on January 18, 2018

See Page 2 for Conditions and Reasons

MEMBERS concurring in the above ruling:

Gordon Benthall  
Harvey Elliott

Brian George  
Mark Hacon

Absent  
Absent

Russell Jull  
Tom Rock

Arend Tennhove

IF APPROVED:  
Is subject to the conditions and for the reasons stated herein on this Notice of Decision of the Land Division Committee

IF DENIED/DEFERRED:  
Is for the reasons stated herein on this Notice of Decision of the Land Division Committee

CERTIFICATION

I, LOUISE M. TASCHNER, Secretary-Treasurer of the Land Division Committee for the County of Oxford, do hereby certify that the above is a true copy of the Decision of the Land Division Committee with respect to the Application recorded herein.

DATED this 23rd day of January, 2018.  

Secretary-Treasurer

NOTE:

The last date to submit an Appeal of the above Decision to the Secretary-Treasurer of the Land Division Committee is:

**February 12, 2018**

$300.00 is payable to the Minister of Finance, together with a written letter outlining the reasons for the appeal
REASONS:

1. The application be denied for the reasons set out in the City of Woodstock Council resolution of January 11, 2018 which reads as follows:
   - That Woodstock City Council in a resolution advised that the City did not support the applications to sever the subject property as presented;
   - and further that City Council supported, in principle, the severance of the subject lands to be maximum of three lots, including the retained lot;
   - and further that City Council would consider the acquisition of a portion of any remaining land at the north end of the subject property for future parkette purposes subject to further discussion with the applicant; and
   - City Council requested that the applications be deferred to consider alternatives.

2. Comments received from the public were reviewed, and where appropriate, were considered in the Land Division Committee’s decision to deny the application.

DATED this 23rd day of January, 2018.

[Signature]
Secretary-Treasurer

DATE OF MAILING: January 23, 2018

Additional information regarding the application for consent will be available to the public for inspection between 8:30 am to 4:30 pm, Monday to Friday, at the Community Planning Office, 21 Reeve Street, Woodstock, Ontario N4S 3G1 (Telephone: (519) 539-9800; FAX: (519) 421-4712).

The land which is the subject of the application is the subject of an application under the Planning Act for: B17-02-8 & B17-04-8; A17-10-8

You will be entitled to receive notice of any changes to the conditions of the provisional consent if you have either made a written request to be notified of the decision to give or refuse to give provisional consent, or make a written request to be notified of changes to the conditions of the provisional consent.

Only individuals, corporations and public bodies may appeal decisions in respect of applications for consent to the Ontario Municipal Board. A notice of appeal may not be filed by an unincorporated association or group. However, a notice of appeal may be filed in the name of an individual who is a member of the association or group.

Any notice of appeal must be submitted on the appropriate Appellant Form available from this Office or the Ontario Municipal Board website: www.omb.gov.on.ca. The notice of appeal accompanied by the prescribed fee under the Ontario Municipal Board Act shall be filed with the Secretary-Treasurer of the Land Division Committee. The prescribed fee is $300.00 for the first appeal and $25.00 for each subsequent appeal. Only certified cheques, money orders or solicitors’ firm cheques are acceptable and are to be made payable to the Minister of Finance.

For further information please contact
The Secretary-Treasurer, Oxford County Land Division Committee, Community Planning Office, P.O. Box 1614, Woodstock ON N4S 7Y3
or by personal delivery to 21 Reeve Street, Woodstock ON
In the case of an Application for Consent as made under Section 15, 45, and 53 of the Planning Act, R.S.O., 1990, as amended:

The purpose of the Application for Consent is to create a residential building lot. The lot to be severed will cover an area of approximately 530.2 m² (5,707.2 ft²) with an 18.9 m (62 ft) frontage and a 28.8 m (94.5 ft) depth. The lot to be retained will cover an area of approximately 458.6 m² (4,936.5 ft²) with a 12.0 m (39.4 ft) frontage and a 38.2 m (125.33 ft) depth. A single detached dwelling is proposed to be constructed on the lot to be severed. The existing single detached dwelling located on the proposed retained lot will remain. The owner has applied for Partial Discharge of Mortgage.

The subject lands are described as Lot 12, Park Strip, Plan 445, in the City of Woodstock. The lands are located on the southeast corner of Sydenham Street and Huron Street, and are municipally known as 250 Huron Street.

DECISION: Not Granted on January 18, 2018
VARIANCE DECISION: Not Granted on January 28, 2018
VARIANCE(S) REQUESTED: See Page 2 for Variances Requested
See Page 2 for Conditions and Reasons

MEMBERS concurring in the above ruling:

Gordon Brumby
Harvey Elliott
Brian George
Mark Hacon
Russell Jull
Tom Rock
Arend Tenhove

IF APPROVED: Is subject to the conditions and for the reasons stated herein on this Notice of Decision of the Land Division Committee.

IF DENIED/DEFERRED: Is for the reasons stated herein on this Notice of Decision of the Land Division Committee.

CERTIFICATION

I, LOUISE M. TASCHNER, Secretary-Treasurer of the Land Division Committee for the County of Oxford, do hereby certify that the above is a true copy of the Decision of the Land Division Committee with respect to the Application recorded herein.

DATED this 18th day of January, 2018.

Secretary-Treasurer

NOTE:
The last date to submit an Appeal on the Minor Variance of the above Decision to the Secretary-Treasurer of the Land Division Committee is:

February 7, 2018

The last date to submit an Appeal of the above Decision to the Secretary-Treasurer of the Land Division Committee is:

February 12, 2018

$300.00 is payable to the Minister of Finance for each decision ($600.00 if both consent and minor variance decisions are appealed), together with a written letter outlining the reasons for the appeal.
VARIANCES REQUESTED (AND GRANTED):

The owner has also applied for minor variances from the City of Woodstock Zoning By-law No. 8626-10 as follows: Relief is sought from Table 6.2, Lot Area, for the lot to be severed by B17-04-8 (Lot C), from 540 m² (5,812.7 ft²) to 530 m² (5,705.1 ft²); relief is required from Table 6.2, Rear Yard Depth, for the lot to be retained, from 7.5 m (24.6 ft) to 3.7 m (12.14 ft).

B17-04-8

REASONS:

1. The application be denied for the reasons set out in the City of Woodstock Council resolution of January 11, 2018 which reads as follows:
   - That Woodstock City Council in a resolution advised that the City did not support the applications to sever the subject property as presented;
   - and further that City Council supported, in principle, the severance of the subject lands to be maximum of three lots, including the retained lot;
   - and further that City Council would consider the acquisition of a portion of any remaining land at the north end of the subject property for future parkette purposes subject to further discussion with the applicant; and
   - City Council requested that the applications be deferred to consider alternatives.

2. Comments received from the public were reviewed, and where appropriate, were considered in the Land Division Committee’s decision to deny the application.

DATE OF MAILING: January 23, 2018

Additional information regarding the application for consent will be available to the public for inspection between 8:30 am to 4:30 pm, Monday to Friday, at the Community and Strategic Planning Office, 21 Reeve Street, Woodstock, Ontario N4S 3G1 (Telephone: (519) 539-9800; FAX: (519) 421-4712).

The land which is the subject of the application is the subject of an application under the Planning Act for: B17-02-8 & B17-03-8

You will be entitled to receive notice of any changes to the conditions of the provisional consent if you have either made a written request to be notified of the decision to give or refuse to give provisional consent, or make a written request to be notified of changes to the conditions of the provisional consent.
Only individuals, corporations and public bodies may appeal decisions in respect of applications for consent to the Ontario Municipal Board. A notice of appeal may not be filed by an unincorporated association or group. However, a notice of appeal may be filed in the name of an individual who is a member of the association or group.

Any notice of appeal must be submitted on the appropriate Appellant Form available from this Office or the Ontario Municipal Board website: www.omb.gov.on.ca. The notice of appeal accompanied by the prescribed fee under the Ontario Municipal Board Act shall be filed with the Secretary-Treasurer of the Land Division Committee. The prescribed fee is $300.00 for the first appeal and $25.00 for each subsequent appeal. Only certified cheques, money orders or solicitors’ firm cheques are acceptable and are to be made payable to the Minister of Finance.

For further information please contact
The Secretary-Treasurer, Oxford County Land Division Committee, Community and Strategic Planning Office, P.O. Box 1614, Woodstock ON N4S 7Y3
or by personal delivery to 21 Reeve Street, Woodstock ON
To: Warden and Members of County Council
From: Director, Community Planning

Application for Draft Plan of Subdivision
SB 17-07-8 – 2593636 Ontario Inc.

RECOMMENDATION

1. That Oxford County Council grant draft approval to a proposed subdivision submitted by 2593636 Ontario Inc. (SB 17-07-8); prepared by Paul J. Benedict, OLS; dated March 5, 2018, for lands legally described as Part of Lots 15, 17 & 18, Registrar’s Compiled Plan 1600, in the City of Woodstock, subject to the conditions attached as Schedule “A” to this Report being met prior to final approval.

REPORT HIGHLIGHTS

- The purpose of this report is to give consideration to granting draft plan approval for a residential plan of subdivision within the City of Woodstock.

Implementation Points

This application will be implemented in accordance with the relevant objectives, strategic initiatives and policies contained in the Official Plan.

Financial Impact

The approval of this application will have no financial impact beyond what has been approved in the current year’s budget. The Treasurer has reviewed this report and agrees with the financial impact information.
Risks/Implications

There are no risks or other implications anticipated as a result of this application beyond those that can reasonably be expected for any such proposal with respect to potential appeals to the Local Planning Appeal Tribunal (LPAT).

Strategic Plan (2015-2018)

County Council adopted the County of Oxford Strategic Plan (2015-2018) at its regular meeting held May 27, 2015. The initiative contained within this report supports the Values and Strategic Directions as set out in the Strategic Plan as it pertains to the following Strategic Directions:

3. ii. A County that Thinks Ahead and Wisely Shapes the Future – Implement development policies, land uses and community planning guidelines that:
   - Strategically grow our economy and our community
   - Actively promote the responsible use of land and natural resources by focusing on higher density options before considering settlement boundary expansions
   - Provides a policy framework which supports community sustainability, health and well-being
   - Supports healthy communities within the built environment
   - Supports and protects a vibrant and diversified agricultural industry

DISCUSSION

Background

At the April 25, 2018 meeting of County Council, a public meeting was held pursuant to Section 51(20) of the Planning Act, R.S.O. 1990, as amended, to consider an application for draft approval of a plan of subdivision. No concerns were raised at the public meeting.

Comments

City of Woodstock Council, at their meeting of April 19, 2018 passed a resolution recommending the draft plan approval be given by the County. County Council is now in a position to give draft plan approval to subdivision File No. SB 17-07-8.
Conclusion

It is the opinion of the Community Planning Office that draft approval of the plan of subdivision, SB 17-07-8, is appropriate from a planning perspective, subject to the imposition of the draft plan conditions attached as Schedule “A”.

SIGNATURES

Original Signed By

Gordon K. Hough, RPP
Director

Approved for submission:

Original Signed By

Peter M. Crockett, P.Eng.
Chief Administrative Officer

ATTACHMENT

Attachment 1: Conditions of Draft Approval (SB 17-07-8)
CONDITIONS OF DRAFT APPROVAL – SB 17-07-8 – 2593636 Ontario Incorporated

1. This approval applies to the draft plan of subdivision submitted by 2593636 Ontario Inc. (SB 17-07-8) and prepared by Paul J. Benedict, OLS dated March 5, 2018, as shown on Plate 3 of Report No. 2018-106 and comprising Part of Lots 15, 17 & 18, Registrar’s Compiled Plan 1600, in the City of Woodstock, showing 1 residential block.

2. The owner agrees to reimburse the City $62,127.95 prior to the City dedicating the 1-foot reserve (Part 3, 41R-8893) along the frontage of the subject property as road allowance. The fee will be required at the time of signing the subdivision agreement.

3. The owner agrees in writing to submit a grading and servicing plan for the proposed townhouse development to the City for review and approval. The plan shall include notes and details of the municipal sidewalk and boulevard topsoil and sod, which the owner agrees to install at the owner’s expense and to the satisfaction of the City of Woodstock.

4. The subdivision agreement shall, if required by the City, make provision for the dedication of parkland or cash-in lieu thereof in accordance with the relevant provisions of the Planning Act. The fee will be required at the time of signing the subdivision agreement.

5. The owner agrees to pay the City of Woodstock a fee for the planting of street trees, which will be required at the time of signing the subdivision agreement.

6. Prior to the approval of the final plan by the County, such easements as may be required for utility and drainage purposes shall be granted to the appropriate authority.

7. Prior to the approval of the final plan by the County, all lots/blocks shall conform to the zoning requirements of the City’s Zoning By-law. Certification of lot areas, frontages, and depths shall be provided to the City by an Ontario Land Surveyor retained by the owner.

8. The owner agrees to provide security to the satisfaction of the City of Woodstock for work to be completed in the Lampman Place road allowance by the owner. Security will be required at the time of signing the subdivision agreement.

9. The owner agrees in writing that all existing wells on the subject lands will be properly abandoned in accordance with Ontario Regulation 903 and that septic fields will be abandoned to the satisfaction of the County Board of Health and the necessary paperwork will be submitted to the City for review.

10. The owner agrees in writing that all foundations of existing buildings will be removed from the subject property and that necessary fill will be placed and compacted to the satisfaction of the City of Woodstock.

11. The owner agrees in writing to satisfy all requirements, financial and otherwise, including payment of applicable development charges, of the County of Oxford regarding the installation of the water distribution system, the installation of the sanitary sewer system, and other matters pertaining to the development of the subdivision.
12. Prior to the signing of the final plan by the County of Oxford, the owner shall agree in writing to satisfy the requirements of Canada Post Corporation with respect to advising prospective purchasers of the method of mail delivery; the location of temporary Centralized Mail Box locations during construction; and the provision of public information regarding the proposed locations of permanent Centralized Mail Box locations.

13. Prior to the approval of the final plan by the County, the owner shall agree in writing to satisfy the requirements of Union Gas that the owner/developer provide Union Gas Limited with the necessary easements and/or agreements required for the provisions of gas services, in a form satisfactory to Union Gas Limited.

14. Prior to the signing of the final plan, the County of Oxford shall be advised by the City of Woodstock that Conditions 2 to 10 (inclusive), have been met to the satisfaction of the City. The clearance letter shall include a brief statement for each condition detailing how each has been satisfied.

15. Prior to the signing of the final plan, the owner shall secure clearance from the County of Oxford Public Works Department that Condition 11 has been met to the satisfaction of County Public Works. The clearance letter shall include a brief statement for each condition detailing how each has been satisfied.

16. Prior to the signing of the final plan, the County of Oxford shall be advised by Canada Post Corporation that Condition 12 has been met to the satisfaction of Canada Post. The clearance letter shall include a brief statement detailing how this condition has been satisfied.

17. Prior to the signing of the final plan, the County of Oxford shall be advised by Union Gas that Condition 13 has been met to the satisfaction of Union Gas. The clearance letter shall include a brief statement detailing how this condition has been satisfied.

18. This plan of subdivision shall be registered by May 9, 2021 after which time this draft approval shall lapse unless an extension is authorized by the County of Oxford.
To: Warden and Members of County Council
From: Director of Public Works

Revised Township of Perth East Water Supply Agreement

RECOMMENDATION

1. That the Chief Administrative Officer and the Director of Public Works be authorized to sign a revised agreement with the Township of Perth East for the continued supply and distribution of drinking water to certain properties on Perth Road 107 (formally Highway 59), Perth-Oxford Road (Hope Street East) and Perth Line 29.

REPORT HIGHLIGHTS

- The purpose of this report is to obtain County Council approval to renew the Water Supply Agreement with the Township of Perth East and to seek authorization for the Chief Administrative Officer and the Director of Public Works to execute the revised agreement.

- The revised five year agreement, which has been endorsed by the Township of Perth East Council, is for the continued supply and distribution of drinking water to specified properties within the Township.

Financial Impact

There are no financial implications associated with the recommendation contained within this report.

The Treasurer has reviewed this report and agrees with the financial impact information.

Risks/Implications

The revised agreement does not propose any alterations to the level of service or operations associated with the Water Supply. Not executing the revised agreement could expose the County to litigation stemming from out-of-date indemnity clauses.
Strategic Plan (2015-2018)

County Council adopted the County of Oxford Strategic Plan (2015-2018) at its regular meeting held May 27, 2015. The initiative contained within this report supports the Values and Strategic Directions as set out in the Strategic Plan as it pertains to the following Strategic Directions:

1. ii. A County that Works Together – Enhance the quality of life for all of our citizens by:
   - Maintaining and strengthening core infrastructure,
   - Working with community partners and organizations to maintain/strengthen public safety

DISCUSSION

Background

Through agreements, the former Tavistock Public Utility Commission supplied water to certain properties in the Township of Perth East outside of the designated limits of the Village of Tavistock since the 1960's. Through By-law No. 3936 99, County Council approved a revised agreement to replace the aging watermain and to continue to supply water to those properties.

The Township of Perth East subsequently submitted an application on June 18, 2002 to amend the Oxford County Official Plan to allow for servicing of eight (8) additional properties in the community of Sebastopol. County Council adopted Amendment No. 62 to the Oxford County Official Plan on August 22, 2002 which allowed the County to enter into a new agreement through By-law No. 4270-2003 for the continued supply of water to the defined group of properties on Perth Road 107 (formally Highway 59) and the Perth-Oxford Road (Hope Street East) and Perth Line 29 in the Township of Perth East.

Comments

The revised Water Supply Agreement is included in this report as Attachment 1, and is a renewal to the agreement from 2003. The revised agreement has been updated to standardize the indemnity and insurance clauses to those included in other County agreements. No changes have been made to the level of service or operational requirements. The Township of Perth East Council endorsed the revised Water Supply Agreement on April 17, 2018.
Conclusion

It is recommended that County Council authorize the execution of the revised agreement to allow for the continued supply of water to the defined group of properties on Perth Road 107 (formally Highway 59), Perth-Oxford (Hope Street East) and Perth Line 29 in the Township of Perth East.

SIGNATURES

Report Author:

Original signed by:

Deborah Goudreau, P.Eng.
Manager of Water and Wastewater Services

Departmental Approval:

Original signed by:

David Simpson, P.Eng., PMP
Director of Public Works

Approved for submission:

Original signed by:

Peter Crockett, P.Eng.
Chief Administrative Officer

ATTACHMENT

Attachment 1: Revised Township of Perth East Water Supply Agreement
WATER AND WASTEWATER SERVICE AGREEMENT

THIS AGREEMENT made to be effective as provided herein

BETWEEN:

COUNTY OF OXFORD
(hereinafter called “County of Oxford”) OF THE FIRST PART

-and-

THE CORPORATION OF THE TOWNSHIP OF PERTH EAST
(hereinafter called “Perth East”) OF THE SECOND PART

WHEREAS the County of Oxford owns and operates the County of Oxford-Tavistock Water System;

AND WHEREAS the provision of services as evidenced by this Agreement is of benefit to each of the parties hereto in accordance with Section 20(1) of the Municipal Act;

NOW THEREFORE THIS AGREEMENT WITNESSES that the County of Oxford agrees to supply water and/or wastewater services to specified customers or residents in Perth East, upon the following terms:

1. Generally provision of water and/or wastewater services outside of Oxford County boundaries would be subject to amendments of Oxford County’s Official Plan.

2. The County of Oxford is the owner of the watermain on Perth Road 107/Line 29 and will perform all maintenance of the watermain within Road 107 right-of-way and Line 29 at the expense of the County of Oxford with the exception of work on individual properties will be at the expense of the property owner.

3. The water services to 085285 and 085303 Perth County Road are privately owned and maintained. The County of Oxford reserves the right to discontinue service if the water services are in disrepair.

4. Perth East residents or customers will be subject to the same external water use regulations as all other residents or customers on the County of Oxford water system. This may include a total ban of external water usage in cases of system maintenance or water supply problems.

5. Perth East customers shall be billed “out-of-town” rates as defined in Oxford County By-law No.5803-2017, or subsequent amendments to this by-law.

6. All Perth East water customers shall be metered.

7. No additional extensions or connections for Perth East residents or customers will be connected to the system without permission from the County of Oxford, and will be subject to an amendment to the County of Oxford Official Plan.

8. The Perth East residents and customers currently on the water system are identified on Schedule “A”. Schedule “A” may be amended from time to time, subject to requirements set out in paragraph 5.

9. The County of Oxford reserves the right to use a third party service for billing Perth East customers.

10. Payment terms will be pursuant to those authorized by the County of Oxford and in accordance with the County of Oxford Receivables Management Policy No. 6.30 as amended.

11. The parties acknowledge and agree that the requirements have been satisfied by the adoption of County of Oxford Plan Amendments Section 4.2.2.4.3

12. During the term of this Agreement, the parties shall obtain and maintain in full force and effect Municipal Liability Insurance, underwritten by an insurer licensed to conduct business in the Province of Ontario for a limit of not less than $5,000,000.00 per occurrence, an aggregate limit of not less than $5,000,000.00 within any policy year. This policy shall include but not be limited to:
i. Name the other party as an additional insured with respect to general liability
ii. Cross-liability and severability of interest
iii. Blanket Contractual Liability
iv. Environmental Policy to cover injury to or physical damage to tangible property including loss of use of tangible property, or the prevention, control, repair, cleanup or restoration of environmental impairment of lands, the atmosphere or any water course or body of water on a sudden and accidental basis and on a gradual release
v. The policy shall include 30 days' notice of cancellation.

13. The Corporation of the Township of Perth East shall defend, indemnify and save harmless the County of Oxford and its elected officials, officers, employees and agents from and against any and all claims of any nature, actions, causes of action, losses, expenses, fines, costs (including legal costs), interest or damages of every nature and kind whatsoever, including but not limited to bodily injury, sickness, disease or death or to damage to or destruction of tangible property including loss of revenue or incurred expense resulting from disruption of service, arising out of or allegedly attributable to the negligence, acts, errors, omissions, misfeasance, nonfeasance, fraud or willful misconduct of the Township of Perth East and its directors, officers, employees, agents, contractors and subcontractors, or any of them, in connection with or in any way related to the delivery or performance of this Contract. This indemnity shall be in addition to and not in lieu of any insurance to be provided by the Corporation of the Township of Perth East in accordance with this Agreement, and shall survive this Agreement.

14. The County of Oxford shall defend, indemnify and save harmless the Corporation of the Township of Perth East and its elected officials, officers, employees and agents from and against any and all claims of any nature, actions, causes of action, losses, expenses, fines, costs (including legal costs), interest or damages of every nature and kind whatsoever, including but not limited to bodily injury, sickness, disease or death or to damage to or destruction of tangible property including loss of revenue or incurred expense resulting from disruption of service, arising out of or allegedly attributable to the negligence, acts, errors, omissions, misfeasance, nonfeasance, fraud or willful misconduct of the County of Oxford and its directors, officers, employees, agents, contractors and subcontractors, or any of them, in connection with or in any way related to the delivery or performance of this Contract. This indemnity shall be in addition to and not in lieu of any insurance to be provided by the County of Oxford in accordance with this Agreement, and shall survive this Agreement.

15. This Agreement shall commence upon execution of the same and shall be reviewed at least every five years subsequently.

16. Termination of this Agreement may be carried out with six months' notice at the request of either party.

17. This Agreement may be executed in counterparts, which, when taken together, shall be deemed to constitute one and the same Agreement with an effective date as of the date when the signatory hereto executing at the latest date as indicated herein has executed the Agreement.

COUNTY OF OXFORD

David Simpson, P.Eng., PMP
Director of Public Works

Peter M. Crockett, P.Eng.
Chief Administrative Officer

THE CORPORATION OF THE TOWNSHIP OF PERTH EAST

Bob McMillan
Mayor

Theresa Campbell
Clerk
<table>
<thead>
<tr>
<th>Address</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>3549 Road 107</td>
<td>2161 Line 29</td>
</tr>
<tr>
<td>3553 Road 107</td>
<td>2163 Line 29</td>
</tr>
<tr>
<td>3567 Road 107</td>
<td>2169 Line 29</td>
</tr>
<tr>
<td>3558 Road 107</td>
<td>2173 Line 29</td>
</tr>
<tr>
<td>3560 Road 107</td>
<td>2175 Line 29</td>
</tr>
<tr>
<td>3562 Road 107</td>
<td>2177 Line 29</td>
</tr>
<tr>
<td>3563 Road 107</td>
<td>2181 Line 29</td>
</tr>
<tr>
<td>3565 Road 107</td>
<td>2183 Line 29</td>
</tr>
<tr>
<td>3566 Road 107</td>
<td>2184 Line 29</td>
</tr>
<tr>
<td>3568 Road 107</td>
<td>2187 Line 29</td>
</tr>
<tr>
<td>3573 Road 107</td>
<td>2189 Line 29</td>
</tr>
<tr>
<td>3575 Road 107</td>
<td>2190 Line 29</td>
</tr>
<tr>
<td>3577 Road 107</td>
<td>2193 Line 29</td>
</tr>
<tr>
<td>3579 Road 107</td>
<td>2196 Line 29</td>
</tr>
<tr>
<td>3581 Road 107</td>
<td>2210 Line 29</td>
</tr>
<tr>
<td>3583 Road 107</td>
<td>985285 Perth Oxford Road</td>
</tr>
<tr>
<td>3584 Road 107</td>
<td>985303 Perth Oxford Road</td>
</tr>
<tr>
<td>3587 Road 107</td>
<td></td>
</tr>
<tr>
<td>3591 Road 107</td>
<td></td>
</tr>
<tr>
<td>3596 Road 107</td>
<td></td>
</tr>
<tr>
<td>3597 Road 107</td>
<td></td>
</tr>
</tbody>
</table>
To: Warden and Members of County Council
From: Director of Public Works

Pilot Testing of Automated Vehicles – Draft Road Network

RECOMMENDATIONS


2. And further, that County Council endorse the draft Automated Vehicle network of preferred routes in Oxford County, as attached to Report No. PW 2018-20, for pilot testing of Level 4/5 Automated Vehicles as part of a Windsor to Ottawa network.

REPORT HIGHLIGHTS

- Proposed amendments to Ontario Regulation 306/15: Pilot Project – Automated Vehicles will permit driverless testing of Level 4/5 Automated Vehicles (AV) on public roads.

- Ontario Good Roads Association (OGRA) has facilitated a municipal alliance, which Oxford County is participating in, with a vision to identify an AV road network extending from Windsor to Ottawa that, once established, would be the longest AV testing corridor in the world.

- County staff have developed a draft AV network on County roads and will work with area municipalities to integrate the network with local routes within their communities.

Implementation Points

Following Council approval of the recommendations in this report, staff will work with area municipalities to develop local routes within their communities.

OGRA will compile routes submitted by various jurisdictions and develop an aggregate map that will be used for further discussion and collaboration with AV manufacturers.

Financial Impact

There is no financial impact, with the exception of staff resources, associated with this initiative.

The Treasurer has reviewed this report and agrees with the financial impact information.
Risks/Implications

The proposed amendments to Ontario Regulation 306/15: Pilot Project – Automated Vehicles will permit driverless testing of AVs on public roads. As a result, municipalities will not have the authority to prohibit AV testing within their communities.

Collaboration with AV manufacturers and municipal partners to identify an AV testing road network will ensure a focused approach and provide opportunities for municipalities to influence AV testing and implementation for local and regional benefits.

Strategic Plan (2015-2018)

County Council adopted the County of Oxford Strategic Plan (2015-2018) at its regular meeting held May 27, 2015. The initiative contained within this report supports the Values and Strategic Directions as set out in the Strategic Plan as it pertains to the following Strategic Directions:

1. ii. A County that Works Together – Enhance the quality of life for all of our citizens by:
   - Working with community partners and organizations to maintain / strengthen public safety

2. i. A County that is Well Connected – Improve travel options beyond the personal vehicle by:
   - Exploring the feasibility of innovative inter-municipal transportation strategies (E.g., car/ride share)

2. ii. A County that is Well Connected – Advocate for appropriate federal and provincial support, programming and financial initiatives to strengthen the movement of people and goods to, from and through the County

3. i. A County that Thinks Ahead and Wisely Shapes the Future – Influence federal and provincial policy with implications for the County by:
   - Advocating for federal and provincial initiatives that are appropriate to our county

3. iii. A County that Thinks Ahead and Wisely Shapes the Future - Demonstrated commitment to sustainability by:
   - Ensuring that all significant decisions are informed by assessing all options with regard to the community, economic and environmental implications including:
     o Responsible environmental leadership and stewardship

DISCUSSION

Background

Automated Vehicles (AVs) are driverless or self-driving vehicles that are capable of detecting the surrounding environment using artificial intelligence, sensors and GPS coordinates, and
have the potential to help improve fuel efficiency, as well as reduce traffic congestion, greenhouse gas emissions (GHG) and driver distraction.

On January 1, 2016, the Ontario Ministry of Transportation (MTO) launched a 10-year pilot project under the Highway Traffic Act (HTA) and Ontario Regulation 306/15 to allow for the testing of Level 3 to Level 5 AVs on public roads, making Ontario the first Canadian jurisdiction to regulate AV testing. The pilot enables manufacturers to conduct research and development in Ontario rather than in competing jurisdictions, as well as support opportunities to bring AVs to market.

Level 3 AVs require a driver to assume vehicle operation in the event of a system failure or mechanical issue, whereas Level 4/5 AVs can operate without a driver. However, under the current AV Pilot Project regulation (O.Reg 306/15) a driver must remain in the driver’s seat of the vehicle at all times and monitor the vehicles’ operation. Proposed amendments to this regulation would permit driverless testing of Level 4/5 AVs as part of the pilot.

To ensure municipalities are prepared for the emergence of AV technologies and in anticipation of the proposed amendment to the AV Pilot Project that would permit testing of driverless vehicles, the Ontario Good Roads Association (OGRA) has developed a strategy to actively engage manufacturers of AV technologies and to create a seamless Level 4/5 AV corridor extending from the Windsor to Ottawa corridor. This vision would establish the longest AV testing corridor in the world and further advance Ontario as a leading jurisdiction in AV technology.

As an initial step to implement this strategy, OGRA has facilitated the Municipal Alliance for Connected and Automated Vehicles in Ontario (MACAVO), consisting of member municipalities that are interested in the development of an AV corridor. Warden Mayberry was invited by OGRA to participate in MACAVO and attended the first meeting with staff on March 26, 2018. Participating municipalities were asked to identify routes in their community with the specific criteria left at the discretion of each jurisdiction. Designated routes can include a variety of road conditions (i.e. urban vs rural, gravel vs paved, etc), and any areas of preferred focus such as intermodal connections, commercial/institutional areas, transit routes, etc., as well as areas that municipalities would prefer to avoid. Identified routes would not require any infrastructure enhancements above minimum maintenance standards.

OGRA will compile the routes identified by each jurisdiction and develop an aggregate map for further review by MACAVO members.

Comments

Staff have identified a draft AV network on County roads as shown on Attachment 1. The proposed routes provide a loop within Oxford County that connects to all eight area municipalities, as well as connection points to provincial highways and to neighbouring jurisdictions.

Staff will forward the AV routes to area municipalities and ask them to consider identifying routes in their community that could potentially link to the County AV network, with the objective of establishing routes with a variety of conditions (i.e. gravel/paved surfaces, urban, rural, multi-
lane, etc). Staff will also facilitate a workshop with area municipalities for further discussion and collaboration on this initiative.

Establishing a designated AV testing road network will provide a focused approach for AV manufacturers where they can consider enhanced mapping of the routes (#D laser scanning) and further testing and validation of wireless communication networks and technology.

Conclusions

Automated Vehicles have the potential to deliver environmental, economic, social and safety benefits including decreased GHG emissions, enhanced mobility, reduced traffic congestion and improved flow of goods and services. OGRA’s strategy to actively engage AV manufacturers and municipal partners will support Provincial initiatives for the advancement and deployment of AV technologies and position Ontario as a leading jurisdiction.

SIGNATURES

Report Author:

Original signed by:

______________________________
Frank Gross, C. Tech
Manager of Transportation and Waste Management Services

Departmental Approval:

Original signed by:

______________________________
David Simpson, P.Eng., PMP
Director of Public Works

Approved for submission:

Original signed by:

______________________________
Peter M. Crockett, P.Eng.
Chief Administrative Officer

ATTACHMENT

Attachment 1: Draft Oxford County Automated Vehicle Network Map
To: Warden and Members of County Council

From: Director of Public Works
       Director of Corporate Services

Potters Road Sanitary Sewer and Watermain Project

RECOMMENDATION

1. That By-law No. 6012-2018, being a by-law to authorize the funding sources and mandatory connection for the Potters Road Sanitary Sewer and Watermain Project, be presented to Council for enactment.

REPORT HIGHLIGHTS

- The purpose of this report is to authorize funding sources for the extension of water services and sanitary sewer services installed in 2017.

- Total costs for the water and sewer extension to the Potters Road properties is $163,845.

- Funding for the cost of the project is comprised of $59,153 from future development; $24,673 is funded from the Community Servicing Assistance Program (CSAP) Reserve and $80,019 is attributed to the existing developed properties (net of CSAP).

- In addition to the total cost of the project, $10,300 will be billed to benefitting properties with existing water service in accordance to By-law No. 4889-2007 Fees and Charges.

- As per procedures under the County Water and Sewer Services Financing Policy, public meetings were held with the affected property owners on August 17, 2017 and February 21, 2018.

Implementation Points

With County Council approval of this report and passing of the authorizing by-law, staff will proceed to bill the benefitting property owners as set out in Schedule “B” of the by-law. Property owners will be presented options to pay a lump sum payment without interest or through a debenture (with interest) which will be collected with their taxes.

Financial Impact

The water and sanitary extension project was completed in 2017 for a total cost of $163,845.

The Treasurer has reviewed this report and agrees with the financial impact information.
Risks/Implications

A minor risk exists in that unrealized future growth/development could create a situation where stranded debt would have to be levied and collected either through future user fees or taxes.

Strategic Plan (2015-2018)

County Council adopted the County of Oxford Strategic Plan (2015-2018) at its regular meeting held May 27, 2015. The initiative contained within this report supports the Values and Strategic Directions as set out in the Strategic Plan as it pertains to the following Strategic Directions:

3. iii. A County that Thinks Ahead and Wisely Shapes the Future - Demonstrated commitment to sustainability by:
   - Ensuring that all significant decisions are informed by assessing all options with regard to the community, economic and environmental implications including:
   - Life cycle costs and benefit/costs, including debt, tax and reserve levels and implications

4. i. A County that Informs and Engages - Harness the power of the community through conversation and dialogue by:
   - Providing multiple opportunities for public participation and a meaningful voice in civic affairs
   - Fostering greater involvement in County and community events and/or program/project implementation

DISCUSSION

Background

The Potters Road project was originally planned as a road resurfacing project in the 2017 capital budget. The scope was subsequently changed to a full road reconstruction and urbanization project due to: preference to urbanize the existing road cross-section (replace gravel shoulders, ditches and driveway culverts with curb and gutter, sidewalk, and storm sewer installation), the age and material of part of the existing watermain, and to benefit residences that did not have municipal sanitary service on a block of Potters Road. Extension of watermain to Harvest Avenue to accommodate future development, and servicing to properties on that stretch was also added to the scope.

A location map is included in the draft by-law as Schedule A and is attached to this report as Attachment 1.

Comments

As required by the procedures under the County Water and Sewer Services Financing Policy, public meetings were held with the affected property owners on August 17, 2017 and February 21, 2018. In February 2018 after the public meeting, a letter was sent to each landowner to further inform them of the billing process. In response, there have been discussions with a number of property owners to address property specific issues.
The billing procedure and CSAP grant proposed are in accordance with County By-laws and procedures. The CSAP grant only applies to developed properties that existed at the time of servicing.

Cost allocations for future development was based on the cost of the water extension less connection charges for the two benefitting properties which were in accordance with By-law No. 4889-2007 Fees and Charges. Cost allocations for benefitting properties have been calculated on a single resident dwelling unit equivalency (SDE) basis. Charges for connection of lots created by severance in the future will be applied in addition to development charges at the time they are developed - to be paid at severance registration or prior to a building permit being issued.

With County Council approval of this report and adoption of the by-law, County staff will proceed to bill the benefitting property owners the amount noted within the by-law. Property owners will have the option to pay a lump sum payment without interest or through a debenture payment plan with their annual property tax bill. The debenture payment plan options offer either a 5 or 10 year repayment term including interest with no option for early payout. Under the lump sum payment option, the County is paid up front. Alternatively, property owners may choose to arrange private financing with more personalized terms.

Schedule “B” of the authorizing by-laws provide a list of benefitting properties by roll number having existing buildings that will be required to connect to the water and wastewater services by October 31, 2019 – the mandatory connection date as set out in the by-law. Also forming part of the by-law is a map of the areas serviced by the project - see Attachment 1 to this report.

**Conclusions**

The proposed funding model, including a CSAP grant component, as described within this report are in accordance with County policies and procedures. As such, staff recommends that Council authorize the funding sources to recover costs for this project.

**SIGNATURES**

**Report Author:**

Original signed by: 
Jennifer Lavallee, CPA, CGA  
Coordinator of Asset Management

**Departmental Approval:**

Original signed by:  
David Simpson, P.Eng., PMP  
Director of Public Works

Original signed by:  
Lynn S. Buchner, CPA, CGA  
Director of Corporate Services
Approved for submission:

Original signed by:  

Peter M. Crockett, P.Eng.  
Chief Administrative Officer

ATTACHMENT

Attachment 1: Draft By-law No. 6012-2018 – Potters Road Sanitary Sewer and Watermain Project
COUNTY OF OXFORD

BY-LAW NO. 6012-2018

BEING a by-law to mandate connection to and impose the cost of the water and sanitary sewage system to the area designated and referred to as the Potters Road Sanitary Sewer and Watermain Project;

WHEREAS section 9 of the Municipal Act, 2001, S.O. 2001 c. 25, provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority;

AND WHEREAS section 11 of the Municipal Act, 2001, S.O. 2001 c. 25, provides that the County of Oxford, as an upper-tier municipality, has jurisdiction for provision of public utilities specifically including collection of sanitary sewage and water distribution;

AND WHEREAS sections 9, 11 and 391 of the Municipal Act, 2001, S.O. 2001 c. 25, provide that the County of Oxford, as an upper-tier municipality, may pass by-laws imposing charges for capital costs related to sewage and water services upon the owners of lands to which such services are provided;

AND WHEREAS sections 8(2) and 11 of the Municipal Act, 2001, S.O. 2001 c. 25, provide that the County of Oxford, as an upper-tier municipality, may pass by-laws to require persons to connect to municipal water and sanitary sewage works;

AND WHEREAS sections 445 and 446 of the Municipal Act, 2001, S.O. 2001 c. 25, provide that the County of Oxford may pass by-laws authorizing remedial action to be undertaken by the County at a person's expense in certain circumstances;

AND WHEREAS pursuant to section 445 (1) of the Municipal Act, 2001, S.O. 2001 c. 25, if a municipality is satisfied that a contravention of a By-law of the municipality has occurred, the municipality may make an order requiring the person who contravened the By-law to do work to correct the contravention;

AND WHEREAS the County of Oxford has installed water and sanitary services, referred to as the Potters Road Sanitary Sewer and Watermain Project (the “Services”), that benefit the owners of the lands as illustrated on the map attached to and forming part of this By-law as Schedule “A” with the associated property assessment role numbers shown on the list attached to and forming part of this By-law as Schedule “B” (“Benefitting Properties”);

AND WHEREAS the total costs to date for the Services amounts to $163,845 (“Total Cost”).

NOW THEREFORE THE COUNCIL OF THE COUNTY OF OXFORD ENACTS AS FOLLOWS:

1. That the Total Costs of the Services shall be allocated as follows: $59,153 shall be funded by future development, $80,019 shall be attributed to the Benefitting Properties, and $24,673 shall be funded from the Community Servicing Assistance Program (CSAP) Reserve.

2. In addition to the total cost of the project, $10,300 is attributed to benefitting properties in accordance with By-law No. 4889-2007 Fees and Charges.
3. That the Total Costs attributed to the Benefiting Properties shall be apportioned to, and collected from, the owners of the Benefitting Properties as set out in Schedule “B”.

4. That the Benefitting Properties, listed on Schedule “B” attached hereto and forming part of this By-law, that have existing buildings with plumbing at the time of passing this By-Law are required to be connected to the Services by October 31, 2019.

5. The County of Oxford may, at any reasonable time, enter land in accordance with section 436 of the Municipal Act, 2001 for the purpose of carrying out an inspection to determine whether or not this By-law is being complied with.

6. In the event that a person fails to make a connection as required by this By-law, the County of Oxford may enter onto the lands and make the connections at the expense of owner of the Benefitting Properties in accordance with sections 446 the Municipal Act, 2001.

7. In addition to other methods of cost recovery available, the costs of such remedial action by the County of Oxford may be added to the tax roll in accordance with sections 446 (3) through (8) of the Municipal Act, 2001.

READ a first and second time this 25th day of April, 2018.

READ a third time and finally passed in this 25th day of April, 2018.

______________________________
DAVID MAYBERRY, WARDEN

______________________________
BRENDA J. TABOR, CLERK
### COUNTY OF OXFORD
### BY-LAW NO. 6012-2018
### SCHEDULE “B”

**Potters Road Sanitary Sewer and Watermain Project**

<table>
<thead>
<tr>
<th>ROLL No.</th>
<th>Water</th>
<th>Sanitary</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>320402201000500</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
<tr>
<td>320402201000600</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
<tr>
<td>320402201000800</td>
<td>3,260</td>
<td>6,729</td>
<td>9,989</td>
</tr>
<tr>
<td>320402201000700</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
<tr>
<td>320402201000900</td>
<td>3,260</td>
<td>6,729</td>
<td>9,989</td>
</tr>
<tr>
<td>320402201000702</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
<tr>
<td>320402201001000</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
<tr>
<td>320402201001400</td>
<td>3,260</td>
<td>6,729</td>
<td>9,989</td>
</tr>
<tr>
<td>320402201002000</td>
<td>3,260</td>
<td>6,729</td>
<td>9,989</td>
</tr>
<tr>
<td>320402201002050</td>
<td>3,260</td>
<td>6,729</td>
<td>9,989</td>
</tr>
<tr>
<td>320402201002100</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
</tbody>
</table>

**Total** $16,300 $74,019 $90,319
<table>
<thead>
<tr>
<th>Council Meeting Date</th>
<th>Issue</th>
<th>Pending Action</th>
<th>Lead Dept.</th>
<th>Time Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>24-May-17</td>
<td>Resolution No. 8 - Princeton Wastewater Servicing Solution</td>
<td>Report</td>
<td>PW</td>
<td>Q-1 2018</td>
</tr>
<tr>
<td>24-May-17</td>
<td>5935-2017 - Natural Resource Gas Limited Franchise Agreement</td>
<td>3rd Reading</td>
<td>PW</td>
<td>Subject to OEB Order</td>
</tr>
<tr>
<td>10-Jan-18</td>
<td>Resolution No. 8 - Blandford-Blenheim resolution requesting the County</td>
<td>Report</td>
<td>CP</td>
<td>Q-1 2018</td>
</tr>
<tr>
<td></td>
<td>initiate a lands needs assessment including the need for future</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>residential growth - referred to Community Planning.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
COUNTY OF OXFORD

BY-LAW NO. 6012-2018

BEING a by-law to mandate connection to and impose the cost of the water and sanitary sewage system to the area designated and referred to as the Potters Road Sanitary Sewer and Watermain Project;

WHEREAS section 9 of the Municipal Act, 2001, S.O. 2001 c. 25, provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority;

AND WHEREAS section 11 of the Municipal Act, 2001, S.O. 2001 c. 25, provides that the County of Oxford, as an upper-tier municipality, has jurisdiction for provision of public utilities specifically including collection of sanitary sewage and water distribution;

AND WHEREAS sections 9, 11 and 391 of the Municipal Act, 2001, S.O. 2001 c. 25, provide that the County of Oxford, as an upper-tier municipality, may pass by-laws imposing charges for capital costs related to sewage and water services upon the owners of lands to which such services are provided;

AND WHEREAS sections 8(2) and 11 of the Municipal Act, 2001, S.O. 2001 c. 25, provide that the County of Oxford, as an upper-tier municipality, may pass by-laws to require persons to connect to municipal water and sanitary sewage works;

AND WHEREAS sections 445 and 446 of the Municipal Act, 2001, S.O. 2001 c. 25, provide that the County of Oxford may pass by-laws authorizing remedial action to be undertaken by the County at a person's expense in certain circumstances;

AND WHEREAS pursuant to section 445 (1) of the Municipal Act, 2001, S.O. 2001 c. 25, if a municipality is satisfied that a contravention of a By-law of the municipality has occurred, the municipality may make an order requiring the person who contravened the By-law to do work to correct the contravention;

AND WHEREAS the County of Oxford has installed water and sanitary services, referred to as the Potters Road Sanitary Sewer and Watermain Project (the “Services”), that benefit the owners of the lands as illustrated on the map attached to and forming part of this By-law as Schedule “A” with the associated property assessment role numbers shown on the list attached to and forming part of this By-law as Schedule “B” (“Benefitting Properties”);

AND WHEREAS the total costs to date for the Services amounts to $163,845 (“Total Cost”).

NOW THEREFORE THE COUNCIL OF THE COUNTY OF OXFORD ENACTS AS FOLLOWS:

1. That the Total Costs of the Services shall be allocated as follows: $59,153 shall be funded by future development, $80,019 shall be attributed to the Benefitting Properties, and $24,673 shall be funded from the Community Servicing Assistance Program (CSAP) Reserve.

2. In addition to the total cost of the project, $10,300 is attributed to benefitting properties in accordance with By-law No. 4889-2007 Fees and Charges.
3. That the Total Costs attributed to the Benefiting Properties shall be apportioned to, and collected from, the owners of the Benefitting Properties as set out in Schedule “B”.

4. That the Benefitting Properties, listed on Schedule “B” attached hereto and forming part of this By-law, that have existing buildings with plumbing at the time of passing this By-Law are required to be connected to the Services by October 31, 2019.

5. The County of Oxford may, at any reasonable time, enter land in accordance with section 436 of the Municipal Act, 2001 for the purpose of carrying out an inspection to determine whether or not this By-law is being complied with.

6. In the event that a person fails to make a connection as required by this By-law, the County of Oxford may enter onto the lands and make the connections at the expense of owner of the Benefitting Properties in accordance with sections 446 the Municipal Act, 2001.

7. In addition to other methods of cost recovery available, the costs of such remedial action by the County of Oxford may be added to the tax roll in accordance with sections 446 (3) through (8) of the Municipal Act, 2001.

READ a first and second time this 9th day of May, 2018.

READ a third time and finally passed in this 9th day of May, 2018.

____________________________
DAVID MAYBERRY, WARDEN

____________________________
BRENDA J. TABOR, CLERK
Potters Road Reconstruction 2017
New Water & Sanitary Services

LEGEND
- New Water Service
- New Sanitary Service

Future Development

By-law No. 6012-2018
Schedule "A"
## COUNTY OF OXFORD
### BY-LAW NO. 6012-2018
#### SCHEDULE “B”

Potters Road Sanitary Sewer and Watermain Project

<table>
<thead>
<tr>
<th>ROLL No.</th>
<th>Water</th>
<th>Sanitary</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>320402201000500</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
<tr>
<td>320402201000600</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
<tr>
<td>320402201000800</td>
<td>3,260</td>
<td>6,729</td>
<td>9,989</td>
</tr>
<tr>
<td>320402201000700</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
<tr>
<td>320402201000900</td>
<td>3,260</td>
<td>6,729</td>
<td>9,989</td>
</tr>
<tr>
<td>320402201000702</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
<tr>
<td>320402201001000</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
<tr>
<td>320402201001400</td>
<td>3,260</td>
<td>6,729</td>
<td>9,989</td>
</tr>
<tr>
<td>320402201002000</td>
<td>3,260</td>
<td>6,729</td>
<td>9,989</td>
</tr>
<tr>
<td>320402201002050</td>
<td>3,260</td>
<td>6,729</td>
<td>9,989</td>
</tr>
<tr>
<td>320402201002100</td>
<td>-</td>
<td>6,729</td>
<td>6,729</td>
</tr>
</tbody>
</table>

**Total**  
$16,300  
$74,019  
$90,319
COUNTY OF OXFORD

BY-LAW NO. 6017-2018

BEING a By-law to remove certain lands from Part Lot Control.

WHEREAS, Tillsonburg Developments Inc., has applied to the County of Oxford to delete, by by-law, certain lands for two (2) residential lots in a registered subdivision from Part Lot Control.

AND WHEREAS pursuant to Subsection 77(1) of the Planning Act, R.S.O. 1990, c. P.13, as amended, the County of Oxford may pass a by-law under subsection 50(7) of the Planning Act, R.S.O. 1990, Chapter P.13, as amended;

NOW THEREFORE, the Council of the County of Oxford enacts as follows:

1. Pursuant to subsection 50(7), subsection 50(5) of the Planning Act, R.S.O. 1990, c. P.13, as amended, does not apply to:

   Part Lot 70, Registered Plan 41M-182, Town of Tillsonburg, County of Oxford, comprising a total number of two (2) parcels and each parcel to be marketed to individual grantees in accordance with the descriptions attached as Schedule “A” to this By-law.

2. Pursuant to subsection 50 (7.3) of the Planning Act, R.S.O. 1990, c. P.13, as amended, this By-law shall expire on May 9, 2019, unless it shall have prior to that date been repealed or extended by the Council of the County of Oxford.

3. That this By-law shall become effective on the date of third and final reading.

4. That after the lots or any portion thereof have been marketed to individual grantees this By-law may be repealed by the Council of the County of Oxford.

READ a first and second time this 9th day of May, 2018

READ a third time and finally passed this 9th day of May, 2018

DAVID MAYBERRY, WARDEN

BRENDA J. TABOR, CLERK
Pursuant to subsection 50(7), subsection 50(5) of the Planning Act, R.S.O. 1990, c. P.13, as amended, does not apply to:

Part Lot 70, Registered Plan 41M-182, Town of Tillsonburg, County of Oxford, comprising a total number of two (2) parcels and each parcel to be marketed to individual grantees in accordance with the descriptions as follows:

i. Part Lot 70, Plan 41M-182, being PARTS 15, 16 & 17, Plan 41R-9347; subject to an easement in gross over PARTS 15 & 16, Plan 41R-9374, and PART 16, Plan 41R-9347 as in CO156619; subject to an easement over PARTS 15 & 16, Plan 41R-9374 and PART 16, Plan 41R-9347, as in CO156620; subject to an easement over PART 17, Plan 41R-9347, in favour of Part Lot 70, Plan 41M-182, being PARTS 18, 19, 20 & 21, Plan 41R-9347 as in CO162663; being all of PIN 00025-1137

ii. Part Lot 70, Plan 41M-182, being PARTS 50, 51, 52 & 53, Plan 41R-9347; subject to an easement in gross over PART 51, Plan 41R-9347 as in CO156619; subject to an easement over PART 51, Plan 41R-9347 as in CO156620; together with an easement over Part Lot 70, Plan 41M-182 being PART 155, Plan 41R-8228 as in CO107602; together with an easement over Part Lot 70, Plan 41M-182 being PART 155, Plan 41R-8228 as in CO162663; subject to an easement over PART 50, Plan 41R-9347 in favour of Part Lot 70, Plan 41M-182, being PARTS 46, 47, 48 & 49, Plan 41R-9347 as in CO162663; being all of PIN 00025-1146

All PARTS are designated on a Plan of Survey deposited in the Land Registry Office for Oxford No. 41.
COUNTY OF OXFORD

BY-LAW NO. 6018-2018

BEING a By-law to amend By-law No. 5936-2017, being a By-law to remove certain lands from Part Lot Control.

WHEREAS, Council passed By-law No. 5936-2017 on May 24, 2017 containing an expiration date of May 24, 2018;

AND WHEREAS, 2274581 ONTARIO INC. has applied to the County of Oxford to amend the expiration date of By-law No. 5936-2017 which deleted certain lands for eight (8) residential lots in a registered subdivision from Part Lot Control.

NOW THEREFORE, the Council of the County of Oxford enacts as follows:

1. That By-law No. 5936-2017 is hereby amended by changing the expiration date to May 9, 2019.

2. That this By-law shall become effective on the date of third and final reading.

READ a first and second time this 9th day of May, 2018

READ a third time and finally passed this 9th day of May, 2018

DAVID MAYBERRY, WARDEN

BRENDA J. TABOR, CLERK
COUNTY OF OXFORD
BY-LAW NO. 6019-2018

BEING a By-law to amend By-law No. 5725-2015, as amended, to revise the times when the reduced speed limit is in effect within the designated school zone on a section of Oxford Road 59 (Stover Street South) in the Township of Norwich.

WHEREAS, the Table to Section 11 and Section 52 (3) of the Municipal Act, 2001, S.O. 2001, Chapter 25, prescribes that specified highways are within the jurisdiction of the County of Oxford for all matters relating to those highways, including parking and traffic.

AND WHEREAS, the Highway Traffic Act, R.S.O. 1990, Chapter H.8 authorizes a municipality to prescribe speed limits for motor vehicles driven on any highway or portion of a highway under its jurisdiction.


NOW THEREFORE, the Council of the County of Oxford enacts as follows:

1. That Schedule “A” of By-law No. 5725-2015, as amended, is hereby amended by removing the wording respecting the reference to County Road 59 only, and replacing the wording to read:

“from 15 metres South of the South limit of South Street, Norwich to 33 metres North of the North limit of Robson Street, Norwich – for specific times, being from 8:15 a.m. to 9:00 a.m., 10:40 a.m. to 11:30 a.m., 1:10 p.m. to 1:50 p.m., and 3:15 p.m. to 4:00 p.m., Monday to Friday when school is in session”

2. That Schedules “A”, “B”, “C” and “D” to By-law No. 5725-2015 with amendments consolidated to date are attached hereto and form part of this By-law.

READ a first and second time this 9th day of May, 2018.

READ a third time and finally passed this 9th day of May, 2018.

DAVID MAYBERRY, WARDEN

BRENDA J. TABOR, CLERK
<table>
<thead>
<tr>
<th>Highway</th>
<th>From the point described as</th>
<th>To the point described as</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Road 3</td>
<td>South limit of County Road 29, Drumbo</td>
<td>260 metres South of South limit of County Road 29, Drumbo</td>
</tr>
<tr>
<td>County Road 4</td>
<td>10 metres North of the North limit of George St. Innerkip</td>
<td>10 metres South of South limit of Main St./Burton St. Innerkip</td>
</tr>
<tr>
<td></td>
<td>For specific times, being from 8:30am to 9:00am, 12:15pm to 12:45pm and 3:30pm to 4:00pm, Monday to Friday when school is in session.</td>
<td></td>
</tr>
<tr>
<td>County Road 8</td>
<td>20 metres West of the West limit of William St. Plattsville</td>
<td>20 metres East of East limit of River Road Plattsville</td>
</tr>
<tr>
<td></td>
<td>For specific times, being from 8:15am to 9:00am, and 2:30pm to 3:00pm, Monday to Friday when school is in session.</td>
<td></td>
</tr>
<tr>
<td>County Road 8</td>
<td>30 metres West of the West limit of John St. Hickson</td>
<td>100 metres West of West limit of 13th Line Hickson</td>
</tr>
<tr>
<td></td>
<td>For specific times, being from 8:30am to 9:00am, and 3:30pm to 4:00pm, Monday to Friday when school is in session.</td>
<td></td>
</tr>
<tr>
<td>County Road 15</td>
<td>30 metres West of the West limit of Sales Drive, Woodstock</td>
<td>90 metres East of the East limit of Robinson St. Woodstock</td>
</tr>
<tr>
<td>County Road 35</td>
<td>Springbank Avenue, Woodstock</td>
<td>Cree Avenue, Woodstock</td>
</tr>
<tr>
<td>County Road 53</td>
<td>10 metres North of the North limit of Brock St., Tillsonburg</td>
<td>South limit of Concession Street, Tillsonburg</td>
</tr>
<tr>
<td>County Road 59</td>
<td>15 metres South of the South limit of South St. Norwich</td>
<td>33 metres North of the North limit of Robson St. Norwich</td>
</tr>
<tr>
<td></td>
<td>For specific times, being from 8:15am to 9:00am, 10:40am to 11:30am, 1:10pm to 1:50pm, and 3:15pm to 4:00pm Monday to Friday when school is in session.</td>
<td></td>
</tr>
<tr>
<td>Highway</td>
<td>From the point described as</td>
<td>To the point described as</td>
</tr>
<tr>
<td>-----------------</td>
<td>------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>County Road 2</td>
<td>193 metres West of Stanley Street, Thamesford</td>
<td>403 metres East of the 21st Line Zorra Thamesford</td>
</tr>
<tr>
<td>County Road 2</td>
<td>310 metres West of the West limit of Ingersoll Road, Woodstock</td>
<td>West limit of Mill Street, Woodstock</td>
</tr>
<tr>
<td>County Road 2</td>
<td>631 metres West of Oxford County Road #3 Princeton</td>
<td>268 metres East of Oxford County Road #3 Princeton</td>
</tr>
<tr>
<td>County Road 3</td>
<td>North limit of County Road #2, Princeton</td>
<td>90 metres North of the North limit of Roper St., Princeton</td>
</tr>
<tr>
<td>County Road 3</td>
<td>670 metres South of the South limit of County Road #29, Drumbo</td>
<td>260 metres South of the South limit of County Road 29</td>
</tr>
<tr>
<td>County Road 3</td>
<td>North limit of County Road 29, Drumbo</td>
<td>660 metres North of the North limit of County Road #29, Drumbo</td>
</tr>
<tr>
<td>County Road 4</td>
<td>190 metres South of George St., Innerkip</td>
<td>the West end of County Road #29</td>
</tr>
<tr>
<td>County Road 6</td>
<td>North limit of County Road #12, Foldens</td>
<td>570 metres North of the North limit of County Road #12, Foldens</td>
</tr>
<tr>
<td>County Road 6</td>
<td>480 metres South of the South limit of John St., Embro</td>
<td>100 metres North of the North limit of Halliday St., Embro</td>
</tr>
<tr>
<td>County Road 7</td>
<td>South limit of Bell St. Ingersoll</td>
<td>270 metres North of the North Townline Road, Ingersoll</td>
</tr>
<tr>
<td>County Road 8</td>
<td>180 metres West of the West limit of County Road #59, Hickson</td>
<td>30 metres East of the East limit of 13th Line, Hickson</td>
</tr>
<tr>
<td>County Road 8</td>
<td>535 metres West of the West limit of County Road #22, Bright</td>
<td>620 metres East of the East limit of County Road #22, Bright</td>
</tr>
<tr>
<td>County Road 8</td>
<td>10 metres South of the South limit of Isabella St., Plattsville</td>
<td>150 metres East of the East limit of Walter St., Plattsville</td>
</tr>
<tr>
<td>County Road 8</td>
<td>230 metres West of the West limit of County Road #3, Washington</td>
<td>350 metres East of the East limit of County Road #3, Washington</td>
</tr>
<tr>
<td>County Road 9</td>
<td>700 metres West of the West limit of Ingersoll St., Ingersoll</td>
<td>East limit of County Road 10 Ingersoll St., Ingersoll</td>
</tr>
<tr>
<td>County Road 9</td>
<td>West limit of Harris St. Ingersoll</td>
<td>450 metres East of the East limit of Taylor St., Ingersoll</td>
</tr>
<tr>
<td>County Road</td>
<td>Distance</td>
<td>Points of Interest</td>
</tr>
<tr>
<td>-------------</td>
<td>----------</td>
<td>--------------------</td>
</tr>
<tr>
<td>9</td>
<td>310 metres West of the Street, Beachville</td>
<td>340 metres West of the West limit of East Hill Road, Beachville</td>
</tr>
<tr>
<td>9</td>
<td>South limit of Park Row, Woodstock</td>
<td>South limit of Dundas St. Woodstock</td>
</tr>
<tr>
<td>10</td>
<td>1130 metres South of the South limit of County Road #20, Brownsville</td>
<td>340 metres North of the North limit of County Road #20, Brownsville</td>
</tr>
<tr>
<td>10</td>
<td>West limit of Culloden Rd., Ingersoll</td>
<td>South limit of County Rd. 119 Bell St., Ingersoll</td>
</tr>
<tr>
<td>11</td>
<td>Northerly limits of Queen St., Beachville</td>
<td>390 metres North of Queen St., Beachville</td>
</tr>
<tr>
<td>12</td>
<td>770 metres South of the South limit of Bowerhill Rd., Woodstock.</td>
<td>South limit of Dundas St. Woodstock</td>
</tr>
<tr>
<td>15</td>
<td>90 metres East of the East limit of Robinson St., Woodstock</td>
<td>80 metres East of the East limit of Springbank Ave., Woodstock.</td>
</tr>
<tr>
<td>18</td>
<td>200 metres West of the West limit of Spring St., Norwich</td>
<td>130 metres East of the East limit of Phoebe St., Norwich</td>
</tr>
<tr>
<td>18</td>
<td>East limit of Highway 19, Mt. Elgin</td>
<td>430 metres East of the East limit of Highway 19, Mt. Elgin</td>
</tr>
<tr>
<td>19</td>
<td>290 metres West of the West limit of James St., Otterville</td>
<td>320 metres East of the East limit of York St., Otterville</td>
</tr>
<tr>
<td>19</td>
<td>450 metres West of the West limit of County Road #13, Springford</td>
<td>1030 metres East of the East limit of County Road #13, Springford</td>
</tr>
<tr>
<td>20</td>
<td>180 metres West of the West limit of County Road #10 Brownsville</td>
<td>320 metres East of the East limit of County Road #10, Brownsville</td>
</tr>
<tr>
<td>20</td>
<td>720 metres West of the West limit of the road between lots 14/15, Delmer</td>
<td>200 metres East of the East limit of the road between lots 14/15, Delmer</td>
</tr>
<tr>
<td>20</td>
<td>West limit of the Town of Tillsonburg</td>
<td>East limit of the Town of Tillsonburg.</td>
</tr>
<tr>
<td>22</td>
<td>710 metres South of the South limit of County Road #8, Bright</td>
<td>240 metres North of the North limit of County Road #8, Bright</td>
</tr>
<tr>
<td>22</td>
<td>490 metres North of North limit of Oxford Road 29</td>
<td>175 metres South of North limit of Blandford-Blenheim Township Road 8</td>
</tr>
<tr>
<td>24</td>
<td>530 metres West of the West limit of Centennial St., Tavistock</td>
<td>200 metres East of the East limit of Victoria St., Tavistock</td>
</tr>
<tr>
<td>29</td>
<td>East end of County Road #4, Innerkip</td>
<td>50 metres West of the centre of the Thames River</td>
</tr>
<tr>
<td>29</td>
<td>370 metres West of the West limit of Morrow St., Drumbo</td>
<td>170 metres East of the East limit of Duke St., Drumbo</td>
</tr>
</tbody>
</table>
SCHEDULE "B"
FORMING PART OF BY-LAW NO. 5725-2015
CONSOLIDATED AS OF MAY 9, 2018
MAXIMUM RATE OF SPEED
50 KILOMETRES PER HOUR

County Road 33  668 metres West of the West limit of County West limit of County
West limit of County Road #4, Innerkip Road #4, Innerkip

County Road 35  East limit of Vansittart Springbank Avenue, Springbank Avenue,
Avenue, Woodstock Woodstock

County Road 35  East limit of Cree Avenue, 50 metres East of the East limit of Woodall Way, 
Woodstock Woodstock

County Road 37  North limit of Simcoe East limit of the Road in
Street, Tillsonburg lot 28, Con. 12, Township of Norwich

County Road 51  500 metres West of North limit of Oxford St.,
the West limit of Tillsonburg Tillsonburg

County Road 51  West limit of New Vienna 200 metres East of the East limit of Goshen St.,
Road, Tillsonburg Tillsonburg

County Road 53  North limit of Oxford St., 10 metres North of the North limit of Brock St.,
Tillsonburg Tillsonburg

County Road 53  South limit of Concession South limit of North St.,
Street, Tillsonburg Tillsonburg

County Road 54  North limits of Dundas South limit of Devonshire
Street, Woodstock Avenue, Woodstock

County Road 59  50 metres South of 58 metres North of
Robson Street, Norwich North Street,Norwich

County Road 59  334 metres East of 158 metres West of
Burgess Street, Deer Street,
Burgessville Burgessville

County Road 59  149 metres South of Tecumseh North limits of Dundas
Street, Woodstock Street, Woodstock

County Road 59  11 metres South of 119 metres South of
Dietrich Road, Tavistock Bauer Street, Tavistock

County Road 59  50 metres South of the 60 metres South of
Southerly limit of Salter Pattullo Avenue, 
Pattullo Avenue, Woodstock Woodstock

County Road 119  155 metres South of North limits of County
Stedelbauer Road Road 2, Thamesford
Thamesford

County Road 119  125 metres South of South limits of County
County Road 2, Thamesford Road 2, Thamesford

County Road 119  Thames Street, Ingersoll 268 metres North of Ingersoll Rd.
<table>
<thead>
<tr>
<th>Highway</th>
<th>From the point described as</th>
<th>To the point described as</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Road 2</td>
<td>350 metres West of County Road 6</td>
<td>350 metres East of County Road 6</td>
</tr>
<tr>
<td>County Road 2</td>
<td>West limit of the 10th Line Road of East Zorra-Tavistock</td>
<td>215 metres West of Bexley Street, in the City of Woodstock</td>
</tr>
<tr>
<td>County Road 2</td>
<td>120 metres West of the 15th Line</td>
<td>193 metres West of Stanley Street, Thamesford</td>
</tr>
<tr>
<td>County Road 2</td>
<td>631 metres west of the west limit of County Road 3, Princeton</td>
<td>1131 metres west of the west limit of County Road 3, Princeton</td>
</tr>
<tr>
<td>County Road 2</td>
<td>268 metres east of the east limit of County Road 3, Princeton</td>
<td>668 metres east of the east limit of County Road 3, Princeton</td>
</tr>
<tr>
<td>County Road 3</td>
<td>South limit of County Road #8</td>
<td>280 metres South of the South limit of County Road #8</td>
</tr>
<tr>
<td>County Road 3</td>
<td>90 metres north of the north limit of Roper St., Princeton</td>
<td>340 metres north of the north limit of Roper St., Princeton</td>
</tr>
<tr>
<td>County Road 3</td>
<td>670 metres south of the south limit of County Road 29, Drumbo</td>
<td>870 metres south of the south limit of County Road 29, Drumbo</td>
</tr>
<tr>
<td>County Road 3</td>
<td>660 metres north of the north limit of County Road 29, Drumbo</td>
<td>860 metres north of the north limit of County Road 29, Drumbo</td>
</tr>
<tr>
<td>County Road 6</td>
<td>260 metres South of the South limit of Road between lots 25 and 26, Brooksdale</td>
<td>390 metres North of the North limit of Road between lots 25 and 26, Brooksdale</td>
</tr>
<tr>
<td>County Road 6</td>
<td>350 metres North of County Road 2</td>
<td>350 metres South of County Road 2</td>
</tr>
<tr>
<td>County Road 7</td>
<td>270 metres North of the North limit of the North Town Line, Ingersoll</td>
<td>365 metres North of the North limit of the North Town Line, Ingersoll</td>
</tr>
<tr>
<td>County Road 8</td>
<td>30 metres East of the East limit of 13th Line, Hickson</td>
<td>320 metres East of the East limit of 13th Line, Hickson</td>
</tr>
<tr>
<td>County Road 8</td>
<td>835 metres West of West limit of County Road 22</td>
<td>535 metres West of West limit of County Road 22</td>
</tr>
<tr>
<td>County Road 8</td>
<td>620 metres East of East limit of County Road 22</td>
<td>920 metres East of East limit of County Road 22</td>
</tr>
<tr>
<td>County Road 8</td>
<td>80 metres North of the North limit of Elizabeth St., Plattsville</td>
<td>10 metres South of the South limit of Isabella St., Plattsville</td>
</tr>
</tbody>
</table>
## SCHEDULE “C”

**FORMING PART OF BY-LAW NO. 5725-2015**  
**CONSOLIDATED AS OF MAY 9, 2018**  
**MAXIMUM RATE OF SPEED**  
**60 KILOMETRES PER HOUR**

<table>
<thead>
<tr>
<th>County Road</th>
<th>Distance</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Road 8</td>
<td>30 metres East of the East limit of Hofstetter Road, Plattsville</td>
<td>150 metres East of the East limit of Walter Street, Plattsville</td>
</tr>
<tr>
<td>County Road 8</td>
<td>230 metres West of the West limit of County Road #3, Washington</td>
<td>480 metres West of the West limit of County Road #3, Washington</td>
</tr>
<tr>
<td>County Road 8</td>
<td>350 metres East of the East limit of County Road #3, Washington</td>
<td>600 metres East of the East limit of County Road #3, Washington</td>
</tr>
<tr>
<td>County Road 9</td>
<td>310 metres West of the West limit of Vine St., Beachville</td>
<td>150 metres West of the West limit of Domtar Line, Beachville</td>
</tr>
<tr>
<td>County Road 9</td>
<td>340 metres West of the West limit of East Hill Road, Beachville</td>
<td>100 metres East of the East limit of East Hill Road, Beachville</td>
</tr>
<tr>
<td>County Road 9</td>
<td>520 metres South of the South limit of Park Row, Woodstock</td>
<td>South limit of Park Row, Woodstock</td>
</tr>
<tr>
<td>County Road 9</td>
<td>Western boundary of Ingersoll and South-West Oxford</td>
<td>395 metres west of the 25th Line of South-West Oxford Township</td>
</tr>
<tr>
<td>County Road 10</td>
<td>530 metres South of the South limit of the Road between Con. 8 &amp; 9, Culloden</td>
<td>200 metres North of the North limit of the Road between Con. 8 &amp; 9, Culloden</td>
</tr>
<tr>
<td>County Road 10</td>
<td>1140 metres South of the South limit of the Road between Con. 4 &amp; 5, Verschoyle</td>
<td>200 metres North of the North limit of the Road between Con. 4 &amp; 5, Verschoyle</td>
</tr>
<tr>
<td>County Road 10</td>
<td>250 metres North of the North limit of the road between Con. 1 &amp; 2, West Oxford</td>
<td>South limit of the Northern ramp terminal at Hwy 401</td>
</tr>
<tr>
<td>County Road 12</td>
<td>160 metres West of the West limit of County Road #6, Foldens</td>
<td>260 metres East of the East limit of County Road #6, Foldens</td>
</tr>
<tr>
<td>County Road 12</td>
<td>480 metres West of the West limit of Dodge Line, Sweaburg</td>
<td>230 metres East of the East limit of Dodge Line, Sweaburg</td>
</tr>
<tr>
<td>County Road 12</td>
<td>240 metres North of the North limit of Con. 3 &amp; 4, East Oxford</td>
<td>770 metres South of the South limit of Bowerhill Road, Woodstock</td>
</tr>
<tr>
<td>County Road 13</td>
<td>600 metres South of the South limit of County Road #19, Springford</td>
<td>360 metres North of the North limit of County Road #19, Springford</td>
</tr>
<tr>
<td>County Road 15</td>
<td>80 metres East of the East limit of Springbank Avenue, Woodstock</td>
<td>East limit of Beard's Lane, Woodstock</td>
</tr>
<tr>
<td>County Road</td>
<td>West of the limit</td>
<td>North of the limit</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>County Road 16</td>
<td>500 metres</td>
<td>883 metres</td>
</tr>
<tr>
<td></td>
<td>West of the</td>
<td>East of the</td>
</tr>
<tr>
<td></td>
<td>West limit of</td>
<td>limit of County</td>
</tr>
<tr>
<td></td>
<td>County Road #119,</td>
<td>Road #119, Kintore</td>
</tr>
<tr>
<td>County Road 17</td>
<td>West limit of</td>
<td>4.2 km East of</td>
</tr>
<tr>
<td></td>
<td>County Road 30</td>
<td>14th Concession</td>
</tr>
<tr>
<td>County Road 17</td>
<td>Westerly limits</td>
<td>Westerly 900</td>
</tr>
<tr>
<td></td>
<td>of County Road 30</td>
<td>metres</td>
</tr>
<tr>
<td>County Road 18</td>
<td>620 metres</td>
<td>200 metres</td>
</tr>
<tr>
<td></td>
<td>West of the</td>
<td>West of the</td>
</tr>
<tr>
<td></td>
<td>West limit of</td>
<td>West limit of</td>
</tr>
<tr>
<td></td>
<td>Spring St.,</td>
<td>Spring St.,</td>
</tr>
<tr>
<td></td>
<td>Norwich</td>
<td>Norwich</td>
</tr>
<tr>
<td>County Road 18</td>
<td>130 metres</td>
<td>480 metres</td>
</tr>
<tr>
<td></td>
<td>East of the</td>
<td>East of the</td>
</tr>
<tr>
<td></td>
<td>limit of Phoebe</td>
<td>limit of Phoebe</td>
</tr>
<tr>
<td></td>
<td>St., Norwich</td>
<td>St., Norwich</td>
</tr>
<tr>
<td>County Road 18</td>
<td>430 metres</td>
<td>680 metres</td>
</tr>
<tr>
<td></td>
<td>East of the</td>
<td>East of the</td>
</tr>
<tr>
<td></td>
<td>limit of Highway</td>
<td>limit of Highway</td>
</tr>
<tr>
<td></td>
<td>19, Mt. Elgin</td>
<td>19, Mt. Elgin</td>
</tr>
<tr>
<td>County Road 19</td>
<td>West limit of</td>
<td>570 metres</td>
</tr>
<tr>
<td></td>
<td>County Road 19</td>
<td>County Road 19</td>
</tr>
<tr>
<td>County Road 22</td>
<td>North limit of</td>
<td>490 metres</td>
</tr>
<tr>
<td></td>
<td>County Road 29</td>
<td>County Road 29</td>
</tr>
<tr>
<td>County Road 22</td>
<td>175 metres</td>
<td>175 metres</td>
</tr>
<tr>
<td></td>
<td>South of North</td>
<td>North of North</td>
</tr>
<tr>
<td></td>
<td>limit of Blandford</td>
<td>limit of Twp Rd 8</td>
</tr>
<tr>
<td></td>
<td>Blenheim Twp Rd 8</td>
<td>8</td>
</tr>
<tr>
<td>County Road 24</td>
<td>200 metres</td>
<td>500 metres</td>
</tr>
<tr>
<td></td>
<td>East of limit</td>
<td>East of limit</td>
</tr>
<tr>
<td></td>
<td>of Victoria St.,</td>
<td>of Victoria St.,</td>
</tr>
<tr>
<td></td>
<td>Tavistock</td>
<td>Tavistock</td>
</tr>
<tr>
<td>County Road 27</td>
<td>240 metres</td>
<td>130 metres</td>
</tr>
<tr>
<td></td>
<td>West of the</td>
<td>East of the</td>
</tr>
<tr>
<td></td>
<td>limit of the Road</td>
<td>limit of the Road</td>
</tr>
<tr>
<td></td>
<td>between lots 14 &amp; 15, Dereham Centre</td>
<td>between lots 14 &amp; 15, Dereham Centre</td>
</tr>
<tr>
<td>County Road 27</td>
<td>East limit of</td>
<td>370 metres</td>
</tr>
<tr>
<td></td>
<td>County Road 27</td>
<td>County Road 27</td>
</tr>
<tr>
<td>County Road 28</td>
<td>15 metres</td>
<td>East Limit of the</td>
</tr>
<tr>
<td></td>
<td>west of the west</td>
<td>33rd Line</td>
</tr>
<tr>
<td></td>
<td>limit of 31st Line</td>
<td></td>
</tr>
<tr>
<td>County Road 29</td>
<td>176 metres</td>
<td>376 metres</td>
</tr>
<tr>
<td></td>
<td>West of the West</td>
<td>West of the West</td>
</tr>
<tr>
<td></td>
<td>limit of Harmer</td>
<td>limit of Harmer</td>
</tr>
<tr>
<td></td>
<td>Crescent,</td>
<td>Crescent,</td>
</tr>
<tr>
<td></td>
<td>Drumbo</td>
<td>Drumbo</td>
</tr>
<tr>
<td>County Road 29</td>
<td>170 metres</td>
<td>420 metres</td>
</tr>
<tr>
<td></td>
<td>East of East limit</td>
<td>East of East limit</td>
</tr>
<tr>
<td></td>
<td>of Duke St.,</td>
<td>of Duke St.,</td>
</tr>
<tr>
<td></td>
<td>Drumbo</td>
<td>Drumbo</td>
</tr>
<tr>
<td>County Road 30</td>
<td>North of the North</td>
<td>1730 metres</td>
</tr>
<tr>
<td></td>
<td>limit of County</td>
<td>limit of County</td>
</tr>
<tr>
<td></td>
<td>Road #2</td>
<td>Road #2</td>
</tr>
<tr>
<td>County Road 33</td>
<td>160 metres</td>
<td>160 metres</td>
</tr>
<tr>
<td></td>
<td>West of the West</td>
<td>East of the</td>
</tr>
<tr>
<td></td>
<td>limit of the road</td>
<td>limit of the road</td>
</tr>
<tr>
<td></td>
<td>between con. 8 &amp; 9</td>
<td>between con. 8 &amp; 9</td>
</tr>
<tr>
<td>County Road 35</td>
<td>50 metres</td>
<td>West limit of</td>
</tr>
<tr>
<td></td>
<td>East of East limit</td>
<td>County Road 4,</td>
</tr>
<tr>
<td></td>
<td>of Woodall Way,</td>
<td>Woodstock</td>
</tr>
<tr>
<td></td>
<td>Woodstock</td>
<td></td>
</tr>
<tr>
<td>County Road</td>
<td>Distance</td>
<td>Location</td>
</tr>
<tr>
<td>-------------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>County Road 37</td>
<td>1970 metres</td>
<td>East of the East limit of Sand Road, in lot 28, Con. 12, Norwich Township</td>
</tr>
<tr>
<td>County Road 40</td>
<td>350 metres</td>
<td>East of County Road 59, Curries</td>
</tr>
<tr>
<td>County Road 46</td>
<td>380 metres</td>
<td>East of the East limit of Highway #19, Salford</td>
</tr>
<tr>
<td>County Road 51</td>
<td>500 metres</td>
<td>West of the West limit of Borden Cres., Tillsonburg</td>
</tr>
<tr>
<td>County Road 51</td>
<td>200 metres</td>
<td>Boundary between the County of Oxford and the Regional Municipality of Haldimand-Norfolk</td>
</tr>
<tr>
<td>County Road 59</td>
<td>750 metres</td>
<td>South West from intersection of Wilton St., Tavistock</td>
</tr>
<tr>
<td>County Road 59</td>
<td>119 metres</td>
<td>South of Bauer Street, Tavistock</td>
</tr>
<tr>
<td>County Road 59</td>
<td>309 metres</td>
<td>North of Oxford County Road #8 Hickson</td>
</tr>
<tr>
<td>County Road 59</td>
<td>149 metres</td>
<td>South of Tecumseh Street, Woodstock</td>
</tr>
<tr>
<td>County Road 59</td>
<td>60 metres</td>
<td>South of Pattullo Avenue, Woodstock</td>
</tr>
<tr>
<td>County Road 59</td>
<td>310 metres</td>
<td>South of Quaker Street, Norwich</td>
</tr>
<tr>
<td>County Road 59</td>
<td>50 metres</td>
<td>South of Robson Street, Norwich</td>
</tr>
<tr>
<td>County Road 59</td>
<td>891 metres</td>
<td>South of Braemar Road</td>
</tr>
<tr>
<td>County Road 119</td>
<td>303 metres</td>
<td>South of County Road #16 Kintore</td>
</tr>
<tr>
<td>County Road 119</td>
<td>113 metres</td>
<td>South of North Town Line Ingersoll</td>
</tr>
<tr>
<td>County Road 119</td>
<td>630 metres</td>
<td>North of County Road #28, Uniondale</td>
</tr>
<tr>
<td>County Road 119</td>
<td>303 metres</td>
<td>South of County Road #16 Kintore</td>
</tr>
<tr>
<td>County Road 119</td>
<td>113 metres</td>
<td>South of North Town Line Ingersoll</td>
</tr>
<tr>
<td>County Road 119</td>
<td>630 metres</td>
<td>North of County Road #28, Uniondale</td>
</tr>
<tr>
<td>County Road 119</td>
<td>303 metres</td>
<td>South of County Road #16 Kintore</td>
</tr>
<tr>
<td>County Road 119</td>
<td>113 metres</td>
<td>South of North Town Line Ingersoll</td>
</tr>
<tr>
<td>County Road 119</td>
<td>630 metres</td>
<td>North of County Road #28, Uniondale</td>
</tr>
<tr>
<td>County Road 119</td>
<td>303 metres</td>
<td>South of County Road #16 Kintore</td>
</tr>
<tr>
<td>County Road 119</td>
<td>113 metres</td>
<td>South of North Town Line Ingersoll</td>
</tr>
<tr>
<td>County Road 119</td>
<td>630 metres</td>
<td>North of County Road #28, Uniondale</td>
</tr>
<tr>
<td>County Road 119</td>
<td>303 metres</td>
<td>South of County Road #16 Kintore</td>
</tr>
<tr>
<td>County Road 119</td>
<td>113 metres</td>
<td>South of North Town Line Ingersoll</td>
</tr>
<tr>
<td>County Road 119</td>
<td>630 metres</td>
<td>North of County Road #28, Uniondale</td>
</tr>
<tr>
<td>County Road 119</td>
<td>303 metres</td>
<td>South of County Road #16 Kintore</td>
</tr>
<tr>
<td>County Road 119</td>
<td>113 metres</td>
<td>South of North Town Line Ingersoll</td>
</tr>
<tr>
<td>County Road 119</td>
<td>630 metres</td>
<td>North of County Road #28, Uniondale</td>
</tr>
<tr>
<td>County Road 119</td>
<td>303 metres</td>
<td>South of County Road #16 Kintore</td>
</tr>
<tr>
<td>County Road 119</td>
<td>113 metres</td>
<td>South of North Town Line Ingersoll</td>
</tr>
<tr>
<td>County Road 119</td>
<td>630 metres</td>
<td>North of County Road #28, Uniondale</td>
</tr>
</tbody>
</table>
County Road 119 115 metres south of south limit of Bates Lane, Thamesford

95 metres north of north limit of Bates Lane, Thamesford
<table>
<thead>
<tr>
<th>Highway</th>
<th>From the point described as</th>
<th>To the point described as</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Road 15</td>
<td>East limit of Beards Lane, Woodstock</td>
<td>East limit of the City of Woodstock</td>
</tr>
</tbody>
</table>
BEING a By-law to confirm all actions and proceedings of the Council of the County of Oxford at the meeting at which this By-law is passed.

The Council of the County of Oxford enacts as follows:

1. That all decisions made by Council at the meeting at which this By-law is passed, in respect of each report, resolution or other action passed and taken by the Council at this meeting, are hereby adopted, ratified and confirmed.

2. That the Warden and/or the proper officers of the County are hereby authorized and directed to do all things necessary to give effect to the said decisions referred to in Section 1 of this By-law, to obtain approvals where required, and except where otherwise provided, to execute all necessary documents and the Clerk is hereby authorized and directed to affix the corporate seal where necessary.

3. That nothing in this By-law has the effect of giving to any decision the status of a By-law where any legal prerequisite to the enactment of a specific By-law has not been satisfied.

4. That all decisions, as referred to in Section 1 of this By-law, supercede any prior decisions of Council to the contrary.

READ a first and second time this 9th day of May, 2018.

READ a third time and finally passed this 9th day of May, 2018.

DAVID MAYBERRY, WARDEN

BRENDA J. TABOR, CLERK