



 **Watson
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ECONOMISTS LTD.

Development Charges Background Study

Region of Waterloo

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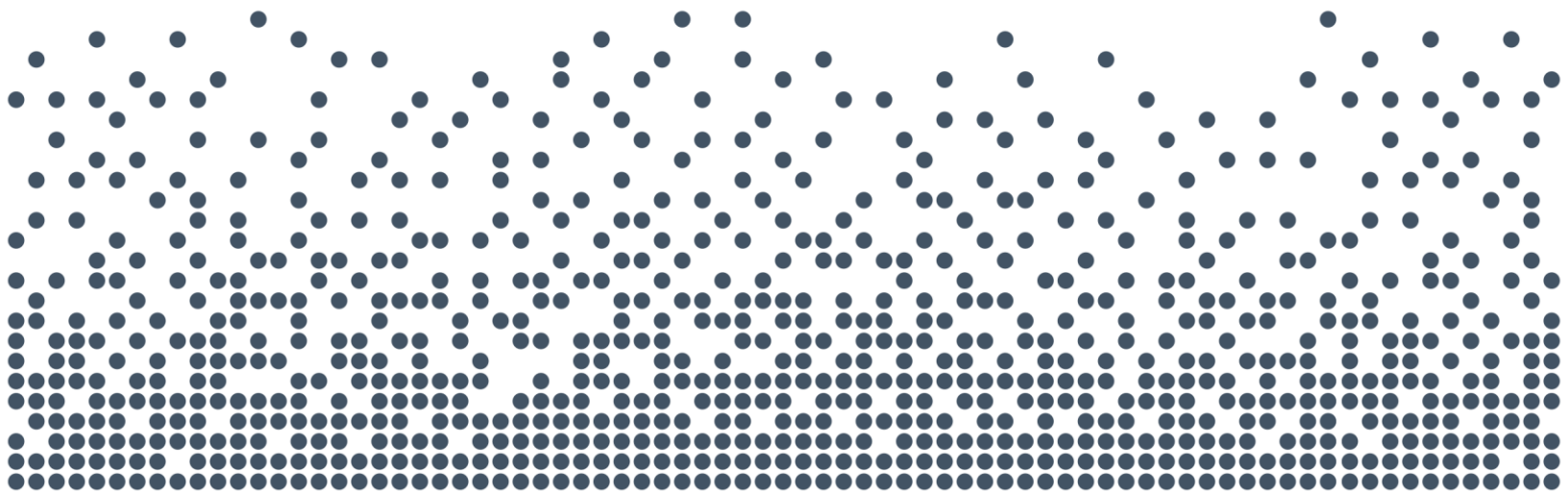
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List of Acronyms and Abbreviations

Acronym	Full Description of Acronym
A.M.P.	Asset Management Plan
D.C.	Development charge
D.C.A.	Development Charges Act, 1997, as amended
G.F.A.	Gross floor area
G.R.T.	Grand River Transit
I.C.I.	Industrial, Commercial, and Institutional
L.P.A.T.	Local Planning Appeal Tribunal
L.R.T.	Light Rail Transit
N.F.P.O.W.	No Fixed Place of Work
O.M.B.	Ontario Municipal Board
O.P.A.	Official Plan Amendment
O.Reg.	Ontario Regulation
P.O.A.	Provincial Offences Act
P.P.U.	Persons per unit
R.T.M.P.	Regional of Waterloo Transportation Master Plan
S.D.E.	Single detached equivalent
S.D.U.	Single detached unit
s.s.	Subsection
S.W.M.	Stormwater management
sq.ft.	square foot
sq.m.	square metre



Executive Summary



Executive Summary

1. The report provided herein represents the Development Charges (D.C.) Background Study for the Region of Waterloo required by the Development Charges Act, 1997 (D.C.A.). This report has been prepared in accordance with the methodology required under the D.C.A. The contents include the following:
 - Chapter 1 – Overview of the legislative requirements of the Act;
 - Chapter 2 – Review of present D.C. policies of the Region;
 - Chapter 3 – Summary of the residential and non-residential growth forecasts for the Region;
 - Chapter 4 – Approach to calculating the D.C.;
 - Chapter 5 – Review of historic service standards and identification of future capital requirements to service growth and related deductions and allocations;
 - Chapter 6 – Calculation of the D.C.s;
 - Chapter 7 – D.C. policy recommendations and rules; and
 - Chapter 8 – By-law implementation.

2. D.C.s provide for the recovery of certain growth-related capital expenditures from new development. The D.C.A. is the statutory basis to recover these charges. The methodology is detailed in Chapter 4; a simplified summary is provided below:
 - 1) Identify amount, type and location of growth;
 - 2) Identify servicing needs to accommodate growth;
 - 3) Identify capital costs to provide services to meet the needs;
 - 4) Deduct:
 - Grants, subsidies and other contributions;
 - Benefit to existing development;
 - Statutory 10% deduction (soft services);
 - Amounts in excess of 10-year historical service calculation (where applicable);



- D.C. reserve funds (where applicable);
- 5) Net costs are then allocated between residential and non-residential benefit; and
 - 6) Net costs divided by growth to provide the D.C. charge.
3. A number of changes to the D.C. process need to be addressed as a result of the Smart Growth for our Communities Act, 2015 (Bill 73). These changes have been incorporated throughout the report and in the updated draft by-law, as necessary. These items include:
 - a. Area-rating: Council must consider the use of area-specific charges.
 - b. Asset Management Plan for New Infrastructure: The D.C. background study must include an asset management plan that deals with all assets proposed to be funded, in whole or in part, by D.C.s. The asset management plan must show that the assets are financially sustainable over their full lifecycle.
 - c. 60-day Circulation Period: The D.C. background study must be released to the public at least 60-days prior to passage of the D.C. by-law.
 - d. Timing of Collection of Development Charges: The D.C.A. now requires D.C.s to be collected at the time of the first building permit.
 4. The growth forecast (Chapter 3) on which the D.C. are based, projects the following population, housing and non-residential floor area for the Cities, Townships, and Region-wide 10-year (2019 to 2028), Regional Longer Term, and Regional Urban Longer Term periods (Urban Serviced Area).

Measure	Cities - 10 Year	Townships - 10 Year	Region-wide - 10 Year	Region-wide - Longer Term	Region - Urban Longer Term
	2019-2028	2019-2028	2019-2028	2019 - Longer Term	2019-Longer Term Urban Service Area - Region Wide
(Net) Population Increase	60,373	11,666	72,039	159,020	218,654
Residential Unit Increase	28,809	4,780	33,589	72,015	99,656
Non-Residential Gross Floor Area Increase (m ²)	1,096,132	239,141	1,335,274	2,945,911	3,532,037

Source: Region of Waterloo 2019 Forecast and summarized by Watson & Associates Economists Ltd.



5. On June 27, 2014, the Region of Waterloo passed By-law 14-046 under the D.C.A. The by-law imposes D.C.s on residential and non-residential uses. Further to the 2014 by-law, the Region undertook a review of the transit and waste diversion services in 2016 and passed amending By-law 16-053 on November 30, 2016. The Region's amended D.C. by-law will expire on July 31, 2019. The Region is undertaking a D.C. public process and anticipates passing a new by-law in advance of the expiry date. The mandatory public meeting has been set for May 8, 2019 with adoption of the by-law anticipated on June 26, 2019.
6. The Region's D.C.s currently in effect for the Cities are \$22,659 for single detached dwelling units for full services. Non-residential (excluding industrial) charges are \$131.10 per sq.m. (\$12.18 per sq.ft.) for full services and industrial charges are \$65.55 per sq.m. (\$6.09 per sq.ft.) for full services. This report has undertaken a recalculation of the charge based on future identified needs (presented in Schedule ES-1 for residential and non-residential). Charges have been provided on a Region-wide basis for Cities for all services except Libraries. The corresponding single detached unit charge is \$28,056. The non-residential charge is \$173.22 per sq.m. (\$16.07 per sq.ft.) of building area. These rates are submitted to Council for its consideration.
7. The Region's D.C.s currently in effect for the Townships are \$19,278 for single detached dwelling units for full services. Non-residential (excluding industrial) charges are \$110.01 per sq.m. (\$10.22 per sq.ft.) for full services and industrial charges are \$55 per sq.m. (\$5.11 per sq.ft.) for full services. This report has undertaken a recalculation of the charge based on future identified needs (presented in Schedule ES-1 for residential and non-residential). Charges have been provided on a Region-wide basis for Townships for all services except Transit. The corresponding single detached unit charge is \$25,630. The non-residential charge is \$152.81 per square metre (\$14.17 per sq.ft.) of building area. These rates are submitted to Council for its consideration.
8. The Region of Waterloo staff have requested a further calculation of the non-residential charges to provide the following breakdown:
 - a) Industrial/Non-Industrial;
 - b) Retail/Non-retail; and



c) Industrial/Commercial/Institutional.

These charges are further explained and presented in Appendix I.

9. The D.C.A. requires a summary be provided of the gross capital costs and the net costs to be recovered over the life of the by-law. This calculation is provided by service and is presented in Table 6-7. A summary of these costs is provided below:

Total gross expenditures planned over the next five years	\$ 1,488,270,240
Less:	
Benefit to existing development	\$ 512,541,939
Post planning period benefit	\$ 248,995,102
Mandatory 10% deduction for certain services	\$ 2,051,729
Grants, subsidies and other contributions	\$ 2,192,000
Net Costs to be recovered from development charges	\$ 722,489,469

This suggests that for the non-D.C. cost over the five-year D.C. by-law (benefit to existing development, mandatory 10% deduction, and the grants, subsidies and other contributions), \$516.79 million (or an annual amount of \$103.36 million) will need to be contributed from taxes and rates, or other sources. With respect to the post period benefit amount of \$248.99 million, it will be included in subsequent D.C. study updates to reflect the portion of capital that benefits growth in the post period D.C. forecasts.

Based on the above table, the Region plans to spend \$1.49 billion over the next five years, of which \$722.49 million (49%) is recoverable from D.C.s. Of this net amount, \$549.58 million is recoverable from residential development and \$172.91 million from non-residential development. It is noted also that any exemptions or reductions in the charges would reduce this recovery further.

10. Considerations by Council – The background study represents the service needs arising from residential and non-residential growth over the forecast periods.

The following services are calculated based on a Longer Term Region-wide Service Area Forecast:

- Water Services; and
- Wastewater Services.



The following services are calculated based on a Longer Term Region-wide forecast:

- Services Related to a Highway; and
- Operations;

The following services are calculated based on a 10-year Region-wide forecast. These include:

- Police Services;
- Airport;
- Paramedic Services;
- Waste Diversion; and
- General Government.

The following services are calculated based on an area specific basis for the 10-year forecast period:

- Transit Services (based on a 10-year Cities only forecast); and
- Library Services (based on a 10-year Townships only forecast).

Council will consider the findings and recommendations provided in the report and, in conjunction with public input, approve such policies and rates it deems appropriate. These directions will refine the draft D.C. by-law which is appended in Appendix G. These decisions may include:

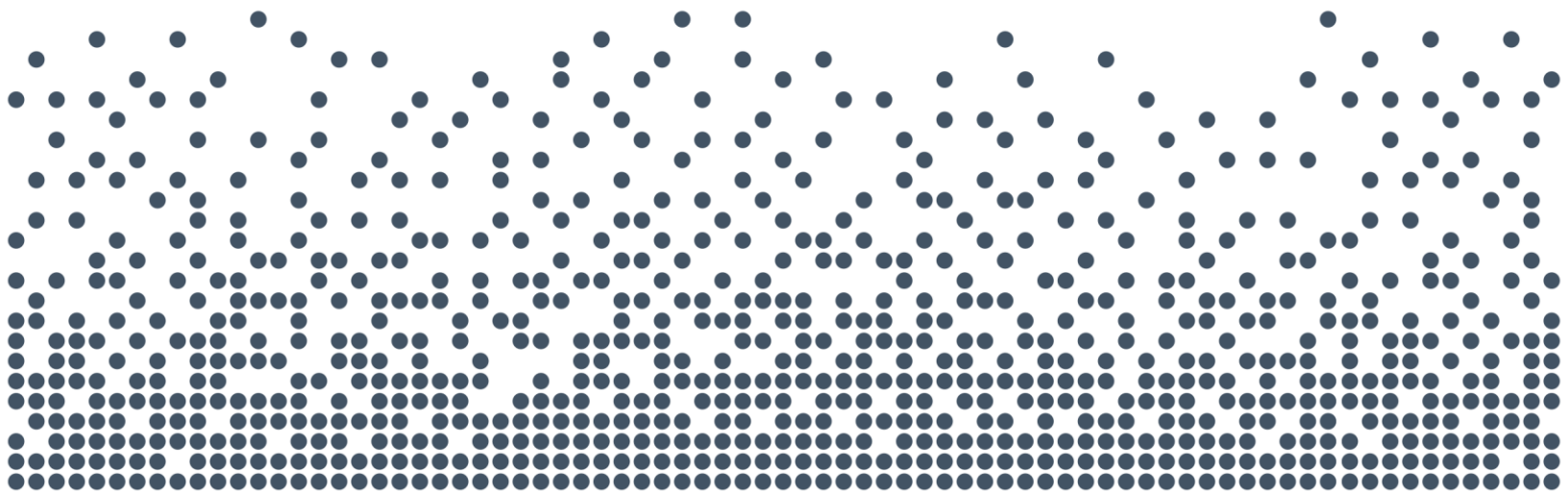
- adopting the charges and policies recommended herein;
- considering additional exemptions to the by-law; and
- considering reductions in the charge by class of development (obtained by removing certain services on which the charge is based and/or by a general reduction in the charge).



Rate Summary

Table ES-1

Service	RESIDENTIAL								NON-RESIDENTIAL			
	Single and Semi-Detached Dwelling		Other Multiples		Apartments		Lodging Units		(per sq.m. of Gross Floor Area)	(per sq.m. of Gross Floor Area)	(per sq.ft. of Gross Floor Area)	(per sq.ft. of Gross Floor Area)
	Cities	Townships	Cities	Townships	Cities	Townships	Cities	Townships	Cities	Townships	Cities	Townships
Municipal Wide Services:												
Services Related to a Highway Operations	11,997	11,997	8,966	8,966	6,532	6,532	4,163	4,163	73.42	73.42	6.82	6.82
Police Services	812	812	607	607	442	442	282	282	5.10	5.10	0.47	0.47
Airport	585	585	437	437	319	319	203	203	3.69	3.69	0.34	0.34
General Government	298	298	223	223	162	162	103	103	1.88	1.88	0.17	0.17
Paramedic Services	170	170	127	127	93	93	59	59	0.36	0.36	0.03	0.03
Waste Diversion	298	298	223	223	162	162	103	103	0.12	0.12	0.01	0.01
Total General Services	14,322	14,322	10,704	10,704	7,798	7,798	4,969	4,969	85.56	85.56	7.93	7.93
Area Specific Services:												
Transit Services	3,072	-	2,296	-	1,673	-	1,066	-	20.97	-	1.95	-
Library Services	-	646	-	483	-	352	-	224	-	0.56	-	0.05
Total Area Specific Services	3,072	646	2,296	483	1,673	352	1,066	224	20.97	0.56	1.95	0.05
Urban Services:												
Wastewater Services	6,220	6,220	4,648	4,648	3,387	3,387	2,158	2,158	38.91	38.91	3.61	3.61
Water Services	4,442	4,442	3,320	3,320	2,419	2,419	1,541	1,541	27.78	27.78	2.58	2.58
Total Urban Services	10,662	10,662	7,968	7,968	5,806	5,806	3,699	3,699	66.69	66.69	6.19	6.19
Total Full Services - Cities	28,056	-	20,968	-	15,277	-	9,734	-	173.22	-	16.07	-
Total Full Services - Townships	-	25,630	-	19,155	-	13,956	-	8,892	-	152.81	-	14.17



Report



Chapter 1

Introduction



1. Introduction

1.1 Purpose of this Document

This background study has been prepared pursuant to the requirements of the D.C.A. (s.10) and, accordingly, sets out calculated D.C. rates and policies for consideration by the Region of Waterloo.

The Region retained Watson & Associates Economists Ltd. (Watson), to undertake the D.C.s (D.C.) study process throughout 2018 and 2019. Watson worked with Regional staff, as well as engineering consultants (Dillon Consulting Limited), in preparing the D.C. analysis and policy recommendations.

This D.C. background study, containing the proposed D.C. by-law, will be distributed to members of the public in order to provide interested parties with sufficient background information on the legislation, the study's recommendations and an outline of the basis for these recommendations.

This report has been prepared, in the first instance, to meet the statutory requirements applicable to the Region's D.C. background study, as summarized in Chapter 4. It also addresses the requirement for "rules" (contained in Chapter 7) and the proposed by-law to be made available as part of the approval process (included as Appendix G).

In addition, the report is designed to set out sufficient background on the legislation (Chapter 4), Waterloo's current D.C. policies (Chapter 2) and the policies underlying the proposed by-law, to make the exercise understandable to those who are involved.

Finally, it addresses post-adoption implementation requirements (Chapter 8) which are critical to the successful application of the new policy.

The Chapters in the report are supported by Appendices containing the data required to explain and substantiate the calculation of the charge. A full discussion of the statutory requirements for the preparation of a background study and calculation of a D.C. is provided herein.



1.2 Summary of the Process

The public meeting required under Section 12 of the D.C.A., has been scheduled for May 8, 2019. Its purpose is to present the study to the public and to solicit public input. The meeting is also being held to answer any questions regarding the study's purpose, methodology and the proposed modifications to the Region's D.C.s.

In accordance with the legislation, the background study and proposed D.C. by-law will be available for public review no later than April 23, 2019.

The process to be followed in finalizing the report and recommendations includes:

- consideration of responses received prior to, at, or immediately following the Public Meeting; and
- finalization of the report and Council consideration of the by-law subsequent to the public meeting.

Figure 1-1 outlines the proposed schedule to be followed with respect to the D.C. by-law adoption process.



Figure 1-1
Schedule of Key D.C. Process Dates for the Region of Waterloo

1. Data collection, staff review, engineering work, D.C. calculations and policy work	Fall 2018 to Spring 2019
2. Stakeholder meetings	1. April 11, 2019 2. April 25, 2019
3. Public meeting advertisement placed in newspaper(s)	April 10, 2019 and April 11, 2019
4. Background study and proposed by-law available to public	April 23, 2019
5. Public meeting of Council	May 8, 2019
6. Council considers adoption of background study and passage of by-law	June 26, 2019
7. Newspaper notice given of by-law passage	By 20 days after passage
8. Last day for by-law appeal	40 days after passage
9. Region makes pamphlet available (where by-law not appealed)	By 60 days after in force date



1.3 Changes to the D.C.A.: Bill 73 - Smart Growth for our Communities Act, 2015

With the amendment of the D.C.A. (as a result of Bill 73 and O.Reg. 428/15), there are a number of areas that must be addressed to ensure that the Region is in compliance with the D.C.A., as amended. The following provides an explanation of the changes to the Act that affect the Region's Background Study and how they have been dealt with to ensure compliance with the amended legislation.

1.3.1 Area Rating

Bill 73 introduced two new sections where Council must consider the use of area-specific charges:

- 1) Section 2(9) of the Act requires a municipality to implement area-specific D.C.s for either specific services which are prescribed and/or for specific municipalities which are to be regulated. (Note that at this time, no municipalities or services are prescribed by the Regulations.)
- 2) Section 10(2)c.1 of the D.C.A. requires that, "the development charges background study shall include consideration of the use of more than one development charge by-law to reflect different needs for services in different areas."

In regard to the first item, there are no services or specific municipalities identified in the regulations which must be area-rated. The second item requires Council to consider the use of area rating.

1.3.2 Asset Management Plan for New Infrastructure

The D.C.A. requires that a D.C. background study must include an Asset Management Plan (s.10 (2) c.2). The asset management plan must deal with all assets that are proposed to be funded, in whole or in part, by D.C.s. The current regulations provide very extensive and specific requirements for the asset management plan related to transit services; however, they are silent with respect to how the asset management plan is to be provided for all other services. As part of any asset management plan, the examination should be consistent with the municipality's existing assumptions, approaches and policies on asset management planning. This examination may



include both qualitative and quantitative measures such as examining the annual future lifecycle contributions needs (discussed further in Appendix F of this report).

1.3.3 60-Day Circulation of D.C. Background Study

Previously the legislation required that a D.C. background study be made available to the public at least two weeks prior to the public meeting. The amended legislation now provides that the D.C. background study must be made available to the public (including posting on the municipal website) at least 60 days prior to passage of the D.C. by-law. No other changes were made to timing requirements for such things as notice of the public meeting and notice of by-law passage.

This D.C. study is being provided to the public no later than April 23, 2019 to ensure the new requirements for release of the study is met.

1.3.4 Timing of Collection of D.C.s

The D.C.A. has been refined by Bill 73 to require that D.C.s are collected at the time of the first building permit. For the majority of development, this will not impact the Region's present process. There may be instances, however, where several building permits are to be issued and either the size of the development or the uses will not be definable at the time of the first building permit. In these instances, the Region may enter into a delayed payment agreement in order to capture the full development.

1.3.5 Other Changes

It is also noted that a number of other changes were made through Bill 73 and O.Reg. 428/15 including changes to the way in which Transit D.C. service standards are calculated, the inclusion of Waste Diversion and the ability for collection of additional levies. The Region passed By-law 16-053 in order to update the Transit Services charge and impose a Waste Diversion charge. This background study involves a review and update of these charges.



Chapter 2

Current Region of Waterloo Policy



2. Current Region of Waterloo Policy

2.1 Schedule of Charges

On June 27, 2014, the Region of Waterloo passed By-law 14-046 under the D.C.A. This by-law was amended on November 30, 2016 via by-law 16-053, which amended by-law 14-046 to include a Waste Diversion charge and an updated Transit D.C.

This by-law imposes D.C.s for residential and non-residential uses. The table below provides the rates currently in effect, as at January 1, 2019.

Table 2-1
Region of Waterloo
Current D.C. Rates

Service	Residential								Non-Residential per sq.ft.			
	Single & Semi Detached		Multiples		Apartments		Lodging Unit		Non-Industrial		Industrial	
	City	Township	City	Township	City	Township	City	Township	City	Township	City	Township
Transportation	10,033	10,033	7,533	7,533	5,464	5,464	3,089	3,089	5.58	5.58	2.79	2.79
Operations	131	131	97	97	70	70	39	39	0.07	0.07	0.04	0.04
Transit Services	3,612	-	2,711	-	1,966	-	1,111	-	1.96	-	0.98	-
Police Services	282	-	213	213	154	154	86	86	0.15	0.15	0.07	0.07
Library Services	-	231	-	173	-	124	-	72	-	-	-	-
General Government	119	119	88	88	65	65	35	35	0.06	0.06	0.03	0.03
Airport	244	244	182	182	134	134	75	75	0.30	0.30	0.15	0.15
Paramedic Services	101	101	76	76	54	54	31	31	0.05	0.05	0.03	0.03
Waste Diversion	273	273	207	207	149	149	85	85	0.01	0.01	0.01	0.01
Total General Services	14,795	11,414	11,107	8,569	8,056	6,214	4,551	3,512	8.18	6.22	4.10	3.12
Wastewater Services	5,602	5,602	4,207	4,207	3,052	3,052	1,725	1,725	2.84	2.84	1.42	1.42
Water Services	2,262	2,262	1,699	1,699	1,233	1,233	697	697	1.16	1.16	0.57	0.57
Total Full Services	22,659	19,278	17,013	14,475	12,341	10,499	6,973	5,934	12.18	10.22	6.09	5.11

2.2 Services Covered

The following services are covered under By-laws 14-046 (as amended by By-law 16-053):

- Transportation (now referred to Services Related to a Highway in this study);
- Operations;
- Transit Services;
- Police Services;
- Library Services;
- General Government;
- Airport;



- Paramedic Services;
- Waste Diversion;
- Wastewater Services; and
- Water Services.

2.3 Timing of D.C. Calculation and Payment

D.C.s are calculated and payable at the time of building permit issuance and are paid in full to the Treasurer of the lower-tier municipality where the Development is occurring.

2.4 Indexing

Rates are indexed on January 1st of each year by the percentage change recorded in the average annual Non-Residential Building Construction Price Index produced by Statistics Canada.

2.5 Redevelopment Allowance

A Redevelopment credit shall be applied to the first building permit issued in respect of the site within seven (7) years from the date of demolitions. The balance of the redevelopment credit, if any, shall be applied to any subsequent building permits issued within the same seven (7) years.

No Redevelopment credit shall be made in excess of the actual development of the site.

2.6 Exemptions

The following non-statutory exemptions are provided under By-law 14-046 (as amended):

- Development of land owned and for any conservation use by the Grand River Conservation Authority;
- a temporary use permitted under an area municipal zoning by-law enacted in accordance with Section 39 of the Planning Act;
- Development of land for a Home Occupation;
- Development of land for farming, excluding a Farm Occupation;



- Temporary erection of a building without a foundation defined in the Building Code Act for a period not exceeding six (6) consecutive months and not more than six (6) months in any one calendar year on a site for which D.C.s have previously been paid;
- An Accessory Building, provided the G.F.A. of the Accessory Building does not exceed the total G.F.A. of the applicable main use buildings, dwelling units, or lodging units;
- Hospitals within the meaning of the Public Hospitals Act; and
- Development of a remediated Brownfield up to the maximum of the Eligible Costs on that site (as set out in Schedule C of the By-law) provided such development occurs no later than seven years from the date of issuance of the required Record of Site Condition.



Chapter 3

Anticipated Development in the Region of Waterloo



3. Anticipated Development in the Region of Waterloo

3.1 Requirement of the Act

The growth forecast contained in this chapter (with supplemental tables in Appendix A) provides for the anticipated development for which the Region of Waterloo will be required to provide services, over a 10-year horizon (2019-2028), a Region-wide longer-term horizon and at water and wastewater service capacity for the Region's urban areas.

For the purpose of the 2019 D.C. Background Study, the Region-wide long-term horizon has been derived from the growth forecast developed in the Region's Transportation Master Plan. The water and wastewater service capacity forecast for the Region's urban areas¹ is based on the service capacity in the Region of Waterloo Wastewater Treatment Master Plan Study.

Further, for the purposes of calculating Transit services, the 10-year horizon for the three Cities has been used. Similarly, for Library services, the 10-year horizon for the four Townships have been used.

Chapter 4 provides the methodology for calculating a D.C. as per the D.C.A. Figure 4-1 presents this methodology graphically. It is noted in the first box of the schematic that in order to determine the D.C. that may be imposed, it is a requirement of Section 5 (1) of the D.C.A. that “the anticipated amount, type and location of development, for which development charges can be imposed, must be estimated.”

3.2 Basis of Population, Household and Non-Residential Gross Floor Area Forecast

The D.C. growth forecast was prepared by the Region of Waterloo Planning, Development and Legislative Services Department with consultation with Watson & Associates Economists Ltd. Components of the growth forecast including, the Non-

¹ Refer to the Region of Waterloo Wastewater Treatment Master Plan (p.14) for a list of urban serviced areas.



Residential Gross Floor Area (G.F.A.) forecast and the water and wastewater service capacity growth forecast were prepared by Watson and reviewed by the Region of Waterloo.

3.3 Summary of Growth Forecast

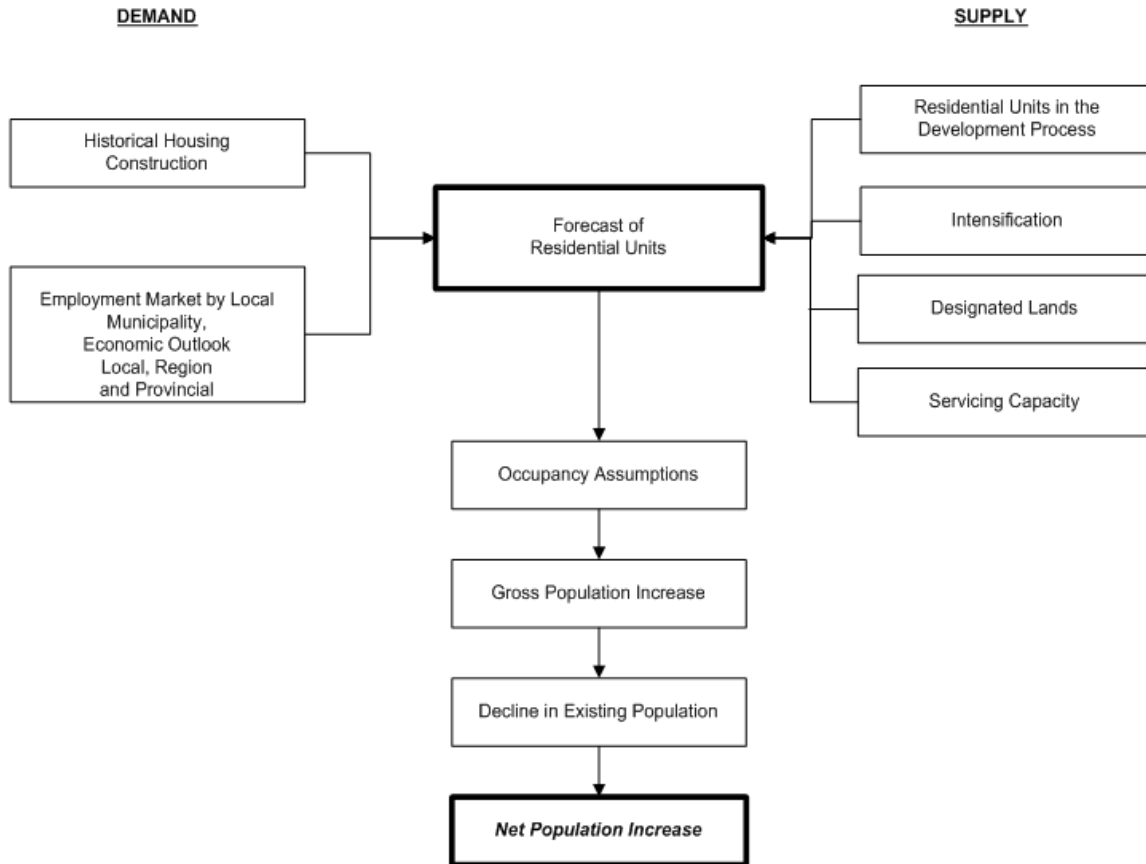
A detailed analysis of the residential and non-residential growth forecasts is provided in Appendix A and the methodology employed is illustrated in Figure 3-1. The discussion provided herein summarizes the anticipated growth for the Region and describes the basis for the forecast. The results of the residential growth forecast analysis are summarized in Table 3-1 and *Schedule 1* in Appendix A.

As identified in Table 3-1 and *Schedule 1*, the Region's population is anticipated to reach approximately 656,000 by mid-2029 (including off-campus post-secondary students), resulting in an increase of 72,040 persons over the 10-year.¹

¹ The population figures used in the calculation of the 2019 D.C. exclude the net Census undercount, which is estimated at approximately 4.0%.



Figure 3-1
Household Formation-based Population and Household Projection Model





**Table 3-1
Region of Waterloo
Residential Growth Forecast Summary**

	Year	Population (Including Census Undercount) ¹		Excluding Census Undercount					Housing Units						Person Per Unit (P.P.U.): Total Population/ Total Households
		Population, excluding Off-Campus Students	Population, including Off-Campus Students ²	Population	Institutional Population	Population Excluding Institutional Population	Off-campus Students ²	Population Including Institutional and Off-Campus Students	Singles & Semi-Detached	Multiple Dwellings ³	Apartments & Other ⁴	Total Households	Off-Campus Student Housing (Non-Census)	Total Households, Including Off-Campus Student Housing	
Historical	Mid 2006	497,250	516,210	478,121	7,286	470,835	18,960	497,081	113,822	17,991	46,491	178,303	4,800	183,103	2.682
	Mid 2011	527,380	551,989	507,096	7,486	499,610	24,609	531,705	122,310	20,240	49,045	191,595	6,230	197,825	2.647
	Mid 2016	556,560	585,198	535,154	7,814	527,340	28,638	563,792	126,400	22,640	54,795	203,835	7,250	211,085	2.625
Forecast	Mid 2019	577,460	606,169	555,253	8,789	546,464	28,709	583,962	129,300	24,725	60,257	214,282	7,280	221,562	2.591
	Mid 2029	652,000	681,077	626,923	11,751	615,172	29,077	656,000	139,795	30,641	77,278	247,714	7,437	255,151	2.531
Incremental	Mid 2006 - Mid 2011	30,130	35,779	28,975	200	28,775	5,649	34,624	8,488	2,249	2,554	13,292	1,430	14,722	
	Mid 2011 - Mid 2016	29,180	33,209	28,058	328	27,730	4,029	32,087	4,090	2,400	5,750	12,240	1,020	13,260	
	Mid 2016 - Mid 2019	20,900	20,971	20,099	975	19,124	72	20,171	2,900	2,085	5,462	10,447	30	10,477	
	Mid 2019 - Mid 2029	74,540	74,909	71,670	2,962	68,708	368	72,038	10,495	5,916	17,021	33,432	157	33,589	

Derived from forecasts prepared by the Region of Waterloo and summarized by Watson & Associates Economists Ltd., 2018.

¹ Census undercount estimated at approximately 4.0%. Note: Population including the undercount has been rounded.

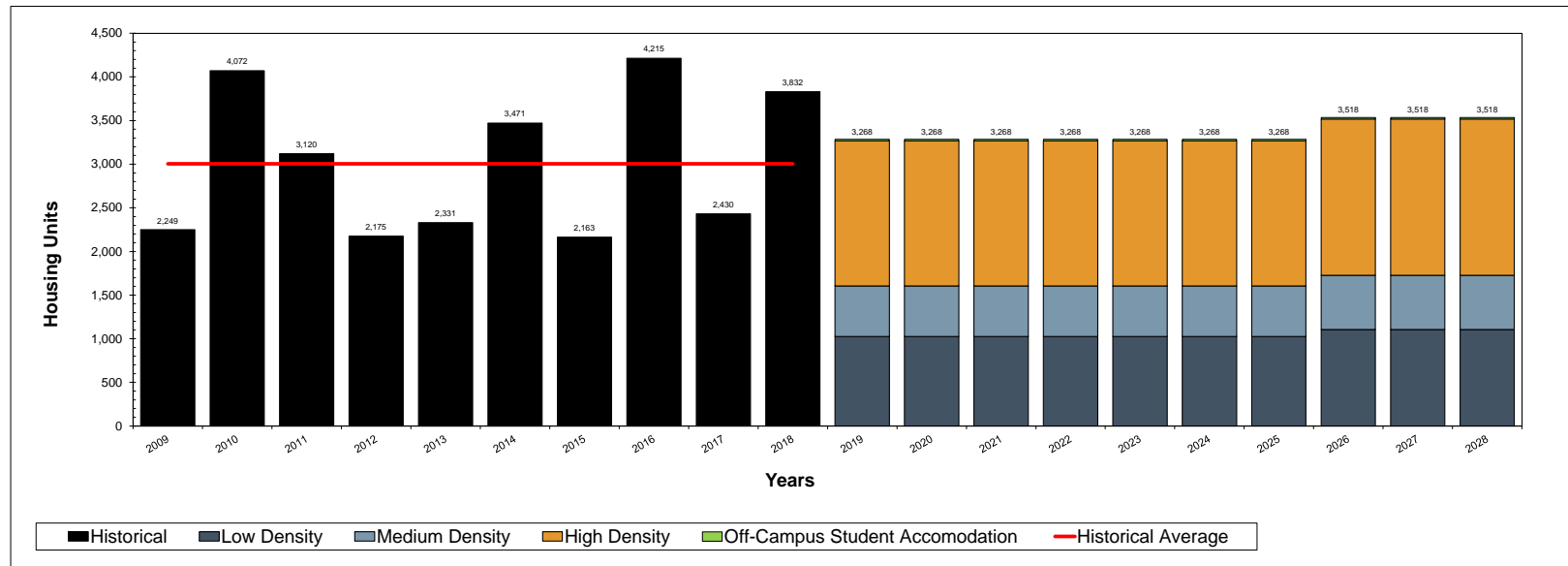
² Off-Campus students represent the net increase of post-secondary students who reside within Waterloo Region in off-campus housing.

³ Includes townhouses.

⁴ Includes apartments in duplexes, bachelor, 1-bedroom and 2-bedroom+ apartments.



Figure 3-2
Region of Waterloo
Annual Housing Forecast



Source: Historical housing activity derived from data compiled by the Region of Waterloo.
1. Growth forecast represents calendar year.



1. Unit Mix (Appendix A – Schedules 1, 2a, 2b, 3 and 4)

- The unit mix for the Region was prepared by the Region of Waterloo and summarized by Watson.
- The 10-year household growth forecast is comprised of a unit mix of 31% low density (single detached and semi-detached), 18% medium density (multiples except apartments) and 51% high density (bachelor, 1-bedroom and 2-bedroom apartments).
- In addition, the forecast includes approximately 160 new off-campus student housing units over the 10-year period.¹

2. Geographic Location of Residential Development (Appendix A – Schedules 2a and 2b)

- Schedules 2a and 2b summarizes the anticipated amount, type and location of development for Region of Waterloo by the Region's Townships and Cities.
- The percentage of forecast housing growth between 2019 and 2029 by development location is summarized below.

Development Location	Percentage Housing Growth, 2019-2029²
Cities (Kitchener, Waterloo and Cambridge)	86%
Townships (Woolwich, North Dumfries, Wilmot and Wellesley)	14%

3. Planning Period

- Short and longer-term time horizons are required for the D.C. process. The D.C.A. limits the planning horizon for certain services, such as waste diversion and libraries, to a 10-year planning horizon. Services related to

¹ It is important to note that this includes an estimate of new off-campus student housing units that would not be captured in the census.

² Includes off-campus student housing, represents less than 1% of the forecast housing in the Region's Cities over the 10-year period.



a highway, operations, water and wastewater services utilize a longer planning period.

4. Population in New Units (Appendix A - Schedules 2 through 5)

- The number of permanent housing units to be constructed in Region of Waterloo over the 10-year period is presented on Figure 3-2. Over the 10-forecast period, the Region is anticipated average of approximately 3,340 new housing units per year and an additional 16 off-campus student housing units annually.
- Population in new units is derived from Schedules 2a, 2b, 3 and 4, which incorporate historical development activity, anticipated units (see unit mix discussion) and average persons per unit by dwelling type for new units.
- Schedule 3 and 4 summarizes the P.P.U. assumptions for the new housing units. The average P.P.U.s by dwelling type for the forecast period are as follows:
 - Low density: 3.170
 - Medium density: 2.369
 - High density: 1.726
 - Off-Campus student housing: 2.350

5. Existing Units and Population Change (Appendix A - Schedules 3 and 4)

- Existing households for mid-2019 are based on the 2016 Census households, plus estimated residential units constructed between mid-2016 and 2018 (base on building permit data) assuming an occupancy lag between 6-month (single-detached unit) to 18-months+ (apartments) after building permit issuance.
- The decline in average occupancy levels for existing housing units is calculated in Schedules 3 and 4, by aging the existing population over the forecast period. The forecast population decline in existing households over the 10-year forecast period is approximately 7,960 persons.

6. Employment (Appendix A, Schedules 5a, 5b and 5d)

- Key employment sectors identified for the purposes of this Study, include industrial, retail, non-retail commercial, institutional and other (work at



home, primary, no fixed place of work), which are considered individually below.

- Employment data from the 2016 census at 'Place of Work' was used to estimate employment by sector for Waterloo Region. Estimates for 2019 were based on building permit and floor space per worker assumptions. The 2016 employment base is comprised of the following sectors:
 1. Industrial (24%);
 2. Retail (19%);
 3. Non-Retail Commercial (18%);
 4. Institutional (21%); and
 5. Other (18%).

- The 2016 employment by usual place of work, including "Other employment" (primary employment, work at home employment and N.F.P.O.W. employment), is estimated at 275,870. The 2016 employment base, excluding Other employment totals approximately 228,800.
- Total employment, including Other employment, for the Region of Waterloo is anticipated to reach approximately 324,810 by mid-2029. This represents an employment increase of 34,330 for the 10-year forecast period.
- Schedule 5c, Appendix A, summarizes the employment forecast, excluding "Other employment" (primary employment, work at home employment and N.F.P.O.W. employment), which is the basis for the D.C. employment forecast. Accordingly, "Other employment" has been removed from the D.C. calculation.
- Total employment for the Region of Waterloo (excluding Other employment: primary, work at home and N.F.P.O.W. employment) is anticipated to reach approximately 264,660 by mid-2029. This represents an employment increase of 24,260 over the 10-year forecast periods.
- As summarized in Schedule 5d, Appendix A, over the longer-term forecast, employment is forecasted to increase by 53,360 employees throughout the Region. Further, as summarized in Schedule 5d, the growth forecast for the Urban Serviced Areas at service capacity, the Region is forecast to add 63,830 employees.



7. Non-Residential Sq.ft. Estimates (Gross Floor Area (G.F.A.), Appendix A, Schedule 9b):¹

- Square footage estimates were calculated in Schedule 5c and 5d based on the following employee density assumptions:

Region-Wide Average:

- 96 sq.m. per employee for industrial;
- 49 sq.m. per employee for retail;
- 43 sq.m. per employee for non-retail commercial; and
- 50 sq.m. per employee for institutional employment.

Cities Average:

- 90 sq.m. per employee for industrial;
- 46 sq.m. per employee for retail;
- 42 sq.m. per employee for non-retail commercial; and
- 50 sq.m. per employee for institutional employment.

Townships Average:

- 112 sq.m. per employee for industrial;
- 57 sq.m. per employee for retail;
- 52 sq.m. per employee for non-retail commercial; and
- 52 sq.m. per employee for institutional employment.

Urban Serviced Area (Schedule 5d)

- 92 sq.m. per employee for industrial;
- 48 sq.m. per employee for retail;
- 43 sq.m. per employee for non-retail commercial; and
- 50 sq.m. per employee for institutional employment.

- The Region-wide incremental Gross Floor Area (G.F.A.) increase is anticipated to be 1.33 million sq.m. over the 10-year forecast period and 2.95 million sq.m. over the long-term forecast period. The Urban Serviced Areas (Water and Wastewater) is forecast to add 3.53 million sq.m.
- In terms of percentage growth, the 10-year incremental G.F.A. forecast by sector is broken down as follows:

1. Industrial – 29%;

¹ Based on the Region of Waterloo Workplace Count Survey.



2. Retail – 8%;
3. Non-Retail Commercial – 27%; and
4. Institutional – 36%.



Chapter 4

The Approach to the Calculation of the Charge



4. The Approach to the Calculation of the Charge

4.1 Introduction

This chapter addresses the requirements of s.s.5(1) of the D.C.A. with respect to the establishment of the need for service which underpins the D.C. calculation. These requirements are illustrated schematically in Figure 4-1.

4.2 Services Potentially Involved

Table 4-1 lists the full range of municipal service categories which are provided within the Region.

A number of these services are defined in s.s.2(4) of the D.C.A. as being ineligible for inclusion in D.C.s. These are shown as “ineligible” on Table 4-1. Two ineligible costs defined in s.s.5(3) of the D.C.A. are “computer equipment” and “rolling stock with an estimated useful life of (less than) seven years...” In addition, local roads are covered separately under subdivision agreements and related means (as are other local services). Services which are potentially eligible for inclusion in the Region’s D.C. are indicated with a “Yes.”

4.3 Increase in the Need for Service

The D.C. calculation commences with an estimate of “the increase in the need for service attributable to the anticipated development,” for each service to be covered by the by-law. There must be some form of link or attribution between the anticipated development and the estimated increase in the need for service. While the need could conceivably be expressed generally in terms of units of capacity, s.s.5(1)3, which requires that Regional Council indicate that it intends to ensure that such an increase in need will be met, suggests that a project-specific expression of need would be most appropriate.



Figure 4-1
The Process of Calculating a Development Charge under the Act
that must be followed

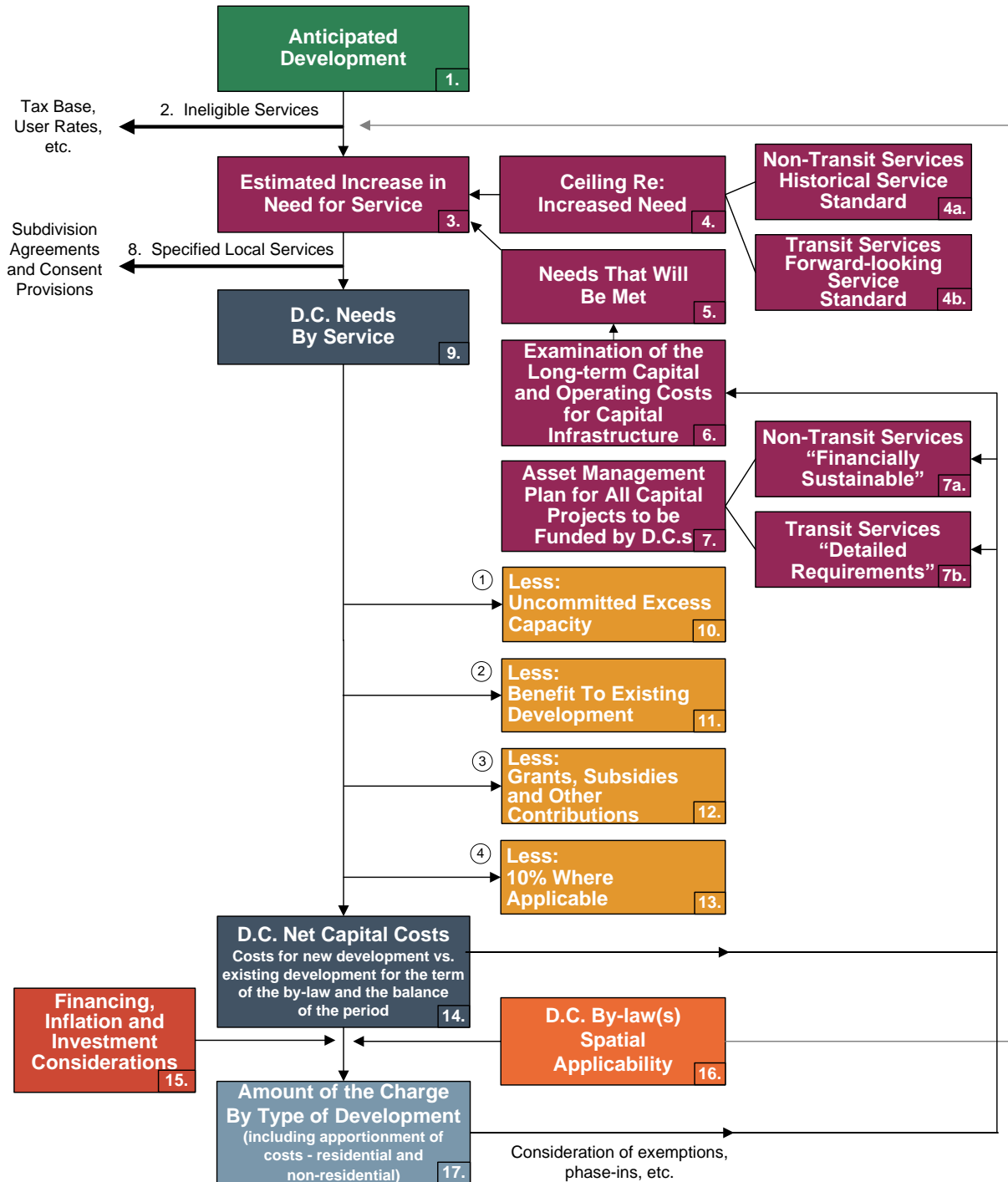




Table 4-1
Categories of Municipal Services to be Addressed as Part of the Calculation

Eligibility for Inclusion in the D.C. Calculation	Description
Yes	Municipality provides the service – service has been included in the D.C. calculation.
No	Municipality provides the service – service has not been included in the D.C. calculation.
n/a	Municipality does not provide the service.
Ineligible	Service is ineligible for inclusion in the D.C. calculation.

Categories of Municipal Services	Eligibility for Inclusion in the D.C. Calculation	Service Components	Maximum Potential D.C. Recovery %
1. Services Related to a Highway	Yes	1.1 Arterial roads	100
	Yes	1.2 Collector roads	100
	Yes	1.3 Bridges, Culverts and Roundabouts	100
	n/a	1.4 Local municipal roads	0
	Yes	1.5 Traffic signals	100
	Yes	1.6 Sidewalks and streetlights	100
	Yes	1.7 Active Transportation	100
2. Other Transportation Services	Yes	2.1 Transit vehicles ¹ & facilities	100
	Yes	2.2 Other transit infrastructure	100
	n/a	2.3 Municipal parking spaces - indoor	90
	n/a	2.4 Municipal parking spaces - outdoor	90
	Yes	2.5 Works Yards	100
	Yes	2.6 Rolling stock ¹	100
	n/a	2.7 Ferries	90
	Yes	2.8 Airport	90

¹with 7+ year life time

*same percentage as service component to which it pertains
computer equipment excluded throughout



Categories of Municipal Services	Eligibility for Inclusion in the D.C. Calculation	Service Components	Maximum Potential D.C. Recovery %
3. Stormwater Drainage and Control Services	n/a	3.1 Main channels and drainage trunks	100
	n/a	3.2 Channel connections	100
	n/a	3.3 Retention/detention ponds	100
4. Fire Protection Services	n/a	4.1 Fire stations	100
	n/a	4.2 Fire pumpers, aerials and rescue vehicles ¹	100
	n/a	4.3 Small equipment and gear	100
5. Outdoor Recreation Services (i.e. Parks and Open Space)	Ineligible	5.1 Acquisition of land for parks, woodlots and E.S.A.s	0
	n/a	5.2 Development of area municipal parks	90
	n/a	5.3 Development of district parks	90
	n/a	5.4 Development of municipal-wide parks	90
	n/a	5.5 Development of special purpose parks	90
	n/a	5.6 Parks rolling stock ¹ and yards	90
6. Indoor Recreation Services	n/a	6.1 Arenas, indoor pools, fitness facilities, community centres, etc. (including land)	90
	n/a	6.2 Recreation vehicles and equipment ¹	90
7. Library Services	Yes	7.1 Public library space (incl. furniture and equipment)	90
	Yes	7.2 Library vehicles ¹	90
	Yes	7.3 Library materials	90
8. Electrical Power Services	Ineligible	8.1 Electrical substations	0
	Ineligible	8.2 Electrical distribution system	0
	Ineligible	8.3 Electrical system rolling stock	0

¹with 7+ year life time



Categories of Municipal Services	Eligibility for Inclusion in the D.C. Calculation	Service Components	Maximum Potential D.C. Recovery %
9. Provision of Cultural, Entertainment and Tourism Facilities and Convention Centres	Ineligible	9.1 Cultural space (e.g. art galleries, museums and theatres)	0
	Ineligible	9.2 Tourism facilities and convention centres	0
10. Wastewater Services	Yes	10.1 Treatment plants	100
	Yes	10.2 Sewage trunks	100
	n/a	10.3 Local systems	0
	Yes	10.4 Vehicles and equipment ¹	100
11. Water Supply Services	Yes	11.1 Treatment plants	100
	Yes	11.2 Distribution systems	100
	n/a	11.3 Local systems	0
	Yes	11.4 Vehicles and equipment ¹	100
12. Waste Management Services	Ineligible	12.1 Landfill collection, transfer vehicles and equipment	0
	Ineligible	12.2 Landfills and other disposal facilities	0
	Yes	12.3 Waste diversion facilities	90
	Yes	12.4 Waste diversion vehicles and equipment ¹	90
13. Police Services	Yes	13.1 Police detachments	100
	Yes	13.2 Police rolling stock ¹	100
	Yes	13.3 Small equipment and gear	100
14. Homes for the Aged	No	14.1 Homes for the aged space	90
	No	14.2 Vehicles ¹	90
15. Child Care	No	15.1 Child care space	90
	No	15.2 Vehicles ¹	90
16. Health	No	16.1 Health department space	90
	No	16.2 Health department vehicles ¹	90
17. Social Housing	No	17.1 Social Housing space	90
18. Provincial Offences Act (P.O.A.)	No	18.1 P.O.A. space	90
19. Social Services	No	19.1 Social service space	90

¹with 7+ year life time



Categories of Municipal Services	Eligibility for Inclusion in the D.C. Calculation	Service Components	Maximum Potential D.C. Recovery %
20. Ambulance	Yes	20.1 Ambulance station space	90
	Yes	20.2 Vehicles ¹	90
21. Hospital Provision	Ineligible	21.1 Hospital capital contributions	0
22. Provision of Headquarters for the General Administration of Municipalities and Area Municipal Boards	Ineligible	22.1 Office space	0
	Ineligible	22.2 Office furniture	0
	Ineligible	22.3 Computer equipment	0
23. Other Services	Yes	23.1 Studies in connection with acquiring buildings, rolling stock, materials and equipment, and improving land ² and facilities, including the D.C. background study cost	0-100
	Yes	23.2 Interest on money borrowed to pay for growth-related capital	0-100

¹with a 7+ year life time

²same percentage as service component to which it pertains

4.4 Local Service Policy

Some of the need for services generated by additional development consists of local services related to a plan of subdivision. As such, they will be required as a condition of subdivision agreements or consent conditions. The local service policy is presented in Appendix E.

4.5 Capital Forecast

Paragraph 7 of s.s.5(1) of the D.C.A. requires that “the capital costs necessary to provide the increased services must be estimated.” The Act goes on to require two



potential cost reductions and the Regulation sets out the way in which such costs are to be presented. These requirements are outlined below.

These estimates involve capital costing of the increased services. This entails costing actual projects or the provision of service units, depending on how each service has been addressed.

The capital costs include:

- a) costs to acquire land or an interest therein (including a leasehold interest);
- b) costs to improve land;
- c) costs to acquire, lease, construct or improve buildings and structures;
- d) costs to acquire, lease or improve facilities, including rolling stock (with a useful life of 7 or more years), furniture and equipment (other than computer equipment), materials acquired for library circulation, reference or information purposes;
- e) interest on money borrowed to pay for the above-referenced costs;
- f) costs to undertake studies in connection with the above-referenced matters; and
- g) costs of the D.C. background study.

In order for an increase in need for service to be included in the D.C. calculation, Regional Council must indicate "...that it intends to ensure that such an increase in need will be met" (s.s.5 (1)3). This can be done if the increase in service forms part of a Council-approved Official Plan, capital forecast or similar expression of the intention of Council (O.Reg. 82/98 s.3). The capital program contained herein reflects the Region's approved and proposed capital budgets and master servicing/needs studies.

4.6 Treatment of Credits

Section 8, paragraph 5, of O.Reg. 82/98 indicates that a D.C. background study must set out "the estimated value of credits that are being carried forward relating to the service." Subsection 17, paragraph 4, of the same Regulation indicates that "...the value of the credit cannot be recovered from future D.C.s," if the credit pertains to an ineligible service. This implies that a credit for eligible services can be recovered from future D.C.s. As a result, this provision should be made in the calculation, in order to avoid a funding shortfall with respect to future service needs. The Region does not have any outstanding credit obligations.



4.7 Existing Reserve Funds

Section 35 of the D.C.A. states that:

“The money in a reserve fund established for a service may be spent only for capital costs determined under paragraphs 2 to 8 of subsection 5(1).”

There is no explicit requirement under the D.C.A. calculation method set out in s.s.5(1) to net the outstanding reserve fund balance as part of making the D.C. calculation; however, s.35 does restrict the way in which the funds are used in future.

For services which are subject to a per capita based service level “cap,” the reserve fund balance should be applied against the development-related costs for which the charge was imposed once the project is constructed (i.e. the needs of recent growth). This cost component is distinct from the development-related costs for the next 10-year period, which underlie the D.C. calculation herein.

The alternative would involve the Region spending all reserve fund monies prior to renewing each by-law, which would not be a sound basis for capital budgeting. Thus, the Region will use these reserve funds for the Region’s cost share of applicable development-related projects, which are required but have not yet been undertaken, as a way of directing the funds to the benefit of the development which contributed them (rather than to future development, which will generate the need for additional facilities directly proportionate to future growth).

The Region’s D.C. Reserve Fund Balance by service at December 31, 2018 (adjusted) is shown below:

Service	Balance as at December 31, 2018	Commitments/Adjustments	Adjusted Totals Net of Commitments
Services Related to a Highway	\$6,975,671	\$0	\$6,975,671
Operations	\$3,644,860	\$0	\$3,644,860
Transit Services	\$2,997,750	\$0	\$2,997,750
Airport	\$980,106	\$0	\$980,106
Library Services	\$47,897	\$0	\$47,897
Police Services	(\$728,638)	\$120,284	(\$608,354)
General Government	(\$2,292,222)	\$0	(\$2,292,222)
Paramedic Services	\$694,553	\$0	\$694,553
Waste Diversion	\$242,074	\$0	\$242,074
Wastewater Services	(\$2,140,082)	\$0	(\$2,140,082)
Water Services	\$26,385,883	\$0	\$26,385,883
Total	\$36,807,852	\$120,284	\$36,928,136

Note: Amounts in brackets are deficit balances.



4.8 Deductions

The D.C.A. potentially requires that five deductions be made to the increase in the need for service. These relate to:

- the level of service ceiling;
- uncommitted excess capacity;
- benefit to existing development;
- anticipated grants, subsidies and other contributions; and
- 10% reduction for certain services.

The requirements behind each of these reductions are addressed as follows:

4.8.1 Reduction Required by Level of Service Ceiling

This is designed to ensure that the increase in need included in 4.3 does “...not include an increase that would result in the level of service (for the additional development increment) exceeding the average level of the service provided in the Municipality over the 10-year period immediately preceding the preparation of the background study...” O.Reg. 82.98 (s.4) goes further to indicate that “...both the quantity and quality of a service shall be taken into account in determining the level of service and the average level of service.”

In many cases, this can be done by establishing a quantity measure in terms of units as floor area, land area or road length per capita and a quality measure, in terms of the average cost of providing such units based on replacement costs, engineering standards or recognized performance measurement systems, depending on circumstances. When the quantity and quality factor are multiplied together, they produce a measure of the level of service, which meets the requirements of the Act, i.e. cost per unit.

With respect to transit services, the changes to the Act as a result of Bill 73 have provided for an alternative method for calculating the services standard ceiling. Transit services must now utilize a forward-looking service standard analysis, described later in this section.



The average service level calculation sheets for each service component in the D.C. calculation are set out in Appendix B.

4.8.2 Reduction for Uncommitted Excess Capacity

Paragraph 5 of s.s.5(1) requires a deduction from the increase in the need for service attributable to the anticipated development that can be met using the Region's "excess capacity," other than excess capacity which is "committed."

"Excess capacity" is undefined, but in this case must be able to meet some or all of the increase in need for service, in order to potentially represent a deduction. The deduction of uncommitted excess capacity from the future increase in the need for service would normally occur as part of the conceptual planning and feasibility work associated with justifying and sizing new facilities, e.g. if a road widening to accommodate increased traffic is not required because sufficient excess capacity is already available, then widening would not be included as an increase in need, in the first instance.

4.8.3 Reduction for Benefit to Existing Development

Section 5(1)6 of the D.C.A. provides that, "The increase in the need for service must be reduced by the extent to which an increase in service to meet the increased need would benefit existing development." The general guidelines used to consider benefit to existing development included the following:

- the repair or unexpanded replacement of existing assets that are in need of repair;
- an increase in average service level of quantity or quality;
- the elimination of a chronic servicing problem not created by growth; and
- providing services where none previously existed (generally considered for water or wastewater services).

This step involves a further reduction in the need, by the extent to which such an increase in service would benefit existing development. The level of services cap in 4.4 is related but is not the identical requirement. Water and wastewater are highly localized to growth areas and can be more readily allocated in this regard than other services such as services related to a highway, which do not have a fixed service area.



Where existing development has an adequate service level which will not be tangibly increased by an increase in service, no benefit would appear to be involved. For example, where expanding existing library facilities simply replicates what existing residents are receiving, they receive very limited (or no) benefit as a result. On the other hand, where a clear existing service problem is to be remedied, a deduction should be made accordingly.

For example, in the case of services such as libraries, the service is typically provided on a Township system basis. For example, library facilities of the same type may provide different services (i.e. first aid training vs. computer classes), different programs (i.e. family story time vs. reading buddies) and different time availability for the same service (i.e. first aid training available on Wednesday in one library and Saturday in another). As a result, Township residents will travel to different facilities to access the services they want at the times they wish to use them, and facility location generally does not correlate directly with residence location. Even where it does, displacing users from an existing facility to a new facility frees up capacity for use by others and generally results in only a very limited benefit to existing development. Where an increase in demand is not met for a number of years, a negative service impact to existing development is involved for a portion of the planning period.

4.8.4 Reduction for Anticipated Grants, Subsidies and Other Contributions

This step involves reducing the capital costs necessary to provide the increased services by capital grants, subsidies and other contributions (including direct developer contributions required due to the local service policy) made or anticipated by Council and in accordance with various rules such as the attribution between the share related to new vs. existing development. That is, some grants and contributions may not specifically be applicable to growth or where Council targets fundraising as a measure to offset impacts on taxes (O.Reg. 82.98 s.6).

4.8.5 The 10% Reduction

Paragraph 8 of s.s. (1) of the D.C.A. requires that, “the capital costs must be reduced by 10 percent.” This paragraph does not apply to water supply services, waste water services, storm water drainage and control services, services related to a highway, police and fire protection services. The primary services to which the 10% reduction



does apply include services such as libraries, childcare/social services, the Provincial Offences Act, ambulance, homes for the aged, and health.

The 10% is to be netted from the capital costs necessary to provide the increased services, once the other deductions have been made, as per the infrastructure costs sheets in Chapter 5.

4.9 Municipal-wide vs. Area Rating

This step involves determining whether all of the subject costs are to be recovered on a uniform municipal-wide basis or whether some or all are to be recovered on an area-specific basis. Under the amended D.C.A., it is now mandatory to “consider” area-rating of services (providing charges for specific areas and services), however, it is not mandatory to implement area-rating. Further discussion is provided in section 7.4.4.

4.10 Allocation of Development

This step involves relating the costs involved to anticipated development for each period under consideration and using allocations between residential and non-residential development and between one type of development and another, to arrive at a schedule of charges.

4.11 Asset Management

The D.C.A. now requires that a D.C. Background Study must include an Asset Management Plan (s. 10 (2)c.2). The asset management plan must deal with all assets that are proposed to be funded, in whole or in part, by D.C.s. The current regulations provide very extensive and specific requirements for the asset management plan related to transit services (as noted in the subsequent subsection); however, they are silent with respect to how the asset management plan is to be provided for all other services. As part of any asset management plan, the examination should be consistent with the municipality’s existing assumptions, approaches and policies on the asset management planning. This examination has been included in Appendix F.



4.12 Transit

Transit services require the following:

- A. The Background Study requires the following in regard to transit costs (as per section 8(2) of the Regulations):
 - 1. The calculations that were used to prepare the estimate for the planned level of service for the transit services, as mentioned in subsection 5.2(3) of the Act.
 - 2. An identification of the portion of the total estimated capital cost relating to the transit services that would benefit,
 - i. the anticipated development over the 10-year period immediately following the preparation of the background study, or
 - ii. the anticipated development after the 10-year period immediately following the preparation of the background study.
 - 3. An identification of the anticipated excess capacity that would exist at the end of the 10-year period immediately following the preparation of the background study.
 - 4. An assessment of ridership forecasts for all modes of transit services proposed to be funded by the development charge over the 10-year period immediately following the preparation of the background study, categorized by development types, and whether the forecasted ridership will be from existing or planned development.
 - 5. An assessment of the ridership capacity for all modes of transit services proposed to be funded by the development charge over the 10-year period immediately following the preparation of the background study.
- B. A new forward-looking service standard (as per 6.1(2) of the Regulations):
 - 1. The service is a discrete service.



2. No portion of the service that is intended to benefit anticipated development after the 10-year period immediately following the preparation of the background study may be included in the estimate.
 3. No portion of the service that is anticipated to exist as excess capacity at the end of the 10-year period immediately following the preparation of the background study may be included in the estimate.
- C. A detailed asset management strategy and reporting requirements (section 6.1(3) of the Regulation) that includes lifecycle costs, action plans that will enable the assets to be sustainable, summary of how to achieve the proposed level of service, discussion on procurement measures and risk.

As stated in Chapter 1, Watson retained Dillon Consulting Limited (Dillon) to undertake the above calculations and reporting requirements and is attached to Appendix H of this study.



Chapter 5

D.C.-Eligible Cost Analysis by Service



5. D.C.-Eligible Cost Analysis by Service

5.1 Introduction

This chapter outlines the basis for calculating eligible costs for the D.C.s to be applied on a uniform basis. In each case, the required calculation process set out in s.5(1) paragraphs 2 to 8 in the D.C.A. and described in Chapter 4, was followed in determining D.C. eligible costs.

The nature of the capital projects and timing identified in the Chapter reflects Council's current intention. However, over time, Regional projects and Council priorities change and accordingly, Council's intentions may alter and different capital projects (and timing) may be required to meet the need for services required by new growth.

5.2 Service Levels and 10-Year Capital Costs for D.C. Calculation

This section evaluates the development-related capital requirements for all of the "softer" services and police over a 10-year planning period. Each service component (except transit services) is evaluated on two format sheets: the average historical 10-year level of service calculation (see Appendix B), which "caps" the D.C. amounts; and, the infrastructure cost calculation, which determines the potential D.C. recoverable cost. For Transit services, the service standard calculations are on a forward-looking basis (see Appendix H).

5.2.1 *Transit Services*

As discussed in section 4.12, changes were made the Development Charges Act with respect to Transit services as part of the Bill 73 revisions. In summary these changes required:

- Transit no longer requires the statutory 10% mandatory deduction from the net capital cost;
- The calculations that were used to prepare the estimate for the planned level of service for the transit services;



- An identification of the portion of the total estimated capital cost relating to the transit services that would benefit:
 - the anticipated development over the 10-year period immediately following the preparation of the background study, or
 - the anticipated development after the 10-year period immediately following the preparation of the background study;
- An identification of the anticipated excess capacity that would exist at the end of the 10-year period immediately following the preparation of the background study;
- An assessment of ridership forecasts for all modes of transit services proposed to be funded by the development charge over the 10-year period immediately following the preparation of the background study; and
- An assessment of the ridership capacity for all modes of transit services proposed to be funded by the development charge over the 10-year period immediately following the preparation of the background study.

The following definitions are provided to assist in explaining the methodology provided herein:

P.M. Peak Period Person Trips: The total number of trips by all modes within the Region of Waterloo that occur between 2:30 p.m. and 5:30 p.m.

P.M. Peak Period Total Transit Trips: The total number of linked transit trips from origin to destination within the Region of Waterloo that occur between 2:30 p.m. and 5:30 p.m. by either G.R.T. bus or ION L.R.T. Transit trips is used interchangeably with “Transit ridership” or “Transit rides”.

As provided in Appendix H to this report, Dillon Consulting has undertaken the above calculations based on transit ridership over the forecasted period.

As noted in their write-up, calculations were undertaken in August, 2016 to support the initial calculation of the development charge. The 2016 Transit D.C. calculation was undertaken using the best available information at that time, including the Region of Waterloo 2010 Transportation Master Plan. At the time of this D.C. Study, the Transportation Master Plan has been updated (2019). As noted in Appendix H, some of the key changes include:



1. 2016 is no longer the forecast year but is considered a base-year, taken from the 2016 Transportation Tomorrow Survey.
2. A long-term planning horizon beyond 2031 was established (however using the same population targets).
3. The mode share targets in the Transportation Master Plan were adjusted to be measured across the whole P.M. peak period (three hours, compared to one hour) to allow for more school and discretionary trips to be included.
4. The 14.8% transit mode share target established in the 2010 Regional Transportation Master Plan (R.T.M.P.) was extended beyond 2031 to the long-term to allow more time for travellers to change their travel behaviours (due to slower than predicted uptake in transit services).
5. Assessment of transit trip generation for new residents vs. existing.

As provided in Appendix H, the updated transit modal shares along with the corresponding P.M. Peak transit trips as follows:

	R.T.M.P Base Year	In-Period		Post-Period	
Trip Statistics	2016	2019	2028	2031	Long-term
P.M. Peak Transit Period Mode Share	4.90%	5.90%	8.70%	9.70%	14.80%
P.M. Peak Total Transit Trips	17,096	21,175	35,564	40,877	68,422

Based on the above table, the growth which has been planned for the system is 51,326 P.M. Peak trips. Allocation of those trips by period are as follows:

2016 to Long-term	PM Peak Trips	%
Pre-period	4,079	8%
In-Period	14,389	28%
Post Period	32,858	64%
Total Trips	51,326	100%

For the 2019 – 2028 In-Period increase in the number of trips (i.e. 14,389), Dillon’s report has calculated the amount attributed to growth and to benefit to existing development, as follows:



In-Period Trips	PM Peak Trips	%
Benefit to Existing	8,734	61%
Growth	5,655	39%
Total Trips	14,389	100%

As part of the prior DC Study, a forward-looking listing of capital works was identified for Transit Services by the Transportation and Transit Master Plans. This listing has been updated as part of the 2019 Transportation Master Plan process. Presently, full capital servicing for the Transit service has been estimated at \$2.81 billion (net of debt servicing costs), as follows:

Gross Cost for each Transit Component (Excluding Specialized Transit)^

Description	Paid to date (debt before 2019)	10-Year Forecast		Post Period Capital	Total
		Debt Related (Cost Incurred debt 2019+)	2019-2028 Capital Budget		
Principal Related Capital Costs					
ION Phase 1 (Principal Related)	\$ 50,391,724	\$ 799,760,642	\$ 48,748,428	\$ 36,050,000	\$ 934,950,794
ION Phase 2	\$ -	\$ -	\$ -	\$ 1,360,000,000	\$ 1,360,000,000
BUSES (excluding Specialized Transit)	\$ -	\$ -	\$ 61,776,000	\$ 112,318,500	\$ 174,094,500
FACILITIES (Principal Related)	\$ 3,188,067	\$ 17,053,933	\$ 132,302,000	\$ 120,000,000	\$ 272,544,000
OTHER	\$ -	\$ -	\$ 32,189,000	\$ 11,000,000	\$ 43,189,000
Prior Years Capital Expenditures (2016-2018)	\$ 23,973,225	\$ -	\$ -	\$ -	\$ 23,973,225
Total (Principal Related)	\$ 77,553,015	\$ 816,814,575	\$ 275,015,428	\$ 1,639,368,500	\$ 2,808,751,518
Interest Related Capital Costs*					
ION (Interest Related)	\$ 31,125,525	\$ 162,933,911	\$ -	\$ -	\$ 194,059,436
FACILITIES (Interest Related)	\$ 2,546,788	\$ 1,675,946	\$ -	\$ -	\$ 4,222,734
Total (Interest Related)	\$ 33,672,313	\$ 164,609,858	\$ -	\$ -	\$ 198,282,170
Total Principal and Interest Related Capital Costs	\$ 111,225,328	\$ 981,424,433	\$ 275,015,428	\$ 1,639,368,500	\$ 3,007,033,689

^All costs include assumed grant funding and other contributions

*Interest Related is discounted

Note: Table excludes assumed future financing

It is noted that significant grant funding has been received to date from senior levels of government. Further grant funding has also been assumed for the Region's 2019-2028 capital budget. As well, full grant funding for the ION Stage 2 project has been assumed at this time. Based on these assumptions, the net capital costs to be funded to meet the anticipated trips during the forecast period is \$621 million (not including debt servicing costs) as follows:



Net Cost for each Transit Component (Excluding Specialized Transit)^

Description	Paid to date (debt before 2019)	10-Year Forecast		Post Period Capital	Total
		Debt Related (Cost Incurred debt 2019+)	2019-2028 Capital Budget		
Principal Related Capital Costs					
ION Phase 1 (Principal Related)	\$ 13,009,520	\$ 206,472,436	\$ 28,148,428	\$ 12,016,667	\$ 259,647,051
ION Phase 2	\$ -	\$ -	\$ -	\$ -	\$ -
BUSES (excluding Specialized Transit)	\$ -	\$ -	\$ 16,679,520	\$ 112,318,500	\$ 128,998,020
FACILITIES (Principal Related)	\$ 3,188,067	\$ 17,053,933	\$ 43,075,736	\$ 120,000,000	\$ 183,317,736
OTHER	\$ -	\$ -	\$ 23,612,873	\$ 11,000,000	\$ 34,612,873
Prior Years Capital Expenditures (2016-2018)	\$ 15,225,992	\$ -	\$ -	\$ -	\$ 15,225,992
Total (Principal Related)	\$ 31,423,578	\$ 223,526,369	\$ 111,516,557	\$ 255,335,167	\$ 621,801,671
Interest Related Capital Costs*					
ION (Interest Related)	\$ 31,125,525	\$ 162,933,911	\$ -	\$ -	\$ 194,059,436
FACILITIES (Interest Related)	\$ 2,546,788	\$ 1,675,946	\$ -	\$ -	\$ 4,222,734
Total (Interest Related)	\$ 33,672,313	\$ 164,609,858	\$ -	\$ -	\$ 198,282,170
Total Principal and Interest Related Capital Costs	\$ 65,095,891	\$ 388,136,227	\$ 111,516,557	\$ 255,335,167	\$ 820,083,842

^Cost for ION is based on the assumed 1/3 Region portion

*Interest Related is discounted

Note: Table excludes assumed future financing

Given that the Region has incurred costs to date and has further costs planned for the future, the costs need to be allocated across all future users of the system. To attain an equal distribution of these costs, an allocation has been provided based on a capital cost per P.M. Peak hour trip and then applied across the In-Period and Post-Period trips, as follows:



TOTAL COST WITHOUT INTEREST	
Total \$ without Interest	\$ 621,801,671
Total New Trips (2016-2041 Existing and Growth)	51,326
\$ Cost per Trip	\$ 12,115
<u>In Period (2019-2028)</u>	
% of BTE Trips	61%
% of Growth Trips	39%
# of BTE Trips	8,734
# of Growth Trips	5,655
BTE Trips x Cost per Trip	\$ 105,810,229
Growth Trips x Cost per Trip	\$ 68,508,913
Total In-Period \$ Costs	\$ 174,319,141
Total In-Period \$ Percentage	28%
Growth-Related Costs	\$ 68,508,913
Reserve Fund Balance	\$ 2,997,750
Net Growth \$ Amount (less Reserve Fund Balance)	\$ 65,511,163
Residential	74%
Non-Residential	26%
Residential Growth (Growth Amount x Residential %)	\$ 48,478,260
Non-Residential Growth (Growth Amount x Non-Residential %)	\$ 17,032,902

As the Region has undertaken debt financing costs to date, these financing costs (discounted to recognize that the D.C. by-law will be indexed annually) must also be included in the above calculations, as follows:



TOTAL COST WITH INTEREST	
Total \$ with Interest	\$ 820,083,842
Total New Trips (2016-2041 Existing and Growth)	51,326
\$ Cost per Trip	\$ 15,978
<u>In Period (2019-2028)</u>	
% of BTE Trips	61%
% of Growth Trips	39%
# of BTE Trips	8,734
# of Growth Trips	5,655
BTE Trips x Cost per Trip	\$ 139,551,344
Growth Trips x Cost per Trip	\$ 90,355,261
Total In-Period \$ Costs	\$ 229,906,605
Total In-Period \$ Percentage	28%
Growth-Related Costs	\$ 90,355,261
Reserve Fund Balance	\$ 2,997,750
Net Growth \$ Amount (less Reserve Fund Balance)	\$ 87,357,511
Residential	74%
Non-Residential	26%
Residential Growth (Growth Amount x Residential %)	\$ 64,644,558
Non-Residential Growth (Growth Amount x Non-Residential %)	\$ 22,712,953

The above capital information is provided in the following capital sheets along with the additional costs for Specialized Transit services.



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Transit Services

Item Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
							Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share	Non-Residential Share
	2019-2028								74%	26%	
1	ION Phase 1 (Principal Related)	2019-2028	246,637,531	124,566,882		122,070,649	74,095,840		47,974,809	35,501,358	12,473,450
2	BUSES (excluding Specialized Transit)	2019-2028	128,998,020	120,319,850		8,678,170	5,267,575		3,410,595	2,523,840	886,755
3	FACILITIES (Principal Related)	2019-2028	180,129,669	148,844,864		31,284,805	18,989,609		12,295,196	9,098,445	3,196,751
4	OTHER	2019-2028	34,612,873	22,327,355		12,285,518	7,457,204		4,828,314	3,572,952	1,255,362
5	Prior Years Capital Expenditures (2016-2018)	2019-2028	-	-		-	-		-	-	-
6	Specialized Transit + Infrastructure	2019-2028	3,700,000	1,750,000		1,950,000	-		1,950,000	1,443,000	507,000
7	ION (Interest Related)	2019-2028	162,933,911	107,912,402		55,021,510	33,397,586		21,623,924	16,001,703	5,622,220
8	FACILITIES (Interest Related)	2019-2028	1,675,946	1,109,992		565,954	343,529		222,425	164,594	57,830
	Reserve Fund										
9	Reserve Fund Adjustment	Reserve		-		-	2,997,750		(2,997,750)	(2,218,335)	(779,415)
	Total		758,687,951	526,831,345	-	231,856,605	142,549,094	-	89,307,511	66,087,558	23,219,953

Note: The gross capital costs included in this table are net of grants, subsidies, and other funding.



5.2.2 Airport Services

The Region owns the Waterloo International Airport, which totals 102,816 sq.ft. of airport-related facilities and is situated on 472.9 hectares of land. The Airport infrastructure also contains over 1 million sq.m. of pavement (runways, taxiways, aprons, and parking lots) and a network of water pipelines, sewer pipelines, drainage, lighting, electrical systems. This represents a replacement value of approximately \$157.1 million and equals \$251 per capita, which provides a D.C.-eligible amount of \$18,097,638 over the 10-year forecast period.

To support the airport services, the airport has maintained a current inventory of 68 vehicles and equipment, which equals \$9 per capita. When multiplied over the 10-year forecast period, the service standard the Region would be eligible to collect is an additional \$677,887 from D.C.s.

Based on the above, the total D.C.-eligible amount for airport services is \$18,775,525.

As set out in the Region's Airport Master Plan and Business Plan, the Region plans to expand its airport services over three phases/triggers. Within these phases/triggers, several capital projects have been identified which range from property acquisitions, runway expansions, sewer expansions, drainage expansions, terminal expansions, other infrastructure expansions, and various studies, totalling \$176.5 million. In addition to this amount, the recovery of an existing debenture (principal and discounted interest) and future estimated financing costs of \$19.1 million have been included for recovery (note that financing costs are not subject to the service standard ceiling), for a gross total cost of \$195.6 million. Of this total, \$163.7 million is planned to be spent in the post 10-year period. Further deductions in the amounts of \$9.7 million to recognize existing benefit and the reserve fund surplus of \$980,106 have been made. Therefore, after the 10% mandatory deduction, \$19,692,107 has been included in the D.C. calculation (note that the interest costs included in the total is \$3.3 million and is not subject to the service standard ceiling of \$18,775,525).

The residential/non-residential allocation for airport services is based on the relationship between population and employment resulting in an allocation of 75% to residential and 25% to non-residential.



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Airport Facilities

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Subtotal	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development		Other (e.g. 10% Statutory Deduction)	Total	Residential Share	Non-Residential Share	
		2019-2028											75%	25%	
1	3542	Runway 08 Approach Lighting	2027	300,000	-		300,000	150,000		150,000	15,000	135,000	101,250	33,750	
2	3544	Sanitary Forcemain Servicing	2019-2020	5,671,500	-		5,671,500	1,417,900		4,253,600	425,360	3,828,240	2,871,180	957,060	
3	3547	Airport Business Plan/Master Plan Update	2021-2026	400,000	-		400,000	-		400,000	40,000	360,000	270,000	90,000	
4	3548	Rehabilitation 08/26	2026-2027	4,070,000	-		4,070,000	1,020,000		3,050,000	305,000	2,745,000	2,058,750	686,250	
5	3564	Randell Drain/Stormwater-Expansion	2022-2024	100,000	-		100,000	-		100,000	10,000	90,000	67,500	22,500	
6	3569	Hydro Plant Upgrade	2019-2025	1,140,000	-		1,140,000	70,000		1,070,000	107,000	963,000	722,250	240,750	
7	3574	Security Upgrades	2019-2025	230,000	-		230,000	115,000		115,000	11,500	103,500	77,625	25,875	
8	3579	Parking lot Expansion	2019	20,000	-		20,000	-		20,000	2,000	18,000	13,500	4,500	
9	3592	Zoning Study for 3rd Runway	2020	100,000	-		100,000	35,900		64,100	6,410	57,690	43,268	14,423	
10	3593	Terminal Bldg Exp Feasibility/Site Study	2019-2020	614,500	-		614,500	220,500		394,000	39,400	354,600	265,950	88,650	
11	3594	Rail Connectivity Study YKF / YYZ	2019	207,700	-		207,700	74,500		133,200	13,320	119,880	89,910	29,970	
12	3595	Enviro Assmt for Runway 14-32 & 08-26	2019-2020	251,200	-		251,200	90,200		161,000	16,100	144,900	108,675	36,225	
13	3596	Design Runway 14-32 & 08-26 Extensions	2019-2020	328,300	-		328,300	117,800		210,500	21,050	189,450	142,088	47,363	
14	3597	Master Land Use and Servicing Plan	2019-2020	204,500	-		204,500	73,400		131,100	13,110	117,990	88,493	29,498	
15	3600	Design of Terminal Expansion Phase 1	2019	491,600	-		491,600	176,400		315,200	31,520	283,680	212,760	70,920	
16	3601	Development of Apron VII Serviced Lands	2019-2020	465,000	-		465,000	166,900		298,100	29,810	268,290	201,218	67,073	
17	3602	Federal Zoning Runway 14-32 and 08-26 Ext	2019-2020	371,900	-		371,900	133,500		238,400	23,840	214,560	160,920	53,640	
18	3603	Trigger 2 Property Acquisition	2019-2023	7,160,900	6,122,600		1,038,300	372,600		665,700	66,570	599,130	449,348	149,783	
19	3604	Construct Runway 14-32 Extension	2023-2025	23,000,000	19,665,000		3,335,000	1,901,000		1,434,000	143,400	1,290,600	967,950	322,650	
20	3605	Design Runway 08/26 Ext to 8700'	2024	460,000	393,300		66,700	23,900		42,800	4,280	38,520	28,890	9,630	
21	3606	Shantz Station Road Reconfiguration Options	2024	264,500	226,100		38,400	13,800		24,600	2,460	22,140	16,605	5,535	
22	3607	Design R/T/A to Accomodate AGN-IV Aircraft	2023	161,000	137,700		23,300	8,400		14,900	1,490	13,410	10,058	3,353	
23	3608	Design and Construct Apron 'II' Expansion	2024-2025	1,437,500	1,229,100		208,400	112,700		95,700	9,570	86,130	64,598	21,533	
24	3609	Construct Terminal Expansion Phase 1	2023-2025	24,610,000	21,041,600		3,568,400	2,034,000		1,534,400	153,440	1,380,960	1,035,720	345,240	
25	3610	Design Terminal Expansion Phase 2	2025	3,565,000	3,048,100		516,900	185,500		331,400	33,140	298,260	223,695	74,565	
26	3611	Increase Available Surface Parking	2024	2,875,000	2,458,100		416,900	237,600		179,300	17,930	161,370	121,028	40,343	
27	3612	Develop Existing Serviced Lands	2023-2025	2,760,000	2,359,800		400,200	228,100		172,100	17,210	154,890	116,168	38,723	
28	3613	Fountain Street Utility Relocations	2024	2,300,000	1,966,500		333,500	190,100		143,400	14,340	129,060	96,795	32,265	
29	3614	Trigger 3 Property Acquisition	2026-2028	12,937,500	12,937,500		-	-		-	-	-	-	-	
30	3615	Shantz Station Road Reconfiguration	2026-2028	5,290,000	5,290,000		-	-		-	-	-	-	-	
31	3616	Construct Partial Taxiway 'B'	2026-2028	3,910,000	3,910,000		-	-		-	-	-	-	-	
32	3617	Construct Runway 08/26 Extension	2026-2028	11,500,000	11,500,000		-	-		-	-	-	-	-	
33	3618	Widen Taxiways to Accomodate AGN-IV Aircraft	2026-2028	3,220,000	3,220,000		-	-		-	-	-	-	-	



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo
Service: Airport Facilities

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Subtotal	Less:	Potential D.C. Recoverable Cost			
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development		Other (e.g. 10% Statutory Deduction)	Total	Residential Share	Non-Residential Share	
		2019-2028										75%	25%		
34	3619	Construct Terminal Expansion Phase 2	2026-2028	36,587,500	36,587,500		-	-		-	-	-	-	-	
35	3620	Design Terminal Expansion Phase 3	2028	4,830,000	4,830,000		-	-		-	-	-	-	-	
36	3621	Design Landside Roads & Parking Configuration	2028	230,000	230,000		-	-		-	-	-	-	-	
37	3622	Develop Southeast Serviced Lands	2026-2028	3,795,000	3,795,000		-	-		-	-	-	-	-	
38	3623	Parking Equipment Upgrade	2020	90,000	-		90,000	45,000		45,000	4,500	40,500	30,375	10,125	
39	3629	Runway 08/26 from Rwy 14/32 to Threshold 26 Reconstruction	2027	8,550,000	8,550,000		-	-		-	-	-	-	-	
40	3631	Taxiway A West - Taxiway C South Reconstruction	2028	2,040,000	1,580,000		460,000	460,000		-	-	-	-	-	
41	3603	CDS 18-89 Airport Trigger 2 Land (Principal)	2019-2028	3,149,843	-		3,149,843	-		3,149,843	-	3,149,843	2,362,382	787,461	
42	3603	CDS 18-89 Airport Trigger 2 Land (Discounted Interest)	2019-2028	170,733	-		170,733	-		170,733	-	170,733	128,049	42,683	
New		Estimated Discounted Financing Cost (10 Year Debenture)	2019-2028	382,027	-		382,027	-		382,027	-	382,027	286,521	95,507	
New		Estimated Discounted Financing Cost (10 Year Debenture)	2020-2029	279,987	28,000		251,987	-		251,987	-	251,987	188,990	62,997	
New		Estimated Discounted Financing Cost (10 Year Debenture)	2023-2032	763,795	305,500		458,295	-		458,295	-	458,295	343,721	114,574	
New		Estimated Discounted Financing Cost (10 Year Debenture)	2024-2033	984,272	492,100		492,172	-		492,172	-	492,172	369,129	123,043	
New		Estimated Discounted Financing Cost (10 Year Debenture)	2025-2034	616,064	369,600		246,464	-		246,464	-	246,464	184,848	61,616	
New		Estimated Discounted Financing Cost (20 Year Debenture)	2024-2043	715,644	536,700		178,944	-		178,944	-	178,944	134,208	44,736	
New		Estimated Discounted Financing Cost (20 Year Debenture)	2025-2044	715,431	572,300		143,131	-		143,131	-	143,131	107,349	35,783	
New		Estimated Discounted Financing Cost (20 Year Debenture)	2026-2045	1,463,755	1,244,200		219,555	-		219,555	-	219,555	164,666	54,889	
New		Estimated Discounted Financing Cost (20 Year Debenture)	2027-2046	5,540,238	4,986,200		554,038	-		554,038	-	554,038	415,528	138,509	
New		Estimated Discounted Financing Cost (20 Year Debenture)	2028-2047	4,326,374	4,110,100		216,274	-		216,274	-	216,274	162,205	54,068	
		Reserve Fund Adjustment			-		-	980,106		(980,106)	-	(980,106)	(735,080)	(245,027)	
		Total		195,648,263	163,722,600		-	31,925,663	10,654,806	-	21,270,857	1,578,750	19,692,107	14,769,080	4,923,027

Note: BTE includes deductions for out of service area



5.2.3 Library Services

The Region has 11 library branches totalling 32,738 sq.ft. in library space that are located within the Townships (the Cities of Kitchener, Waterloo, and Cambridge provide their own library services). Of these facilities, only the Regional Library Headquarters is fully funded by the Region. The remaining 10 facilities are the responsibility of the local Townships and the Region is responsible for purchasing furnishings, equipment and collection material for those facilities. Based on this information, the Region has provided an average level of service of 0.49 sq.ft. of space per capita or an investment of \$62 per capita in library facility space. In addition, the Region also operates a sprinter van for library purposes. Based on the service standard over the past ten years, the Region would be eligible to collect a total of \$729,592 from D.C.s for facilities over the 10-year forecast period for Townships.

The Region has an inventory of library collection materials along with totalling 237,801 items. These collection items include various materials including books, periodicals, digital equipment, electronic resources as well as subscriptions, all of which have a total value of approximately \$8.7 million. Over the past ten years, the average level of service was 4.2 collection items per capita or an investment of \$186 per capita. Based on this service standard, the Region would be eligible to collect approximately \$2,170,226 from D.C.s for library collection items (over the 10-year period).

Based on the service standard for facilities, vehicles, and collection materials, the total D.C.-eligible amount the Region can collect over the 10-year forecast period for library services is \$2,899,818.

The Region has identified the need for new library materials, new and expanded furnishings and equipment for inclusion in the D.C. for library services due to growth. The gross cost of the projects has been included at a total of \$2,795,000, with an additional \$200,000 related to the library collection business plan and \$185,651 to recover an existing debenture (principal and discounted interest) related to the Region's library headquarters. Reductions in the amounts of \$142,200 to recognized benefit to existing development benefit, \$25,000 of other contributions, and the reserve fund balance of \$47,897 have been made. Therefore, the net growth capital cost after the mandatory 10% deduction is \$2,682,774.



While library usage is predominately residential based, there is some use of the facilities by non-residential users, for the purpose of research. To acknowledge this use, the growth-related capital costs have been allocated 95% residential and 5% non-residential.



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Regional Library Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Subtotal	Less:	Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development		Other (e.g. 10% Statutory Deduction)	Total	Residential Share	Non-Residential Share
		2019-2028										95%	5%	
1	20002	Library Holdings Acquisitions (RDC)	2019-2028	2,300,000	-		2,300,000	-		2,300,000	230,000	2,070,000	1,966,500	103,500
2	20009	Other Branch Furnishings	2019-2028	200,000	-		200,000	-		200,000	20,000	180,000	171,000	9,000
3	20026	New Breslau Branch (Woolwich) Relocation - Furnishings, Equipment & Collection	2021	120,000	-		120,000	20,000		100,000	10,000	90,000	85,500	4,500
4	20027	St. Clements Branch - Relocation and Expansion - Additional Furnishings	2022	50,000	-		50,000	22,200		27,800	2,780	25,020	23,769	1,251
5	20023	New Hamburg Branch - Puddicombe Estate - Expansion Furnishings, Equipment & Collection	2019	25,000	-		25,000	-	25,000	-	-	-	-	-
6	20015	Branch Development - to increase furnishings & equipment at existing branches to service growth	2020-2028	100,000	-		100,000	-		100,000	10,000	90,000	85,500	4,500
7		Library Collection Business Plan	2023	100,000	-		100,000	50,000		50,000	5,000	45,000	42,750	2,250
8		Library Collection Business Plan	2028	100,000	-		100,000	50,000		50,000	5,000	45,000	42,750	2,250
9	20024	CDS 18-90 Library HQ (Principal)	2019-2028	172,000	-		172,000	-		172,000	-	172,000	163,400	8,600
10	20024	CDS 18-90 Library HQ (Discounted Interest)	2019-2028	13,651	-		13,651	-		13,651	-	13,651	12,969	683
11		Reserve Fund Adjustment	Reserve	-	-			47,897		(47,897)	-	(47,897)	(45,502)	(2,395)
		Total		3,180,651	-	-	3,180,651	190,097	25,000	2,965,554	282,780	2,682,774	2,548,635	134,139



5.2.4 General Government

The D.C.A. permits the inclusion of studies undertaken to facilitate the completion of the Region's capital works program. The Region has made provision for the inclusion of new studies undertaken to facilitate this D.C. process, as well as other studies which benefit growth (in whole or in part). The list of studies includes such studies as the following:

- Municipal Comprehensive Review;
- Sub-Watershed Studies;
- Development Application Database; and
- Development Charge studies.

The cost of these studies, including the reserve fund deficit of \$2,292,222 is \$11,072,222, of which \$577,800 is attributable to existing benefit. The net growth-related capital cost, after the mandatory 10% deduction, is \$10,030,202 and has been included in the D.C.

These costs have been allocated 75% residential and 25% non-residential based on the incremental growth in population to employment for the 10-year forecast period.



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo
Service: General Government

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Subtotal	Less:	Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development		Other (e.g. 10% Statutory Deduction)	Total	Residential Share	Non-Residential Share
		2019-2028										75%	25%	
1	60005	Development Charge By-law Review	2019	192,000	-		192,000	-		192,000	19,200	172,800	129,600	43,200
2	60005	Development Charge By-law Review	2023	180,000	-		180,000	-		180,000	18,000	162,000	121,500	40,500
3	60005	Development Charge By-law Review	2024	120,000	-		120,000	-		120,000	12,000	108,000	81,000	27,000
4	60005	Development Charge By-law Review	2028	180,000	-		180,000	-		180,000	18,000	162,000	121,500	40,500
5	22007	Municipal Comprehensive Review	2019-2028	3,748,000	-		3,748,000	-		3,748,000	374,800	3,373,200	2,529,900	843,300
6	22021	Sub-Watershed Studies	2019-2028	3,560,000	-		3,560,000	-		3,560,000	-	3,560,000	2,670,000	890,000
7	22038	Development Application Database	2019-2021	800,000	-		800,000	577,800		222,200	22,220	199,980	149,985	49,995
8		Reserve Fund Adjustment	Reserve	2,292,222	-		2,292,222	-		2,292,222		2,292,222	1,719,167	573,056
		Total		11,072,222	-	-	11,072,222	577,800	-	10,494,422	464,220	10,030,202	7,522,652	2,507,551



5.2.5 Paramedic Services

The Region currently provides paramedic services through 11 ambulance facilities totalling of 45,591 sq.ft. of space. Over the past ten years, the average level of service was 0.07 sq.ft. of space per capita or an investment of \$52 per capita. Based on this service standard, the Region would be eligible to collect approximately \$3,751,791 from D.C.s for ambulance facility space (over the 10-year period).

The Region currently has an inventory of 54 vehicles and 330 items of equipment (e.g. defibrillators, stretchers, etc.) for paramedic services. Over the past ten years, the average level of service investment for vehicles and equipment is \$13 per capita. Based on this service standard, the Region would be eligible to collect approximately \$962,441 from D.C.s for ambulance equipment (over the 10-year period).

Based on the above, the Region has a combined service standard ceiling of \$4,714,232 for paramedic services.

The Region of Waterloo has identified the need for additional ambulance facilities, new vehicles, and new equipment, resulting in costs of \$23,127,000. In addition, the capital costs include outstanding debt and interest (discounted) on the Kitchener Station, HQ North Operations Centre, and Breslau Station in the amount of \$2,386,917. The estimated financing costs for projects identified in the capital plan have also been included in the amount of \$346,169, providing a total gross cost of \$25,860,086. Reductions have been made in the amounts of \$7,535,702 to recognize post period benefit, \$12,444,000 to recognize benefit to existing development, and \$694,553 which reflects the existing reserve fund balance. Therefore, the resulting D.C. recoverable amount after the 10% mandatory deduction is \$4,768,897 (note that of this amount, \$471,709 is related to interest payments which is not subject to the service standard ceiling).

While paramedics services are predominately residential based, there is some use of the service by non-residential users. To acknowledge this use, the growth-related capital costs have been allocated 90% residential and 10% non-residential.



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Paramedic Services

Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Subtotal	Less:		Potential D.C. Recoverable Cost	
							Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development		Other (e.g. 10% Statutory Deduction)	Total	Residential Share	Non-Residential Share
	2019-2028												
82007	EMS Station- East Waterloo/Breslau	2019	230,100	-		230,100	-		230,100	23,010	207,090	186,381	20,709
82019	EMS Station - HQ North	2019-2020	14,939,900	1,996,700		12,943,200	12,444,000		499,200	49,920	449,280	404,352	44,928
82017	New Station - As per Master Plan	2024	1,400,000	799,960		600,040	-		600,040	60,004	540,036	486,032	54,004
82018	New Station - As per Master Plan	2026	1,400,000	1,260,000		140,000	-		140,000	14,000	126,000	113,400	12,600
82024	Vehicle New - Ambulance Master Plan	2019-2023	1,700,000	-		1,700,000	-		1,700,000	170,000	1,530,000	1,377,000	153,000
82024	Vehicle New - Ambulance Master Plan	2024-2028	1,870,000	1,683,000		187,000	-		187,000	18,700	168,300	151,470	16,830
82036	Equipment - Master Plan - Defibrillators	2019-2028	630,000	378,000		252,000	-		252,000	25,200	226,800	204,120	22,680
82038	Equipment - Master Plan - Stretchers	2019-2023	400,000	-		400,000	-		400,000	40,000	360,000	324,000	36,000
82038	Equipment - Master Plan - Stretchers	2024-2028	440,000	396,000		44,000	-		44,000	4,400	39,600	35,640	3,960
82032	ERU	2019	37,000	-		37,000	-		37,000	3,700	33,300	29,970	3,330
82033	EMS Admin Vehicles	2019	80,000	-		80,000	-		80,000	8,000	72,000	64,800	7,200
82016	CDS 14-080 Kitchener EMS Station (Principal)	2019-2024	383,835	-		383,835	-		383,835	-	383,835	345,452	38,384
82016	CDS 14-080 Kitchener EMS Station (Discounted Interest)	2019-2024	18,187	-		18,187	-		18,187	-	18,187	16,368	1,819
82019	CDS 18-90 EMS HQ North Operations Centre (Principal)	2019-2038	631,000	315,500		315,500	-		315,500	-	315,500	283,950	31,550
82019	CDS 18-90 EMS HQ North Operations Centre (Discounted Interest)	2019-2038	101,010	50,505		50,505	-		50,505	-	50,505	45,454	5,050
82007	CDS 18-90 EMS Station Breslau (Principal)	2019-2038	1,080,000	540,000		540,000	-		540,000	-	540,000	486,000	54,000
82007	CDS 18-90 EMS Station Breslau (Discounted Interest)	2019-2038	172,885	86,443		86,443	-		86,443	-	86,443	77,798	8,644
New	Estimated Discounted Financing Cost (10 Year Debenture)	2019-2028	283,925	-		283,925	-		283,925	-	283,925	255,532	28,392
New	Estimated Discounted Financing Cost (10 Year Debenture)	2020-2029	3,819	382		3,437	-		3,437	-	3,437	3,093	344
New	Estimated Discounted Financing Cost (20 Year Debenture)	2019-2038	58,425	29,213		29,213	-		29,213	-	29,213	26,291	2,921
	Reserve Fund Adjustment	Reserve	-	-		-	694,553		(694,553)	-	(694,553)	(625,098)	(69,455)
	Total		25,860,086	7,535,702	-	18,324,384	13,138,553	-	5,185,831	416,934	4,768,897	4,292,008	476,890



5.2.6 Police Services

The Waterloo Regional Police Service operates from several facilities, most of which are owned by the Region. These facilities combined provide 342,591 sq.ft. of building area, providing for a per capita average level of service of 0.55 sq.ft. per capita or \$258 per capita. This level of service provides the Region with a maximum D.C.-eligible amount for recovery over the 10-year forecast period of \$18,575,256.

The police service has a fleet of 317 vehicles consisting of marked and unmarked cruisers, prisoner transport vans, and other police vehicles. The average level of service for the 10-year period is \$29 per capita, providing for a D.C.-eligible amount over the forecast period of \$2,086,970.

The police service currently has 774 sworn officers, including 65 special constables, and 91 auxiliary officers and cadets. The police service provides equipment and gear for the officers with a calculated average level of service for the historical 10-year period of \$49 per capita, providing for a D.C.-eligible amount over the forecast period of \$3,527,750.

Therefore, the total D.C.-eligible amount based on facilities, vehicles, and equipment is \$24,189,976.

To service growth over the 10-year forecast period, a number of projects have been identified for inclusion in the D.C.; they include an expansion to the training facilities, a new station, renovations and expansions to Central Division, headquarters upgrades, Investigative Services Unit expansions, new vehicles, and other growth-related equipment and gear. The total capital costs of these projects are \$82,682,200, with an additional \$2,202,887 of existing debt (principal and discounted interest), \$5,963,614 in estimated future financing (discounted), and the recovery of the reserve fund deficit of \$608,354. Deductions in the amounts of \$22,726,430 and \$41,403,231 to recognize post period benefit and existing benefit, respectively, have been made, resulting in a total of \$27,327,395 to be included in the D.C. calculation (note that of this amount, \$3,142,621 is related to discount debt interest which is in addition to the service standard).



The costs for the Waterloo Regional Police Services are shared 75%/25% between residential and non-residential based on the population to employment ratio over the 10-year forecast period.



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo
Service: Police Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019-2028	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
1	50004	Police Vehicles-Growth (24) - Marked	2019-2028	1,452,000	-		1,452,000	-		1,452,000	1,089,000	363,000
2	50012	Training Facilities Expansion	2020-2022	12,500,000	5,054,000		7,446,000	3,000,000		4,446,000	3,334,500	1,111,500
3	50022	Replacement of North Division (Unfunded Portion)	2019	425,600	-		425,600	255,360		170,240	127,680	42,560
4	50043	Investigative Services Renovation (Unfunded Portion)	2019	70,000	-		70,000	57,750		12,250	9,188	3,063
5	50045	WRPS Voice Radio Infrastructure	2019	6,304,800	-		6,304,800	5,333,861		970,939	728,204	242,735
6	50046	200 Frederick St Construction	2019-2021	28,380,000	7,940,400		20,439,600	14,473,800		5,965,800	4,474,350	1,491,450
7	50049	Central Division Communications Centre	2021-2022	4,500,000	1,259,100		3,240,900	2,295,000		945,900	709,425	236,475
8	50050	Central Division Traffic Services	2023-2024	1,075,000	300,800		774,200	548,250		225,950	169,463	56,488
9	50051	Central Division Renovation/Expansion	2027-2028	1,654,000	462,800		1,191,200	843,540		347,660	260,745	86,915
10	50052	Headquarters Parking Upgrades/Expansion	2020-2023	795,000	431,200		363,800	39,750		324,050	243,038	81,013
11	50053	Headquarters Renovations/Expansions	2022-2027	13,544,000	850,700		12,693,300	12,054,160		639,140	479,355	159,785
12	50055	Reporting Centre Expansion	2027-2028	1,045,000	596,700		448,300	-		448,300	336,225	112,075
13	50056	North Division Expansion (Kit Bag)	2024	144,500	82,500		62,000	-		62,000	46,500	15,500
14	50058	Rural North Division Construction	2022-2023	4,544,000	1,686,500		2,857,500	1,590,400		1,267,100	950,325	316,775
15	50060	Police Furniture - Growth	2019-2028	260,000	-		260,000	-		260,000	195,000	65,000
16	50061	Police Equipment - Growth (122)	2019-2028	1,494,000	-		1,494,000	-		1,494,000	1,120,500	373,500
17	50062	Executive Branch Expansion	2028	1,024,000	64,300		959,700	911,360		48,340	36,255	12,085
18	50019	Oversized Investigative Services Unit	2019-2023	3,470,300	-		3,470,300	-		3,470,300	2,602,725	867,575
19	90171	CDS 17-087 200 Frederick St. (Principal)	2019-2037	2,052,900	1,026,450		1,026,450	-		1,026,450	769,838	256,613
20	90171	CDS 17-087 200 Frederick St. (Discounted Interest)	2019-2037	149,987	74,993		74,994	-		74,994	56,245	18,748
21	New	Estimated Discounted Financing Cost (10 Year Debenture)	2020-2029	8,786	879		7,907	-		7,907	5,930	1,977
22	New	Estimated Discounted Financing Cost (10 Year Debenture)	2021-2030	437,454	87,491		349,963	-		349,963	262,472	87,491
23	New	Estimated Discounted Financing Cost (10 Year Debenture)	2022-2031	941,082	282,325		658,757	-		658,757	494,068	164,689



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Police Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019-2028	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
24	New	Estimated Discounted Financing Cost (10 Year Debenture)	2023-2032	333,778	133,511		200,267	-		200,267	150,200	50,067
25	New	Estimated Discounted Financing Cost (10 Year Debenture)	2024-2033	71,971	35,985		35,986	-		35,986	26,989	8,996
26	New	Estimated Discounted Financing Cost (10 Year Debenture)	2025-2034	13,562	8,137		5,425	-		5,425	4,069	1,356
27	New	Estimated Discounted Financing Cost (10 Year Debenture)	2026-2035	24,373	17,061		7,312	-		7,312	5,484	1,828
28	New	Estimated Discounted Financing Cost (10 Year Debenture)	2027-2036	110,104	88,083		22,021	-		22,021	16,516	5,505
29	New	Estimated Discounted Financing Cost (10 Year Debenture)	2028-2037	98,469	88,622		9,847	-		9,847	7,385	2,462
30	New	Estimated Discounted Financing Cost (20 Year Debenture)	2019-2038	916,129	458,065		458,064	-		458,064	343,548	114,516
31	New	Estimated Discounted Financing Cost (20 Year Debenture)	2020-2039	2,178,309	1,198,070		980,239	-		980,239	735,179	245,060
32	New	Estimated Discounted Financing Cost (20 Year Debenture)	2021-2040	829,597	497,758		331,839	-		331,839	248,879	82,960
33		Reserve Fund Adjustment	Reserve	608,354	-		608,354	-		608,354	456,266	152,089
		Total		91,457,056	22,726,430	-	68,730,626	41,403,231	-	27,327,395	20,495,546	6,831,849



5.2.7 Waste Diversion

With respect to Waste Diversion, the Region provides a total of 397,872 sq.ft. of eligible waste diversion space (which includes contracted organics processing facilities), with the ineligible space related to landfill and incineration being excluded. Over the past ten years, the average level of service was 0.61 sq.ft. of space per capita or an investment of \$95 per capita. Based on the service standard over the past ten years, the Region would be eligible to collect a total of \$6,860,274.

The Region has an eligible waste diversion inventory of vehicles and equipment (which excludes any items that are related to landfill) of 464,650 items¹. These items include trucks, loaders, roll off trucks, screener, grinder, bailer, green and blue bins, carts, and composters, and other various equipment, all of which have a total value of \$39,904,652. Over the past ten years, the average level of service was 0.82 items per capita or an investment of \$63 per capita. Based on this service standard, the Region would be eligible to collect approximately \$4,534,855 from D.C.s for waste diversion equipment (over the 10-year period).

Therefore, the total D.C.-eligible amount for waste diversion is \$11,395,129.

Based on the projected growth over the 10-year forecast period (2019 to 2028), the Region has identified the need for additional waste diversion facility space, additional blue boxes, green bins (as well as the capital component to the processing of the green bins), scales, compost pad, and additional vehicles, with a gross cost of \$26,057,400. Of this amount, a deduction of \$17,248,000 to recognize existing benefit, and \$242,074 to reflect the reserve fund balance have been applied. After the mandatory 10% deduction, the net growth-related capital cost to be included in the D.C. is \$7,686,386.

The growth costs have been allocated 98% to residential development and 2% to non-residential development based on the allocation of residential versus non-residential properties collected from.

¹ The Region outsources the collection of green bins and blue box materials, as well as the processing of green bin materials.



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Waste Diversion Services

Project Number	Increased Service Needs Attributable to Anticipated Development 2019-2028	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Subtotal	Less:	Potential D.C. Recoverable Cost		
							Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development		Other (e.g. 10% Statutory Deduction)	Total	Residential Share 98%	Non-Residential Share 2%
1005	Cambridge Scale System & Building	2021-2024	1,005,000	-		1,005,000	884,400		120,600	12,060	108,540	106,369	2,171
1084	Materials Recycling Centre	2019-2028	4,796,000	-		4,796,000	4,220,500		575,500	57,550	517,950	507,591	10,359
1104	Cambridge Transfer Building Upgrade	2019-2026	3,622,000	-		3,622,000	3,187,400		434,600	43,460	391,140	383,317	7,823
1106	Cambridge Compost Pad Expansion	2022-2028	1,725,000	-		1,725,000	1,518,000		207,000	20,700	186,300	182,574	3,726
1186	Waterloo Scale System & Building	2019-2028	3,108,000	-		3,108,000	2,735,000		373,000	37,300	335,700	328,986	6,714
1192	Waterloo Transfer Station Upgrade	2019-2028	5,344,000	-		5,344,000	4,702,700		641,300	64,130	577,170	565,627	11,543
New	Blue Box - for Low and Medium Density	2019-2028	179,500	-		179,500	-		179,500	17,950	161,550	158,319	3,231
New	Green Bin and Household Kitchen Bin	2019-2028	237,600	-		237,600	-		237,600	23,760	213,840	209,563	4,277
New	New Vehicles - Cities (10)	2019-2028	2,470,000	-		2,470,000	-		2,470,000	247,000	2,223,000	2,178,540	44,460
New	New Vehicles - Townships (2)	2019-2028	796,000	-		796,000	-		796,000	79,600	716,400	702,072	14,328
	Walker Contract - Capital Component	2019-2028	2,774,300	-		2,774,300	-		2,774,300	277,430	2,496,870	2,446,933	49,937
	Reserve Fund Adjustment	Reserve	-	-		-	242,074		(242,074)	-	(242,074)	(237,233)	(4,841)
	Total		26,057,400	-	-	26,057,400	17,490,074	-	8,567,326	880,940	7,686,386	7,532,658	153,728



5.3 Service Levels and Longer-Term Capital Costs for Waterloo's D.C. Calculation

This section evaluates the development-related capital requirements for those services with Longer-Term capital costs.

5.3.1 Services Related to a Highway

The Region of Waterloo currently owns and maintains 8 subcategories within its services related to a highway. Those subcategories, along with the current values of each respective inventory, are as follows:

Services Related to a Highway Category	Total count of current inventory	\$ per Capita	Eligible Amount \$
Roads	706.9 km	\$6,293	\$1,000,744,664
Bridges & Culverts	76,421 sq.m.	\$1,064	\$169,133,672
Sidewalks	434 km	\$247	\$39,230,234
Multi-use Trails	129,174 sq.m.	\$19	\$3,053,184
Roundabouts	36 items	\$66	\$10,558,928
Traffic Signals, Illumination & Oil Separators	9,406 items	\$121	\$19,273,224
Guide Rails	96,421 metres	\$49	\$7,712,470
Retaining Walls	17,489 sq.m.	\$16	\$2,496,614
Total		\$7,875	\$1,252,202,990



Based on the above table, the combined services related to a highway provides an average level of investment of \$7,875 per capita, resulting in a D.C.-eligible recovery amount of \$1,252,202,990 over the longer term forecast period.

With respect to future needs, the identified service related to highways program was reviewed with staff and totals \$877.8 million. Of this amount, \$850.2 million is related to capital projects to be undertaken over the forecast period and \$34.6 million is related to estimated future financing of capital projects (for cashflow purposes). The capital projects identify various works related to adding capacity to the highway system, and includes resurfacing rural and urban sidewalks, new sidewalks, adding cycling lanes to roads, road improvements/expansions, intersection improvements, adding turn lanes, traffic signals, and additional active transportation corridors. Deductions for existing benefit of \$10,571,600 have been made, along with a deduction of \$2,167,000 for works that received grant funding and \$6,975,671 to reflect the existing reserve fund balance, resulting in a D.C. eligible amount of \$865,065,825 to be recovered over the longer term forecast period.

The residential/non-residential capital cost allocation for services related to a highway is based on a 75%/25% split which is based on the incremental growth in population to employment for the longer term forecast period.



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo
 Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
Urban Resurfacing Sidewalks												
1	5657	REG. RD. 50 (WESTMOUNT ROAD S), GLASGOW	2020	50,000	-		50,000	5,000		45,000	33,750	11,250
2	5749	REG. RD. 5 (QUEEN'S BUSH ROAD) NAFZIGER RD. (RR5) TO FIRELLA CRK BRIDGE	2023	260,000	-		260,000	26,000		234,000	175,500	58,500
3	5751	REG. RD. 56 (BLEAMS ROAD) HOMER WATSON BLVD. (RR28) TO STRASBURG RD.	2022	410,000	-		410,000	41,000		369,000	276,750	92,250
4	5765	REG. RD. 9 (ERB STREET E) MARGARET AVE. TO KING ST.	2024	565,000	-		565,000	56,500		508,500	381,375	127,125
5	7385	REG. RD. 17 (SAWMILL ROAD), ARTHUR STREET SOUTH (RR85) TO KING STREET NORTH (RR8)	2020	5,000	-		5,000	500		4,500	3,375	1,125
6		Urban Resurfacing Sidewalks btw years 2029 - Longer Term	2029+	290,000	-		290,000	29,000		261,000	195,750	65,250
Rural Resurfacing Sidewalks												
7	5585	REG. RD. 17 (EBYCREST ROAD), VICTORIA ST. N (RR55) TO BRIDGE ST.	2027	80,000	-		80,000	8,000		72,000	54,000	18,000
8	5748	REG. RD. 5 (HUTCHISON ROAD) WEIMAR LINE TO CROSSHILL S. LIMITS	2028	200,000	-		200,000	20,000		180,000	135,000	45,000
9	5754	REG. RD. 86 (LINE 86) KATHARINE ST. (RR23) TO NORTHFIELD DR. E. (RR22)	2025	70,000	-		70,000	7,000		63,000	47,250	15,750
10	5758	REG. RD. 10 (HERRGOTT ROAD) N. LIMITS OF	2026	185,000	-		185,000	18,500		166,500	124,875	41,625
11	5761	REG. RD. 25 (MARYHILL ROAD) WATERLOO/WELLINGTON BDRY. TO BRIDGE 2501	2028	50,000	-		50,000	5,000		45,000	33,750	11,250
12	5794	REG. RD. 30 (SHANTZ STATION ROAD), CNR TRACKS (SOUTH OF TWP RD 72) TO HOPEWELL CREEK BRIDGE #3002	2025	120,000	-		120,000	12,000		108,000	81,000	27,000
13	5795	REG. RD. 75 (SPRAGUES ROAD), WRIGLEY RD.	2026	340,000	-		340,000	34,000		306,000	229,500	76,500
14	5902	REG. RD. 22 (NORTHFIELD DRIVE), SCOTCH LINE RD. TO LINE 86 (RR86)	2024	150,000	-		150,000	15,000		135,000	101,250	33,750
15	5935	REG. RD. 12 (NOTRE DAME DRIVE), ST. ANN AVE. N. TO MOSER-YOUNG RD. (RR14)	2025	355,000	-		355,000	35,500		319,500	239,625	79,875
16	5937	REG. RD. 12 (QUEEN STREET), WATER ST. TO BETHEL RD.	2028	60,000	-		60,000	6,000		54,000	40,500	13,500



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
17	5939	REG. RD. 17 (SAWMILL ROAD), MUSSELMAN CR	2019	150,000	-		150,000	15,000		135,000	101,250	33,750
18	5942	REG. RD. 27 (CLYDE ROAD), VILLAGE RD. SOUTH TO DOBBIE DRIVE	2027	265,000	-		265,000	26,500		238,500	178,875	59,625
19	5945	REG. RD. 6 (GINGERICH ROAD), SANDHILLS RD. TO FOUNDRY ST. (RR51)	2019	415,000	-		415,000	41,500		373,500	280,125	93,375
20	5946	REG. RD. 71 (DICKIE SETTLEMENT ROAD), ROSEVILLE RD. (RR46) TO FOUNTAIN ST. S. (RR28)	2026	175,000	-		175,000	17,500		157,500	118,125	39,375
21	5977	REG. RD. 9 (ERB'S RD.), SANDHILLS RD. TO BRIDGE #0903 OVER THE NITH RIVER	2020	200,000	-		200,000	20,000		180,000	135,000	45,000
22	7348	REG. RD. 15 (LOBSINGER LINE), REITZEL PL. TO HEIDELBERG CEMETRY	2023	160,000	-		160,000	16,000		144,000	108,000	36,000
23	7350	REG. RD. 43 (BRANCHTON RD.), MORRISON RD. TO CAMBRIDGE/NORTH DUMFRIES BOUNDARY	2023	40,000	-		40,000	4,000		36,000	27,000	9,000
24	7405	REG. RD. 21 (ARTHUR ST. N.), CANAGAGIGUE CREEK BRIDGE (BRIDGE #2101) TO SANDY HILLS DR.	2023	195,000	-		195,000	19,500		175,500	131,625	43,875
25	7422	REG. RD. 70 (ERBSVILLE ROAD), WIDEMAN ROAD TO WATERLOO/WOOLWICH BDY	2024	45,000	-		45,000	4,500		40,500	30,375	10,125
26	7462	REG. RD. 85 (ARTHUR STREET), SAWMILL RD. (RR17) TO LISTOWEL RD. (RR85)	2027	220,000	-		220,000	22,000		198,000	148,500	49,500
27	7492	REG. RD. 52 (BRIDGE STREET EAST), EBYCREST RD (RR17) TO KITCHENER/WOOLWICH BOUNDARY	2027	120,000	-		120,000	12,000		108,000	81,000	27,000
28	7597	REG. RD 75 (SPRAGUES RD), SHOULDICE SIDE ROAD TO 3315M N. OF ALPS RD	2024	170,000	-		170,000	17,000		153,000	114,750	38,250
29		Rural Resurfacing Sidewalks btw years 2029 - Longer Term	2029+	6,885,000	-		6,885,000	688,500		6,196,500	4,647,375	1,549,125
		Cycling Facilities Constructed with Road Works										
30	5163	REG. RD. 4 (OTTAWA STREET N) HIGHWAY 7 W	2020-2021	380,000	-		380,000	38,000		342,000	256,500	85,500
31	5164	REG. RD. 15 (KING STREET), RAIL TRACKS T	2022	110,000	-		110,000	11,000		99,000	74,250	24,750
32	5367	REG. RD. 8 (DUNDAS STREET), ELGIN ST. T	2020-2022	1,210,000	-		1,210,000	121,000		1,089,000	816,750	272,250



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
33	5377	REG. RD. 4 (OTTAWA STREET), PATTANDON AV	2019	385,000	-		385,000	38,500		346,500	259,875	86,625
34	5386	REG. RD. 8 (WEBER STREET), BLYTHWOOD RD.	2020-2022	430,000	-		430,000	43,000		387,000	290,250	96,750
35	5387	REG. RD. 8 (WEBER STREET), ERB ST. (RR9) TO FORWELL CREEK RD.	2023-2024	570,000	-		570,000	57,000		513,000	384,750	128,250
36	5390	REG. RD. 9 (ERB STREET), FISCHER-HALLMAN	2020	125,000	-		125,000	12,500		112,500	84,375	28,125
37	5394	REG. RD. 21 (ARTHUR STREET), SOUTH ST. T	2021	290,000	-		290,000	29,000		261,000	195,750	65,250
38	5430	REG. RD. 8 (WEBER STREET), BENJAMIN RD.	2022	195,000	-		195,000	19,500		175,500	131,625	43,875
39	5489	REG. RD. 8 (WEBER STREET), FORWELL CREEK	2020	820,000	-		820,000	82,000		738,000	553,500	184,500
40	5494	REG. RD. 15 (KING STREET), CENTRAL ST. T	2020	390,000	-		390,000	39,000		351,000	263,250	87,750
41	5497	REG. RD. 29 (LANCASTER STREET), VICTORIA	2021-2022	975,000	-		975,000	97,500		877,500	658,125	219,375
42	5576	REG. RD. 52 (BRIDGE STREET W.), WOOLWICH	2020	5,000	-		5,000	500		4,500	3,375	1,125
43	5582	REG. RD. 77 (PARKHILL ROAD), AINSLIE ST.	2022	70,000	-		70,000	7,000		63,000	47,250	15,750
44	5636	RR58(Swan)Hilltop to Stanley	2019	135,000	-		135,000	13,500		121,500	91,125	30,375
45	5654	RR#25 (Maryhill)Bridge 2501 to St. Charl	2024	395,000	-		395,000	39,500		355,500	266,625	88,875
46	5656	REG. RD. 50 (WESTMOUNT ROAD W), SOUTH OF	2021-2022	2,665,000	-		2,665,000	266,500		2,398,500	1,798,875	599,625
47	5675	REG. RD. 50 (WESTMOUNT ROAD E), FISCHER-HALLMAN RD. (RR58) TO BLOCKLINE RD.	2022	410,000	-		410,000	41,000		369,000	276,750	92,250
48	5679	REG. RD. 97 (CEDAR CREEK ROAD), CAMBRIDGE/NORTH DUMFRIES BDRY. TO EDWORTHY SIDE RD. (RR71)	2025-2025	460,000	-		460,000	46,000		414,000	310,500	103,500



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
49	5682	REG. RD. 5 (NAFZIGER ROAD), GERBER RD. (RR12) TO QUEEN'S BUSH RD. (RR5)	2023	550,000	-		550,000	55,000		495,000	371,250	123,750
50	5683	REG. RD. 5 (QUEENS BUSH ROAD), FIRELLA CK BRIDGE TO HUTCHISON RD. (RR5)	2023	620,000	-		620,000	62,000		558,000	418,500	139,500
51	5684	RR#8 (Coronation) Water to Highland Prk	2024	1,000,000	-		1,000,000	100,000		900,000	675,000	225,000
52	5687	REG. RD. 9 (ERB STREET), MENNO ST. TO WESTMOUNT RD. (RR50)	2023	510,000	-		510,000	51,000		459,000	344,250	114,750
53	5690	REG. RD. 21 (ARTHUR STREET S), WHIPPOORW	2023	545,000	-		545,000	54,500		490,500	367,875	122,625
54	5692	REG. RD. 24 (AINSLIE STREET S), WATER ST	2022-2023	1,170,000	-		1,170,000	117,000		1,053,000	789,750	263,250
55	5693	REG. RD. 38 (SPORTSWORLD DRIVE), SPORTSWORLD CROSSING RD. TO KING ST. E. (RR8)	2023	290,000	-		290,000	29,000		261,000	195,750	65,250
56	5694	REG. RD. 41 (BISHOP STREET N), CONCESSION RD. TO KING ST. E. (RR8)	2024	235,000	-		235,000	23,500		211,500	158,625	52,875
57	5695	REG. RD. 49 (SCOTT ST./MAIN ST./STANLEY ST.), 190 M. E. OF HILLTOP DR. TO ST. ANDREWS ST.	2023	300,000	-		300,000	30,000		270,000	202,500	67,500
58	5697	REG. RD. 53 (FAIRWAY ROAD N), BRIARMEADO	2023	1,050,000	-		1,050,000	105,000		945,000	708,750	236,250
59	5706	REG. RD. 57 (UNIVERSITY AVENUE E), BRIDG	2020	100,000	-		100,000	10,000		90,000	67,500	22,500
60	5760	REG. RD. 24 (HESPELER ROAD) BROOKLYN RD./NORFOLK AVE. TO MUNCH AVE.	2022	1,360,000	-		1,360,000	136,000		1,224,000	918,000	306,000
61	5766	REG. RD. 1 (SNYDER'S ROAD E) CHRISTIAN S	2020-2021	565,000	-		565,000	56,500		508,500	381,375	127,125
62	5789	REG. RD. 24 (WATER STREET N), MAIN ST. TO PARKHILL RD. (RR77)	2024	215,000	-		215,000	21,500		193,500	145,125	48,375
63	5799	REG. RD. 23 (KATHERINE STREET), LUNDY RD. TO BRIDGE #2301 (COX CREEK)	2023	560,000	-		560,000	56,000		504,000	378,000	126,000
64	5800	RR39(Eagle St)Concession Rd/Speedville R	2023	945,000	-		945,000	94,500		850,500	637,875	212,625
65	5855	REG. RD. 86 (CHURCH STREET W), ARTHUR ST. (RR21) TO WEIGEL AVE.	2022	40,000	-		40,000	4,000		36,000	27,000	9,000



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
66	5923	REG. RD. 39 (PINEBUSH ROAD), TOWNLINE RD. (RR33) TO FRANKLIN BLVD. (RR36)	2024	1,590,000	-		1,590,000	159,000		1,431,000	1,073,250	357,750
67	5928	REG. RD. 97 (CEDAR STREET), GRAND AVE. S. (RR76) TO OSBORNE ST.	2024	660,000	-		660,000	66,000		594,000	445,500	148,500
68	5933	REG. RD. 97 (MAIN STREET E), FRANKLIN BL	2022	635,000	-		635,000	63,500		571,500	428,625	142,875
69	5982	REG. RD. 12 (NOTRE DAME DRIVE), 0.38 KM	2020	205,000	-		205,000	20,500		184,500	138,375	46,125
70	6265	REG. RD. 15 (KING ST), RAILWAY TRACKS TO	2019	100,000	-		100,000	10,000		90,000	67,500	22,500
71	6759	RR57 (University Ave E) King St N to Web	2023	840,000	-		840,000	84,000		756,000	567,000	189,000
72	7352	REG. RD. 9 (BRIDGEPORT ROAD E), HWY 86 SB RAMP TO MARGARET AVENUE	2024	555,000	-		555,000	55,500		499,500	374,625	124,875
73	7353	REG. RD. 9 (BRIDGEPORT ROAD), LANCASTER ST. (RR29) TO HWY 86 NB RAMP	2024	465,000	-		465,000	46,500		418,500	313,875	104,625
74	7403	REG. RD. 9 (BRIDGEPORT ROAD E), WEBER ST. N. TO MOORE ST.	2022	415,000	-		415,000	41,500		373,500	280,125	93,375
75	7407	REG. RD. 27 (CLYDE ROAD), DOBBIE DR. TO FRANKLIN BLVD. (RR36)	2024	620,000	-		620,000	62,000		558,000	418,500	139,500
76	7412	REG. RD. 56 (RIVER RD. E), FAIRWAY RD. N (RR53) TO KING ST. E (RR8)	2024	1,065,000	-		1,065,000	106,500		958,500	718,875	239,625
77	7546	REG. RD 14(WEIMAR LINE) MOSER-YOUNG RD (RR14) TO BAMBERG EAST LIMITS	2026	655,000	-		655,000	65,500		589,500	442,125	147,375
78	7550	REG. RD 9 (BRIDGEPORT RD E), MARGARET AVE TO WEBER ST N (RR8)	2028	535,000	-		535,000	53,500		481,500	361,125	120,375
79	7568	REG. RD 97 (MAIN ST), 1070 MAIN ST TO FRANKLIN BLVD (RR36)	2026	460,000	-		460,000	46,000		414,000	310,500	103,500
		Sidewalks Constructed with Road Works										
80	5164	REG. RD. 15 (KING STREET), RAIL TRACKS T	2022	55,000	-		55,000	5,500		49,500	37,125	12,375
81	5367	REG. RD. 8 (DUNDAS STREET), ELGIN ST. T	2020	590,000	-		590,000	59,000		531,000	398,250	132,750



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
82	5377	REG. RD. 4 (OTTAWA STREET), PATTANDON AV	2019	100,000	-		100,000	10,000		90,000	67,500	22,500
83	5386	REG. RD. 8 (WEBER STREET), BLYTHWOOD RD.	2021	50,000	-		50,000	5,000		45,000	33,750	11,250
84	5390	REG. RD. 9 (ERB STREET), FISCHER-HALLMAN	2020	235,000	-		235,000	23,500		211,500	158,625	52,875
85	5394	REG. RD. 21 (ARTHUR STREET), SOUTH ST. T	2021	180,000	-		180,000	18,000		162,000	121,500	40,500
86	5417	REG. RD. 86 (CHURCH STREET), SPRUCE LANE	2020	50,000	-		50,000	5,000		45,000	33,750	11,250
87	5420	REG. RD. 97 (CEDAR STREET), OSBORNE ST.	2019	350,000	-		350,000	35,000		315,000	236,250	78,750
88	5430	REG. RD. 8 (WEBER STREET), BENJAMIN RD.	2022	130,000	-		130,000	13,000		117,000	87,750	29,250
89	5487	REG. RD. 8 (KING STREET), HWY. 401 TO SP	2020	595,000	-		595,000	59,500		535,500	401,625	133,875
90	5489	REG. RD. 8 (WEBER STREET), FORWELL CREEK	2020	45,000	-		45,000	4,500		40,500	30,375	10,125
91	5497	REG. RD. 29 (LANCASTER STREET), VICTORIA	2021-2022	40,000	-		40,000	4,000		36,000	27,000	9,000
92	5498	REG. RD. 43 (MYERS ROAD), BRANCHTON RD.	2020-2021	770,000	-		770,000	77,000		693,000	519,750	173,250
93	5566	REG. RD. 6 (HIGHLAND ROAD), FISCHER-HALL	2019	150,000	-		150,000	15,000		135,000	101,250	33,750
94	5568	REG. RD. 16 (KRESSLER ROAD), LOBSINGER L	2020	30,000	-		30,000	3,000		27,000	20,250	6,750
95	5576	REG. RD. 52 (BRIDGE STREET W.), WOOLWICH	2020	140,000	-		140,000	14,000		126,000	94,500	31,500
96	5603	REG. RD. 17 (SAWMILL ROAD), KING ST. (RR	2020	100,000	-		100,000	10,000		90,000	67,500	22,500
97	5636	RR58(Swan)Hilltop to Stanley	2019	175,000	-		175,000	17,500		157,500	118,125	39,375
98	5649	REG. RD. 8 (WEBER STREET E), MONTGOMERY	2021	30,000	-		30,000	3,000		27,000	20,250	6,750
99	5654	RR#25 (Maryhill)Bridge 2501 to St. Charl	2024	240,000	-		240,000	24,000		216,000	162,000	54,000



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								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
100	5675	REG. RD. 50 (WESTMOUNT ROAD E), FISCHER-HALLMAN RD. (RR58) TO BLOCKLINE RD.	2022	120,000	-		120,000	12,000		108,000	81,000	27,000
101	5679	REG. RD. 97 (CEDAR CREEK ROAD), CAMBRIDGE/NORTH DUMFRIES BDRY. TO EDWORTHY SIDE RD. (RR71)	2025	130,000	-		130,000	13,000		117,000	87,750	29,250
102	5682	REG. RD. 5 (NAFZIGER ROAD), GERBER RD. (RR12) TO QUEEN'S BUSH RD. (RR5)	2023	110,000	-		110,000	11,000		99,000	74,250	24,750
103	5683	REG. RD. 5 (QUEENS BUSH ROAD), FIRELLA CK BRIDGE TO HUTCHISON RD. (RR5)	2023	95,000	-		95,000	9,500		85,500	64,125	21,375
104	5688	REG. RD. 10 (HERRGOTT ROAD), LOBSINGER L	2019	80,000	-		80,000	8,000		72,000	54,000	18,000
105	5690	REG. RD. 21 (ARTHUR STREET S), WHIPPOORW	2023	340,000	-		340,000	34,000		306,000	229,500	76,500
106	5694	REG. RD. 41 (BISHOP STREET N), CONCESSION RD. TO KING ST. E. (RR8)	2024	140,000	-		140,000	14,000		126,000	94,500	31,500
107	5695	REG. RD. 49 (SCOTT ST./MAIN ST./STANLEY ST.), 190 M. E. OF HILLTOP DR. TO ST. ANDREWS ST.	2023	200,000	-		200,000	20,000		180,000	135,000	45,000
108	5697	REG. RD. 53 (FAIRWAY ROAD N), BRIARMEADO	2023	165,000	-		165,000	16,500		148,500	111,375	37,125
109	5699	REG. RD. 53 (FAIRWAY ROAD S/COURTLAND AVE.), KING ST (RR8). TO MANITOU DR.	2024	60,000	-		60,000	6,000		54,000	40,500	13,500
110	5700	REG. RD. 55 (VICTORIA STREET N), FREDERI	2021	585,000	-		585,000	58,500		526,500	394,875	131,625
111	5703	REG. RD. 56 (BLEAMS ROAD), MANITOU DR. (RR69) TO HOMER WATSON BLVD. (RR28)	2022	360,000	-		360,000	36,000		324,000	243,000	81,000
112	5705	REG. RD. 56 (BLEAMS ROAD), FISCHER-HALLM	2021	905,000	-		905,000	90,500		814,500	610,875	203,625
113	5706	REG. RD. 57 (UNIVERSITY AVENUE E), BRIDG	2020	65,000	-		65,000	6,500		58,500	43,875	14,625
114	5766	REG. RD. 1 (SNYDER'S ROAD E) CHRISTIAN S	2020-2021	1,080,000	-		1,080,000	108,000		972,000	729,000	243,000
115	5796	REG. RD. 4 (OTTAWA STREET), ALPINE RD. T	2021-2022	700,000	-		700,000	70,000		630,000	472,500	157,500



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								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
116	5799	REG. RD. 23 (KATHERINE STREET), LUNDY RD. TO BRIDGE #2301 (COX CREEK)	2023	340,000	-		340,000	34,000		306,000	229,500	76,500
117	5800	RR39(Eagle St)Concession Rd/Speedville R	2023	580,000	-		580,000	58,000		522,000	391,500	130,500
118	5827	REG. RD. 41 (BISHOP STREET), FRANKLIN BLVD (RR36) TO CONESTOGA BLVD.	2023	405,000	-		405,000	40,500		364,500	273,375	91,125
119	5923	REG. RD. 39 (PINEBUSH ROAD), TOWNLINE RD. (RR33) TO FRANKLIN BLVD. (RR36)	2024	850,000	-		850,000	85,000		765,000	573,750	191,250
120	5927	REG. RD. 17 (FOUNTAIN STREET N), HIGHWAY	2021	670,000	-		670,000	67,000		603,000	452,250	150,750
121	5932	REG. RD. 8 (KING STREET E), SPORTSWORLD DR. (RR38) TO FREEPORT BRIDGE	2022	265,000	-		265,000	26,500		238,500	178,875	59,625
122	5933	REG. RD. 97 (MAIN STREET E), FRANKLIN BL	2022	390,000	-		390,000	39,000		351,000	263,250	87,750
123	5955	REG. RD. 4 (OTTAWA STREET S), FISCHER-HA	2019	400,000	-		400,000	40,000		360,000	270,000	90,000
124	5981	REG. RD. 8 (WEBER ST. E.), HWY 8 ON RAMP. TO FERGUS AVE.	2022	85,000	-		85,000	8,500		76,500	57,375	19,125
125	5982	REG. RD. 12 (NOTRE DAME DRIVE), 0.38 KM	2020	160,000	-		160,000	16,000		144,000	108,000	36,000
126	5983	RR15 (King St) Northfield (RR50) to HWY	2023	365,000	-		365,000	36,500		328,500	246,375	82,125
127	5986	REG. RD. 46 (ROSEVILLE ROAD), ROSEVILLE EAST SETTLEMENT LIMIT TO 500M WEST OF FISCHER HALLMAN RD.	2022	700,000	-		700,000	70,000		630,000	472,500	157,500
128	5987	REG. RD. 51 (FOUNDRY STREET), GINGERICH ROAD TO SNYDER'S ROAD	2023	100,000	-		100,000	10,000		90,000	67,500	22,500
129	6510	REG. RD. 9 (BRIDGEPORT RD./CAROLINE ST.)	2020	140,000	-		140,000	14,000		126,000	94,500	31,500
130	7353	REG. RD. 9 (BRIDGEPORT ROAD), LANCASTER ST. (RR29) TO HWY 86 NB RAMP	2024	110,000	-		110,000	11,000		99,000	74,250	24,750



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								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
131	7361	REG. RD. 8 (KING STREET E), FREEPORT BRIDGE TO RIVER RD. E (RR56)	2023	160,000	-		160,000	16,000		144,000	108,000	36,000
132	7391	REG. RD. 50 (WESTMOUNT ROAD N), UNIVERSITY AVE. W (RR57) TO COLUMBIA ST.	2024	330,000	-		330,000	33,000		297,000	222,750	74,250
133	7392	REG. RD. 55 (VICTORIA STREET N), KITCHENER/ WOOLWICH BDRY TO FREDERICK ST.	2022	805,000	-		805,000	80,500		724,500	543,375	181,125
134	7394	REG. RD. 70 (ERBSVILLE ROAD), COLUMBIA ST. TO WIDEMAN RD.	2022	265,000	-		265,000	26,500		238,500	178,875	59,625
135	7412	REG. RD. 56 (RIVER RD. E), FAIRWAY RD. N (RR53) TO KING ST. E (RR8)	2024	80,000	-		80,000	8,000		72,000	54,000	18,000
136	7418	REG. RD. 43 (BRANCHTON ROAD), CAMBRIDGE/NORTH DUMFRIES BOUNDARY TO MEYERS RD. (RR43)	2026	320,000	-		320,000	32,000		288,000	216,000	72,000
137	7516	REG. RD. 58 (FISCHER-HALLMAN ROAD) ROSEVILLE RD. (RR46) TO 400 M NORTH OF ROSEVILLE RD. (RR46)	2028	150,000	-		150,000	15,000		135,000	101,250	33,750
138	7546	REG. RD 14(WEIMAR LINE) MOSER-YOUNG RD (RR14) TO BAMBERG EAST LIMITS	2026	635,000	-		635,000	63,500		571,500	428,625	142,875
139	7548	REG. RD 50 (WESTMOUNT RD N), COLUMBIA ST TO WESTMOUNT RD N	2026	155,000	-		155,000	15,500		139,500	104,625	34,875
140	7568	REG. RD 97 (MAIN ST), 1070 MAIN ST TO FRANKLIN BLVD (RR36)	2026	130,000	-		130,000	13,000		117,000	87,750	29,250
		Cycling Facilities Constructed as Separate Projects										
141	7590	RR24 (HESPELER RD) AT RR8 (DUNDAS ST/CORONATION BLVD) BIKE LANE	2022	40,000	-		40,000	4,000		36,000	27,000	9,000
142		CF to be constructed btw years 2029 - Longer Term	2029+	1,000,000	-		1,000,000	100,000		900,000	675,000	225,000
		Sidewalks Constructed as Separate Projects										
143	5779	Waterloo Spur Trail	2019	20,000	-		20,000	2,000		18,000	13,500	4,500
144	6744	REG. RD. 53 (FAIRWAY ROAD), HWY 8 SB RAM	2019	135,000	-		135,000	13,500		121,500	91,125	30,375
145	6762	REG. RD. 28 (HOMER WATSON BLVD.), OTTAWA	2019	1,308,000	-		1,308,000	69,100	617,000	621,900	466,425	155,475



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								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
146	6826	INFILL SIDEWALK AND CYCLING FACILITIES TO BE IDENTIFIED	2023-2028	3,000,000	-		3,000,000	300,000		2,700,000	2,025,000	675,000
147	7338	NEW PEDESTRIAN BRIDGE OVER SPEED RIVER (PRESTON) STUDY	2019-2020	900,000	-		900,000	90,000		810,000	607,500	202,500
148	7382	PHILLIP STREET TO "RESEARCH AND TECHNOLOGY	2019	10,000	-		10,000	1,000		9,000	6,750	2,250
149	7477	IMPLEMENTATION OF SEPARATED BIKE LANE ST	2019	1,310,000	-		1,310,000	131,000		1,179,000	884,250	294,750
150	7495	REG. RD. 54 (LACKNER BOULEVARD), OTTAWA ST. TO KEEWATIN AVE.	2019	300,000	-		300,000	30,000		270,000	202,500	67,500
151	7496	REG. RD. 54 (LACKNER BOULEVARD), ZELLER	2019	10,000	-		10,000	1,000		9,000	6,750	2,250
152	7499	REG. RD. 70 (ERBSVILLE ROAD), KEATS WAY	2019	10,000	-		10,000	1,000		9,000	6,750	2,250
153	7515	REG. RD. 54 (LACKNER BOULEVARD), KEEWATIN AVE. TO VICTORIA ST.	2019-2021	310,000	-		310,000	31,000		279,000	209,250	69,750
154	7579	RR53 (COURTLAND AVE) AT STIRLING AVE	2019	30,000	-		30,000	3,000		27,000	20,250	6,750
155	7590	RR24 (HESPELER RD) AT RR8 (DUNDAS ST/CORONATION BLVD) BIKE LANE	2021-2023	15,000	-		15,000	1,500		13,500	10,125	3,375
156	7591	RR29 (LANCASTER ST) BRIDGEPORT RD (RR9) TO BRIDGE ST	2019	300,000	-		300,000	30,000		270,000	202,500	67,500
157	7592	RR53 (COURTLAND AVE E) HAYWARD AVE TO MANITOU DR	2019-2023	1,135,000	-		1,135,000	113,500		1,021,500	766,125	255,375
158	7594	RR38 (MAPLE GROVE RD) KING ST E (RR8) TO FOUNTAIN ST N (RR17)	2020-2022	320,000	-		320,000	32,000		288,000	216,000	72,000
159	7595	RR57 (UNIVERSITY AVE) BELGREEN WAY/STONEHAVEN DR TO FISCHER-HALLMAN	2021-2023	195,000	-		195,000	19,500		175,500	131,625	43,875
160	7599	REG. RD 54 (LACKNER BLVD), FAIRWAY RD. (RR53) TO OTTAWA ST. (RR4)	2023-2025	415,000	-		415,000	41,500		373,500	280,125	93,375
161	7600	REG. RD. 54 (LACKNER BLVD), OTTAWA ST. N (RR4) TO VICTORIA ST. N (RR55)	2025-2027	360,000	-		360,000	36,000		324,000	243,000	81,000
Engineering General												
162	7480	REG. RD. 12 (NOTRE DAME DRIVE), APPROACHING MOSER-YOUNG RUMBLE STRIP	2019	30,000	-		30,000	-		30,000	22,500	7,500



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2019 - Longer Term												
Intersection Improvements (Growth Related)												
163	5284	REG. RDS. 12 & 58, NEW DUNDEE RD. AT FIS	2019-2021	1,440,000	-		1,440,000	-		1,440,000	1,080,000	360,000
164	5389	REG. RD. 9 (ERB STREET), 100M EAST OF CA	2019	50,000	-		50,000	7,500		42,500	31,875	10,625
165	6269	REG. RD. 9 (BRIDGEPORT ROAD) AT LANCASTE	2019-2023	1,470,000	-		1,470,000	-		1,470,000	1,102,500	367,500
166	7090	REG. RDS. 9 AND 50, ERB ST. AT WESTMOUNT	2020-2021	225,000	-		225,000	-		225,000	168,750	56,250
167	7111	REG. RDS. 28 & 69, HOMER WATSON BLVD., C	2019-2020	11,607,000	-		11,607,000	1,508,600	1,550,000	8,548,400	6,411,300	2,137,100
168	7145	REG. RD. 56 (BLEAMS ROAD) AT FISCHER HAL	2019-2021	10,940,000	-		10,940,000	-		10,940,000	8,205,000	2,735,000
169	7178	TRAFFIC EDUCATION PROGRAM	2019-2028	550,000	-		550,000	275,000		275,000	206,250	68,750
170	7197	REG. RD. 39 (PINEBUSH ROAD), AT TOWNLINE	2023-2025	320,000	-		320,000	-		320,000	240,000	80,000
171	7217	REG. RD. 15 (KING STREET) AT BRIDGE ST.	2022-2024	325,000	-		325,000	-		325,000	243,750	81,250
172	7247	REG. RD. 8 (WEBER STREET) AT GLEN FORREST BLVD.	2019-2021	210,000	-		210,000	-		210,000	157,500	52,500
173	7248	REG. RD. 17 AND REG. RD. 26, SAWMILL RD.	2019	40,000	-		40,000	-		40,000	30,000	10,000
174	7249	REG. RD. 29 (LANCASTER STREET) AT ELIZAB	2021-2023	250,000	-		250,000	-		250,000	187,500	62,500
175	7252	RR75 (St.Andrews St) at Grand Ridge Dr,	2019	485,000	-		485,000	-		485,000	363,750	121,250
176	7256	INTERSECTION IMPROVEMENTS TO BE IDENTIFIED	2021-2028	12,900,000	-		12,900,000	-		12,900,000	9,675,000	3,225,000
177	7283	REG. RD. 29 (LANCASTER STREET), AT LOUISA ST.	2021-2023	230,000	-		230,000	-		230,000	172,500	57,500
178	7294	REG. RD. 4 (OTTAWA STREET), HOMER WATSON	2019	570,000	-		570,000	-		570,000	427,500	142,500
179	7315	REG. RD. 12 (NEW DUNDEE ROAD) AT STRASBURG RD. EXTENSION	2022-2024	2,110,000	-		2,110,000	-		2,110,000	1,582,500	527,500
180	7323	REG. RD. 4 (OTTAWA STREET) AT WESTMOUNT RD. (RR50)	2020-2022	140,000	-		140,000	-		140,000	105,000	35,000



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								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
181	7325	REG. RD. 8 (KING STREET E) AT FAIRWAY RD. (RR53)	2024-2026	200,000	-		200,000	-		200,000	150,000	50,000
182	7326	REG. RD. 8 (KING STREET E) AT WEBER ST E (RR8)	2024-2026	245,000	-		245,000	-		245,000	183,750	61,250
183	7329	REG. RDS. 50 & 55, WESTMOUNT RD. AT VICTORIA ST.	2020-2022	115,000	-		115,000	-		115,000	86,250	28,750
184	7331	REG. RD. 53 (FAIRWAY ROAD) AT WILSON AVE	2019-2025	240,000	-		240,000	-		240,000	180,000	60,000
185	7332	REG. RD. 4 (OTTAWA STREET), KING ST. (RR)	2020-2022	3,215,000	-		3,215,000	482,300		2,732,700	2,049,525	683,175
186	7333	REG. RD. 8 (DUNDAS STREET NORTH) AT CHALMERS ST. N/GORE ST.	2019-2021	340,000	-		340,000	-		340,000	255,000	85,000
187	7344	REG. RD. 55 (VICTORIA STREET) AT FISHER HALLMAN RD. (RR58)	2021-2023	325,000	-		325,000	-		325,000	243,750	81,250
188	7345	REG. RD. 55 (VICTORIA STREET) AT HAZELGLEN DR.	2021-2023	240,000	-		240,000	-		240,000	180,000	60,000
189	7346	REG. RD. 55 (VICTORIA STREET) AT MONTE CARLO ST.	2021-2023	90,000	-		90,000	-		90,000	67,500	22,500
190	7362	REG. RD. 1 (WATERLOO STREET) AT NAFZIGER	2019-2021	2,030,000	-		2,030,000	-		2,030,000	1,522,500	507,500
191	7364	REG. RD. 51 (FOUNDRY STREET) AT GINGERIC	2019	780,000	-		780,000	-		780,000	585,000	195,000
192	7366	REG. RD. 70 (TRUSSLER ROAD) AT BRIDGE ST	2019-2020	850,000	-		850,000	-		850,000	637,500	212,500
193	7441	REG. RD. 71 (DICKIE SETTLEMENT ROAD) AT	2019-2021	1,190,000	-		1,190,000	-		1,190,000	892,500	297,500
194	7553	REG. RD 17 (SAWMILL ROAD) AT EBYCREST RD (RR17)	2019-2023	1,300,000	-		1,300,000	-		1,300,000	975,000	325,000
195	7554	REG. RD 21 (ARTHUR ST S) AT LISTOWEL RD	2019-2021	350,000	-		350,000	-		350,000	262,500	87,500
196	7555	REG. RD 30 (SHANTZ STATION RD) AT KOSSUTH RD (RR31)	2019-2023	1,300,000	-		1,300,000	-		1,300,000	975,000	325,000
197	7557	REG. RD 85 (ARTHUR ST) AT SAWMILL RD (RR17)	2019-2021	350,000	-		350,000	-		350,000	262,500	87,500
198	7558	REG. RD 86 (LINE 86) AT FLORADALE RD (RR19)	2019-2023	1,300,000	-		1,300,000	-		1,300,000	975,000	325,000



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
Growth Related Turn Lanes												
199	7097	DEVELOPMENT RELATED LEFT AND RIGHT TURN	2019-2028	1,000,000	-		1,000,000	-		1,000,000	750,000	250,000
200	7165	REG. RDS. 28 & 56, HOMER WATSON BLVD. AT	2020-2023	550,000	-		550,000	-		550,000	412,500	137,500
201	7173	DEVELOPMENT RELATED BOULEVARD AND SHOULD	2019-2028	1,000,000	-		1,000,000	-		1,000,000	750,000	250,000
202	7180	PRELIMINARY DESIGN AND POST CONSTRUCTION	2019-2028	2,000,000	-		2,000,000	-		2,000,000	1,500,000	500,000
203	7225	REG. RD. 56 (BLEAMS ROAD), AT NYLES RD.	2020-2022	220,000	-		220,000	-		220,000	165,000	55,000
204	7309	REG. RD. 28 (FOUNTAIN STREET) AT LIMERIC	2019	10,000	-		10,000	-		10,000	7,500	2,500
205	7484	REG. RD. 28 (HOMER WATSON BOULEVARD), AT PEARSON ST.	2019	250,000	-		250,000	-		250,000	187,500	62,500
206	7494	REG. RD. 54 (LACKNER BOULEVARD), AT OTTERBEIN RD.	2019	200,000	-		200,000	-		200,000	150,000	50,000
207	7538	REG. RD. 38 (MAPLE GROVE ROAD), AT COMPA	2019	350,000	-		350,000	-		350,000	262,500	87,500
208	7542	REG. RED. 56 (BLEAMS ROAD) AT FALLOWFIELD DR./BULLOCK ST.	2019	50,000	-		50,000	-		50,000	37,500	12,500
209	7562	REG. RD 58 (NORTHUMBERLAND ST) AT BROOM ST	2019-2022	1,155,000	-		1,155,000	-		1,155,000	866,250	288,750
210	7563	REG. RD 85 (LISTOWEL RD) AT TIMBER TRAIL	2019-2020	150,000	-		150,000	-		150,000	112,500	37,500
211	7580	RR58 (FISHER-HALLMAN RD) WALLACETON WAY	2019-2020	250,000	-		250,000	-		250,000	187,500	62,500
212	7593	RR70 (TRUSSLER RD) AT RICKERT WAY	2019-2021	190,000	-		190,000	-		190,000	142,500	47,500
213	7601	Turn Lane RR12 (New Dundee Rd) at Pinnacle Dr	2019	250,000	-		250,000	-		250,000	187,500	62,500
214		Growth Related Turn Lanes btw years 2029 - Longer Term	2029+	1,200,000	-		1,200,000	-		1,200,000	900,000	300,000



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019 - Longer Term	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
Traffic Signal Installations												
215	7372	Bridge St / New Dundee Rd at Trussler	2019	40,000	-		40,000	-		40,000	30,000	10,000
216	7374	REG. RD. 17 (SAWMILL ROAD) AT CHARLES ST	2019	30,000	-		30,000	-		30,000	22,500	7,500
217	7380	REG. RD.51 (FOUNDRY STREET) AT GINGERICH	2019	50,000	-		50,000	-		50,000	37,500	12,500
218	7478	NEW TRAFFIC SIGNAL INSTALLATION	2019	500,000	-		500,000	-		500,000	375,000	125,000
219	7490	REG. RD. 4 (PEEL STREET), AT HURON ST.	2019	45,000	-		45,000	-		45,000	33,750	11,250
220	7500	REG. RD. 86 (LINE 86), AT FLORADALE RD.	2019	50,000	-		50,000	-		50,000	37,500	12,500
221	7507	REG. RD. 86 (LINE 86), AT HERRGOTT RD.	2019	80,000	-		80,000	-		80,000	60,000	20,000
222	9025	GROWTH RELATED TRAFFIC SIGNAL MODERNIZAT	2019-2028	280,000	-		280,000	-		280,000	210,000	70,000
223	9655	REG.RD. 50 (WESTMOUNT ROAD W.) AT UNION BOULEVARD	2019	170,000	-		170,000	-		170,000	127,500	42,500
224		traffic signal Installations btw years 2029 - Longer Term	2029+	61,000	-		61,000	-		61,000	45,750	15,250
Road Widenings												
225	5110	REG. RD. 55 (VICTORIA STREET), HWY 7 BRI	2019	50,000	-		50,000	-		50,000	37,500	12,500
226	5337	REG. RD. 8 (KING STREET), EAGLE ST. (RR3	2019-2020	3,155,000	-		3,155,000	473,300		2,681,700	2,011,275	670,425
227	5340	REG. RD. 69 (MANITOU DRIVE), BLEAMS RD.	2019	160,000	-		160,000	-		160,000	120,000	40,000
228	5549	REG. RD. 36 (FRANKLIN BOULEVARD), MYERS	2019-2020	11,500,000	-		11,500,000	-		11,500,000	8,625,000	2,875,000
229	5616	REG. RD. 70 (TRUSSLER ROAD), BLEAMS RD.	2020-2025	5,835,000	-		5,835,000	-		5,835,000	4,376,250	1,458,750
230	5709	REG. RD. 58 (FISCHER-HALLMAN ROAD), HWY.	2021-2028	16,120,000	-		16,120,000	-		16,120,000	12,090,000	4,030,000
231	5752	REG. RD. 6 (HIGHLAND ROAD W) HIGHLAND HI	2019-2021	6,380,000	-		6,380,000	-		6,380,000	4,785,000	1,595,000
232	6416	REG. RD. 36 (FRANKLIN BOULEVARD), 200M N	2019-2023	8,870,000	-		8,870,000	-		8,870,000	6,652,500	2,217,500
233	7101	REG. RD. 8 (WEBER STREET), COLLEGE AVE.	2019	90,000	-		90,000	13,500		76,500	57,375	19,125
234	7104	REG. RD. 70 (ERBSVILLE ROAD), ERB ST. (RR9) TO COLUMBIA ST.	2026-2028	300,000	-		300,000	-		300,000	225,000	75,000



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
235	7116	REG. RD. 38 (MAPLE GROVE ROAD), HESPELER	2019-2028	31,210,000	-		31,210,000	-		31,210,000	23,407,500	7,802,500
236	7121	REG. RD. 58 (FISCHER-HALLMAN ROAD), BLEA	2019	10,000	-		10,000	-		10,000	7,500	2,500
237	7122	REG. RD. 58 (FISCHER-HALLMAN ROAD), PLAI	2019-2025	20,800,000	-		20,800,000	-		20,800,000	15,600,000	5,200,000
238	7194	REG. RD. 80 (CANAMERA PARKWAY), CONESTOGA BLVD. TO FRANKLIN BLVD (RR36)	2020-2025	3,465,000	-		3,465,000	-		3,465,000	2,598,750	866,250
239	7221	REG. RD. 58 (FISCHER-HALLMAN ROAD / BEAR	2019-2022	9,275,000	-		9,275,000	-		9,275,000	6,956,250	2,318,750
240	7257	REG. RD. 22 (NORTHFIELD DRIVE), DAVENPOR	2019-2023	4,385,000	-		4,385,000	-		4,385,000	3,288,750	1,096,250
241	7258	REG. RD. 56 (BLEAMS ROAD), STRASBURG RD.	2019-2022	9,430,000	-		9,430,000	-		9,430,000	7,072,500	2,357,500
242	7259	REG. RD. 57 (UNIVERSITY AVENUE), KEATS W	2019	1,310,000	-		1,310,000	-		1,310,000	982,500	327,500
243	7282	RR 70 (Ira Needles) Highview to Erb	2019	70,000	-		70,000	-		70,000	52,500	17,500
244	7284	REG. RD. 12 (NEW DUNDEE ROAD), HOMER WATSON BLVD. (RR28) TO FISCHER HALLMAN RD. (RR58)	2020-2026	11,565,000	-		11,565,000	-		11,565,000	8,673,750	2,891,250
245	7297	REG. RD. 9 (ERB STREET), GATEVIEW DR./BE	2019-2021	3,215,000	-		3,215,000	482,300		2,732,700	2,049,525	683,175
246	7303	REG. RD. 17 (FOUNTAIN STREET), MAPLE GRO	2019-2024	11,550,000	-		11,550,000	-		11,550,000	8,662,500	2,887,500
247	7318	REG. RD. 53 (FAIRWAY ROAD), LACKNER BLVD	2019-2024	3,140,000	-		3,140,000	-		3,140,000	2,355,000	785,000
248	7327	REG. RD. 9 (ERB STREET), IRA NEEDLES BLV	2019-2021	5,925,000	-		5,925,000	-		5,925,000	4,443,750	1,481,250
249	7386	REG. RD. 53 (FAIRWAY ROAD), PEBBLECREEK	2019	100,000	-		100,000	-		100,000	75,000	25,000
250	7586	RR33 (TOWNLINE RD) SAGINAW PKWY TO AVENUE RD	2025-2028	800,000	-		800,000	-		800,000	600,000	200,000
251	7587	RR57 (UNIVERSITY AVE) IRA NEEDLES BLVD TO FISCHER-HALLMAN RD	2025-2028	1,000,000	-		1,000,000	-		1,000,000	750,000	250,000



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
252	7588	RR28 (FOUNTAIN ST S) BLAIR RD TO DICKIE SETTLEMENT RD	2026-2028	600,000	-		600,000	-		600,000	450,000	150,000
253	7589	RR39 (EAGLE ST) SPEEDSVILLE RD TO HESPELER RD	2026-2028	600,000	-		600,000	-		600,000	450,000	150,000
254		Road Widening	2029+	236,510,000	-		236,510,000	-		236,510,000	177,382,500	59,127,500
System Expansion												
255	6433	REG. RD. 24 (AINSLIE STREET) EXTENSION	2019	300,000	-		300,000	-		300,000	225,000	75,000
256	7066	REGIONAL TRANSPORTATION MASTER PLAN	2019-2024	625,000	-		625,000	-		625,000	468,750	156,250
257	7074	GROWTH RELATED STUDIES AND DESIGN	2019-2027	900,000	-		900,000	-		900,000	675,000	225,000
258	7087	REG. RD. 56 (RIVER ROAD EXTENSION), KING	2019-2024	66,925,000	-		66,925,000	-		66,925,000	50,193,750	16,731,250
259	7127	ACTIVE TRANSPORTATION MASTER PLAN	2019	30,000	-		30,000	15,000		15,000	11,250	3,750
260	7129	S. BOUNDARY ROAD, FRANKLIN BLVD.(RR36) T	2019-2023	16,140,000	-		16,140,000	-		16,140,000	12,105,000	4,035,000
261	7131	REG. RD. 17 (FOUNTAIN STREET EXTENSION), VICTORIA ST. (RR55) TO 1.0 KM. N. OF VICTORIA ST.(RR55)	2021-2023	3,660,000	-		3,660,000	-		3,660,000	2,745,000	915,000
262	7158	TRANSPORTATION TOMORROW SURVEY	2021-2022	165,000	-		165,000	-		165,000	123,750	41,250
263	7192	S. BOUNDARY ROAD, WATER ST. (RR24) TO FR	2019-2020	13,500,000	-		13,500,000	-		13,500,000	10,125,000	3,375,000
264	7253	GROWTH RELATED LAND DEDICATION SURVEYS A	2019-2027	900,000	-		900,000	-		900,000	675,000	225,000
265	7298	COMMUTER PARKING LOT FEASIBILITY STUDY	2019	50,000	-		50,000	25,000		25,000	18,750	6,250
266	7299	EAST BOUNDARY ROAD CORRIDOR PROTECTION S	2019-2027	5,610,000	-		5,610,000	-		5,610,000	4,207,500	1,402,500
267	7301	ROAD IMPROVEMENT TRANSIT PRIORITY STRATEGY	2019	150,000	-		150,000	75,000		75,000	56,250	18,750
268	7302	TRANSPORTATION AND TRANSIT FORECASTING	2019	105,000	-		105,000	-		105,000	78,750	26,250



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
2019 - Longer Term												
269	7304	GOODS MOVEMENT STUDY	2019-2020	100,000	-		100,000	50,000		50,000	37,500	12,500
270	7337	HESPELER ROAD OVER HIGHWAY 401 FEASIBILITY STUDY	2019	65,000	-		65,000	-		65,000	48,750	16,250
271	7341	INTER-REGIONAL TRANSPORTATION STUDY	2019	100,000	-		100,000	25,000		75,000	56,250	18,750
272	7551	ELMIRA BY-PASS, SOUTH OF LISTOWEL RD TO TOWNSHIP RD 12	2021-2023	900,000	-		900,000	-		900,000	675,000	225,000
273	7577	DEFINE & MEASURE HEALTH BENEFITS OF A.T. & PUBLIC TRANSIT	2019-2021	100,000	-		100,000	50,000		50,000	37,500	12,500
274	7578	PLANNING FOR FUTURE RT CORRIDORS	2019-2023	210,000	-		210,000	-		210,000	157,500	52,500
275	7581	TRANSPORTATION CORRIDOR DESIGN GUIDELINES UPDATE	2019	100,000	-		100,000	-		100,000	75,000	25,000
276	7582	TRANSPORTATION IMPACT STUDY GUIDELINES UPDATE	2019	100,000	-		100,000	-		100,000	75,000	25,000
277	7583	TRANSPORTATION SYSTEM MANAGEMENT STUDY FOR HWY 7/8/85/10, MTO	2019	50,000	-		50,000	-		50,000	37,500	12,500
278	7584	SHARED PAYMENT PLATFORM (JOINT w TRANSIT SERVICES)	2020-2021	200,000	-		200,000	-		200,000	150,000	50,000
279	7585	MOBILITY PRICING FEASIBILITY STUDY	2022-2023	200,000	-		200,000	150,000		50,000	37,500	12,500
280		System Expansion	2029+	113,430,000	-		113,430,000	-		113,430,000	85,072,500	28,357,500
		Other Development Related Projects and Programs										
281	7536	OTM BOOK 18 (CYCLING FACILITIES UPDATE)	2019	20,000	-		20,000	-		20,000	15,000	5,000
282	7540	REG. RD. 24 (HESPELER ROAD) AT HIGHWAY 401 CYCLING FACILITY	2020	1,900,000	-		1,900,000	-		1,900,000	1,425,000	475,000
283	New	Active Transportation	2029+	62,222,000	-		62,222,000	-		62,222,000	46,666,500	15,555,500
284		Unfunded WIP Projects	2019-2028	15,516,970	-		15,516,970	-		15,516,970	11,637,728	3,879,243



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Services Related to a Highway - Roads

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
		2019 - Longer Term										
		Future Financing										
285		Estimated Discounted Financing Cost (20 Year Debenture)	2019-2038	11,944,871	-		11,944,871	-		11,944,871	8,958,653	2,986,218
286		Estimated Discounted Financing Cost (20 Year Debenture)	2020-2039	3,668,286	-		3,668,286	-		3,668,286	2,751,215	917,072
287		Estimated Discounted Financing Cost (20 Year Debenture)	2021-2040	3,483,461	-		3,483,461	-		3,483,461	2,612,596	870,865
288		Estimated Discounted Financing Cost (20 Year Debenture)	2022-2041	5,361,341	-		5,361,341	-		5,361,341	4,021,006	1,340,335
289		Estimated Discounted Financing Cost (20 Year Debenture)	2023-2042	7,006,426	-		7,006,426	-		7,006,426	5,254,820	1,751,607
290		Estimated Discounted Financing Cost (20 Year Debenture)	2024-2043	3,130,741	-		3,130,741	-		3,130,741	2,348,056	782,685
		Reserve Fund										
291		Reserve Fund Adjustment	Reserve	-	-		-	6,975,671		(6,975,671)	(5,231,753)	(1,743,918)
		Total		884,780,096	-	-	884,780,096	17,547,271	2,167,000	865,065,825	648,799,369	216,266,456



5.3.2 Operations

The Region's Facilities and Fleet Management Division operates 13 facilities totalling 259,247 sq.ft. of building area, providing an average level of service of 0.48 sq.ft. per capita or a level of investment of \$137 per capita. The inventory provides a D.C.-eligible amount for facilities of \$21,844,577.

The Region maintains an inventory of 109 vehicles and equipment (excluding vehicles and equipment included in other D.C. eligible service areas) with an approximate replacement cost value of \$15.6 million. This provides a level of investment of \$29 per capita and equals a D.C.-eligible amount of \$4,678,368.

Based on the facilities, vehicles, and equipment, the total D.C.-eligible amount for operations is \$26,522,945.

There have been three projects identified for expansion to existing facilities, upgrades to the radio system, and additional vehicles. The total cost of the projects identified is \$61,398,900. A deduction to recognize benefit to existing development of \$46.1 million has been made, along with a further deduction of \$3.6 million from the reserve fund balance. Therefore, the net amount included in the D.C. is \$11,702,361.

The residential/non-residential capital cost allocation for facilities and fleet is based on a 75%/25% split which is based on the incremental growth in population to employment for the longer term forecast period.



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Operations - Facilities

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019 - Longer Term	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 75%	Non-Residential Share 25%
1	90109	Waterloo Regional Voice Radio System Upgrades (Operations portion)	2019	533,900	-		533,900	451,679		82,221	61,665	20,555
2	90137	Headquarters Expansion/Integrated Service Centre (Staff related to D.C. Hard Services Only)	2021-2022	60,800,000	-		60,800,000	45,600,000		15,200,000	11,400,000	3,800,000
3	6055	Operations Growth Vehicles	2019	65,000	-		65,000	-		65,000	48,750	16,250
4		Reserve Fund Adjustment	Reserve	-	-		-	3,644,860		(3,644,860)	(2,733,645)	(911,215)
		Total		61,398,900	-	-	61,398,900	49,696,539	-	11,702,361	8,776,770	2,925,590



5.4 Service Levels and Urban Longer-Term Capital Costs for Waterloo's D.C. Calculation

This section evaluates the development-related capital requirements for those services with urban longer-term capital costs.

5.4.1 Water Services

Similar to the previous D.C. study, the capital program provided herein has been identified by Region staff based on the updated Master Plans (e.g. Water Supply Master Plan, Water Supply and Distribution Operations Master Plan, Water Efficiency Master Plan, Baden and New Hamburg Water and Wastewater Master Plan Update, etc.). The projects have been divided into sections that determine the benefit to existing development and are classified as either Expansionary, Upgrades, and Prior Oversized Projects.

- Expansionary projects are those deemed 100% growth-related due to providing additional capacity to the Regional system. This can also include studies that are required to undertake the expansionary works.
- Upgrades are projects that are growth-related but service both new and existing development.
 - These upgrades have a benefit to existing development that are based on the long-term projected growth within various areas of the Region:

Service Area	Growth %	Benefit to Existing %
Integrated Urban System¹	26.4%	73.6%
Baden/New Hamburg	36.3%	63.7%
Ayr	43.8%	56.2%
Wellesley	34.7%	65.3%
Overall	27.0%	73.0%

¹ This includes the areas of Kitchener, Waterloo, Galt, Hespeler, Preston, Elmira, and St. Jacobs

- Prior Oversized Projects are projects that have been identified in previous D.C. studies and require the recovery of unfunded growth costs. Based on discussions with staff, it is assumed that these projects will be paid within 15 years.



In addition to the above categories, the estimated growth-related future financing costs (anticipated discounted debt) has also been included.

Based on the above, the total capital gross cost of \$1,029,386,000 has been identified. In addition to this amount, the estimated growth-related financing costs (discounted) of \$24,173,071 has been included, for a grand total of \$1,053,559,071. Deductions to this amount include \$617,725,856 which has been identified as benefiting existing, along with the surplus in the water D.C. reserve fund of \$9,159,434. The result of these deductions is a net growth-related cost of \$426,673,781 which has been included in the D.C. calculations.

These costs have been allocated 77% residential and 23% non-residential based on the incremental growth in population to employment for the urban longer-term forecast period.



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo
Service: Water Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019-Longer Term Urban Service Area - Region Wide	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 77%	Non-Residential Share 23%
		Expansionary Projects										
1	4007	Water Supply Master Plan	2020-2021	600,000	-		600,000	-		600,000	462,000	138,000
2	4007	Water Supply Master Plan	2029+	1,800,000	-		1,800,000	-		1,800,000	1,386,000	414,000
3	4014	Integrated Urban System Groundwater Supp	2019	68,000	-		68,000	-		68,000	52,360	15,640
4	4015	Waterloo North Water Supply System	2019-2025	6,723,000	-		6,723,000	-		6,723,000	5,176,710	1,546,290
5	4044	Production Treatment Facilities System Expansion	2024-2028	5,000,000	-		5,000,000	-		5,000,000	3,850,000	1,150,000
6	4051	Pumping & Storage Facilities System Expansion	2024-2028	10,000,000	-		10,000,000	-		10,000,000	7,700,000	2,300,000
7	4083	New Watermains	2019-2028	17,854,000	-		17,854,000	-		17,854,000	13,747,580	4,106,420
8	4086	Baden New Hamburg Watermains	2019-2023	5,160,000	-		5,160,000	-		5,160,000	3,973,200	1,186,800
9	4090	W&E Research & Development Project	2019-2028	750,000	-		750,000	-		750,000	577,500	172,500
10	4090	W&E Research & Development Project	2029+	1,725,000	-		1,725,000	-		1,725,000	1,328,250	396,750
11	4134	Maple Grove Area Water Supply System	2023-2028	1,700,000	-		1,700,000	-		1,700,000	1,309,000	391,000
12	4134	Maple Grove Area Water Supply System	2029-2039	4,000,000	-		4,000,000	-		4,000,000	3,080,000	920,000
13	4155	Tri City Distribution Upgrades	2019-2028	7,750,000	-		7,750,000	-		7,750,000	5,967,500	1,782,500
14	4156	Kitchener Zone(s) 2/4 Distribution Upgrades	2019-2022	4,632,000	-		4,632,000	-		4,632,000	3,566,640	1,065,360
15	4161	Kitchener Zone 4 Feeder Upgrades	2019-2021	4,936,000	-		4,936,000	-		4,936,000	3,800,720	1,135,280
16	4178	Weber St - Connection Kitchener to Water	2019	19,000	-		19,000	-		19,000	14,630	4,370
17	4183	Residential Water Efficiency Initiatives	2019-2028	2,453,000	-		2,453,000	-		2,453,000	1,888,810	564,190
18	4183	Residential Water Efficiency Initiatives	2029+	5,635,000	-		5,635,000	-		5,635,000	4,338,950	1,296,050
19	4189	Elmira and St.Jacobs Water Supply Optimization	2019-2024	7,800,000	-		7,800,000	-		7,800,000	6,006,000	1,794,000
20	4190	04190 Baden & New Hamburg Comprehensive Servicing Master Plan	2019-2021	600,000	-		600,000	-		600,000	462,000	138,000
21	4864	Water Efficiency - ICI Programs	2019-2028	2,250,000	-		2,250,000	-		2,250,000	1,732,500	517,500
22	4864	Water Efficiency - ICI Programs	2029+	5,175,000	-		5,175,000	-		5,175,000	3,984,750	1,190,250
23	4904	Long Term Water Supply Strategy (LTWS) Aquafir Storage and Recovery (ASR) Stages 1 + 2	2019-2028	13,784,000	-		13,784,000	-		13,784,000	10,613,680	3,170,320
24	4904	Long Term Water Supply Strategy (LTWS) Aquafir Storage and Recovery (ASR) Stages 1 + 2	2029-2030	700,000	-		700,000	-		700,000	539,000	161,000



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo
Service: Water Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019-Longer Term Urban Service Area - Region Wide	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 77%	Non-Residential Share 23%
25	4943	Water Efficiency-Outdoor Water Use	2019-2028	1,800,000	-		1,800,000	-		1,800,000	1,386,000	414,000
26	4943	Water Efficiency-Outdoor Water Use	2029+	4,140,000	-		4,140,000	-		4,140,000	3,187,800	952,200
27	New	Grand River Wells & Maple Grove System Consolidation	2030-2040	42,800,000	-		42,800,000	-		42,800,000	32,956,000	9,844,000
		Upgrade Projects										
28	4001	Groundwater Modelling	2019-2028	1,607,000	-		1,607,000	1,173,110		433,890	334,095	99,795
29	4001	Groundwater Modelling	2029+	6,100,000	-		6,100,000	4,453,000		1,647,000	1,268,190	378,810
30	4005	MOE Source Water Assessment	2019-2025	525,000	-		525,000	383,250		141,750	109,148	32,603
31	4005	MOE Source Water Assessment	2029+	1,500,000	-		1,500,000	1,095,000		405,000	311,850	93,150
32	4024	Mannheim WTP RMP Supernatant	2019-2022	3,150,000	-		3,150,000	2,318,400		831,600	640,332	191,268
33	4082	Watermain Upgrades	2019-2028	25,322,000	-		25,322,000	18,485,060		6,836,940	5,264,444	1,572,496
34	4082	Watermain Upgrades	2029-2035	3,170,000	-		3,170,000	2,314,100		855,900	659,043	196,857
35	4097	Water Supply Upgrades	2019-2020	295,000	-		295,000	215,350		79,650	61,331	18,320
36	4124	Source Protection Planning & Programming	2019-2028	22,620,000	-		22,620,000	16,512,600		6,107,400	4,702,698	1,404,702
37	4124	Source Protection Planning & Programming	2029+	9,000,000	-		9,000,000	6,570,000		2,430,000	1,871,100	558,900
38	4125	Source Protection Technical Assessment	2019-2028	12,285,000	-		12,285,000	8,968,050		3,316,950	2,554,052	762,899
39	4125	Source Protection Technical Assessment	2029+	29,900,000	-		29,900,000	21,827,000		8,073,000	6,216,210	1,856,790
40	4135	Well Optimization & Upgrades	2019-2028	7,530,000	-		7,530,000	5,496,900		2,033,100	1,565,487	467,613
41	4135	Well Optimization & Upgrades	2029+	23,000,000	-		23,000,000	16,790,000		6,210,000	4,781,700	1,428,300
42	4149	GW/SW Assessments	2019-2025	1,566,000	-		1,566,000	1,143,180		422,820	325,571	97,249
43	4157	Water Supply Operations Master Plan	2020-2021	600,000	-		600,000	438,000		162,000	124,740	37,260
44		Water Supply Operations Master Plan	2029+	1,800,000	-		1,800,000	1,314,000		486,000	374,220	111,780
45	4159	Asset Management	2019-2028	5,875,000	-		5,875,000	4,288,750		1,586,250	1,221,413	364,838
46	4159	Asset Management	2029+	8,050,000	-		8,050,000	5,876,500		2,173,500	1,673,595	499,905
47	4160	William St & K41/K42 Class EA	2019-2021	26,546,000	-		26,546,000	19,537,856		7,008,144	5,396,271	1,611,873
48	4165	Clean Water Act Implementation	2019-2028	1,988,000	-		1,988,000	1,451,240		536,760	413,305	123,455
49	4165	Clean Water Act Implementation	2029+	4,600,000	-		4,600,000	3,358,000		1,242,000	956,340	285,660
50	4170	Monitoring System Management	2019-2028	3,368,000	-		3,368,000	2,458,640		909,360	700,207	209,153
51	4170	Monitoring System Management	2029+	6,900,000	-		6,900,000	5,037,000		1,863,000	1,434,510	428,490
52	4172	Distribution Decision Support System	2020-2023	2,000,000	-		2,000,000	1,460,000		540,000	415,800	124,200
53	4173	Conestoga Plains and West Montrose Syste	2019-2021	4,479,000	-		4,479,000	3,296,544		1,182,456	910,491	271,965



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo
Service: Water Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019-Longer Term Urban Service Area - Region Wide	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 77%	Non-Residential Share 23%
54	4175	New Hamburg Reservoir Expansion	2020-2024	4,700,000	-		4,700,000	2,993,900		1,706,100	1,313,697	392,403
55	4181	Cambridge Water Distribution Upgrades	2019-2028	43,371,000	-		43,371,000	31,921,056		11,449,944	8,816,457	2,633,487
56	4181	Cambridge Water Distribution Upgrades	2029-2035	23,750,000	-		23,750,000	17,480,000		6,270,000	4,827,900	1,442,100
57	4184	Connection of New wells to water Supply	2019-2028	2,732,000	-		2,732,000	1,994,360		737,640	567,983	169,657
58	4184	Connection of New wells to water Supply	2029+	4,600,000	-		4,600,000	3,358,000		1,242,000	956,340	285,660
59	4186	Mannheim Reservoir Inlet Piping Upgrades	2019	160,000	-		160,000	116,800		43,200	33,264	9,936
60	4187	Manganese Treatment Upgrades	2019-2025	47,174,000	-		47,174,000	34,437,020		12,736,980	9,807,475	2,929,505
61	4188	Water Asset Management Systems	2019	933,000	-		933,000	681,090		251,910	193,971	57,939
62	4893	Facilities Upgrades	2019-2028	130,958,000	-		130,958,000	95,599,340		35,358,660	27,226,168	8,132,492
63	4893	Facilities Upgrades	2029+	345,000,000	-		345,000,000	251,850,000		93,150,000	71,725,500	21,424,500
64	4903	PS & Reservoir Decommissioning	2019-2020	483,000	-		483,000	352,590		130,410	100,416	29,994
65	4911	Regulatory Requirements Upgrades	2019-2028	1,126,000	-		1,126,000	821,980		304,020	234,095	69,925
66	4911	Regulatory Requirements Upgrades	2029+	2,300,000	-		2,300,000	1,679,000		621,000	478,170	142,830
67	4969	SCADA Communication Upgrade	2019-2024	19,136,000	-		19,136,000	13,969,280		5,166,720	3,978,374	1,188,346
68	78040	Water Building Renewal (formerly 0 4112)	2019-2028	5,767,000	-		5,767,000	4,209,910		1,557,090	1,198,959	358,131
		Prior Oversized Projects (Growth Portion Only)										
69	4904	LTWS ASR Stage 1	2019+	4,115,000	-		4,115,000	-		4,115,000	3,168,550	946,450
70	4933	Ayr Water Supply System Expansion	2019+	5,152,000	-		5,152,000	-		5,152,000	3,967,040	1,184,960
71	N/A	Mannheim WTP Residual Capacity	2019+	-	-		-	-		-	-	-
72	4645	Cambridge East Water Supply System	2019+	5,327,000	-		5,327,000	-		5,327,000	4,101,790	1,225,210
73	4427	Middleton Reservoir and Pumping Station	2019+	2,769,000	-		2,769,000	-		2,769,000	2,132,130	636,870
74	4940	Zone 6 PS	2019+	925,000	-		925,000	-		925,000	712,250	212,750
75	N/A	Water Efficiency Projects	2019+	1,337,000	-		1,337,000	-		1,337,000	1,029,490	307,510
76	4908	Baden Tank Upgrade - BNHWMP	2019+	767,000	-		767,000	-		767,000	590,590	176,410
77	4828	New Hamburg WTP	2019+	335,000	-		335,000	-		335,000	257,950	77,050
78	4017	Greenbrook System Upgrades (already completed)	2019+	2,169,000	-		2,169,000	-		2,169,000	1,670,130	498,870
79	4968	Storage & Maintenance Building	2019+	670,000	-		670,000	-		670,000	515,900	154,100



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo
Service: Water Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019-Longer Term Urban Service Area - Region Wide	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 77%	Non-Residential Share 23%
		Estimated Growth-Related Financing Cost										
80		Estimated Discounted Financing Cost (20 Year Debenture)	2020-2039	1,037,846	-		1,037,846	-		1,037,846	799,141	238,704
81		Estimated Discounted Financing Cost (20 Year Debenture)	2021-2040	2,328,401	-		2,328,401	-		2,328,401	1,792,869	535,532
82		Estimated Discounted Financing Cost (20 Year Debenture)	2022-2041	2,403,131	-		2,403,131	-		2,403,131	1,850,411	552,720
83		Estimated Discounted Financing Cost (20 Year Debenture)	2023-2042	2,989,992	-		2,989,992	-		2,989,992	2,302,294	687,698
84		Estimated Discounted Financing Cost (20 Year Debenture)	2024-2043	4,365,260	-		4,365,260	-		4,365,260	3,361,251	1,004,010
85		Estimated Discounted Financing Cost (20 Year Debenture)	2025-2044	3,389,835	-		3,389,835	-		3,389,835	2,610,173	779,662
86		Estimated Discounted Financing Cost (20 Year Debenture)	2026-2045	2,398,495	-		2,398,495	-		2,398,495	1,846,841	551,654
87		Estimated Discounted Financing Cost (20 Year Debenture)	2027-2046	2,991,628	-		2,991,628	-		2,991,628	2,303,554	688,075
88		Estimated Discounted Financing Cost (20 Year Debenture)	2028-2047	2,268,482	-		2,268,482	-		2,268,482	1,746,731	521,751
89		Reserve Fund Adjustment	Reserve		-		-	9,159,434		(9,159,434)	(7,052,764)	(2,106,670)
		Total		1,053,559,071	-	-	1,053,559,071	626,885,290	-	426,673,781	328,538,811	98,134,970



5.4.2 Wastewater Services

Similar to water, the capital program provided herein has been identified by Region staff based on updated Master Plans (e.g. Baden and New Hamburg Water and Wastewater Master Plan Update, Wastewater Treatment Master Plan, etc.). The projects have been divided into sections that determine the benefit to existing development and are classified as either Expansionary, Upgrades, and Prior Oversized Projects.

- Expansionary projects are those deemed 100% growth-related due to providing additional capacity to the Regional system. This can also include studies that are required to undertake the expansionary works.
- Upgrades are projects that are growth-related but service both new and existing development.
 - These upgrades have a benefit to existing development that are based on the long-term projected growth within various areas of the Region:

Service Area	Growth %	Benefit to Existing %
Kitchener	28.7%	71.3%
Waterloo	21.1%	78.9%
Galt	24.7%	75.3%
Hespeler	27.8%	72.2%
Preston	18.1%	81.9%
Elmira	50.8%	49.2%
St. Jacobs	30.9%	69.1%
Baden/New Hamburg	36.3%	63.7%
Ayr	43.8%	56.2%
Wellesley	34.7%	65.3%
Overall	27.0%	73.0%

- Prior Oversized Projects are projects that have been identified in previous D.C. studies and require the recovery of unfunded growth costs. Based on discussions with staff, it is assumed that these projects will be paid within 15 years.

In addition to the above categories, the existing debentures (principal and discounted interest) have been included, along with the estimated growth-related future financing costs (anticipated discounted debt).

Based on the above, the total capital gross cost of \$1,051,793,000 has been identified. In addition to this amount, the existing debentures Kitchener, Waterloo, Ayr, and Galt



totalling \$110,278,618 (principal and discounted interest), as well as the estimated growth-related financing costs (discounted) of \$27,496,063 have been included for recovery. Further, the reserve fund deficit of \$2,140,082 has also been included for recovery, for a grand total of \$1,191,707,763. A deduction in the amount of \$594,186,392 has been identified as benefiting existing. Therefore, the net growth-related cost of \$597,521,371 has been included in the D.C. calculations.

These costs have been allocated 77% residential and 23% non-residential based on the incremental growth in population to employment for the urban longer-term forecast period.



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Wastewater Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019-Longer Term Urban Service Area - Region Wide	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 77%	Non-Residential Share 23%
Expansionary Projects												
1	8242	Hespeler Expansion	2029+	16,200,000	-		16,200,000	-		16,200,000	12,474,000	3,726,000
2	8267	Wellesley Expansion	2028	200,000	-		200,000	-		200,000	154,000	46,000
3	8267	Wellesley Expansion	2029+	8,100,000	-		8,100,000	-		8,100,000	6,237,000	1,863,000
4	8301	St. Jacobs Expansion	2024-2028	7,150,000	-		7,150,000	-		7,150,000	5,505,500	1,644,500
5	8301	St. Jacobs Expansion	2029+	5,250,000	-		5,250,000	-		5,250,000	4,042,500	1,207,500
6	8302	East Side Lands Wastewater Servicing	2029+	34,400,000	-		34,400,000	-		34,400,000	26,488,000	7,912,000
7	8315	Elmira Expansion	2029+	14,900,000	-		14,900,000	-		14,900,000	11,473,000	3,427,000
8	8316	Waterloo Expansion	2025-2028	32,182,000	-		32,182,000	-		32,182,000	24,780,140	7,401,860
9	8317	Baden/New Hamburg Expansion	2019-2028	17,243,000	-		17,243,000	-		17,243,000	13,277,110	3,965,890
10	8324	Southern Ayr Wastewater System Expansion	2019	170,000	-		170,000	-		170,000	130,900	39,100
11	8779	Wastewater Master Plan Update	2023-2024	600,000	-		600,000	-		600,000	462,000	138,000
12	8779	Wastewater Master Plan Update	2029+	1,800,000	-		1,800,000	-		1,800,000	1,386,000	414,000
Upgrades Projects												
13	8242	Hespeler Upgrades	2019-2023	26,509,000	-		26,509,000	19,139,498		7,369,502	5,674,517	1,694,985
14	8270	Biosolids Masterplan Update	2024-2025	800,000	-		800,000	584,000		216,000	166,320	49,680
15	8270	Biosolids Masterplan Update	2029+	1,600,000	-		1,600,000	1,168,000		432,000	332,640	99,360
16	8275	Biosolids Management Facility	2019-2028	38,200,000	-		38,200,000	27,886,000		10,314,000	7,941,780	2,372,220
17	8275	Biosolids Management Facility	2029+	25,000,000	-		25,000,000	18,250,000		6,750,000	5,197,500	1,552,500
18	8279	SCADA System	2019-2028	10,644,000	-		10,644,000	7,770,120		2,873,880	2,212,888	660,992
19	8279	SCADA System	2029+	23,000,000	-		23,000,000	16,790,000		6,210,000	4,781,700	1,428,300
20	8281	River Sampling Program	2019-2028	4,750,000	-		4,750,000	3,467,500		1,282,500	987,525	294,975
21	8281	River Sampling Program	2029+	11,500,000	-		11,500,000	8,395,000		3,105,000	2,390,850	714,150
22	8288	Other Studies	2019-2028	1,000,000	-		1,000,000	730,000		270,000	207,900	62,100
23	8289	Galt Process Upgrades	2019-2026	63,001,000	-		63,001,000	47,439,753		15,561,247	11,982,160	3,579,087
24	8301	St. Jacobs Upgrade	2019-2023	3,000,000	-		3,000,000	2,073,000		927,000	713,790	213,210
25	8305	Wastewater Treatment Upgrades	2019-2028	4,565,000	-		4,565,000	3,332,450		1,232,550	949,064	283,487
26	8307	Kitchener & Waterloo Infrastructure Upgrade	2019-2028	46,324,000	-		46,324,000	34,233,436		12,090,564	9,309,734	2,780,830



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Wastewater Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019-Longer Term Urban Service Area - Region Wide	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 77%	Non-Residential Share 23%
27	8307	Kitchener & Waterloo Infrastructure Upgrade	2029+	115,000,000	-		115,000,000	84,985,000		30,015,000	23,111,550	6,903,450
28	8308	Cambridge Infrastructure Upgrades	2019-2028	33,200,000	-		33,200,000	25,132,400		8,067,600	6,212,052	1,855,548
29	8308	Cambridge Infrastructure Upgrades	2029+	92,000,000	-		92,000,000	69,644,000		22,356,000	17,214,120	5,141,880
30	8309	Rural Infrastructure Upgrades	2019-2028	24,152,000	-		24,152,000	13,984,008		10,167,992	7,829,354	2,338,638
31	8309	Rural Infrastructure Upgrades	2029+	69,000,000	-		69,000,000	39,951,000		29,049,000	22,367,730	6,681,270
32	8310	Sewage PSs Infrastructure Upgrades	2019-2028	6,810,000	-		6,810,000	4,971,300		1,838,700	1,415,799	422,901
33	8310	Sewage PSs Infrastructure Upgrades	2029+	11,500,000	-		11,500,000	8,395,000		3,105,000	2,390,850	714,150
34	8315	Elmira Upgrades	2019-2028	5,800,000	-		5,800,000	2,853,600		2,946,400	2,268,728	677,672
35	8316	Waterloo Upgrades	2019-2024	30,000,000	-		30,000,000	-		30,000,000	23,100,000	6,900,000
36	8322	Cogeneration & Other Biosolids Upgrades	2019-2022	21,092,000	-		21,092,000	15,397,160		5,694,840	4,385,027	1,309,813
37	8323	Preston Treatment Upgrades	2019-2021	689,000	-		689,000	564,291		124,709	96,026	28,683
38	8327	Wastewater Asset Management	2019-2028	5,350,000	-		5,350,000	3,905,500		1,444,500	1,112,265	332,235
39	8327	Wastewater Asset Management	2029+	4,950,000	-		4,950,000	3,613,500		1,336,500	1,029,105	307,395
40	8328	Kitchener WWTP Influent Channel Twinning	2019-2020	3,050,000	-		3,050,000	2,174,650		875,350	674,020	201,331
41	8329	Spring Valley PS Upgrades	2019-2025	14,002,000	-		14,002,000	10,221,460		3,780,540	2,911,016	869,524
42	8331	Biosolids Class EA	2019-2028	1,300,000	-		1,300,000	949,000		351,000	270,270	80,730
43	8332	Wastewater Asset Management Systems	2019	978,000	-		978,000	713,940		264,060	203,326	60,734
44	8333	Waterloo WWTP Outfall Upgrade	2019-2028	18,850,000	-		18,850,000	14,872,650		3,977,350	3,062,560	914,791
45	8750	Rural Water Quality Program	2019-2028	2,500,000	-		2,500,000	1,825,000		675,000	519,750	155,250
46	8750	Rural Water Quality Program	2029+	5,750,000	-		5,750,000	4,197,500		1,552,500	1,195,425	357,075
47	8797	Kitchener Process Upgrades	2019-2028	92,992,000	-		92,992,000	66,303,296		26,688,704	20,550,302	6,138,402
48	8797	Kitchener Process Upgrades	2029+	39,300,000	-		39,300,000	28,020,900		11,279,100	8,684,907	2,594,193
49	8809	Waterloo Process Upgrade	2019	320,000	-		320,000	252,480		67,520	51,990	15,530



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Wastewater Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019-Longer Term Urban Service Area - Region Wide	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 77%	Non-Residential Share 23%
		Prior Oversized Projects (Growth Portion Only)										
50	8731	Elmira & St. Jacobs - I/I Supplementary Program	2019+	6,301,000	-		6,301,000	-		6,301,000	4,851,770	1,449,230
51	8765	Elmira WWTP Expansion	2019+	9,831,000	-		9,831,000	-		9,831,000	7,569,870	2,261,130
52	8068	Galt WWTP Process Upgrades & Expansion (90's)	2019+	11,887,000	-		11,887,000	-		11,887,000	9,152,990	2,734,010
53	8776	Ayr WWTP Plant Re-Rating	2019+	1,001,000	-		1,001,000	-		1,001,000	770,770	230,230
54	8824	Ayr WWTP Process Upgrades & Expansion	2019+	5,874,000	-		5,874,000	-		5,874,000	4,522,980	1,351,020
55	8762	Baden/New Hamburg Plant Expansion and Conveyance Infrastructure	2019+	8,748,000	-		8,748,000	-		8,748,000	6,735,960	2,012,040
56	8764	St. Jacobs WWTP Expansion	2019+	3,379,000	-		3,379,000	-		3,379,000	2,601,830	777,170
57	8820	Galt Biosolids Upgrade	2019+	5,495,000	-		5,495,000	-		5,495,000	4,231,150	1,263,850
58	8735	Preston WWTP Process Upgrades & Expansion (90's)	2019+	2,228,000	-		2,228,000	-		2,228,000	1,715,560	512,440
59	8796	Galt New Stand-By Power System	2019+	376,000	-		376,000	-		376,000	289,520	86,480
		Prior Year Debentures:										
60	08797 and 08809	CDS 13-075 Kitchener and Waterloo (Principal)	2019-2033	38,092,828	-		38,092,828	-		38,092,828	29,331,478	8,761,351
61	08797 and 08809	CDS 13-075 Kitchener and Waterloo (Discounted Interest)	2019-2033	28,599,969	-		28,599,969	-		28,599,969	22,021,976	6,577,993
62	08797	CDS 14-082 Kitchener (Principal)	2019-2034	19,453,911	-		19,453,911	-		19,453,911	14,979,511	4,474,400
63	08797	CDS 14-082 Kitchener (Discounted Interest)	2019-2034	2,562,037	-		2,562,037	-		2,562,037	1,972,768	589,268
64	08797	CDS 16-086 Kitchener (Principal)	2019-2036	5,604,452	-		5,604,452	-		5,604,452	4,315,428	1,289,024



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Wastewater Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019-Longer Term Urban Service Area - Region Wide	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 77%	Non-Residential Share 23%
65	08797	CDS 16-086 Kitchener (Discounted Interest)	2019-2036	509,850	-		509,850	-		509,850	392,585	117,266
66	08797	CDS 17-087 Kitchener (Principal)	2019-2037	4,175,212	-		4,175,212	-		4,175,212	3,214,913	960,299
67	08797	CDS 17-087 Kitchener (Discounted Interest)	2019-2037	305,045	-		305,045	-		305,045	234,885	70,160
68	08797	CDS 17-088 Kitchener (Principal)	2019-2037	5,249,605	-		5,249,605	-		5,249,605	4,042,196	1,207,409
69	08797	CDS 17-088 Kitchener (Discounted Interest)	2019-2037	559,526	-		559,526	-		559,526	430,835	128,691
70	08324	CDS 17-088 Ayr (Principal)	2019-2037	3,081,395	-		3,081,395	-		3,081,395	2,372,674	708,721
71	08324	CDS 17-088 Ayr (Discounted Interest)	2019-2037	328,429	-		328,429	-		328,429	252,890	75,539
72	8289	CDS 18-90 Galt Process Upgrades & Expansion (Principal)	2019-2038	871,000	-		871,000	-		871,000	670,670	200,330
73	8289	CDS 18-90 Galt Process Upgrades & Expansion (Discounted Interest)	2019-2038	139,429	-		139,429	-		139,429	107,360	32,069
74	8328	CDS 18-90 Kitchener WWTP (Principal)	2019-2038	643,000	-		643,000	-		643,000	495,110	147,890
75	8328	CDS 18-90 Kitchener WWTP (Discounted Interest)	2019-2038	102,931	-		102,931	-		102,931	79,257	23,674
		Estimated Financing Costs										
76		Estimated Discounted Financing Cost (20 Year Debenture)	2019-2038	3,673,829	-		3,673,829	-		3,673,829	2,828,848	844,981
77		Estimated Discounted Financing Cost (20 Year Debenture)	2020-2039	4,253,338	-		4,253,338	-		4,253,338	3,275,070	978,268
78		Estimated Discounted Financing Cost (20 Year Debenture)	2021-2040	1,185,139	-		1,185,139	-		1,185,139	912,557	272,582
79		Estimated Discounted Financing Cost (20 Year Debenture)	2022-2041	1,326,227	-		1,326,227	-		1,326,227	1,021,194	305,032
80		Estimated Discounted Financing Cost (20 Year Debenture)	2023-2042	507,917	-		507,917	-		507,917	391,096	116,821



Infrastructure Costs Covered in the D.C. Calculation

Region of Waterloo

Service: Wastewater Services

Item Number	Project Number	Increased Service Needs Attributable to Anticipated Development 2019-Longer Term Urban Service Area - Region Wide	Timing (year)	Gross Capital Cost Estimate (2019\$)	Post Period Benefit	Other Deductions	Net Capital Cost	Less:		Potential D.C. Recoverable Cost		
								Benefit to Existing Development	Grants, Subsidies and Other Contributions Attributable to New Development	Total	Residential Share 77%	Non-Residential Share 23%
81		Estimated Discounted Financing Cost (20 Year Debenture)	2024-2043	705,440	-		705,440	-		705,440	543,189	162,251
82		Estimated Discounted Financing Cost (20 Year Debenture)	2025-2044	620,787	-		620,787	-		620,787	478,006	142,781
83		Estimated Discounted Financing Cost (20 Year Debenture)	2026-2045	3,936,353	-		3,936,353	-		3,936,353	3,030,992	905,361
84		Estimated Discounted Financing Cost (20 Year Debenture)	2027-2046	5,925,693	-		5,925,693	-		5,925,693	4,562,784	1,362,909
85		Estimated Discounted Financing Cost (20 Year Debenture)	2028-2047	5,361,341	-		5,361,341	-		5,361,341	4,128,233	1,233,108
86		Reserve Fund Adjustment	Reserve	2,140,082	-		2,140,082	-		2,140,082	1,647,863	492,219
		Total		1,191,707,763	-	-	1,191,707,763	594,186,392	-	597,521,371	460,091,456	137,429,915



Chapter 6

D.C. Calculation



6. D.C. Calculation

Table 6-1 calculates the proposed uniform D.C.s to be imposed for infrastructure services based upon an urban longer-term horizon (wastewater and water). Table 6-2 calculates the proposed uniform D.C. to be imposed on anticipated development in the Region for services related to a highway and operations over a Region-wide longer-term planning horizon. Table 6-3 calculates the proposed uniform D.C. to be imposed on anticipated development in the Region for Region-wide services over a 10-year planning horizon. Table 6-4 calculates the proposed Cities only D.C. to be imposed on anticipated development in the Cities of Kitchener, Cambridge, and Waterloo for Transit services over a 10-year planning horizon. Table 6-5 calculates the proposed Townships only D.C. to be imposed on anticipated development in the four Townships for Library services over a 10-year planning horizon.

The calculation for residential development is generated on a per capita basis and is based upon four forms of housing types (single and semi-detached, apartments, lodging units, and all other multiples). The non-residential D.C. has been calculated on a per sq.m. of gross floor area basis for all types of non-residential development (industrial, commercial and institutional).

The D.C.-eligible costs for each service component were developed in Chapter 5 for all Region services, based on their proposed capital programs.

For the residential calculations, the total cost is divided by the “gross” (new resident) population to determine the per capita amount. The eligible D.C. cost calculations set out in Chapter 5 are based on the net anticipated population increase (the forecast new unit population less the anticipated decline in existing units). The cost per capita is then multiplied by the average occupancy of the new units (Appendix A, Schedule 4) to calculate the charge in Tables 6-1 to 6-5.

With respect to non-residential development, the total costs in the uniform charge allocated to non-residential development (based on need for service) have been divided by the anticipated development over the planning period to calculate a cost per sq.m. of gross floor area.

Table 6-6 summarizes the total D.C. that are applicable for Region-wide services and area specific services for Transit in Cities and Library in the Townships. Table 6-7



summarizes the gross capital expenditures and sources of revenue for works to be undertaken during the 5-year life of the by-law.



Table 6-1
Region of Waterloo
Development Charge Calculation
2019-Longer Term Urban Service Area

SERVICE	2019\$ D.C.-Eligible Cost		2019\$ D.C.-Eligible Cost		
	Residential	Non-Residential	SDU	per sq.m.	per sq.ft.
1. <u>Wastewater Services</u>	\$	\$	\$	\$	\$
1.1 Treatment plants & Sewers	460,091,456	137,429,915	6,220	38.91	3.61
	460,091,456	137,429,915	6,220	38.91	3.61
2. <u>Water Services</u>					
2.1 Treatment, storage and distribution systems	328,538,811	98,134,970	4,442	27.78	2.58
	328,538,811	98,134,970	4,442	27.78	2.58
TOTAL	\$788,630,267	\$235,564,885	\$10,662	\$66.69	\$6.19
D.C.-Eligible Capital Cost	\$788,630,267	\$235,564,885			
Longer Term Urban Gross Population/GFA Growth (sq.m.)	234,474	3,532,037			
Cost Per Capita/Non-Residential GFA (sq.m.)	\$3,363.40	\$66.69			
By Residential Unit Type	P.P.U.				
Single and Semi-Detached Dwelling	3.170	\$10,662			
Apartments	1.726	\$5,805			
Other Multiples	2.369	\$7,968			
Lodging Units	1.100	\$3,700			



Table 6-2
Region of Waterloo
Development Charge Calculation
2019-Longer Term

SERVICE	2019\$ D.C.-Eligible Cost		2019\$ D.C.-Eligible Cost		
	Residential	Non-Residential	SDU	per sq.m.	per sq.ft.
	\$	\$	\$	\$	\$
3. <u>Services Related to a Highway</u>					
3.1 Roads and Related	648,799,369	216,266,456	11,997	73.42	6.82
	648,799,369	216,266,456	11,997	73.42	6.82
4. <u>Operations</u>					
4.1 Facilities and Fleet	8,776,770	2,925,590	162	0.99	0.09
	8,776,770	2,925,590	162	0.99	0.09
TOTAL	\$657,576,140	\$219,192,047	\$12,159	\$74.41	\$6.91
D.C.-Eligible Capital Cost	\$657,576,140	\$219,192,047			
Longer Term Gross Population/GFA Growth (sq.m.)	171,439	2,945,911			
Cost Per Capita/Non-Residential GFA (sq.m.)	\$3,835.63	\$74.41			
By Residential Unit Type	P.P.U.				
Single and Semi-Detached Dwelling	3.170	\$12,159			
Apartments	1.726	\$6,620			
Other Multiples	2.369	\$9,087			
Lodging Units	1.100	\$4,219			



Table 6-3
Region of Waterloo
Development Charge Calculation
2019-2028
Region-Wide

SERVICE	2019\$ D.C.-Eligible Cost		2019\$ D.C.-Eligible Cost		
	Residential	Non-Residential	SDU	per sq.m.	per sq.ft.
	\$	\$	\$	\$	\$
5. <u>Police Services</u>					
5.1 Police facilities, vehicles and equipment	20,495,546	6,831,849	812	5.10	0.47
	20,495,546	6,831,849	812	5.10	0.47
6. <u>Airport</u>					
6.1 Airport facilities, Vehicles, Equipment & Other Infrastructure	14,769,080	4,923,027	585	3.69	0.34
	14,769,080	4,923,027	585	3.69	0.34
7. <u>General Government</u>					
7.1 Studies	7,522,652	2,507,551	298	1.88	0.17
	7,522,652	2,507,551	298	1.88	0.17
8. <u>Paramedic Services</u>					
8.1 Paramedics facilities and Vehicles	4,292,008	476,890	170	0.36	0.03
	4,292,008	476,890	170	0.36	0.03
9. <u>Waste Diversion</u>					
9.1 Waste diversion facilities, vehicles, equipment and other	7,532,658	153,728	298	0.12	0.01
	7,532,658	153,728	298	0.12	0.01
TOTAL	\$54,611,943	\$14,893,043	\$2,163	\$11.15	\$1.02
D.C.-Eligible Capital Cost	\$54,611,943	\$14,893,043			
10-Year Gross Population/GFA Growth (sq.m.)	79,998	1,335,274			
Cost Per Capita/Non-Residential GFA (sq.m.)	\$682.67	\$11.15			
By Residential Unit Type	P.P.U.				
Single and Semi-Detached Dwelling	3.170	\$2,164			
Apartments	1.726	\$1,178			
Other Multiples	2.369	\$1,617			
Lodging Units	1.100	\$751			



Table 6-4
Region of Waterloo
Development Charge Calculation
2019-2028
Cities Only

SERVICE	2019\$ D.C.-Eligible Cost		2019\$ D.C.-Eligible Cost		
	Residential	Non-Residential	SDU	per sq.m.	per sq.ft.
	\$	\$	\$	\$	\$
10. <u>Transit Services</u>					
10.1 Transit facilities, vehicles and other infrastructure	65,407,905	22,981,156	3,072	20.97	1.95
	65,407,905	22,981,156	3,072	20.97	1.95
TOTAL	\$65,407,905	\$22,981,156	\$3,072	\$20.97	\$1.95
D.C.-Eligible Capital Cost	\$65,407,905	\$22,981,156			
10-Year Cities Gross Population/GFA Growth (sq.m.)	67,487	1,096,132			
Cost Per Capita/Non-Residential GFA (sq.m.)	\$969.19	\$20.97			
<u>By Residential Unit Type</u>	<u>P.P.U.</u>				
Single and Semi-Detached Dwelling	3.170	\$3,072			
Apartments	1.726	\$1,673			
Other Multiples	2.369	\$2,296			
Lodging Units	1.100	\$1,066			



Table 6-5
Region of Waterloo
Development Charge Calculation
2019-2028
Townships Only

SERVICE	2019\$ D.C.-Eligible Cost		2019\$ D.C.-Eligible Cost		
	Residential	Non-Residential	SDU	per sq.m.	per sq.ft.
11. <u>Library Services</u>	\$	\$	\$	\$	\$
11.1 Library facilities, materials and vehicles	2,548,635	134,139	646	0.56	0.05
	2,548,635	134,139	646	0.56	0.05
TOTAL	\$2,548,635	\$134,139	\$646	\$0.56	\$0.05
D.C.-Eligible Capital Cost	\$2,548,635	\$134,139			
10-Year Townships Gross Population/GFA Growth (sq.m.)	12,511	239,141			
Cost Per Capita/Non-Residential GFA (sq.m.)	\$203.71	\$0.56			
<u>By Residential Unit Type</u>	<u>P.P.U.</u>				
Single and Semi-Detached Dwelling	3.170	\$646			
Apartments	1.726	\$352			
Other Multiples	2.369	\$483			
Lodging Units	1.100	\$224			



Table 6-6
Region of Waterloo
Development Charge Calculation
Total All Services

	2019\$ D.C.-Eligible Cost		2019\$ D.C.-Eligible Cost		
	Residential	Non-Residential	SDU	per sq.m.	per sq.ft.
Urban-wide Services Longer Term	\$ \$788,630,267	\$ \$235,564,885	\$ \$10,662	\$ \$66.69	\$ \$6.19
Region-wide Services Longer Term	657,576,140	219,192,047	12,159	74.41	6.91
Region-wide Services 10 Year	54,611,943	14,893,043	2,163	11.15	1.02
TOTAL REGION-WIDE	\$1,500,818,350	\$469,649,975	\$24,984	\$152.25	\$14.12
City Specific Services 10 Year	65,407,905	22,981,156	3,072	20.97	1.95
Township Specific Services 10 Year	2,548,635	134,139	646	0.56	0.05
TOTAL CITIES	\$1,566,226,255	\$492,631,131	\$28,056	\$173.22	\$16.07
TOTAL TOWNSHIPS	\$1,503,366,985	\$469,784,114	\$25,630	\$152.81	\$14.17



Table 6-7
Region of Waterloo
Development Charge Calculation
Gross Expenditure and Sources of Revenue Summary for Costs to be Incurred over the life of the By-law

Service	Total Gross Cost	Sources of Financing						
		Tax Base or Other Non-D.C. Source				Post D.C. Period Benefit	D.C. Reserve Fund	
		Other Deductions	Benefit to Existing	Other Funding	Legislated Reduction		Residential	Non-Residential
1. Wastewater Services 1.1 Treatment plants & Sewers	366,448,411	0	183,374,037	0	0	0	140,967,267	42,107,106
2. Water Services 2.1 Treatment, storage and distribution systems	300,303,429	0	164,831,493	0	0	0	104,313,390	31,158,545
3. Services Related to a Highway 3.1 Roads and Related	320,922,976	0	7,601,433	2,167,000	0	0	233,365,907	77,788,636
4. Operations 4.1 Facilities and Fleet	61,398,900	0	46,051,679	0	0	0	11,510,415	3,836,805
5. Police Services 5.1 Police facilities, vehicles and equipment	68,185,104	0	31,338,099	0	0	17,075,285	14,828,789	4,942,930
6. Airport 6.1 Airport facilities, Vehicles, Equipment & Other Infrastructure	35,658,260	0	4,407,843	0	905,973	20,615,767	7,296,508	2,432,169
7. General Government 7.1 Studies	4,826,000	0	577,800	0	246,820	0	3,001,035	1,000,345
8. Paramedic Services 8.1 Paramedics facilities and Vehicles	18,449,613	0	12,444,000	0	307,230	2,399,575	2,968,927	329,881
9. Waste Diversion 9.1 Waste diversion facilities, vehicles, equipment and other	13,363,057	0	8,918,239	0	444,482	0	3,920,329	80,007
10. Transit Services 10.1 Transit facilities, vehicles and other infrastructure	297,039,047	0	52,905,115	0	0	208,904,476	26,069,798	9,159,659
11. Library Services 11.1 Library facilities, materials and vehicles	1,675,444	0	92,200	25,000	147,224	0	1,340,469	70,551
Total Expenditures & Revenues	\$1,488,270,240	\$0	\$512,541,939	\$2,192,000	\$2,051,729	\$248,995,102	\$549,582,836	\$172,906,633



Chapter 7

D.C. Policy Recommendations and D.C. By-law Rules



7. D.C. Policy Recommendations and D.C. By-law Rules

7.1 Introduction

s.s.5(1)9 of the D.C.A. states that rules must be developed:

“...to determine if a development charge is payable in any particular case and to determine the amount of the charge, subject to the limitations set out in subsection 6.”

Paragraph 10 of the section goes on to state that the rules may provide for exemptions, phasing in and/or indexing of D.C.s.

s.s.5(6) establishes the following restrictions on the rules:

- the total of all D.C.s that would be imposed on anticipated development must not exceed the capital costs determined under 5(1) 2-8 for all services involved;
- if the rules expressly identify a type of development, they must not provide for it to pay D.C.s that exceed the capital costs that arise from the increase in the need for service for that type of development; however, this requirement does not relate to any particular development; and
- if the rules provide for a type of development to have a lower D.C. than is allowed, the rules for determining D.C.s may not provide for any resulting shortfall to be made up via other development.

With respect to “the rules,” Section 6 states that a D.C. by-law must expressly address the matters referred to above re s.s.5(1) paragraphs 9 and 10, as well as how the rules apply to the redevelopment of land.

The rules provided are based on the Region’s existing policies; however, there are items under consideration at this time and these may be refined prior to adoption of the by-law.



7.2 D.C. By-law Structure

Council to consider policy matters in these areas:

- the Region uses a uniform Region-wide D.C. calculation for all Municipal services (except Transit Services and Regional Library Services);
- water and wastewater services be imposed on the urban service areas of the Region;
- Transit services be imposed on development within the three Cities in the Region;
- Regional library services be imposed on development within the four Townships in the Region; and
- one Municipal D.C. by-law be used for all services.

7.3 D.C. By-law Rules

The following subsections set out the recommended rules governing the calculation, payment and collection of D.C.s in accordance with Section 6 of the D.C.A.

The following sections are provided for consideration as the basis for the D.C.s:

7.3.1 Payment in any Particular Case

In accordance with the D.C.A., s.2(2), a D.C. be calculated, payable and collected where the development requires one or more of the following:

- a) the passing of a zoning by-law or of an amendment to a zoning by-law under section 34 of the Planning Act;
- b) the approval of a minor variance under section 45 of the Planning Act;
- c) a conveyance of land to which a by-law passed under section 50(7) of the Planning Act applies;
- d) the approval of a plan of subdivision under section 51 of the Planning Act;
- e) a consent under section 53 of the Planning Act;



- f) the approval of a description under section 50 of the Condominium Act; or
- g) the issuing of a building permit under the Building Code Act in relation to a building or structure.

7.3.2 Determination of the Amount of the Charge

The following conventions be adopted:

- 1) Costs allocated to residential uses will be assigned to different types of residential units based on the average occupancy for each housing type constructed during the previous decade. Costs allocated to non-residential uses will be assigned based on the amount of square feet of gross floor area constructed for eligible uses (i.e. industrial, commercial and institutional).
- 2) Costs allocated to residential and non-residential uses are based upon a number of conventions, as may be suited to each municipal circumstance, e.g.
 - for General Government, Airport, and Police Services, the costs have been based on a population vs. employment growth ratio (75%/25%) for residential and non-residential, respectively over the 10-year forecast period;
 - for Waste Diversion, a 98% residential/2% non-residential attribution has been made to recognize the tonnage collected from residential vs. non-residential properties;
 - for Paramedic Services, a 10% no-residential attribution has been made to recognize use by the non-residential sector;
 - for Library services, a 5% non-residential attribution has been made to recognize use by the non-residential sector;
 - for Transit services, the costs have been based on a population vs. employment growth ratio (74%/26%) for residential and non-residential, respectively over the 10-year forecast period for Cities only;
 - for Services Related to a Highway and Operations, a 75% residential/25% non-residential attribution has been made based on a population vs. employment growth ratio over the longer term forecast period; and



- for Water and Wastewater services a 77% residential/23% non-residential allocation has been made based on population vs. employment growth over the urban longer term forecast period.
- 3) Three options for differentiating the non-residential charges have been provided in Appendix I for Council's consideration. The three options included are:
- a. Retail vs. Non-Retail
 - b. Industrial vs. Non-Industrial
 - c. Industrial vs. Commercial vs. Institutional

7.3.3 Application to Redevelopment of Land (Demolition and Conversion)

If a development involves the demolition of and replacement of a building or structure on the same site, or the conversion from one principal use to another, the developer shall be allowed a credit equivalent to:

- 1) the number of dwelling units demolished/converted multiplied by the applicable residential D.C. in place at the time the D.C. is payable; and/or
- 2) the gross floor area of the building demolished/converted multiplied by the current non-residential D.C. in place at the time the D.C. is payable.

The demolition credit is allowed only if the land was improved by occupied structures and if the demolition permit related to the site was issued less than 12 months prior to the issuance of a building permit. The credit can, in no case, exceed the amount of D.C.s that would otherwise be payable.

Staff are currently reviewing the timeframe for credits and will be determined after consultation with Council.

7.3.4 Exemptions (full or partial)

- a) Statutory exemptions
 - industrial building additions of up to and including 50% of the existing gross floor area (defined in O.Reg. 82/98, s.1) of the building; for industrial building additions which exceed 50% of the existing gross floor area, only



the portion of the addition in excess of 50% is subject to D.C.s (s.4(3)) of the D.C.A.;

- buildings or structures owned by and used for the purposes of any municipality, local board or Board of Education (s.3);
- residential development that results only in the enlargement of an existing dwelling unit, or that results only in the creation of up to two additional dwelling units (based on prescribed limits set out in s.2 of O.Reg. 82/98).

b) Non-statutory exemptions

- Development of land owned and for any conservation use by the Grand River Conservation Authority;
- Temporary use;
- Development of land for a Home Occupation;
- Temporary erection of a building without a foundation defined in the Building Code Act for a period not exceeding six (6) consecutive months and not more than six (6) months in any one calendar year on a site for which D.C.s have previously been paid;
- An Accessory Building, provided the G.F.A. of the Accessory Building does not exceed the total G.F.A. of the applicable main use buildings, dwelling units, or lodging units; and
- Hospitals within the meaning of the Public Hospitals Act.

Exemptions under review:

- Development of land for farming, excluding a Farm Occupation; and
- Development of a remediated Brownfield up to the maximum of the Eligible Costs on that site (as set out in Schedule C of the By-law) provided such development occurs no later than seven years from the date of issuance of the required Record of Site Condition.

7.3.5 Phasing in

No provisions for phasing in the D.C. are provided in the D.C. by-law.



7.3.6 Timing of Collection

A D.C. that is applicable under Section 5 of the D.C.A. shall be calculated and payable:

- where a permit is required under the Building Code Act in relation to a building or structure, the owner shall pay the D.C. prior to the issuance of a permit of prior to the commencement of development or redevelopment as the case may be; and
- despite the above, Council, from time to time and at any time, may enter into agreements providing for all or any part of a D.C. to be paid before or after it would otherwise be payable.

7.3.7 Indexing

Indexing of the D.C.s shall be implemented on a mandatory basis annually commencing on December 1, 2020 and each anniversary date thereafter, in accordance with the Statistics Canada Quarterly, Non-Residential Building Construction Price Index (Table 18-10-0135-01)¹ for the most recent year-over-year period. Previously, the Region indexed annually on January 1st, however, through joint meetings with the all the local area municipalities, a consensus was reached for all by-laws to be updated to reflect annual indexing on December 1st. This is to assist all municipalities with administration and provide the development community the time to adjust their proformas before the next building season.

7.3.8 The Applicable Areas

The charges developed herein provide for varying charges within the Region, as follows:

- All Municipal-wide Services (except for Transit services and Library services) – the full residential and non-residential charge will be imposed on all lands within the Region;
- Transit services – the full residential and non-residential charge will be imposed on all City lands within the Region;

¹ O.Reg. 82/98 referenced “The Statistics Canada Quarterly, Construction Price Statistics, catalogue number 62-007” as the index source. Since implementation, Statistics Canada has modified this index twice and the above-noted index is the most current. The draft by-law provided herein refers to O.Reg. 82/98 to ensure traceability should this index continue to be modified over time.



- Library services – the full residential and non-residential charge will be imposed on all Township lands within the Region;
- Water and Wastewater – the full residential and non-residential charge will be imposed on the urban service areas of the Region.

7.4 Other D.C. By-law Provisions

The following are provided for Council's consideration:

7.4.1 Categories of Services for Reserve Fund and Credit Purposes

The Region's D.C. collections are currently reserved in eleven separate reserve funds: Transportation, Operations, Police Services, Transit Services, Library Services, General Government, Paramedic Services, Airport, Waste Diversion, Water Services and Wastewater Services. Appendix D outlines the reserve fund policies that the Region is required to follow as per the D.C.A.

7.4.2 By-law In-force Date

A by-law under the D.C.A. comes into force on the day after which the by-law is passed by Council. The by-law will come into force on August 1, 2019.

7.4.3 Minimum Interest Rate Paid on Refunds and Charged for Inter-Reserve Fund Borrowing

The minimum interest rate is the Bank of Canada rate on the day on which the by-law comes into force (as per s.11 of O.Reg. 82/98).

7.4.4 Area Rating

As noted earlier, Bill 73 introduced two new sections where Council must consider the use of area specific charges:

1. Section 2(9) of the Act requires a municipality to implement area-specific D.C.s for either specific services which are prescribed and/or for specific municipalities which are to be regulated (note that at this time, no municipalities or services are prescribed by the Regulations).



2. Section 10(2)c.1 of the D.C.A. requires that “the development charges background study shall include consideration of the use of more than one development charge by-law to reflect different needs for services in different areas.”

In regard to the first item, there are no services or specific municipalities identified in the regulations which must be area-rated. The second item requires Council to consider the use of area-rating.

At present, the Region’s by-law does provide for area-rating with respect to water, wastewater, transit services, and library services:

- Water and wastewater services are recovered on the urban area of the Region only;
- Transit services are recovered from the Cities only within the Region based on service area; and
- Library services are recovered from Townships only within the Region as the Cities provide their own library services.

All other Region services are recovered based on a uniform, Region-wide basis. There have been several reasons why area rating has not been imposed on other services, including:

1. All Region services, with the exception of water and wastewater, require that the average 10-year service standard be calculated. This average service standard multiplied by growth in the Region, establishes an upper ceiling on the amount of funds which can be collected from all developing landowners. Section 4(4) of O. Reg. 82/98 provides that “...if a development charge by-law applies to a part of the municipality, the level of service and average level of service cannot exceed that which would be determined if the by-law applied to the whole municipality.” Put in layman terms, the average service standard multiplied by the growth within the specific area, would establish an area specific ceiling which would significantly reduce the total revenue recoverable for the Region hence potentially resulting in D.C. revenue shortfalls and impacts on property taxes.
2. Extending on item 1, attempting to impose an area charge potentially causes equity issues in transitioning from a Region-wide approach to an area specific approach. For example, if all services were now built (and funded) within area A



(which is 75% built out) and this was funded with some revenues from areas B and C, moving to an area rating approach would see Area A contribute no funds to the costs of services in Areas B & C. The development charges would be lower in Area A (as all services are now funded) and higher in B and C. As well, funding shortfalls may then potentially encourage the municipality to provide less services to B and C due to reduced revenue.

3. Many services which are provided (roads, paramedic services, airport, library) are not restricted to one specific area and are often used by all residents. For example, libraries located in different Townships can be used by residents from all Townships depending on the programming of the facility (i.e. a computer learning class is available each night, but at a different library; hence usage of any one facility at any given time is based on programming availability) or based on accessing specific collections housed at one particular library.

For the reasons noted above, the following D.C. approaches to calculate the charges on are as follows:

- An urban area only of the Region for water and wastewater;
- a Cities only for Transit services;
- a Townships only for library services; and
- a uniform Region-wide basis for all other services.

7.5 Other Recommendations

Council needs to consider policy matters in these areas:

“Whenever appropriate, request that grants, subsidies and other contributions be clearly designated by the donor as being to the benefit of existing development or new development, as applicable;”

“Adopt the assumptions contained herein as an ‘anticipation’ with respect to capital grants, subsidies and other contributions;”

“Continue the D.C. approach to calculate the charges on a uniform Municipal-wide basis for all services (except Transit, Library, Water, and Wastewater services);



“Continue the D.C. approach to calculate the Transit charges on a Cities only basis;”

“Continue the D.C. approach to calculate the Library charges on a Townships only basis;”

“Continue the D.C. approach to calculate the charges on a uniform urban-area basis for water and wastewater services;”

“Approve the capital project listing set out in Chapter 5 of the D.C.s Background Study dated April 23, 2019, subject to further annual review during the capital budget process;”

“Approve the D.C.s Background Study dated April 23, 2019, as amended (if applicable);”

“Determine that no further public meeting is required;”

“Approve the Local Service Policy as provided in Appendix E;” and

“Approve the D.C. By-law as provided under separate cover.”



Chapter 8

By-law Implementation



8. By-law Implementation

8.1 Public Consultation Process

8.1.1 Introduction

This chapter addresses the mandatory, formal public consultation process (Section 8.1.2), as well as the optional, informal consultation process (Section 8.1.3). The latter is designed to seek the co-operation and participation of those involved, in order to produce the most suitable policy. Section 8.1.4 addresses the anticipated impact of the D.C. on development from a generic viewpoint.

8.1.2 Public Meeting of Council

Section 12 of the D.C.A. indicates that before passing a D.C. by-law, Council must hold at least one public meeting, giving at least 20 clear days' notice thereof, in accordance with the Regulation. Council must also ensure that the proposed by-law and background report are made available to the public at least two weeks prior to the (first) meeting.

Any person who attends such a meeting may make representations related to the proposed by-law.

If a proposed by-law is changed following such a meeting, Council must determine whether a further meeting (under this section) is necessary (i.e. if the proposed by-law which is proposed for adoption has been changed in any respect, Council should formally consider whether an additional public meeting is required, incorporating this determination as part of the final by-law or associated resolution. It is noted that Council's decision, once made, is final and not subject to review by a Court or the Local Planning Appeal Tribunal (L.P.A.T.) (formerly the Ontario Municipal Board (O.M.B.)).

8.1.3 Other Consultation Activity

There are three broad groupings of the public who are generally the most concerned with Region D.C. policy:

1. The first grouping is the residential development community, consisting of land developers and builders, who are typically responsible for generating the majority



of the D.C. revenues. Others, such as realtors, are directly impacted by D.C. policy. They are, therefore, potentially interested in all aspects of the charge, particularly the quantum by unit type, projects to be funded by the D.C. and the timing thereof, and Region policy with respect to development agreements, D.C. credits and front-ending requirements.

2. The second public grouping embraces the public at large and includes taxpayer coalition groups and others interested in public policy.
3. The third grouping is the industrial/commercial/institutional development sector, consisting of land developers and major owners or organizations with significant construction plans, such as hotels, entertainment complexes, shopping centres, offices, industrial buildings and institutions. Also involved are organizations such as Industry Associations, the Chamber of Commerce, the Board of Trade and the Economic Development Agencies, who are all potentially interested in Region D.C. policy. Their primary concern is frequently with the quantum of the charge, gross floor area exclusions such as basements, mechanical or indoor parking areas, or exemptions and phase-in or capping provisions in order to moderate the impact.

8.2 Anticipated Impact of the Charge on Development

The establishment of sound D.C. policy often requires the achievement of an acceptable balance between two competing realities. The first is that high non-residential D.C.s can, to some degree, represent a barrier to increased economic activity and sustained industrial/commercial growth, particularly for capital intensive uses.

On the other hand, D.C.s or other Region capital funding sources need to be obtained in order to help ensure that the necessary infrastructure and amenities are installed. The timely installation of such works is a key initiative in providing adequate service levels and in facilitating strong economic growth, and investment.



8.3 Implementation Requirements

8.3.1 Introduction

Once the Region has calculated the charge, prepared the complete background study, carried out the public process and passed a new by-law, the emphasis shifts to implementation matters.

These include notices, potential appeals and complaints, credits, front-ending agreements, subdivision agreement conditions and finally the collection of revenues and funding of projects.

The sections which follow overview the requirements in each case.

8.3.2 Notice of Passage

In accordance with s.13 of the D.C.A., when a D.C. by-law is passed, the Region clerk shall give written notice of the passing and of the last day for appealing the by-law (the day that is 40 days after the day it was passed). Such notice must be given no later than 20 days after the day the by-law is passed (i.e. as of the day of newspaper publication or the mailing of the notice).

Section 10 of O.Reg. 82/98 further defines the notice requirements which are summarized as follows:

- notice may be given by publication in a newspaper which is (in the Clerk's opinion) of sufficient circulation to give the public reasonable notice, or by personal service, fax or mail to every owner of land in the area to which the by-law relates;
- s.s.10(4) lists the persons/organizations who must be given notice; and
- s.s.10(5) lists the eight items which the notice must cover.

8.3.3 By-law Pamphlet

In addition to the "notice" information, the Region must prepare a "pamphlet" explaining each D.C. by-law in force, setting out:

- a description of the general purpose of the D.C.s;



- the “rules” for determining if a charge is payable in a particular case and for determining the amount of the charge;
- the services to which the D.C.s relate; and
- a general description of the general purpose of the Treasurer’s statement and where it may be received by the public.

Where a by-law is not appealed to the L.P.A.T., the pamphlet must be readied within 60 days after the by-law comes into force. Later dates apply to appealed by-laws.

The Region must give one copy of the most recent pamphlet without charge, to any person who requests one.

8.3.4 Appeals

Sections 13 to 19 of the D.C.A. set out the requirements relative to making and processing a D.C. by-law appeal and L.P.A.T. Hearing in response to an appeal. Any person or organization may appeal a D.C. by-law to the L.P.A.T. by filing a notice of appeal with the Region clerk, setting out the objection to the by-law and the reasons supporting the objection. This must be done by the last day for appealing the by-law, which is 40 days after the by-law is passed.

The Region is carrying out a public consultation process, in order to address the issues that come forward as part of that process, thereby avoiding or reducing the need for an appeal to be made.

8.3.5 Complaints

A person required to pay a D.C., or his agent, may complain to the Region Council imposing the charge that:

- the amount of the charge was incorrectly determined;
- the reduction to be used against the D.C. was incorrectly determined; or
- there was an error in the application of the D.C.

Sections 20 to 25 of the D.C.A. set out the requirements that exist, including the fact that a complaint may not be made later than 90 days after a D.C. (or any part of it) is payable. A complainant may appeal the decision of Region Council to the L.P.A.T.



8.3.6 Credits

Sections 38 to 41 of the D.C.A. set out a number of credit requirements, which apply where a Region agrees to allow a person to perform work in the future that relates to a service in the D.C. by-law.

These credits would be used to reduce the amount of D.C.s to be paid. The value of the credit is limited to the reasonable cost of the work which does not exceed the average level of service. The credit applies only to the service to which the work relates, unless the Region agrees to expand the credit to other services for which a D.C. is payable.

8.3.7 Front-Ending Agreements

The Region and one or more landowners may enter into a front-ending agreement which provides for the costs of a project which will benefit an area in the Region to which the D.C. by-law applies. Such an agreement can provide for the costs to be borne by one or more parties to the agreement who are, in turn, reimbursed in future by persons who develop land defined in the agreement.

Part III of the D.C.A. (Sections 44 to 58) addresses front-ending agreements and removes some of the obstacles to their use which were contained in the D.C.A., 1989. Accordingly, the Region assesses whether this mechanism is appropriate for its use, as part of funding projects prior to Region funds being available.

8.3.8 Severance and Subdivision Agreement Conditions

Section 59 of the D.C.A. prevents a municipality from imposing directly or indirectly, a charge related to development or a requirement to construct a service related to development, by way of a condition or agreement under s.51 or s.53 of the Planning Act, except for:

- “local services, related to a plan of subdivision or within the area to which the plan relates, to be installed or paid for by the owner as a condition of approval under section 51 of the Planning Act;” and
- “local services to be installed or paid for by the owner as a condition of approval under section 53 of the Planning Act.”

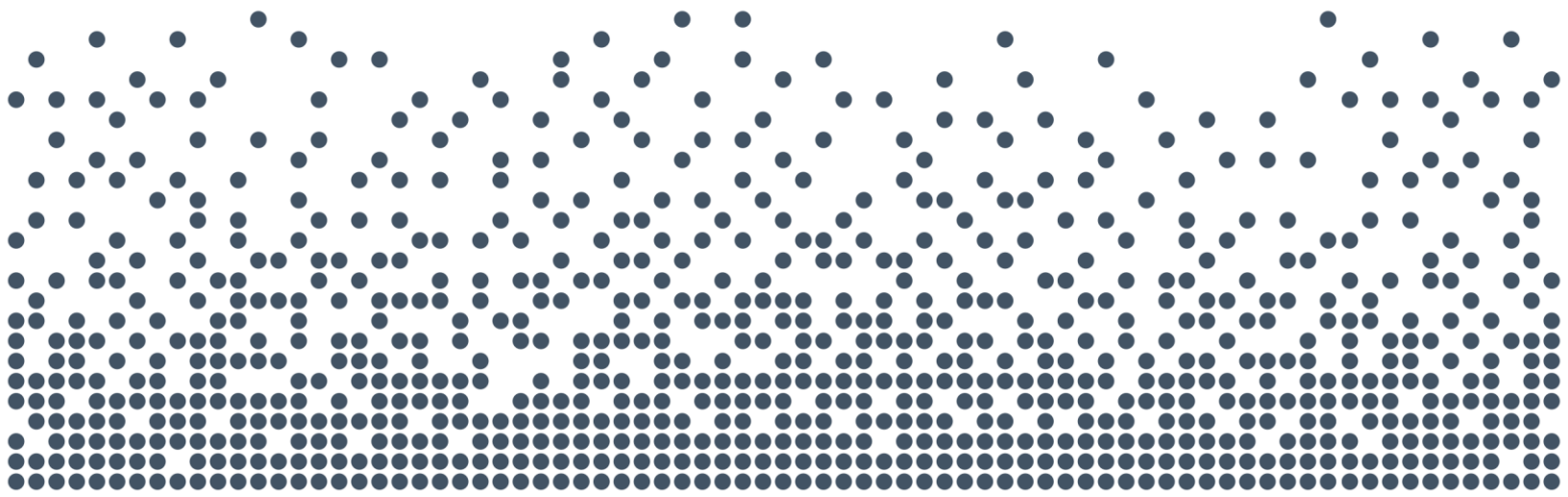


It is also noted that s.s.59(4) of the D.C.A. requires that the municipal approval authority for a draft plan of subdivision under s.s.51(31) of the Planning Act, use its power to impose conditions to ensure that the first purchaser of newly subdivided land is informed of all the D.C.s related to the development, at the time the land is transferred.

In this regard, if the Region in question is a commenting agency, in order to comply with subsection 59(4) of the D.C.A. it would need to provide to the approval authority, information regarding the applicable Region D.C.s related to the site.

If the Region is an approval authority for the purposes of section 51 of the Planning Act, it would be responsible to ensure that it collects information from all entities which can impose a D.C.

The most effective way to ensure that purchasers are aware of this condition would be to require it as a provision in a registered subdivision agreement, so that any purchaser of the property would be aware of the charges at the time the title was searched prior to closing a transaction conveying the lands.



Appendices



Appendix A

Background Information on Residential and Non- Residential Growth Forecast



Schedule 1 Region of Waterloo Residential Growth Forecast Summary

Year		Population (Including Census Undercount) ¹		Excluding Census Undercount					Housing Units					Person Per Unit (P.P.U.): Total Population/ Total Households	
		Population, excluding Off-Campus Students	Population, including Off-Campus Students ²	Population	Institutional Population	Population Excluding Institutional Population	Off-campus Students ²	Population Including Institutional and Off-Campus Students	Singles & Semi-Detached	Multiple Dwellings ³	Apartments & Other ⁴	Total Households	Off-Campus Student Housing (Non-Census)		Total Households, Including Off-Campus Student Housing
Historical	Mid 2006	497,250	516,210	478,121	7,286	470,835	18,960	497,081	113,822	17,991	46,491	178,303	4,800	183,103	2.682
	Mid 2011	527,380	551,989	507,096	7,486	499,610	24,609	531,705	122,310	20,240	49,045	191,595	6,230	197,825	2.647
	Mid 2016	556,560	585,198	535,154	7,814	527,340	28,638	563,792	126,400	22,640	54,795	203,835	7,250	211,085	2.625
Forecast	Mid 2019	577,460	606,169	555,253	8,789	546,464	28,709	583,962	129,300	24,725	60,257	214,282	7,280	221,562	2.591
	Mid 2029	652,000	681,077	626,923	11,751	615,172	29,077	656,000	139,795	30,641	77,278	247,714	7,437	255,151	2.531
Incremental	Mid 2006 - Mid 2011	30,130	35,779	28,975	200	28,775	5,649	34,624	8,488	2,249	2,554	13,292	1,430	14,722	
	Mid 2011 - Mid 2016	29,180	33,209	28,058	328	27,730	4,029	32,087	4,090	2,400	5,750	12,240	1,020	13,260	
	Mid 2016 - Mid 2019	20,900	20,971	20,099	975	19,124	72	20,171	2,900	2,085	5,462	10,447	30	10,477	
	Mid 2019 - Mid 2029	74,540	74,909	71,670	2,962	68,708	368	72,038	10,495	5,916	17,021	33,432	157	33,589	

Derived from forecasts prepared by the Region of Waterloo and summarized by Watson & Associates Economists Ltd., 2018.

¹ Census undercount estimated at approximately 4.0%. Note: Population including the undercount has been rounded.

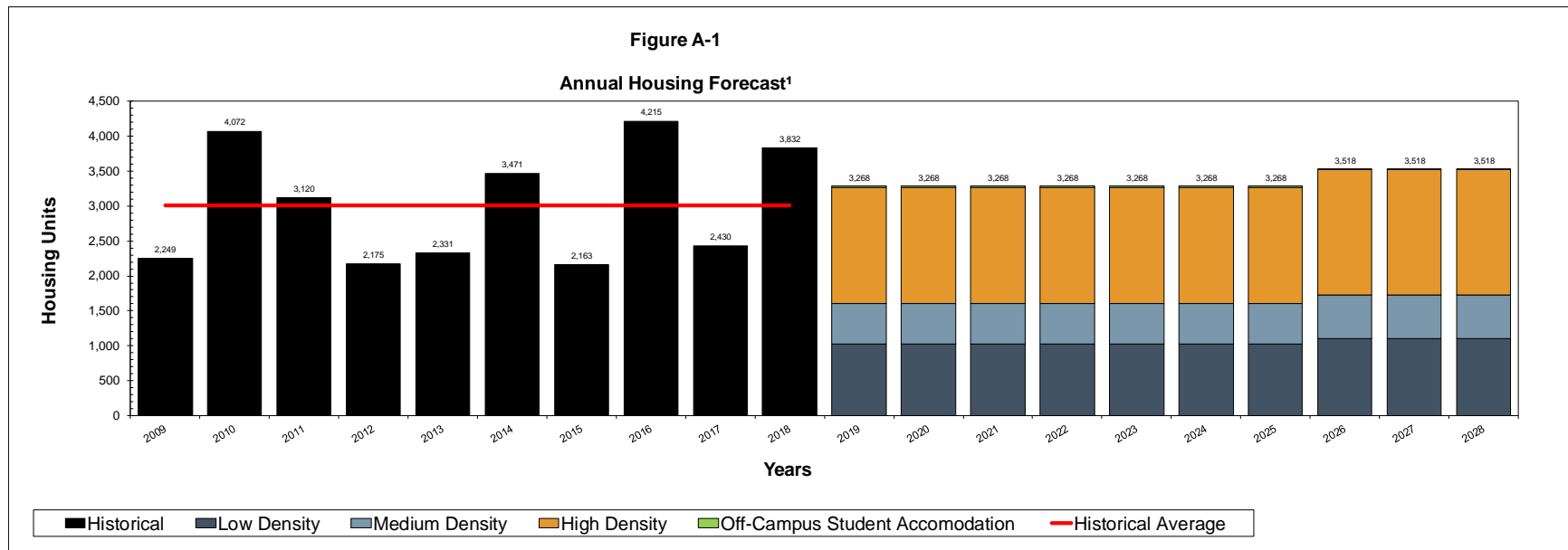
² Off-Campus students represent the net increase of post-secondary students who reside within Waterloo Region in off-campus housing.

³ Includes townhouses.

⁴ Includes apartments in duplexes, bachelor, 1-bedroom and 2-bedroom+ apartments.



Schedule 1 (continued)
Region of Waterloo
Residential Growth Forecast Summary



Source: Historical housing activity derived from data compiled by the Region of Waterloo.

1. Growth forecast represents calendar year.



Schedule 2a
Region of Waterloo
Townships and Cities

Estimate of the Anticipated Amount, Type and Location of Residential development for which Development Charges can be Imposed

Development Location	Timing	Residential Population Excluding Institutional & Off Campus Students					Institutional & Off Campus Population			Gross Population I=E+F+H	Net Population		
		A	B	C	D=A+B+C	E	Institutional F	Off Campus Students (not captured by census data) G	H		J	K=E+J	L=K+F+H
		Single & Semi-Detached (Units)	Multiples (Units) ¹	Apartments (Units) ²	Total Residential Units	Gross Population in New Units Excluding Institutional & Off Campus Students (People)	Institutional Population (People)	Off Campus Students Housing (Units)	Off Campus Students Population (People)	Gross Population Including Institutional & Off Campus Students (People)	Existing Unit Population Change (People)	Net Population Increase Excluding Institutional & Off Campus Students (People)	Net Population Including Institutional & Off Campus Students (People)
Cities ³	2019 - 2029	7,406	5,059	16,187	28,652	64,300	2,818	157	369	67,487	-7,114	57,186	60,373
Townships ⁴	2019 - 2029	3,089	857	834	4,780	12,367	144	0	0	12,511	-845	11,522	11,666
Region of Waterloo	2019 - 2029	10,495	5,916	17,021	33,432	76,667	2,962	157	369	79,998	-7,959	68,708	72,039

Source: Region-wide growth forecast derived from Region of Waterloo and summarized by Watson & Associates Economists Ltd. Growth forecast for Townships and Cities area prepared by Watson & Associates Economists Ltd. based on population growth forecasts prepared by the Region of Waterloo.

¹Includes townhouses.

²Includes accessory apartments, bachelor, 1-bedroom and 2-bedroom+ apartments and apartments in duplexes.

³PPU for Cities based on an average PPU of 3.291 for singles & semi-detached; an average PPU of 2.369 for multiples; and an average PPU of 1.726 for apartments.

⁴PPU for Townships based on an average PPU of 3.002 for singles & semi-detached; an average PPU of 2.369; and an average PPU of 1.276 for apartments.



Schedule 2b
Region of Waterloo
Services Areas

Estimate of the Anticipated Amount, Type and Location of Residential development for which Development Charges can be Imposed

Development Location	Timing	Residential Population Excluding Institutional & Off Campus Students					Institutional & Off Campus Population			Gross Population	Net Population		
		A	B	C	D=A+B+C	E	Institutional	Off Campus Students (not captured by census data)			I=E+F+H	J	K=E+J
		Single & Semi-Detached (Units)	Multiples (Units) ¹	Apartments (Units) ²	Total Residential Units	Gross Population in New Units Excluding Institutional & Off Campus Students (People)	Institutional Population (People)	Off Campus Students Housing (Units)	Off Campus Students Population (People)	Gross Population Including Institutional & Off Campus Students (People)	Existing Unit Population Change (People)	Net Population Increase Excluding Institutional & Off Campus Students (People)	Net Population Including Institutional & Off Campus Students (People)
Region-Wide 10-Year	2019 - 2029	10,495	5,916	17,021	33,432	76,667	2,962	157	369	79,998	-7,959	68,708	72,039
Region-Wide Longer Term	2019 - Service Capacity	22,468	12,373	36,829	71,670	164,112	6,516	345	811	171,439	-12,419	151,693	159,020
Urban Serviced Areas (Water/Wastewater)	2019 - Service Capacity	29,146	17,576	52,439	99,161	224,554	8,756	495	1,164	234,474	-15,820	208,734	218,654

Source: Region-wide growth forecast for the 10-year derived from Region of Waterloo and summarized by Watson & Associates Economists Ltd. Region-Wide Population and housing forecast for Region-Wide Longer Term based on forecast utilized in the Region's Transportation Master Plan. Population forecast for Urban Serviced Areas derived from the 2018 Wastewater Master Plan Study. Population capacity for water and wastewater service areas is assumed to be consistent between 2019 and 2051 (assumed service capacity). Housing forecast for Urban Serviced Areas derived by Watson & Associates Economists Ltd.

1. Includes townhouses.

2. Includes accessory apartments, bachelor, 1-bedroom and 2-bedroom+ apartments and apartments in duplexes.



Schedule 3
Region of Waterloo
Current Year Forecast
Mid 2016 to Mid 2019

		Population (including Off-Campus Students)
Mid 2016 Population		563,792
Occupants of New Housing Units, Mid 2016 to Mid 2019	<i>Units (2)</i>	10,447
	<i>multiplied by P.P.U. (3)</i>	2,392
	<i>gross population increase</i>	24,991
Occupants of New Equivalent Institutional/Bedroom Units, Mid 2016 to Mid 2019	<i>Units</i>	886
	<i>multiplied by P.P.U. (4)</i>	1,100
	<i>gross population increase</i>	975
Occupants of New Off-Campus Student Housing Units, Mid 2016 to Mid 2019	<i>Units</i>	30
	<i>multiplied by P.P.U. (5)</i>	2,350
	<i>gross population increase</i>	70
Decline in Housing Unit Occupancy, Mid 2016 to Mid 2019	<i>Units</i>	214,282
	<i>multiplied by P.P.U. decline rate (6)</i>	-0.027
	<i>total decline in population</i>	-5,866
Population Estimate to Mid 2019		583,962
<i>Net Population Increase, Mid 2016 to Mid 2019</i>		<i>20,171</i>

- (1) 2016 population based on Statistics Canada Census unadjusted for Census undercount. Population figures include students
(2) Estimated residential units constructed, Mid-2016 to the beginning of the growth period assuming a six-month lag between construction and occupancy.
(3) Average number of persons per unit (P.P.U.) is assumed to be:

Structural Type	Persons Per Unit ¹ (P.P.U.)	% Distribution of Estimated Units ²	Weighted Persons Per Unit Average
<i>Singles & Semi Detached</i>	3.439	28%	0.955
<i>Multiples (7)</i>	2.380	20%	0.475
<i>Apartments (8)</i>	1.841	52%	0.963
<i>Off-Campus Student Housing (9)</i>	2.350		
Total		100%	2.392

¹ Based on 2011 Census custom database

² Based on Building permit/completion activity

- (4) Unit/Bedroom Equivalent based on an estimate by Watson & Associates Economists Ltd.
(5) Off-campus student housing PPU derived from Region of Waterloo forecasts.
(6) Decline occurs due to aging of the population and family life cycle changes, lower fertility rates and changing economic conditions.
(7) Includes townhouses and apartments in duplexes.
(8) Includes bachelor, 1 bedroom and 2 bedroom+ apartments.
(9) Off-campus student housing PPU derived from Region of Waterloo forecasts.



Schedule 4
Region of Waterloo
Current Year Forecast
Mid 2019 to Mid 2029

		Population (including Off-Campus Students)
Mid 2019 Population		583,962
Occupants of New Housing Units, Mid 2019 to Mid 2029	<i>Units (2)</i>	33,432
	<i>multiplied by P.P.U. (3)</i>	2,293
	<i>gross population increase</i>	76,667
Occupants of New Equivalent Institutional/Bedroom Units, Mid 2019 to Mid 2029	<i>Units</i>	2,693
	<i>multiplied by P.P.U. (4)</i>	1,100
	<i>gross population increase</i>	2,962
Occupants of New Off-Campus Student Housing Units, Mid 2019 to Mid 2029	<i>Units</i>	157
	<i>multiplied by P.P.U. (5)</i>	2,350
	<i>gross population increase</i>	368
Decline in Housing Unit Occupancy, Mid 2019 to Mid 2029	<i>Units</i>	247,714
	<i>multiplied by P.P.U. decline rate (6)</i>	-0.032
	<i>total decline in population</i>	-7,959
Population Estimate to Mid 2029		656,000
<i>Net Population Increase, Mid 2019 to Mid 2029</i>		72,038

(1) Mid 2019 Population based on:

2016 Population (563,792) + Mid 2016 to Mid 2019 estimated housing units to beginning of forecast period (10,446 x 2.392 = 24,989) + estimated student housing units Mid 2016 to 2019 (30 x 2.350 = 71) + Mid 2016 to Mid 2019 growth in institutional equivalent units/bedrooms (887 x 1.10 = 975) + (214,281 x -0.0274 = -5,865) = 583,961

(2) Based upon forecast building permits/completions assuming a lag between construction and occupancy.

(3) Average number of persons per unit (p.p.u.) is assumed to be:

Structural Type	Persons Per Unit ¹ (P.P.U.)	% Distribution of Estimated Units ²	Weighted Persons Per Unit Average
<i>Singles & Semi Detached</i>	3.170	31%	0.995
<i>Multiples (7)</i>	2.369	18%	0.419
<i>Apartments (8)</i>	1.726	51%	0.879
	<i>one bedroom or less</i> 1.298		
	<i>two bedrooms or more</i> 2.097		
<i>Off-Campus Student Housing (9)</i>	2.350		
Total		100%	2.293

¹ Persons per unit based on adjusted Statistics Canada Custom 2011 Census database.

² Forecast unit mix based upon historical trends and housing units in the development process.

(4) Unit/Bedroom Equivalent based on an estimate by Watson & Associates Economists Ltd.

(5) Off-campus student housing PPU derived from Region of Waterloo forecasts.

(6) Decline occurs due to aging of the population and family life cycle changes, lower fertility rates and changing economic conditions.

(7) Includes townhouses and apartments in duplexes.

(8) Includes bachelor, 1 bedroom and 2 bedroom+ apartments.

(9) Off-campus student housing PPU derived from Region of Waterloo forecasts.



Schedule 5a
Region of Waterloo
2019 Employment Forecast

Period	Population ¹	Activity Rate						Employment					
		Industrial	Retail	Non-Retail Commercial	Institutional	Other ²	Total	Industrial	Retail	Non-Retail Commercial	Institutional	Other ²	Total
Mid 2006	478,121	0.189	0.100	0.088	0.085	0.080	0.542	90,500	47,640	42,220	40,850	38,100	259,310
Mid 2011	507,096	0.145	0.101	0.090	0.105	0.082	0.523	73,600	51,040	45,710	53,340	41,760	265,450
Mid 2016	535,154	0.126	0.100	0.095	0.107	0.088	0.515	67,435	53,375	50,785	57,210	47,060	275,865
Mid 2019	555,253	0.125	0.101	0.099	0.108	0.090	0.523	69,303	56,192	54,931	59,975	50,081	290,483
Mid 2029	626,923	0.117	0.093	0.101	0.111	0.096	0.518	73,281	58,489	63,333	69,553	60,152	324,809
Incremental Change													
Mid 2006 - Mid 2011	28,975	-0.0441	0.0010	0.0018	0.0197	0.0027	-0.0189	-16,900	3,400	3,490	12,490	3,660	6,140
Mid 2011 - Mid 2016	28,058	-0.0191	-0.0009	0.0048	0.0017	0.0056	-0.0080	-6,165	2,335	5,075	3,870	5,300	10,415
Mid 2016 - Mid 2019	20,099	-0.0012	0.0015	0.0040	0.0011	0.0023	0.0077	1,868	2,817	4,146	2,765	3,021	14,618
Mid 2019 - Mid 2029	71,670	-0.0079	-0.0079	0.0021	0.0029	0.0058	-0.0051	3,978	2,297	8,402	9,578	10,071	34,326
Annual Average													
Mid 2006 - Mid 2011	5,795	-0.0088	0.0002	0.0004	0.0039	0.0005	-0.0038	-3,380	680	698	2,498	732	1,228
Mid 2011 - Mid 2016	5,612	-0.0038	-0.0002	0.0010	0.0003	0.0011	-0.0016	-1,233	467	1,015	774	1,060	2,083
Mid 2016 - Mid 2019	6,700	-0.0004	0.0005	0.0013	0.0004	0.0008	0.0026	623	939	1,382	922	1,007	4,873
Mid 2019 - Mid 2029	7,167	-0.0008	-0.0008	0.0002	0.0003	0.0006	-0.0005	398	230	840	958	1,007	3,433

Derived from forecasts prepared by the Region of Waterloo and summarized by Watson & Associates Economists Ltd., 2018.

¹Excludes population undercount. Population undercount is approximately 4%.

²Other includes employment in the primary sector, work at home and no fixed place of work employment.



Schedule 5b
Region of Waterloo
Employment and Gross Floor Area (G.F.A.) Forecast, 2019 to 2029

Period	Population ¹	Employment						Gross Floor Area in Square Metres (Estimated) ³				
		Industrial	Retail	Non-Retail Commercial	Institutional	Other ²	Total	Industrial	Retail	Non-Retail Commercial	Institutional	Total
Mid 2006	478,121	90,500	47,640	42,220	40,850	38,100	259,310					
Mid 2011	507,096	73,600	51,040	45,710	53,340	41,760	265,450					
Mid 2016	535,154	67,435	53,375	50,785	57,210	47,060	275,865					
Mid 2019	555,253	69,303	56,192	54,931	59,975	50,081	290,483					
Mid 2029	626,923	73,281	58,489	63,333	69,553	60,152	324,809					
Incremental Change												
Mid 2006 - Mid 2011	28,975	-16,900	3,400	3,490	12,490	3,660	6,140					
Mid 2011 - Mid 2016	28,058	-6,165	2,335	5,075	3,870	5,300	10,415					
Mid 2016 - Mid 2019	20,099	1,868	2,817	4,146	2,765	3,021	14,618	179,633	138,033	178,278	138,261	634,204
Mid 2019 - Mid 2029	71,670	3,978	2,297	8,402	9,578	10,071	34,326	382,535	112,538	361,299	478,902	1,335,274
Annual Average												
Mid 2006 - Mid 2011	5,795	-3,380	680	698	2,498	732	1,228					
Mid 2011 - Mid 2016	5,612	-1,233	467	1,015	774	1,060	2,083					
Mid 2016 - Mid 2019	6,700	623	939	1,382	922	1,007	4,873	59,878	46,011	59,426	46,087	211,401
Mid 2019 - Mid 2029	7,167	398	230	840	958	1,007	3,433	38,253	11,254	36,130	47,890	133,527

Derived from forecasts prepared by the Region of Waterloo and summarized by Watson & Associates Economists Ltd., 2018.

¹Excludes population undercount. Population undercount is approximately 4%.

²Other includes employment in the primary sector, work at home and no fixed place of work employment.

³Square Metre Per Employee Assumptions

Industrial	96	(1,035 sq.ft)
Commercial (Retail & Non-Retail)	45	(485 sq.ft)
Retail	49	(525 sq.ft.)
Non-Retail Commercial	43	(460 sq. ft.)
Institutional	50	(540 sq.ft)



Schedule 5c
Region of Waterloo
Townships and Cities

Estimate of the Anticipated Amount, Type and Location of Non-Residential development for which Development Charges
can be Imposed

Development Location	Timing	G.F.A. Sq.m. ¹					Employment				
		Industrial	Retail	Non-Retail Commercial	Institutional	Total	Industrial	Retail	Non-Retail Commercial	Institutional	Employment Increase ²
Cities	2019 - 2029	250,296	77,404	316,767	451,666	1,096,132	2,792	1,683	7,542	9,054	21,071
Townships	2019 - 2029	132,239	35,134	44,532	27,236	239,141	1,186	614	860	524	3,184
Region of Waterloo	2019 - 2029	382,535	112,538	361,299	478,902	1,335,274	3,978	2,297	8,402	9,578	24,255

Source: Region-wide growth forecast derived from Region of Waterloo and summarized by Watson & Associates Economists Ltd. Growth forecast for Townships and Cities area prepared by Watson & Associates Economists Ltd. based on population growth forecasts prepared by the Region of Waterloo.

¹ Employment Increase does not include No Fixed Place of Work.

² Square metre per employee assumptions:

	Region Average	
	Sq.m.	Sq.ft.
Industrial	96	1,035
Commercial (Retail & Non-Retail)	45	485
Retail	49	525
Non-Retail Commercial	43	465
Institutional	50	540
Cities		
	Sq.m.	Sq.ft.
Industrial	90	965
Commercial (Retail & Non-Retail)	43	460
Retail	46	490
Non-Retail Commercial	42	450
Institutional	50	535
Townships		
	Sq.m.	Sq.ft.
Industrial	112	1,200
Commercial (Retail & Non-Retail)	54	580
Retail	57	614
Non-Retail Commercial	52	550
Institutional	52	560



Schedule 5d
Region of Waterloo
Serviced Areas

Estimate of the Anticipated Amount, Type and Location of Non-Residential development for which Development Charges can be Imposed

Development Location	Timing	G.F.A. Sq.m. ¹					Employment				
		Industrial	Retail	Non-Retail Commercial	Institutional	Total	Industrial	Retail	Non-Retail Commercial	Institutional	Employment Increase ²
Region-Wide 10-Year	2019 - 2029	382,535	112,538	361,299	478,902	1,335,274	3,978	2,297	8,402	9,578	24,255
Region-Wide Longer Term	2019 - Service Capacity	841,577	315,376	735,376	1,053,583	2,945,911	8,752	6,436	17,102	21,072	53,362
Urban Serviced Areas (Water/Wastewater)	2019 - Service Capacity	1,064,630	617,542	664,211	1,185,653	3,532,037	11,575	12,913	15,527	23,817	63,832

Source: Watson & Associates Economists Ltd.

Source: Region-wide growth forecast for the 10-year derived from Region of Waterloo and summarized by Watson & Associates Economists Ltd. Region-Wide Population and housing forecast for Region-Wide Longer Term based on forecast utilized in the Region's Transportation Master Plan. Employment forecast for Urban Serviced Areas based on population derived from the 2018 Wastewater Master Plan Study. Forecast by sector for Urban Serviced Areas derived by Watson & Associates Economists Ltd.

¹ Employment Increase does not include No Fixed Place of Work and Work at Home.

² Square metre per employee assumptions:

	Region Average	
	Sq.m.	Sq.ft.
Industrial	96	1,035
Commercial (Retail & Non-Retail)	45	485
Retail	49	525
Non-Retail Commercial	43	465
Institutional	50	540
Urban Serviced Area		
	Sq.m.	Sq.ft.
Industrial	92	990
Commercial (Retail & Non-Retail)	45	485
Retail	48	515
Non-Retail Commercial	43	460
Institutional	50	535

	Private Servicing Area	
	Sq.m.	Sq.ft.
Industrial	186	2,000
Commercial (Retail & Non-Retail)	69	750
Retail	70	755
Non-Retail Commercial	65	700
Institutional	74	800



Appendix B

Level of Service



**APPENDIX B - LEVEL OF SERVICE CEILING
REGION OF WATERLOO**

SUMMARY OF SERVICE STANDARDS AS PER DEVELOPMENT CHARGES ACT, 1997, AS AMENDED							
Service Category	Sub-Component	10 Year Average Service Standard					Maximum Ceiling LOS
		Cost (per capita)		Quantity (per capita)	Quality (per capita)		
Services Related to a Highway	Services Related to a Highway - Roads	\$6,293.20	0.0013	Centre Line km of roadways	4,840,923	per lane km	1,000,744,664
	Services Related to a Highway - Bridges, Culverts & Structures	\$1,063.60	0.1291	Square Metres of Bridges, Culverts & Structures	8,239	per item	169,133,672
	Services Related to a Highway - Sidewalks	\$246.70	0.0007	Linear km of sidewalks	352,429	per km	39,230,234
	Services Related to a Highway - Multi-use Trails	\$19.20	0.1431	Square metres of Multi-use Trails	134	per sq.m.	3,053,184
	Services Related to a Highway - Roundabouts	\$66.40	0.00004	Number of Roundabouts	1,702,564	per item	10,558,928
	Services Related to a Highway - Traffic Signals, Illumination & Oil Water Separators	\$121.20	0.0158	Number of Traffic Signals, Illumination & Oil Water Separators	7,671	per signal	19,273,224
	Services Related to a Highway - Guide Rails & Noise Walls	\$48.50	0.1617	Metres of Guide Rails, Guide Cables & Noise Walls	300	per lin m.	7,712,470
	Services Related to a Highway - Retaining Walls	\$15.70	0.0248	Square metres of Retaining Walls	633	per sq.m.	2,496,614
Operations	Operations - Facilities	\$137.37	0.4793	sq.ft. of building area	287	per sq.ft.	21,844,577
	Operations - Vehicles & Equipment	\$29.42	0.0002	No. of vehicles and equipment	147,100	per vehicle	4,678,368
Police	Police Facilities	\$257.85	0.5492	sq.ft. of building area	470	per sq.ft.	18,575,256
	Police Vehicles	\$28.97	0.0005	No. of vehicles and equipment	57,940	per vehicle	2,086,970
	Police Small Equipment and Gear	\$48.97	0.0043	No. of equipment and gear	11,388	per Officer	3,527,750
Airport	Airport Facilities	\$112.27	0.1451	sq.ft. of building area	774	per sq.ft.	8,087,819
	Other Airport Infrastructure	\$138.95	1.9970	No. of items, metres, or sq.m.	70	per item	10,009,819
	Airport Vehicles & Equipment	\$9.41	0.0001	No. of Vehicles and Equipment	72,385	per vehicle	677,887
Library	Library Facilities - Furnishings and Equipment Only for Libraries (excluding HQ)	\$61.73	0.4886	sq.ft. of building area	126	per sq.ft.	720,142
	Library Collection Materials	\$186.03	4.1975	No. of library collection items	44	per collection item	2,170,226
	Library Vehicles	\$0.81	0.0000	No. of library Vehicles	50,625	per vehicle	9,449
Paramedic Services	Paramedic Services - Facilities	\$52.08	0.0747	sq.ft. of building area	697	per sq.ft.	3,751,791
	Paramedic Services - Vehicles	\$9.15	0.0001	No. of vehicles and equipment	130,714	per vehicle	659,157
Waste Diversion	Waste Diversion - Facilities - Stations/Depots	\$95.23	0.6123	sq.ft. of building area	156	per sq.ft.	6,860,274
	Waste Diversion - Vehicles & Equipment	\$62.95	0.8190	No. of vehicles and equipment	77	per vehicle	4,534,855

Note: Transit Service Standard is now based on a forward looking ridership forecast and will be contained within the Transit section of the Background Study



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Services Related to a Highway - Roads
Unit Measure: Centre Line km of roadways

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Centre Lane km)
Rural:											
2 lane	409.7	405.6	405.0	402.8	402.8	402.8	395.8	391.2	389.0	389.0	\$1,990,000
3 lane	-	-	-	-	-	-	-	-	-	-	\$2,340,000
4 lane	3.6	3.3	3.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	\$2,750,000
2 lane + bike lane	13.5	16.9	17.1	13.4	13.4	13.4	18.0	25.8	28.0	28.0	\$2,110,000
4 lane + bike lane	-	-	-	0.7	0.7	0.7	0.7	0.7	0.7	0.7	\$2,920,000
Urban:											
1 lane	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	\$2,170,000
2 lane	109.8	114.6	114.4	115.9	115.6	112.1	110.3	98.0	94.4	94.4	\$2,570,000
3 lane	9.7	7.8	6.7	6.7	6.7	8.0	8.4	6.9	6.1	6.1	\$2,970,000
4 lane	99.5	101.3	99.5	101.7	101.7	103.5	98.7	101.9	99.5	99.5	\$3,370,000
5 lane	7.1	6.3	6.0	6.0	6.0	6.0	6.7	6.7	6.7	6.7	\$3,770,000
6 lane	3.6	4.1	3.9	3.9	3.9	3.9	3.5	3.6	3.6	3.6	\$4,160,000
2 lane + bike lane	20.1	22.9	21.0	22.0	22.4	23.6	26.8	30.3	37.0	37.0	\$2,800,000
3 lane + bike lane	1.1	1.1	2.7	3.4	3.4	3.4	3.4	3.4	3.4	3.4	\$3,240,000
4 lane + bike lane	18.4	18.4	22.0	25.0	25.0	27.1	31.7	35.1	35.1	35.1	\$3,670,000
Total Acres of Land	4,904.4	4,947.7	4,944.6	4,955.1	4,955.1	4,955.1	4,955.1	4,955.1	4,955.1	4,955.1	\$350,000
Total Centre Lane Km.	697.7	703.9	703.6	704.9	705.0	707.9	707.4	707.0	706.9	706.9	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.0014	0.0014	0.0013	0.0013	0.0013	0.0013	0.0013	0.0013	0.0012	0.0012

10 Year Average	2009-2018
Quantity Standard	0.0013
Quality Standard	\$4,840,923
Service Standard	\$6,293

D.C. Amount (before deductions)	Longer Term - Region Wide
Forecast Population	159,020
\$ per Capita	\$6,293
Eligible Amount	\$1,000,744,664



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Services Related to a Highway - Bridges, Culverts & Structures
Unit Measure: Square Metres of Bridges, Culverts & Structures

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/ sq.m.)
Bridges:											
Rigid	8,431	8,431	8,431	8,273	9,102	9,361	9,361	9,058	9,430	9,430	\$6,900
Arch Major	4,528	4,528	4,528	4,528	4,640	4,640	4,640	4,660	4,640	4,640	\$14,300
Girder	43,620	43,620	43,620	44,517	50,902	51,285	51,285	51,285	51,119	51,119	\$8,200
Pedestrian Bridges/Crossovers	-	-	-	-	-	-	-	-	56	56	\$900
Culverts:											
Rigid	3,438	4,027	4,027	4,384	7,779	6,910	6,910	7,497	7,259	7,259	\$8,400
Corrugated Steel Pipe - Major	430	1,638	1,898	1,898	1,898	1,090	1,090	2,006	2,006	2,006	\$1,300
Arch Minor	765	765	765	765	1,320	1,910	1,910	1,864	1,911	1,911	\$5,500
Total	61,212	63,009	63,269	64,365	75,641	75,196	75,196	76,370	76,421	76,421	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.119	0.121	0.119	0.120	0.139	0.137	0.135	0.136	0.133	0.132

10 Year Average	2009-2018
Quantity Standard	0.1291
Quality Standard	\$8,239
Service Standard	\$1,064

D.C. Amount (before deductions)	Longer Term - Region Wide
Forecast Population	159,020
\$ per Capita	\$1,064
Eligible Amount	\$169,133,672



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Services Related to a Highway - Sidewalks
Unit Measure: Linear km of sidewalks

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/ Linear km)
Sidewalks (Based on Avg. 1.8m width)	340	343	346	359	360	368	374	385	402	434	\$364,000
Total	340	343	346	359	360	368	374	385	402	434	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0008

10 Year Average	2009-2018
Quantity Standard	0.0007
Quality Standard	\$352,429
Service Standard	\$247

D.C. Amount (before deductions)	Longer Term - Region Wide
Forecast Population	159,020
\$ per Capita	\$247
Eligible Amount	\$39,230,234



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Services Related to a Highway - Multi-use Trails
Unit Measure: Square metres of Multi-use Trails

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/ sq.m.)
Multi-use Trails (based on Avg. 3m width)	48,578	54,298	54,298	62,192	63,902	66,302	66,518	117,179	129,125	129,174	\$133
Total	48,578	54,298	54,298	62,192	63,902	66,302	66,518	117,179	129,125	129,174	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.094	0.104	0.102	0.116	0.118	0.121	0.120	0.208	0.225	0.224

10 Year Average	2009-2018
Quantity Standard	0.1431
Quality Standard	\$134
Service Standard	\$19

D.C. Amount (before deductions)	Longer Term - Region Wide
Forecast Population	159,020
\$ per Capita	\$19
Eligible Amount	\$3,053,184



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Services Related to a Highway - Roundabouts
Unit Measure: Number of Roundabouts

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/item)
1 lane	4	4	4	4	4	4	4	4	4	6	\$1,020,000
2 lane	9	11	12	14	15	15	15	25	26	28	\$1,840,000
3 lane	-	-	-	-	-	-	-	-	2	2	\$2,960,000
Total	13	15	16	18	19	19	19	29	32	36	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.00003	0.00003	0.00003	0.00003	0.00004	0.00004	0.00003	0.00005	0.00006	0.00006

10 Year Average	2009-2018
Quantity Standard	0.000039
Quality Standard	\$1,702,564
Service Standard	\$66

	Longer Term - Region Wide
D.C. Amount (before deductions)	
Forecast Population	159,020
\$ per Capita	\$66
Eligible Amount	\$10,558,928



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Services Related to a Highway - Traffic Signals, Illumination & Oil Water Separators
Unit Measure: Number of Traffic Signals, Illumination & Oil Water Separators

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/item)
Traffic Signals:											
Intersection Signals	450	451	450	453	452	452	452	452	452	463	\$97,000
Intersection Pedestrian Signals	13	14	15	15	15	15	15	15	15	16	\$85,000
Midblock Pedestrian Signals	14	14	14	14	26	26	26	26	26	26	\$85,000
Illumination:											
Total	7,944	7,982	7,897	8,031	8,106	8,106	8,106	8,106	8,106	8,860	\$2,200
Oil Water Separators:											
Total	23	27	31	31	31	31	31	31	31	36	\$41,000
Pedestrian Facilities:											
Level 1 Pedestrian Crossovers	2	2	2	2	2	2	2	2	2	2	\$51,000
Level 2 Pedestrian Crossovers	-	-	-	-	-	-	-	-	-	3	\$15,000
Total	8,446	8,490	8,409	8,546	8,632	8,632	8,632	8,632	8,632	9,406	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.0164	0.0163	0.0158	0.0159	0.0159	0.0157	0.0155	0.0153	0.0151	0.0163

10 Year Average	2009-2018
Quantity Standard	0.0158
Quality Standard	\$7,671
Service Standard	\$121

	Longer Term - Region Wide
D.C. Amount (before deductions)	
Forecast Population	159,020
\$ per Capita	\$121
Eligible Amount	\$19,273,224



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Services Related to a Highway - Guide Rails & Noise Walls
Unit Measure: Metres of Guide Rails, Guide Cables & Noise Walls

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/ Linear Metre)
Guide Rails	24,921	24,921	25,044	26,107	26,739	26,739	26,739	26,739	30,155	33,628	\$201
Noise Walls	14,090	14,521	14,521	15,096	17,408	17,717	18,139	18,139	18,077	18,077	\$1,170
Guide Cables	44,716	44,716	44,716	44,716	44,716	44,716	44,716	44,716	44,716	44,716	\$38
Total	83,727	84,158	84,281	85,919	88,863	89,172	89,594	89,594	92,948	96,421	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.1622	0.1615	0.1585	0.1595	0.1636	0.1627	0.1609	0.1589	0.1621	0.1669

10 Year Average	2009-2018
Quantity Standard	0.1617
Quality Standard	\$300
Service Standard	\$49

D.C. Amount (before deductions)	Longer Term - Region Wide
Forecast Population	159,020
\$ per Capita	\$49
Eligible Amount	\$7,712,470



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Services Related to a Highway - Retaining Walls
Unit Measure: Square metres of Retaining Walls

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/ sq.m.)
Retaining Walls	13,137	13,137	12,281	12,742	13,433	13,471	13,222	13,332	13,434	17,489	\$629
Total	13,137	13,137	12,281	12,742	13,433	13,471	13,222	13,332	13,434	17,489	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.0254	0.0252	0.0231	0.0237	0.0247	0.0246	0.0238	0.0236	0.0234	0.0303

10 Year Average	2009-2018
Quantity Standard	0.0248
Quality Standard	\$633
Service Standard	\$16

D.C. Amount (before deductions)	Longer Term - Region Wide
Forecast Population	159,020
\$ per Capita	\$16
Eligible Amount	\$2,496,614



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Operations - Facilities
Unit Measure: sq.ft. of building area

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Building Value (\$/sq.ft.)	Value/sq.ft. with land, site works, etc.
Regional Operations Centre	117,095	117,095	117,095	117,095	117,095	117,095	117,095	117,095	117,095	117,095	\$219	\$328
Various Outside Storage Facilities (incl. Cold Storage, Volatile Storage, and Covered Storage Buildings) & Voice Radio Building	14,908	14,908	14,908	14,908	14,908	14,908	14,908	14,908	14,908	14,908	\$178	\$221
Salt Dome	6,972	6,972	6,972	6,972	6,972	6,972	6,972	6,972	6,972	6,972	\$16	\$43
Truck Wash/Salt Storage	21,313	21,313	21,313	21,313	21,313	21,313	21,313	21,313	21,313	21,313	\$164	\$206
150 Frederick St.	44,276	44,276	44,276	44,276	44,276	44,276	44,276	44,276	44,276	44,276	\$332	\$383
20 Weber St./ 50 Queen	9,183	9,183	9,183	9,183	9,183	9,183	9,183	9,183	9,183	9,183	\$406	\$406
Rural Yards:												
Heidelberg Yard	9,819	9,819	9,819	9,819	9,819	9,819	9,819	9,819	9,819	9,819	\$192	\$276
Heidelberg Equipment Storage	5,092	5,092	5,092	5,092	5,092	5,092	5,092	5,092	5,092	5,092	\$108	\$183
North Dumfries Yard	4,250	4,250	4,250	4,250	4,250	4,250	4,250	4,250	4,250	4,250	\$92	\$148
Phillipsburg Yard	9,931	9,931	9,931	9,931	9,931	9,931	9,931	9,931	9,931	9,931	\$194	\$256
Elmira Salt Dome	7,605	7,605	7,605	7,605	7,605	7,605	7,605	7,605	7,605	7,605	\$27	\$39
Heidelberg Salt Dome	4,164	4,164	4,164	4,164	4,164	4,164	4,164	4,164	4,164	4,164	\$49	\$118
North Dumfries Salt Dome	4,205	4,205	4,205	4,205	4,205	4,205	-	-	-	-	\$42	\$42
Phillipsburg Salt Dome	4,640	4,640	4,640	4,640	4,640	4,640	4,640	4,640	4,640	4,640	\$44	\$57
Total	263,452	263,452	263,452	263,452	263,452	263,452	259,247	259,247	259,247	259,247		

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.5103	0.5056	0.4955	0.4891	0.4851	0.4805	0.4657	0.4598	0.4521	0.4488

10 Year Average	2009-2018
Quantity Standard	0.4793
Quality Standard	\$287
Service Standard	\$137

D.C. Amount (before deductions)	Longer Term - Region Wide
Forecast Population	159,020
\$ per Capita	\$137
Eligible Amount	\$21,844,577



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Operations - Vehicles & Equipment
Unit Measure: No. of vehicles and equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Vehicle)
Operations Centre:											
Vehicles Service Utility	2	2	2	2	2	1	1	1	1	-	\$133,000
Vehicles Service Utility (With Crane)	-	-	-	-	-	-	-	-	-	1	\$161,000
Vehicles Service Utility	-	-	-	-	-	1	1	1	1	1	\$90,000
Vehicles 4x4	1	1	1	1	1	1	1	1	1	1	\$46,000
4x4 Pickups	5	5	5	5	5	5	5	5	5	4	\$30,000
1/2 Ton	1	1	1	1	1	1	1	1	1	3	\$35,000
3/4 Ton	3	3	3	3	3	3	3	3	3	1	\$35,000
Cars	4	4	5	5	5	5	5	5	5	5	\$25,000
Ford Econ Transconnect (FM at OPS)	1	1	1	1	1	1	1	1	1	1	\$40,000
Transportation - Roads:											
1/2 Ton Pickups	13	13	13	13	12	12	12	12	12	12	\$38,000
3/4 Ton Pickups (Stake & Flatbed Trucks)	3	3	3	3	3	3	3	3	3	3	\$43,000
Concrete Truck	1	1	1	1	1	1	1	1	-	-	\$92,000
Vacuum Sweeper	2	2	2	2	2	2	2	2	2	2	\$335,000
Dump Trucks - 1 ton	5	5	5	5	5	5	5	5	5	5	\$110,000
Dump Trucks - Ubody	18	18	18	18	18	18	18	18	18	18	\$380,000
Graders	2	2	2	2	2	2	2	2	2	2	\$350,000
Backhoes	2	2	2	2	2	2	2	2	2	1	\$138,000
Loaders	3	3	4	4	3	3	3	3	3	3	\$219,000
Tractors	5	5	4	4	4	4	4	4	4	4	\$185,000
Van	1	1	1	1	1	1	1	1	1	1	\$40,000
Transportation - Traffic:											
1/2 Ton Pickups	1	3	3	3	3	3	3	3	3	3	\$38,000
3/4 Ton Pickups	3	1	1	1	1	1	1	1	1	1	\$63,000
Van	5	5	5	5	5	5	5	5	5	5	\$75,000
Aerial	4	4	4	4	4	4	4	4	4	4	\$277,000
Sign Truck	3	3	3	2	2	2	2	2	2	2	\$208,000
Centre Liner	1	1	1	1	1	1	1	1	1	1	\$519,000



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Operations - Vehicles & Equipment
Unit Measure: No. of vehicles and equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Vehicle)
Equipment:											
Light Hoists in ground (including installation cost)	4	4	4	4	4	4	4	4	4	4	\$31,000
Med Hoists above ground (including installation cost)	3	3	3	3	3	3	3	3	3	3	\$23,000
Heavy Hoists (including installation cost)	5	5	5	5	5	5	5	5	5	5	\$58,000
Overhead crane at OPS		1	1	1	1	1	1	1	1	1	\$115,000
Tire Changer (1) (Hunter)	1	1	1	1	1	1	1	1	1	1	\$32,000
Tire Changer (2) (Coates)	1	1	1	1	1	1	1	1	1	1	\$32,000
Env. Parts Washers	1	1	1	1	1	1	1	1	1	1	\$9,400
Car Wheel Balancer	1	1	1	1	1	1	1	1	1	1	\$10,000
Tester	1	1	1	1	1	1	1	1	1	-	\$7,100
Portable Grease Equipment	1	1	1	1	1	1	1	1	1	1	\$7,500
Anti-Freeze Recycling Equipment	1	1	1	1	1	1	1	1	1	-	\$5,900
A/C Fluid Recycling Equipment	1	1	1	1	1	1	1	1	1	1	\$11,800
Brake Motor Lathe	1	1	1	1	1	1	1	1	1	1	\$12,700
Monitor/Scope Scan Tools	1	1	1	1	1	1	1	1	1	1	\$17,700
Fleet Maintenance System	1	1	1	1	1	1	1	1	1	1	\$231,000
Emission Testing Equipment	1	1	1	1	1	1	1	1	1	-	\$24,000
OPS Zoom Boom (FM at OPS)	1	1	1	1	1	1	1	1	1	-	\$69,000
275 KW Standby generator (FM at OPS)	1	1	1	1	1	1	1	1	1	1	\$178,000
275 KW Standby generator (FM at OPS)	1	1	1	1	1	1	1	1	1	1	\$178,000
Kubota Mower (FM at OPS)	1	1	1	1	1	1	1	1	1	1	\$46,000
Total	117	118	119	118	116	116	116	116	115	109	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002

10 Year Average	2009-2018
Quantity Standard	0.0002
Quality Standard	\$147,100
Service Standard	\$29

D.C. Amount (before deductions)	Longer Term - Region Wide
Forecast Population	159,020
\$ per Capita	\$29
Eligible Amount	\$4,678,368



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Police Facilities
Unit Measure: ft² of building area

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Building Value (\$/sq.ft.)	Value/ft ² with land, site works, etc.
Police Headquarters	103,538	103,538	103,538	103,538	103,538	103,538	106,304	106,304	106,304	106,304	\$426	\$470
Police Reporting Centre	9,264	9,264	9,264	9,264	9,264	9,264	9,264	9,264	9,264	9,264	\$250	\$294
Central Division, Kitchener, including Annex	42,096	42,096	42,096	42,096	42,096	42,096	42,096	42,096	42,096	42,096	\$506	\$579
South Division, Cambridge	24,966	24,966	24,966	24,966	24,966	24,966	24,966	24,966	24,966	24,966	\$359	\$730
North Division, Waterloo	30,000	30,000	30,000	30,000	-	-	-	-	-	-	\$391	\$668
New North Division, Waterloo	-	-	-	-	50,183	50,183	50,183	50,183	50,183	50,183	\$346	\$547
New North Division, Waterloo - 2 Floor Parking Deck	-	-	-	-	50,581	50,581	50,581	50,581	50,581	50,581	\$61	\$145
Division 1A, New Hamburg	1,352	1,352	1,352	1,352	1,352	1,352	1,352	1,352	1,352	1,352	\$684	\$742
Division 3A, Elmira (leased facility)	2,720	2,720	2,720	2,720	2,720	2,720	2,720	2,720	2,720	2,720	\$389	\$405
Firearms Training Facility	9,576	9,576	9,576	9,576	9,576	9,576	9,576	9,576	9,576	9,576	\$442	\$486
Investigative Services Unit	32,453	32,453	32,453	32,453	32,453	32,453	32,453	32,453	32,453	44,649	\$275	\$319
Emergency Training Centre	-	-	-	-	-	900	900	900	900	900	\$532	\$548
Total	255,965	255,965	255,965	255,965	326,729	327,629	330,395	330,395	330,395	342,591		

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.4958	0.4912	0.4814	0.4752	0.6016	0.5976	0.5935	0.5860	0.5762	0.5931

10 Year Average	2009-2018
Quantity Standard	0.5492
Quality Standard	470
Service Standard	\$258

D.C. Amount (before deductions)	10 Year - Region Wide
Forecast Population	72,039
\$ per Capita	\$258
Eligible Amount	\$18,575,256



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Police Vehicles
Unit Measure: No. of vehicles and equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Vehicle)
Marked Cruisers	115	118	125	131	135	135	135	137	139	141	\$60,500
Motorcycles	9	9	9	9	9	9	9	9	9	9	\$37,600
Unmarked Cruisers	119	119	119	119	119	135	140	146	146	156	\$48,000
Command Vehicle	1	1	1	1	1	1	1	1	1	1	\$500,000
Armoured Rescue Vehicle	-	-	-	-	-	-	1	1	1	1	\$350,000
Ident Vans	4	4	4	4	4	4	4	4	4	4	\$105,000
Prisoner Transport Vans	4	4	5	5	5	5	5	5	5	5	\$45,000
Total	252	255	263	269	273	289	295	303	305	317	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005

10 Year Average	2009-2018
Quantity Standard	0.0005
Quality Standard	\$57,940
Service Standard	\$29

D.C. Amount (before deductions)	10 Year - Region Wide
Forecast Population	72,039
\$ per Capita	\$29
Eligible Amount	\$2,086,970



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Police Small Equipment and Gear
Unit Measure: No. of equipment and gear

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/item)
Radios (portable)	533	596	660	652	644	635	636	636	636	636	\$8,500
Pistols	761	761	800	830	782	762	745	777	779	797	\$700
Gear for Sworn Officers	709	730	740	778	776	771	775	777	783	774	\$3,700
Gear for Special Constables	41	43	45	45	58	63	68	67	66	65	\$3,300
Gear for Auxiliary & Cadets	73	73	55	67	77	65	90	95	99	91	\$3,100
C-8 Carbine Rifles	-	-	17	59	57	57	57	57	57	57	\$3,300
Software RMS Niche	1	1	1	1	1	1	1	1	1	1	\$1,200,000
Software Switching	1	1	1	1	1	1	1	1	1	1	\$823,500
Uninterrupted Power System	1	1	1	1	1	1	1	1	1	1	\$220,000
Private Branch Exchange	1	1	1	1	1	1	1	1	1	1	\$1,500,000
Bomb Robot & Disposal Portable X-Ray	1	1	1	1	1	1	1	1	1	1	\$245,000
Dispatch System	1	1	1	1	1	1	1	1	1	1	\$800,000
Forensic Lab Equipment	1	1	1	1	1	1	1	1	1	1	\$28,140
Software CAD - Computer Aided Dispatch	1	1	1	1	1	1	1	1	1	1	\$2,645,000
Traffic Equipment	1	1	1	1	1	1	1	1	1	1	\$378,580
Specialized Rifles (Specialized Response Unit)	-	-	-	-	-	-	-	5	5	5	\$45,000
Voice Radio Infrastructure	1	1	1	1	1	1	1	1	1	1	\$9,606,600
Total	2,127	2,213	2,327	2,441	2,404	2,363	2,381	2,424	2,435	2,435	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.0041	0.0042	0.0044	0.0045	0.0044	0.0043	0.0043	0.0043	0.0042	0.0042

10 Year Average	2009-2018
Quantity Standard	0.0043
Quality Standard	\$11,388
Service Standard	\$49

D.C. Amount (before deductions)	10 Year - Region
Forecast Population	72,039
\$ per Capita	\$49
Eligible Amount	\$3,527,750



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Airport Facilities
Unit Measure: sq.ft. of building area

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Building Value (\$/sq.ft.)	Value/ft ² with FFE, site works, etc.
Terminal Buildings (Bldg. 544) incl. Baggage Handling System	31,398	31,398	31,398	31,398	31,398	31,398	31,398	31,398	31,398	31,398	\$339	\$339
Hangar 5 (Bldg. 538)	8,058	8,058	8,058	8,058	8,058	8,058	8,058	8,058	8,058	8,058	\$246	\$246
Maintenance Garage (Bldg. 542)	7,680	7,680	7,680	7,680	7,680	7,680	7,680	7,680	7,680	7,680	\$246	\$246
Electronics Centre Firehall (Bldg. 537)	3,332	3,332	3,332	3,332	3,332	3,332	3,332	3,332	3,332	3,332	\$246	\$246
Sand Storage (Bldg. 523)	4,520	4,520	4,520	4,520	4,520	4,520	4,520	4,520	4,520	4,520	\$247	\$247
Airport Operations Centre (Bldg. 541)	-	-	28,178	28,178	28,178	28,178	28,178	28,178	28,178	28,178	\$474	\$474
Cement Storage (Bldg. 2100)	-	-	-	-	-	-	-	-	1,720	1,720	\$54	\$54
Hagey House with Garage (Bldg. 2110)	-	-	-	-	-	-	-	-	-	4,730	\$245	\$245
Hagey Driving Shed/Workshop (Bldg.)	-	-	-	-	-	-	-	-	-	3,200	\$75	\$75
Hangar 9	-	-	-	-	-	-	-	-	-	10,000	\$90	\$90
Total Land (ha)	357.7	357.7	395.2	395.2	395.2	395.2	395.2	396.0	415.0	472.9	\$86,000	\$86,000
Total sq.ft. of Facilities	54,988	54,988	83,166	83,166	83,166	83,166	83,166	83,166	84,886	102,816		

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.1065	0.1055	0.1564	0.1544	0.1531	0.1517	0.1494	0.1475	0.1480	0.1780

10 Year Average	2009-2018
Quantity Standard	0.1451
Quality Standard	\$774
Service Standard	\$112

D.C. Amount (before deductions)	10 Year - Region Wide
Forecast Population	72,039
\$ per Capita	\$112
Eligible Amount	\$8,087,819



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Airport Vehicles & Equipment
Unit Measure: No. of Vehicles and Equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Vehicle)
Beacon	1	1	1	1	1	1	1	1	1	1	\$7,500
Emergency Generators											
EPU # 3 CUMMINS LIQUID COOLED 250 KW GENERATOR 600V 3 PH (FAC?)	1	1	1	1	1	1	1	1	1	1	\$71,400
EPU # 1 LISTER AIR COOLED 30 KW GENERATOR 120/ 240V	1	1	1	1	1	1	1	1	1	1	\$25,500
HOMELIGHT - 4500W GENERATOR	1	1	1	1	1	1	1	1	1	1	\$1,000
EPU # 2 SOMMERS LIQUID COOLED 100 KW GENERATOR 600V 3 PH (FAC?)	1	1	1	1	1	1	1	1	1	1	\$45,900
Equipment											
60" ADJUSTABLE FORKS C/W CRAIG QUICK ATTACH for # 126	1	1	1	1	1	1	1	1	1	1	\$8,200
60" ADJUSTABLE FORKS C/W CRAIG QUICK ATTACH FOR # 125	1	1	1	1	1	1	1	1	1	-	\$8,200
VIKING U DUMP REAR PREWET SANDING MOUNTED ON # 96	1	1	1	1	1	1	1	1	1	1	\$49,000
VIKING 20 FT RUNWAY PLOW MOUNTED ON # 96	1	1	1	1	1	1	1	1	1	1	\$30,600
20 FT 3 SECTION LAWN ROLLER	1	1	1	1	1	1	1	1	1	1	\$5,100
HONDA 5000W GENERATOR (ACQUIRED FROM ROADS)	1	1	1	1	1	1	1	1	1	1	\$3,100
MONROE MINI SAND/SALT SPREADER FOR # 83	1	1	1	1	1	1	1	1	1	1	\$8,200
STIHL MODEL FS85 - GRASS TRIMMER	1	1	1	1	1	1	1	1	1	0	\$600
STIHL MS 270 CHAINSAW	1	1	1	1	1	1	1	1	1	1	\$800
STIHL 034 CHAINSAW	1	1	1	1	1	1	1	1	1	1	\$800
ELECTRONIC RUNWAY SURFACE / AIRSIDE INSPECTION SYSTEM	1	1	1	1	0	0	0	0	0	0	\$25,500
ELECTRONIC AIRSIDE INSPECTION SYSTEM	1	1	1	1	0	0	0	0	0	0	\$43,900
12 FT KONGSKILDE MODEL S2919 SPRING TOOTH HARROW	1	1	1	1	1	1	1	0	0	0	\$1,000
STIHL MOD # BACKPAC BLOWER	1	1	1	1	1	1	0	0	0	0	\$800



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Airport Vehicles & Equipment
Unit Measure: No. of Vehicles and Equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Vehicle)
DECELOMETER W/TOUCH SCREEN PACKAGE	1	1	1	1	1	1	1	1	1	1	\$25,000
STIHL MODEL FS110RX - GRASS TRIMMER - SN #269941159	1	1	1	1	1	1	1	1	1	1	\$400
STIHL MODEL FS100RX - GRASS TRIMMER	1	1	1	1	1	1	1	1	1	1	\$400
STIHL SH55 VAC / BLOWER - SN# 273532462	1	1	1	1	1	1	1	1	1	1	\$200
Millermatic 251 MIG Welder 200V	1	1	1	1	1	1	1	1	1	1	\$2,300
STIHL MODEL FS 100RX - GRASS TRIMMER	1	1	1	1	1	1	1	1	1	1	\$600
Fuel System (part of T2010-123)	1	1	1	1	1	1	1	1	1	1	\$259,700
Hotsy Pressure Washer	-	-	1	1	1	1	1	1	1	1	\$6,100
2002 EPOKE SIRIUS SH3500 SPREADER 5 m3 (acquired used from roads)	-	-	-	1	1	1	1	1	1	1	\$5,100
STIHL MS 441 CHAINSAW	-	-	-	1	1	1	1	1	1	1	\$800
Decelerometer (ACAP)	-	-	-	-	-	1	1	1	1	1	\$5,100
Toughbook with sensors (ACAP)	-	-	-	-	-	1	1	1	1	1	\$3,600
Security Cameras	-	-	-	-	-	-	1	1	1	1	\$190,200
Security Cameras (Parking Lot & ATC Tower)	-	-	-	-	-	-	-	-	1	1	\$30,100
FRINK ONE WAY PLOW C/W CRAIG QUICK ATTACH FOR # 126	1	1	1	1	1	1	1	1	1	1	\$10,200
FRINK 10 FT REVERSABLE PLOW AND WING FOR # 97	1	0	0	0	0	0	0	0	0	0	\$10,200
6 FT 3 PT HITCH SCRAPER BLADE	1	1	1	1	1	1	1	1	1	1	\$1,000
GREEN MACHINE MODEL 3000P - GRASS TRIMMER	1	1	1	1	1	1	1	0	0	0	\$600
INTERNATIONAL MODEL 420 3 FURROW 3 PT HITCH FARM PLOW	1	0	0	0	0	0	0	0	0	0	\$3,100
9 FT FARM DISC PULL TYPE	1	0	0	0	0	0	0	0	0	0	\$1,500
VENTURE MODEL SK-200 SPRAYER 200 GAL	1	1	1	1	1	1	1	1	1	-	\$4,600
FRINK 20 FT RAMP HOG C/W CRAIG QUICK ATTACH FOR # 126	1	1	1	1	1	1	1	1	1	1	\$12,200



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Airport Vehicles & Equipment
Unit Measure: No. of Vehicles and Equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Vehicle)
GILL 7 FT LANDSCAPERS BOX 3 PT HITCH	1	0	0	0	0	0	0	0	0	0	\$4,600
FRINK 14 FT REVERSABLE PLOW AND WING FOR # 102	1	1	1	1	1	1	1	0	0	0	\$16,300
HUSQVARNA MODEL 125RD - GRASS TRIMMER	1	1	1	1	1	1	0	0	0	0	\$600
FRINK TWO WAY DUMP BOX MOUNTED ON # 97	1	1	-	-	-	-	-	-	-	-	\$30,600
FRINK TWO WAY DUMP BOX MOUNTED ON # 102	1	1	1	1	1	1	1	0	0	0	\$30,600
DECELOMETER	1	1	1	1	1	0	0	0	0	0	\$8,200
WESTERN MVP PLOW MOUNTED ON # 82	1	1	-	-	-	-	-	-	-	-	\$5,600
Airport Fire											
500LB SKIDMOUNT DRY CHEMICAL FIRE EXTINGUISHER	1	1	1	1	1	1	1	1	1	1	\$24,500
1986 E-ONE AIRCRAFT RESCUE FIRE VEHICLE	1	1	1	1	1	1	1	1	1	1	\$163,200
2010 OSHKOSH T-1500 AIRCRAFT RESCUE FIRE VEHICLE	-	1	1	1	1	1	1	1	1	1	\$854,200
4 SCBA 13 BOTTLES	-	13	13	13	13	13	13	13	13	13	\$36,700
BUNKER GEAR 10 sets	-	10	10	10	10	10	10	10	10	10	\$30,600
HOLMATRO EXTRICATION EQUIPMENT	-	-	-	1	1	1	1	1	1	1	\$12,200
STIHL GAS SAW	-	-	-	1	1	1	1	1	1	1	\$1,200
POSITIVE PRESSURE GAS FAN	-	-	-	1	1	1	1	1	1	1	\$2,600
Airport Fleet											
1991 35,000 GVW FORD SINGLE AXLE DUMP TRUCK (ROAD #1236)	1	1	-	-	-	-	-	-	-	-	\$20,400
2003 GMC MINI VAN	1	1	1	1	1	1	1	1	1	1	\$25,500
2003 35,000 GVW STERLING SINGLE AXLE DUMP TRUCK(14' blade/wing)	1	1	1	1	1	1	1	1	1	1	\$214,400
2004 3/4 TON FORD PICKUP 4WD	1	1	1	1	1	1	1	1	1	1	\$32,600
1994 35,000 GVW FORD SINGLE AXLE DUMP TRUCK (ROAD #1240)	1	1	1	1	1	1	1	-	-	-	\$20,400
2000 1/2 TON FORD PICK-UP (FAC #5152)	1	1	1	1	-	-	-	-	-	-	\$32,600



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Airport Vehicles & Equipment
Unit Measure: No. of Vehicles and Equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Vehicle)
KUBOTA RTV 900W6-A UTILITY VEHICLE - SN #A71074762 (LAB UNIT # 8888)	1	1	1	1	1	1	1	1	1	1	\$20,400
KUBOTA RTV 900W6-A UTILITY VEHICLE - SN #212290	1	1	1	1	1	1	1	1	1	1	\$17,300
TMX-150 AIRCRAFT TOW TRACTOR	1	1	1	1	1	1	1	1	1	1	\$142,700
2009 Chev Colarado 4x4 4Door	1	1	1	1	1	1	1	1	1	1	\$29,600
Tyler TAD 1750 Runway Deicer w reel and boom system	1	1	1	1	1	1	1	1	1	1	\$138,800
2010 Dodge Extended Cab 4x4 1500 Ram Quad Cab (fleet rental)	-	1	1	1	1	1	1	1	1	1	\$24,300
2010 Dodge R2500 Regular Cab 4x4 (monroe sander, sno-way blade)	-	1	1	1	1	1	1	1	1	1	\$28,900
2009 VOLVO 42B200 SINGLE AXLE DUMP TRUCK (20' viking blade)	-	1	1	1	1	1	1	1	1	1	\$123,100
UTILITY INITIAL RESPONSE COVERED TRAILER 7000 LB GVW (LAB Unit # xxxx)	-	1	1	1	1	1	1	1	1	1	\$9,200
UTILITY TRAILER	-	1	1	1	1	1	1	1	1	1	\$2,700
Honda WT20X 2" TRASH PUMP	-	1	1	1	1	1	1	1	1	1	\$1,700
UTILITY TRAILER (CONVERTED TO MARKETING FLOAT)	-	-	1	1	1	1	1	1	1	1	\$5,100
2012 Chev 1500 Silverado ext cab	-	-	-	1	1	1	1	1	1	1	\$22,400
2013 WESTERN STAR 4700SB 45,000 GVW SINGLE AXLE DUMP TRUCK (20' viking)	-	-	-	-	1	1	1	1	1	1	\$122,400
Line Lazer HS200 walk behind paint striper	-	-	-	-	-	-	-	-	1	1	\$15,700
1965 CJ5 FIRE JEEP C/W 350 LB DRY CHEMICAL	1	1	1	1	1	1	1	1	1	1	\$5,100
UTILITY TRAILER 3500 LB GVW	1	1	1	1	1	1	1	1	1	1	\$2,600
UTILITY TRAILER GENERATOR 700 LB GVW	1	1	1	1	1	1	1	1	1	1	\$700
UTILITY TRAILER INITIAL RESPONSE 700 LB GVW	1	1	1	1	1	1	1	1	1	-	\$700



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Airport Vehicles & Equipment
Unit Measure: No. of Vehicles and Equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Vehicle)
1998 1/2 TON FORD EXTENDED CAB PICKUP	1	1	1	-	-	-	-	-	-	-	\$31,100
1999 64,000 GVW STERLING TANDAN AXLE DUMP TRUCK(20' viking blade)	1	1	1	1	1	1	1	1	1	1	\$137,700
Lighting											
Airport Lighting Control System (ALCS)	1	1	1	1	1	1	1	1	1	1	\$23,800
Flood Lights	-	-	-	-	-	-	-	-	-	-	\$0
Loaders											
John Deere 624k Rubber Tire Loader	1	1	1	1	1	1	1	1	1	1	\$191,300
BOBCAT SKIDSTEER LOADER(snowblower,sweeper,brushcutter ,screener,snow bucket)	1	1	1	1	1	1	1	1	1	1	\$44,900
1979 3 1/2 YD 4X4 CATERPILLAR 950 RUBBER TIRE LOADER	-	-	-	-	-	-	-	-	-	-	\$61,200
Mowers											
16 FT BUSH HOG MODEL # BAT WING PULL TYPE ROTARY MOWER	1	1	1	1	1	1	1	1	1	1	\$18,400
8 FT BUSH HOG MODEL # PULL TYPE ROTARY MOWER	1	1	1	1	1	1	1	1	1	1	\$9,200
2006 JOHN DEERE 60" HD BROOM - FOR MOWER #156	1	1	1	1	1	1	1	1	1	-	\$7,700
2006 JOHN DEERE 47" SNOWBLOWER - FOR MOWER #156	1	1	1	1	1	1	1	1	1	-	\$6,500
LILLISTON MODEL 7 - SIX PULL TYPE 96" ROTARY MOWER	1	1	1	1	1	-	-	-	-	-	\$2,600
TORO 20062 LAWNMOWER - SN# 270003498	1	1	1	1	1	1	1	1	1	1	\$800
Parking											
Parking System	-	-	-	-	1	1	1	1	1	1	\$644,200
Parking System	-	-	-	-	-	-	-	-	1	1	\$48,500
Snow Blowers											
2005 3000 TN/HR OSHKOSH H SERIES SNOWBLOWER	1	1	1	1	1	1	1	1	1	1	\$571,200



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Airport Vehicles & Equipment
Unit Measure: No. of Vehicles and Equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Vehicle)
HONDA MODEL HS1132TCS WALK BEHIND SNOWBLOWER	1	1	1	1	1	1	1	1	1	1	\$4,100
2012 Ja LaRue loader mount snowblower 1800 tn/hr	-	-	-	1	1	1	1	1	1	1	\$124,400
1996 1800 TN/HR TENCO LOADER MOUNT SNOWBLOWER	1	1	1	-	-	-	-	-	-	-	\$112,200
Tractors											
2003 FORD 90 HP AGRICULTURAL TRACTOR (3 pc. Tiger flail mowers)	1	1	1	1	1	1	1	1	1	1	\$118,300
2007 TV 145 FORD BI-DIRECTIONAL - RUS055455(16' sweeper, 16' snow blade)	1	1	1	1	1	1	1	1	1	1	\$104,000
KUBOTA FRONT MOUNT ROTARY MOWER w/ sweeper, plow, blower, snow blower	-	-	-	-	-	-	-	-	1	1	\$61,700
1987 CASE 485 42 HP AGRICULTURAL TRACTOR	1	1	1	1	1	1	1	1	1	1	\$35,700
Total	50	76	73	76	77	75	74	70	72	68	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.00010	0.00015	0.00014	0.00014	0.00014	0.00014	0.00013	0.00012	0.00013	0.00012

10 Year Average	2009-2018
Quantity Standard	0.00013
Quality Standard	\$72,385
Service Standard	\$9

D.C. Amount (before deductions)	10 Year - Region Wide
Forecast Population	72,039
\$ per Capita	\$9
Eligible Amount	\$677,887



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Other Airport Infrastructure
Unit Measure: No. of items, metres, or sq.m.

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/item/m/m2)
Pavement (Runways, Taxiways, Aprons, Roads, Parking Lots) (m2)	688,584	830,272	939,682	981,126	981,466	981,466	981,466	988,618	1,008,034	1,008,034	\$31
Drainage (each)	322	347	351	359	359	359	359	377	395	395	\$15,950
Drainage (metres)	27,579	29,759	31,240	32,321	32,321	32,321	32,321	33,436	34,007	34,007	\$450
Drainage (sq. metres)	21,635	21,635	21,635	21,635	21,635	21,635	21,635	21,635	21,635	21,635	\$54
Lighting & Electrical Systems (each)	1,036	1,181	1,220	1,344	1,374	1,374	1,374	1,375	1,427	1,427	\$4,397
Lighting & Electrical Systems (metres)	55,528	61,316	64,206	80,815	81,184	81,184	81,184	81,184	83,985	83,985	\$55
Fencing & Security Gates (metres)	17,889	18,426	19,037	21,036	21,754	21,754	21,755	22,025	22,037	22,037	\$210
Water Pipeline System (each)	41	41	51	122	122	122	122	122	161	161	\$10,050
Water Pipeline System (metres)	2,598	2,598	4,023	5,996	5,996	5,996	5,996	5,996	6,523	6,523	\$1,670
Sewer Pipeline System (each)	21	21	26	42	42	42	42	42	42	42	\$11,650
Sewer Pipeline System (metres)	1,588	1,588	2,951	4,467	4,467	4,467	4,467	4,467	4,986	4,986	\$330
Total	814,223	964,586	1,080,399	1,143,267	1,144,724	1,144,724	1,144,725	1,153,280	1,176,709	1,176,709	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	1.5770	1.8510	2.0320	2.1226	2.1079	2.0880	2.0562	2.0456	2.0521	2.0371

10 Year Average	2009-2018
Quantity Standard	1.9970
Quality Standard	\$70
Service Standard	\$139

D.C. Amount (before deductions)	10 Year - Region Wide
Forecast Population	72,039
\$ per Capita	\$139
Eligible Amount	\$10,009,819



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Library Facilities - Furnishings and Equipment Only for Libraries (excluding HQ)
Unit Measure: sq.ft. of building area

Description	Address	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Building Value (\$/sq.ft.)	Total Value/sq.ft.
Regional Library Headquarters	2017 Nafziger Rd., Baden	5,076	5,076	5,076	5,076	5,076	5,076	5,076	5,076	5,076	6,196	\$335	\$488
Ayr Branch	137 Stanley St., Ayr	7,654	7,654	7,654	7,654	7,654	7,654	7,654	7,654	7,654	7,654	\$46	\$46
Baden Branch	115 Snyder's Rd. E., Baden	1,858	1,858	1,858	1,858	1,858	1,858	1,858	1,858	1,858	1,858	\$62	\$62
Bloomington Branch	860 Sawmill Rd. E., Bloomington	530	530	530	530	530	530	530	530	530	530	\$94	\$94
Elmira Branch	65 Arthur St. S., Elmira	4,250	4,250	4,250	4,250	4,250	4,250	4,250	4,250	4,250	4,250	\$52	\$52
Linwood Branch	5279 Ament Line, Linwood	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300	\$50	\$50
New Dundee Branch	1176 Queen St., New Dundee	820	820	820	820	820	1,720	1,720	1,720	1,720	1,720	\$43	\$43
New Hamburg Branch	145 Huron St., New Hamburg	3,627	3,627	3,627	3,627	3,627	3,627	3,627	3,627	3,627	3,627	\$56	\$56
St. Clements Branch	3605 Lobsinger Line, St. Clements	1,391	1,391	1,391	1,391	1,391	1,391	1,391	1,391	1,391	1,391	\$56	\$56
St. Jacobs Branch	29 Queensway Dr., St. Jacobs	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	1,470	\$66	\$66
Wellesley Branch	1137 Henry St., Wellesley	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	1,742	\$76	\$76
Total		30,718	30,718	30,718	30,718	30,718	31,618	31,618	31,618	31,618	32,738		

Population	59,412	60,760	62,108	62,885	63,661	64,438	65,214	65,991	67,481	68,970
Per Capita Standard	0.5170	0.5056	0.4946	0.4885	0.4825	0.4907	0.4848	0.4791	0.4685	0.4747

10 Year Average	2009-2018
Quantity Standard	0.4886
Quality Standard	\$126
Service Standard	\$62

D.C. Amount (before deductions)	10 Year - Townships
Forecast Population (Townships)	11,666
\$ per Capita	\$62
Eligible Amount	\$720,142



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Library Collection Materials
Unit Measure: No. of library collection items

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/item)
English Print Volumes Held	165,939	179,774	199,825	179,317	152,091	149,077	150,941	149,715	143,135	145,658	\$30
French Print Volumes Held	718	749	811	973	906	949	954	1,009	1,012	1,044	\$30
Other Print Volumes Held	51	51	44	-	3	2	49	139	101	101	\$30
English CD & DVD Copies	10,720	13,955	15,257	16,693	16,623	17,277	17,283	18,015	18,221	18,587	\$30
French CD & DVD Copies	-	18	26	14	20	21	25	402	402	404	\$30
Other CD & DVD Copies	-	-	-	-	-	2	72	91	67	67	\$30
English E-book & E-audio Copies	-	-	38,857	47,154	94,609	152,559	45,911	43,554	49,145	51,495	\$30
French E-book & E-audio Copies	-	-	43	49	203	190	292	320	237	220	\$30
Other E-book & E-audio Copies	-	-	53	95	331	103	465	423	379	380	\$30
English Special Collections - Digital Format	-	-	-	-	-	-	-	804	800	800	\$30
English Print Periodicals Held	7,276	7,276	7,276	7,276	7,276	7,276	7,276	7,276	7,276	7,276	\$10
English - Electronic Periodicals Titles	20,062	20,245	21,388	45,148	45,829	51,785	49,032	8,613	10,004	10,004	\$157
French - Electronic Periodicals Titles	23	23	71	75	179	210	190	62	67	67	\$157
Other - Electronic Periodicals Titles	-	-	-	-	82	137	107	338	704	704	\$157
English Databases & Database Subscriptions	27	27	14	12	24	25	21	15	16	16	\$3,440
French Databases & Database Subscriptions	-	-	1	1	5	9	7	8	4	4	\$3,440
Other Databases & Database Subscriptions	-	-	-	-	4	4	4	8	4	4	\$3,440
Public Access Workstations	44	54	54	54	54	52	52	52	52	52	\$1,100
Automated Catalogue System	1	1	1	1	1	1	1	1	1	1	\$28,300
Other digital equipment	917	917	917	917	917	917	917	917	917	917	\$225
Total	205,778	223,090	284,638	297,779	319,157	380,596	273,599	231,762	232,544	237,801	

Population	59,412	60,760	62,108	62,885	63,661	64,438	65,214	65,991	67,481	68,970
Per Capita Standard	3.46	3.67	4.58	4.74	5.01	5.91	4.20	3.51	3.45	3.45

10 Year Average	2009-2018
Quantity Standard	4.1975
Quality Standard	\$44
Service Standard	\$186

D.C. Amount (before deductions)	10 Year - Townships
Forecast Population (Townships)	11,666
\$ per Capita	\$186
Eligible Amount	\$2,170,226



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Library Vehicles
Unit Measure: No. of library Vehicles

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/vehicle)
Library Sprinter Van	1	1	1	1	1	1	1	1	1	1	\$51,500
Total	1	1	1	1	1	1	1	1	1	1	

Population	59,412	60,760	62,108	62,885	63,661	64,438	65,214	65,991	67,481	68,970
Per Capita Standard	0.000017	0.000016	0.000016	0.000016	0.000016	0.000016	0.000015	0.000015	0.000015	0.000014

10 Year Average	2009-2018
Quantity Standard	0.000016
Quality Standard	\$50,625
Service Standard	\$1

D.C. Amount (before deductions)	10 Year - Townships
Forecast Population (Townships)	11,666
\$ per Capita	\$1
Eligible Amount	\$9,449



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Paramedic Services - Facilities
Unit Measure: sq.ft. of building area

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Building Value (\$/sq.ft.)	Value/sq.ft. with land, site works, etc.
St. Jacobs	1,707	1,707	1,707	1,707	1,707	1,707	1,707	1,707	1,707	1,707	\$535	\$680
St. Andrews, Cambridge	1,587	1,587	1,587	1,587	1,587	1,587	1,587	1,587	1,587	1,587	\$535	\$721
Franklin/Ottawa, Kitchener	1,721	1,721	1,721	1,721	1,721	1,721	1,721	1,721	1,721	1,721	\$535	\$1,030
South Division/Headquarters	21,037	21,037	21,037	24,391	24,391	24,391	24,391	24,391	24,391	24,391	\$535	\$659
Forest Hill/Queen Boulevard	1,157	1,157	1,157	1,157	1,157	1,157	1,157	1,157	1,157	1,157	\$535	\$978
Struck Cr., Cambridge	2,102	2,102	2,102	-	-	-	-	-	-	-	\$535	\$692
Baden	1,412	1,412	1,412	1,412	1,412	1,412	-	-	-	-	\$535	\$796
Westmount	2,439	2,439	2,439	2,439	2,439	2,439	2,439	2,439	2,439	2,439	\$535	\$697
Victoria - Temporary Kitchener Downtown	-	2,100	2,100	2,100	2,100	-	-	-	-	-	\$535	\$813
Conestoga College (incl. meetings rooms)	-	-	2,805	2,805	2,805	2,805	2,805	2,805	2,805	2,805	\$535	\$750
Pinebush, Cambridge (leased space, incl meeting rooms)	-	-	-	3,188	3,188	3,188	3,188	3,188	3,188	3,188	\$535	\$657
82010 Philipsburg (Nafziger Rd)	-	-	-	-	-	-	1,674	1,674	1,674	1,674	\$856	\$856
Breslau (Beacon Pt Crt)/Fire Dept (Woolwich)	-	-	-	-	-	-	-	-	-	2,500	\$500	\$568
82016 Kitchener Downtown (Weber/Water)	-	-	-	-	-	2,422	2,422	2,422	2,422	2,422	\$394	\$451
Total	33,162	35,262	38,067	42,507	42,507	42,829	43,091	43,091	43,091	45,591		

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.0642	0.0677	0.0716	0.0789	0.0783	0.0781	0.0774	0.0764	0.0751	0.0789

10 Year Average	2009-2018
Quantity Standard	0.0747
Quality Standard	\$697
Service Standard	\$52

D.C. Amount (before deductions)	10 Year - Region Wide
Forecast Population	72,039
\$ per Capita	\$52
Eligible Amount	\$3,751,791



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Paramedic Services - Vehicles
Unit Measure: No. of vehicles and equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Vehicle)
Ambulances	18	20	21	21	22	23	25	28	31	35	\$170,000
Emergency Response Unit	4	5	5	5	5	5	6	6	7	8	\$81,000
Emergency Response Support Unit	1	1	1	1	1	1	1	1	1	1	\$160,000
Utility/Fleet Van	1	1	1	1	1	1	1	1	1	1	\$50,000
Trailer	4	4	4	4	4	4	4	4	4	4	\$25,000
Trailer - generator	1	1	1	1	1	1	1	1	1	1	\$30,000
Admin Vehicles - Cars	2	2	2	2	2	2	2	2	2	2	\$40,000
Admin Vehicles - SUVs	-	-	-	-	-	-	-	-	-	2	\$57,000
Total	31	34	35	35	36	37	40	43	47	54	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.00006	0.00007	0.00007	0.00006	0.00007	0.00007	0.00007	0.00008	0.00008	0.00009

10 Year Average	2009-2018
Quantity Standard	0.00007
Quality Standard	\$130,714
Service Standard	\$9

D.C. Amount (before deductions)	10 Year - Region Wide
Forecast Population	72,039
\$ per Capita	\$9
Eligible Amount	\$659,157



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Paramedic Services - Equipment & Gear
Unit Measure: No. of vehicles and equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Item)
EMS Responders Gear											
Defibrillators	19	19	20	20	23	24	31	34	38	43	\$30,000
Respirators - FIT	2	2	2	2	2	2	2	2	2	2	\$18,900
Servers	4	4	4	4	4	4	4	4	4	4	\$14,100
Stretchers	24	24	24	24	24	25	26	30	33	37	\$40,000
Drug Dispensing Units	4	4	4	4	4	4	4	4	4	4	\$51,000
Pooled Equipment - Helmets	240	240	240	240	240	240	240	240	240	240	\$500
Total	293	293	294	294	297	299	307	314	321	330	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.00057	0.00056	0.00055	0.00055	0.00055	0.00055	0.00055	0.00056	0.00056	0.00057

10 Year Average	2009-2018
Quantity Standard	0.00056
Quality Standard	\$7,518
Service Standard	\$4

D.C. Amount (before deductions)	10 Year - Region Wide
Forecast Population	72,039
\$ per Capita	\$4
Eligible Amount	\$303,284



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Waste Diversion - Facilities - Stations/Depots
Unit Measure: sq.ft. of building area

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Building Value (\$/sq.ft.)	Value/sq.ft. with land, site works, etc.
Site 1 - Cambridge												
Compost and Organics Receiving (Paved Area)	180,700	180,700	180,700	180,700	180,700	180,700	180,700	180,700	180,700	180,700	\$4	\$4
Compost and Organics Receiving (Building)	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	1,300	\$14	\$15
Waste Transfer Station (30% diversion portion only)	7,144	7,144	7,144	7,144	7,144	7,144	7,144	7,144	7,144	7,144	\$213	\$235
Scales (Paved Area) (30% diversion portion only)	11,109	11,109	11,109	11,109	11,109	11,109	11,109	11,109	11,109	11,109	\$12	\$13
Scales (Building) (30% diversion portion only)	291	291	291	291	291	291	291	291	291	291	\$14	\$15
Household Hazardous Waste (100% diversion)	-	-	-	-	-	-	27,000	27,000	27,000	27,000	\$70	\$77
Land (Ha)	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	\$495,000	\$495,000
Site 2 - Waterloo												
Main Scales (Paved Area) (36% diversion portion only)	-	-	15,829	15,829	15,829	15,829	15,829	15,829	15,829	15,829	\$13	\$14
Main Scales (Building) (36% diversion portion only)	-	-	59	59	59	59	59	59	59	59	\$14	\$15
Administration Building (70% diversion portion only)	5,520	5,520	5,520	5,520	5,520	5,520	5,520	5,520	5,520	5,520	\$338	\$373
Education Centre (50% diversion portion only)	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	1,725	\$67	\$74
Materials Recycling Centre (100% diversion)	61,862	61,862	61,862	61,862	61,862	61,862	61,862	61,862	61,862	61,862	\$321	\$354
Small Vehicle Transfer Station/Gate Scales (36% diversion portion only)	394	394	394	394	394	394	394	394	394	394	\$143	\$158
Household Hazardous Waste	1,216	1,216	1,216	1,216	1,216	1,216	1,216	1,216	1,216	1,216	\$185	\$204
Green Bin Storage Bunkers	-	-	-	-	2,067	2,067	2,067	2,067	2,067	2,067	\$137	\$151
Land (Ha)	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	\$480,000	\$480,000
Third Party Green Bin Facilities												
Contracted Organics Processing Facilities	16,673	25,827	31,737	30,190	29,973	29,077	31,457	34,550	70,910	80,000	\$204	\$225
Land (Ha)	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.9	1.0	\$495,000	\$495,000



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Waste Diversion - Facilities - Stations/Depots
Unit Measure: ft² of building area

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Building Value (\$/sq.ft.)	Value/ft ² with land, site works, etc.
20 Weber St. (and previous 50 Queen) (office 30% diversion staff)	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	1,656	\$406	\$406
Total Building Area	289,590	298,744	320,542	318,995	320,845	319,949	349,329	352,422	388,782	397,872		
Percentage attributable to Eligible Portion	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Total Eligible Portion of Facilities	289,590	298,744	320,542	318,995	320,845	319,949	349,329	352,422	388,782	397,872		

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.5609	0.5733	0.6029	0.5922	0.5908	0.5836	0.6275	0.6251	0.6780	0.6888

10 Year Average	2009-2018
Quantity Standard	0.6123
Quality Standard	\$156
Service Standard	\$95

D.C. Amount (before deductions)	10 Year - Region Wide
Forecast Population	72,039
\$ per Capita	\$95
Eligible Amount	\$6,860,274



**Region of Waterloo
Service Standard Calculation Sheet**

Service: Waste Diversion - Vehicles & Equipment
Unit Measure: No. of vehicles and equipment

Description	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 Value (\$/Vehicle / Equipment)
Trucks (Contract - Cities) 80% of 64 trucks	52	54	56	55	57	57	58	58	51	51	\$247,000
Trucks (Contract - Townships) 80% of 15 trucks	11	11	12	11	12	12	12	12	12	12	\$398,000
Highway Tractors (Contract)	3	3	3	3	3	3	3	3	3	3	\$187,000
Cambridge (Loader #3565, 3563, 3567) (two are 100% related to diversion)	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	2.0	2.0	\$459,000
Waterloo 3 loaders 80% diversion Cambridge 3 loaders 67% diversion	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	\$459,000
3 Roll off trucks Cambridge and Waterloo - 15% diversion	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	\$227,000
Screener - Compost	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	\$933,000
Grinder - Yard Waste	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	\$933,000
Roll-off bins	64	64	64	64	64	64	64	64	64	64	\$5,000
Processing Equipment:											
Bailer	1	1	1	1	1	1	1	1	1	1	\$1,116,000
Sorting Equipment	1	1	1	1	1	1	1	1	1	1	\$1,415,000
City of Guelph Processing Equipment	0.17	0.26	0.32	0.30	0.30	0.29	0.31	0.35	0.71	0.80	\$13,988,000
Green Bins	138,255	140,403	142,550	143,848	145,146	146,444	147,742	149,040	150,037	151,034	\$14.48
Blue Bins	276,510	280,805	285,100	287,696	290,292	292,888	295,484	298,080	300,074	302,068	\$5.47
Carts	6,925	6,925	6,925	6,925	6,925	6,925	6,925	6,925	6,925	6,925	\$66.25
Composters	4,483	4,483	4,483	4,483	4,483	4,483	4,483	4,483	4,483	4,483	\$34.28
Total	426,312.4	432,756.7	439,202.0	443,094.0	446,991.0	450,885.0	454,780.0	458,674.0	461,659.1	464,650.2	

Population	516,303	521,108	531,705	538,616	543,057	548,234	556,707	563,792	573,405	577,644
Per Capita Standard	0.8257	0.8305	0.8260	0.8227	0.8231	0.8224	0.8169	0.8136	0.8051	0.8044

10 Year Average	2009-2018
Quantity Standard	0.8190
Quality Standard	\$77
Service Standard	\$63

D.C. Amount (before deductions)	10 Year - Region Wide
Forecast Population	72,039
\$ per Capita	\$63
Eligible Amount	\$4,534,855



Appendix C

Long-Term Capital and Operating Cost Examination



Appendix C: Long-Term Capital and Operating Cost Examination

Region of Waterloo Annual Capital and Operating Cost Impact

As a requirement of the D.C.A. under subsection 10(2)(c), an analysis must be undertaken to assess the long-term capital and operating cost impacts for the capital infrastructure projects identified within the D.C. As part of this analysis, it was deemed necessary to isolate the incremental operating expenditures directly associated with these capital projects, factor in cost saving attributable to economies of scale or cost sharing where applicable and prorate the cost on a per unit basis (i.e. sq.ft. of building space, per vehicle, etc.). This was undertaken through a review of the Region's approved 2017 Financial Information Return (FIR).

In addition to the operational impacts, over time the initial capital projects will require replacement. This replacement of capital is often referred to as life cycle cost. By definition, life cycle costs are all the costs which are incurred during the life of a physical asset, from the time its acquisition is first considered, to the time it is taken out of service for disposal or redeployment. The method selected for life cycle costing is the sinking fund method which provides that money will be contributed annually and invested, so that those funds will grow over time to equal the amount required for future replacement. The following factors were utilized to calculate the annual replacement cost of the capital projects (annual contribution = factor X capital asset cost) and are based on an annual growth rate of 2% (net of inflation) over the average useful life of the asset:



Type of Asset	Lifecycle Cost Factors	
	Assumed Average Useful Life (Years)	Factor
Water mains	75	0.0059
Water Treatment Facilities	60	0.0088
Water Pumping Stations and Storage Systems	60	0.0088
Wastewater mains	75	0.0059
Wastewater Treatment Facilities	60	0.0088
Waste Diversion Facilities	50	0.0118
Waste Diversion Equipment	20	0.0412
Waste Diversion Vehicles	5	0.1922
Library Collections	7	0.1345
Library Furnishings	15	0.0578
Airport:		
Runway Lighting	10	0.0913
Hydro Plant	20	0.0412
Security System	10	0.0913
Runways	20	0.0412
Terminal	30	0.0246
Parking Equipment	10	0.0913
Parking Pavement	20	0.0412
Taxiways	20	0.0412
Transit Terminals	30	0.0246
Buses - Conventional	14	0.0626
Buses - Articulating	14	0.0626
Bus Shelters	15	0.0578
Bus Pads	25	0.0312
Voice Radio Systems	10	0.0913
Regional Buildings (e.g. HQ, Police Facilities, etc.)	60	0.0088
Sidewalks	30	0.0246
Cycling Facilities	16	0.0537
Traffic Signals	21	0.0388
Roads Surface	16	0.0537
Roads Urban Base	48	0.0126
Roads Rural Base	100	0.0032

Table C-1 depicts the annual operating impact resulting from the proposed gross capital projects at the time they are all in place. It is important to note that, while Regional program expenditures will increase with growth in population, the costs associated with the new infrastructure (i.e. facilities) would be delayed until the time these works are in place.



Table C-1
Operating and Capital Expenditures Impacts for Future Capital Expenditures

SERVICE	GROSS COST LESS BENEFIT TO EXISTING	ANNUAL LIFECYCLE EXPENDITURES	ANNUAL OPERATING EXPENDITURES	TOTAL ANNUAL EXPENDITURES
1. Wastewater Services				
1.1 Treatment plants & Sewers	597,521,371	10,751,012	17,054,719	27,805,731
2. Water Services				
2.1 Treatment, storage and distribution systems	426,673,781	12,365,440	17,646,170	30,011,610
3. Services Related to a Highway				
3.1 Roads and Related	867,232,825	21,801,846	10,973,700	32,775,546
4. Operations				
4.1 Facilities and Fleet	11,702,361	803,261	148,078	951,339
5. Police Services				
5.1 Police facilities, vehicles and equipment	50,053,825	2,546,021	48,551,406	51,097,427
6. Airport				
6.1 Airport facilities, Vehicles, Equipment & Other Infrastructure	184,993,457	10,841,638	1,106,625	11,948,263
7. General Government				
7.1 Studies	10,494,422	0	0	0
8. Paramedic Services				
8.1 Paramedics facilities and Vehicles	12,721,533	1,102,729	3,686,338	4,789,067
9. Waste Diversion				
9.1 Waste diversion facilities, vehicles, equipment and other	8,567,326	693,211	2,828,745	3,521,956
10. Transit Services				
10.1 Transit facilities, vehicles and other infrastructure	616,138,856	39,320,400	14,993,652	54,314,052
11. Library Services				
11.1 Library facilities, materials and vehicles	2,990,554	337,870	403,357	741,227
Total	2,789,090,312	100,563,428	117,392,790	217,956,218



Appendix D

D.C. Reserve Fund Policy



Appendix D: D.C. Reserve Fund Policy

D.1 Legislative Requirements

The Development Charges Act, 1997 (D.C.A.) requires development charge collections (and associated interest) to be placed in separate reserve funds. Sections 33 through 36 of the Act provide the following regarding reserve fund establishment and use:

- a municipality shall establish a reserve fund for each service to which the D.C. by-law relates; s.7(1), however, allows services to be grouped into categories of services for reserve fund (and credit) purposes, although only 100% eligible and 90% eligible services may be combined (minimum of two reserve funds);
- the municipality shall pay each development charge it collects into a reserve fund or funds to which the charge relates;
- the money in a reserve fund shall be spent only for the “capital costs” determined through the legislated calculation process (as per s.5(1) 2-8);
- money may be borrowed from the fund but must be paid back with interest (O.Reg. 82/98, s.11(1) defines this as Bank of Canada rate either on the day the by-law comes into force or, if specified in the by-law, the first business day of each quarter); and
- D.C. reserve funds may not be consolidated with other municipal reserve funds for investment purposes and may only be as an interim financing source for capital undertakings for which development charges may be spent (s.37).

Annually, the Treasurer of the municipality is required to provide Council with a financial statement related to the D.C. by-law(s) and reserve funds. This statement must be made available to the public and may be requested to be forwarded to the Minister of Municipal Affairs and Housing. The D.C.A. does not prescribe how the statement is to be made available to the public. We would recommend that a resolution of Council make the statement available on the municipality’s website or upon request.

Subsection 43(2) and O.Reg. 82/98 prescribes the information that must be included in the Treasurer’s statement, as follows:

- opening balance;
- closing balance;



- description of each service and/or service category for which the reserve fund was established (including a list of services within a service category);
- transactions for the year (e.g. collections, draws) including each assets capital costs to be funded from the D.C. reserve fund and the manner for funding the capital costs not funded under the D.C. by-law (i.e. non-D.C. recoverable cost share and post-period D.C. recoverable cost share);
- for projects financed by development charges, the amount spent on the project from the D.C. reserve fund and the amount and source of any other monies spent on the project.
- amounts borrowed, purpose of the borrowing and interest accrued during previous year;
- amount and source of money used by the municipality to repay municipal obligations to the D.C. reserve fund;
- list of credits by service or service category (outstanding at beginning of the year, given in the year and outstanding at the end of the year by holder);
- for credits granted under s.14 of the old D.C.A., a schedule identifying the value of credits recognized by the municipality, the service to which it applies and the source of funding used to finance the credit; and
- a statement as to compliance with s.s. 59(1) of the D.C.A., whereby the municipality shall not impose, directly or indirectly, a charge related to a development or a requirement to construct a service related to development, except as permitted by the D.C.A. or another Act.

Based upon the above, Figure 1, and Attachments 1 and 2, set out the format for which annual reporting to Council should be provided.

D.2 D.C. Reserve Fund Application

Section 35 of the D.C.A. states that:

“The money in a reserve fund established for a service may be spent only for capital costs determined under paragraphs 2 to 8 of subsection 5(1).”

This provision clearly establishes that reserve funds collected for a specific service are only to be used for that service, or to be used as a source of interim financing of capital undertakings for which a development charge may be spent.



Figure 1
Annual Treasurer's Statement of Development Charge Reserve Funds

Description	Services to which the Development Charge Relates											Total
	Non-Discounted Services						Discounted Services					
	Services Related to a Highway	Operations	Police Services	Transit Services	Wastewater Services	Water Services	Airport	General Government	Paramedics	Waste Diversion	Library Services	
Opening Balance, January 1, _____												0
Plus:												
Development Charge Collections												0
Accrued Interest												0
Repayment of Monies Borrowed from Fund and Associated Interest ¹												0
Sub-Total	0	0	0			0	0	0	0	0	0	0
Less:												
Amount Transferred to Capital (or Other) Funds ²												0
Amounts Refunded												0
Amounts Loaned to Other D.C. Service Category for Interim Financing												0
Credits ³												0
Sub-Total	0	0	0			0	0	0	0	0	0	0
Closing Balance, December 31, _____	0	0	0			0	0	0	0	0	0	0

¹ Source of funds used to repay the D.C. reserve fund

² See Attachment 1 for details

³ See Attachment 2 for details



Figure 2
Amount Transferred to Capital (or Other) Funds – Capital Fund Transaction

Capital Fund Transactions	Gross Capital Cost	D.C. Recoverable Cost Share					Non-D.C. Recoverable Cost Share				
		D.C. Forecast Period			Post D.C. Forecast Period		Other Reserve/Reserve Fund Draws	Tax Supported Operating Fund Contributions	Rate Supported Operating Fund Contributions	Debt Financing	Grants, Subsidies Other Contributions
		D.C. Reserve Fund Draw	D.C. Debt Financing	Grants, Subsidies Other Contributions	Post-Period Benefit/Capacity Interim Financing	Grants, Subsidies Other Contributions					
<u>Services Related to a Highway</u>											
Capital Cost A											
Capital Cost B											
Capital Cost C											
Sub-Total - Services Related to Highways	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<u>Water</u>											
Capital Cost D											
Capital Cost E											
Capital Cost F											
Sub-Total - Water	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<u>Wastewater</u>											
Capital Cost G											
Capital Cost H											
Capital Cost I											
Sub-Total - Wastewater	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Amount Transferred to Operating (or Other) Funds - Operating Fund Transactions

Operating Fund Transactions	Annual Debt Repayment Amount	D.C. Reserve Fund Draw		Post D.C. Forecast Period			Non-D.C. Recoverable Cost Share		
		Principal	Interest	Principal	Interest	Source	Principal	Interest	Source
<u>Services Related to a Highway</u>									
Capital Cost J									
Capital Cost K									
Capital Cost L									
Sub-Total - Services Related to Highways	\$0	\$0	\$0	\$0	\$0		\$0	\$0	
<u>Water</u>									
Capital Cost M									
Capital Cost N									
Capital Cost O									
Sub-Total - Water	\$0	\$0	\$0	\$0	\$0		\$0	\$0	
<u>Wastewater</u>									
Capital Cost P									
Capital Cost Q									
Capital Cost R									
Sub-Total - Wastewater	\$0	\$0	\$0	\$0	\$0		\$0	\$0	



Figure 3
Statement of Credit Holder Transactions

Credit Holder	Applicable D.C. Reserve Fund	Credit Balance Outstanding Beginning of Year _____	Additional Credits Granted During Year	Credits Used by Holder During Year	Credit Balance Outstanding End of Year _____
Credit Holder A					
Credit Holder B					
Credit Holder C					
Credit Holder D					
Credit Holder E					
Credit Holder F					



Appendix E

Local Service Policy



Appendix E: Local Service Policy

This policy sets out in general terms the size and nature of engineered infrastructure that is included in the development charge background study as a development charge project versus infrastructure that is considered as a local service, to be emplaced separately by landowners, pursuant to a development agreement.

The general principles included in this policy provide guidance to regional staff when considering development applications. However, each application will be considered on its own merits having regard to, among other factors, the nature, type and location of the development and any existing and proposed development in the surrounding area, these policy guidelines, the location and type of services required and their relationship to the proposed development and to existing and proposed development in the area, and subsection 59 (2) of the Development Charges Act, 1997. For more detailed information, refer to the Region of Waterloo and Area Municipalities Design Guidelines and Supplemental Specifications for Municipal Services Report, dated January 2018, as may be amended from time to time.

Water and Wastewater Services

The following guideline sets out, in general, the range of infrastructure for water and wastewater services that constitutes a development charge project vs. subdivider/developer responsibilities.

The Region is responsible for water supply in all area municipalities (source, treatment, storage, pumping and major trunk watermains). The area municipalities are responsible for water distribution and service connections. The exceptions are water serviced communities in the Township of North Dumfries (Ayr, Branchton Meadows, Lloyd Brown and Roseville) and Township of Wellesley (Heidelberg – Wellesley side, Linwood, St. Clements and Wellesley), where the Region also owns and operates the distribution system and service connections.

The Region is responsible for wastewater treatment in all area municipalities, conveyance infrastructure directly connecting the closest point of a municipally serviced area to a wastewater treatment plant located in another area municipality, and also owns and operates seven sewage pumping stations (Spring Valley in Kitchener, Bridgeport in Kitchener/Waterloo, Baden and Morningside in Wilmot, and Rose St., Nith River and



South Ayr in North Dumfries). The area municipalities are responsible for wastewater collection and pumping. The exceptions are wastewater serviced communities in the Townships of North Dumfries (Ayr) and Wellesley (Wellesley), where the Region also owns and operates the collection system, service connections and pumping stations

Water Systems

The water supply Integrated Urban System (I.U.S.) services the communities of Cambridge (including Lloyd Brown's Subdivision in the Township of North Dumfries), Kitchener, Waterloo (including the village of St. Agatha in Wilmot Township), Elmira and St. Jacobs (Township of Woolwich) and are treated as a single system as there are permanent interconnections of the water supply systems servicing these communities.

There are also independent water supply systems which service other areas, including:

- The Baden – New Hamburg Water System (also supplied by one of the I.U.S. sources);
- The Ayr Water System;
- The Wellesley Water System; and
- The St. Clements Water System.

The Region also owns and operates a number of small water supply systems, not identified above, which were designed to service specific subdivisions in the respective settlement areas and generally have no additional capacity to service units beyond those subdivisions. Future capacity availability would be evaluated on an individual basis prior to commenting on development applications. These systems include:

- Branchton Meadows in North Dumfries;
- Roseville in North Dumfries;
- Linwood in Wellesley;
- Heidelberg (reported as one system including that portion of Heidelberg in Woolwich) in Wellesley;
- New Dundee in Wilmot;
- Foxboro Green in Wilmot;
- Conestoga Golf Course in Woolwich;
- Conestoga Plains in Woolwich;
- Maryhill in Woolwich;



- Maryhill Village Heights in Woolwich; and
- West Montrose in Woolwich (now connected to the Conestoga Plains system).

Wastewater Systems

There are a number of wastewater treatment plants and Regional pumping stations that provide service to the City's and Townships including:

Large Treatment Plants:

- The Kitchener Wastewater Treatment Plant (KWWTP);
- The Waterloo Wastewater Treatment Plant (WWWTP);
- The Galt Wastewater Treatment Plan (GWWTP);
- The Preston Wastewater Treatment Plan (PWWTP);
- The Hespeler Wastewater Treatment Plant (HWWTP);

Medium Sized Treatment Plants:

- The Elmira Wastewater Treatment Plant (EWWTP);
- The St. Jacobs Wastewater Treatment Plant (SJWWTP);
- The Baden/New Hamburg Wastewater Treatment Plant (BNHWWTP);
- The Ayr Wastewater Treatment Plant (AWWTP); and
- The Wellesley Wastewater Treatment Plant (WEWWTP).

Small Treatment Plants:

There are three small treatment plants that the Region operates. These plants were designed and constructed to service a limited number of units within the specific subdivisions and generally are not capable of servicing any units beyond that pre-determined number. Future capacity availability would be evaluated on an individual basis prior to commenting on development applications. They include:

- The Heidelberg Wastewater Treatment Plant (HWWTP);
- The Conestoga Golf Course Wastewater Treatment Plant (CGCWWTP); and
- The Foxboro Wastewater Treatment Plant (FWWTP).



Regional Pumping Stations:

There are seven pumping stations owned and operated by the Region.

- Spring Valley Pumping Station servicing the City of Kitchener;
- Bridgeport Pumping Station servicing the Cities of Kitchener and Waterloo;
- Baden Pumping Station servicing the Town of Baden (Township of Wilmot);
- Morningside Pumping Station servicing the Town of New Hamburg (Township of Wilmot);
- Rose St., Nith River and South Ayr Pumping Stations servicing the Town of Ayr (Township of North Dumfries).

E.1 Integrated Urban Water System including the Baden-New Hamburg Water System

E.1.1 Watermains

As per the Region of Waterloo and Area Municipalities Design Guidelines and Supplemental Specifications for Municipal Services Report, dated January 2018, Watermains within the Region are classified into two broad categories, Regional and Local. Regional watermains are furthermore classified into four subcategories:

- i. Transmission
- ii. Trunk Dual-Purpose
- iii. Arterial Dual-Purpose
- iv. Non-Potable

The purpose of the classification is to aid in maintaining the reliability, integrity and flexibility of key components in the water supply and distribution system.

Within the Region of Waterloo, the Region, in consultation with the Area Municipality, will classify new watermains. The watermains are classified by use and not by size.

Dual-Purpose Watermains are those that qualify as Regional Watermains yet allow limited service connections. Non-potable watermains transfer water not fully treated as defined under provincial regulations.



Regional Watermains constitute the skeleton (supply lines and related ancillaries) of the distribution system and satisfy one or more of the following cases:

- Watermains which connect water sources, storage or pumping facilities
- Watermains which cross pressure zone boundaries unless these watermains are controlled by special agreements with the Region and relevant area municipalities
- Watermains that include controlling devices (pressure regulating valves, motorized valves, etc.) with the exception of devices that control a local watermain
- Watermains that include bulk water meters used for wholesale water billing
- Watermains that complete or will complete future major loops. A major loop is defined as watermains that branch from Regional watermains and "loop back" to Regional Watermains. The purpose of a major loop is to enhance the pressure and water supply in the looped area rather than to provide a ring distribution main.
- Watermains that include chlorine residual boosting facilities
- Watermains that provide a focal supplying node to development areas

Local Watermains are those that do not satisfy the criteria for Regional Watermains. These watermains provide the majority of connections to customers.

E.1.1.1 Local Watermains related to a specific development

Local Watermains internal to a specific development, as well as external watermains deemed required to support the specific development to be connected to an existing local/regional main are considered to be the developer's responsibility through a development agreement with the area municipality or the Region in the case of water serviced communities in the Township of North Dumfries and Wellesley, where the Region also owns the distribution system.

E.1.1.2 Regional Watermains unrelated to a specific development

Regional watermains that do not have service connections, are to be included in Regional Development Charges. Dual-purpose watermains are primarily cost shared between the Region and the area municipality, with the Regional costs being included in the Regional Development Charges.



E.1.2 Booster Stations and Reservoirs

E.1.2.1 Related to a specific development

Permanent booster pumping stations and reservoirs are included in the Regional Development Charges.

Temporary booster pumping stations and reservoirs servicing a specific development(s) are considered to be the developer's responsibility.

E.1.3 Treatment and Storage Facilities

New or upgraded treatment and storage facilities will be included in the Regional Development Charges.

E.1.4 Land for Booster Stations, Reservoirs, Treatment and Storage Facilities

Where required, land acquisition for Booster Stations, Reservoirs, Treatment and Storage Facilities to the size required by the design of the facility, is to be provided by the developer as part of the development approval process. The market value of the land is considered to be part of the capital cost of the related development charge project.

E.2 Regional Water Systems (Ayr, Wellesley and St. Clements Systems)

The Region owns and operates the whole water supply and distribution systems in the Towns of Ayr (Township of North Dumfries), and St. Clements and Wellesley (Township of Wellesley).

E.2.1 Watermains

E.2.1.1 Related to a specific development

- a. Watermains internal to the development are considered to be the developer's local service responsibility through a development agreement with the Region.
- b. External watermains required to service one development are considered to be the developer's local service responsibility through a development agreement with the Region.



- c. External watermain required to service multiple developments are considered to be Regional development charge projects.

E.2.2 Booster Stations and Reservoirs

E.2.2.1 *Unrelated to a specific development*

- a. New or expanded permanent water booster pumping stations and reservoir projects servicing developments are considered to be Regional development charge projects.
- b. Temporary water booster pumping stations and reservoir projects are the responsibility of the developer as a local service through a development agreement with the Region.

E.2.3 Treatment and Storage Facilities

New or upgraded treatment and storage facilities will be included in the Regional Development Charges.

E.2.4 Land for Booster Stations, Reservoir, Treatment and Storage Facilities

Where required, land acquisition for Booster Stations, Reservoirs, Treatment and Storage Facilities which are development charge projects, to the size required by the design of the facility, is to be provided by the developer as part of the development approval process. The market value of the land is considered to be part of the capital cost of the related Regional development charge project.

E.3 **Small Water Systems**

Small Water Systems, include:

- Branchton Meadows in North Dumfries;
- Roseville in North Dumfries;
- Linwood in Wellesley;
- Heidelberg (reported as one system including that portion of Heidelberg in Woolwich) in Wellesley;
- New Dundee in Wilmot;
- Foxboro Green in Wilmot;



- Conestoga Golf Course in Woolwich;
- Conestoga Plains in Woolwich;
- Maryhill in Woolwich;
- Maryhill Village Heights in Woolwich; and
- West Montrose in Woolwich (now connected to the Conestoga Plains system).

Future capacity availability would be evaluated on an individual basis prior to commenting on development applications. Any works approved by the Region to add, increase and/or expand these small water systems to service growth would be considered the responsibility of the developer as a local service through a development agreement with the area municipality and/or the Region.

E.4 Wastewater Systems (Large and Medium Sized)

E.4.1 Wastewater Mains – Non-Regional

E.4.1.1 Related to a specific development

- a. Wastewater mains internal to the development are considered to be the developer's local service responsibility through a development agreement with the applicable area municipality, if deemed applicable by this municipality.
- b. External wastewater mains required to service one development are considered to be the developer's local service responsibility through a development agreement with the applicable area municipality, if deemed applicable by this municipality.
- c. External wastewater mains required to service multiple developments are considered to be area municipal development charge projects, if deemed applicable by the applicable area municipality (not Regional development charge projects).

E.4.2 Lift Stations, Booster Stations, Pumping Stations

E.4.2.1 Related to a specific development

Temporary or permanent lift stations, booster stations, and/or pumping stations intended to service a specific development(s), are considered to be the developer's



responsibility through a development agreement with the applicable area municipality, if deemed applicable by this municipality (not Regional development charge projects).

E.4.2.2 Unrelated to a specific development

New or upgraded permanent lift stations, booster stations, and/or pumping stations are considered to be an area municipal development charge projects, if deemed applicable by the applicable area municipality (not Regional development charge projects).

E.5 Regional Wastewater Facilities and Systems

E.5.1 Wastewater Mains – Ayr and Wellesley Systems

E.5.1.1 Related to a specific development

- a. Wastewater mains internal to the development are considered to be the developer's local service responsibility through a development agreement with the Region.
- b. External wastewater mains required to service one development are considered to be the developer's local service responsibility through a development agreement with the Region.
- c. External wastewater mains required to service multiple developments are considered to be Regional development charge projects.

E.5.2 Lift Stations, Booster Stations, Pumping Stations – Ayr and Wellesley Systems

E.5.2.1 Related to a specific development

Temporary lift stations, booster stations, and/or pumping stations intended to service a specific development(s), are considered to be the developer's responsibility through a development agreement with the Region.

E.5.2.2 Unrelated to a specific development

New or upgraded permanent lift stations, booster stations, and/or pumping stations are considered to be Regional development charge projects.



E.5.3 Noise and Odour Control Abatement Measures

E.5.3.1 Related to a specific development – Ayr and Wellesley Systems

All noise and odour control abatement measures to comply with MOE requirements and/or other engineering design standards are considered to be the developer's responsibility through an agreement with the Region and/or provisions of the Planning Act.

E.5.3.2 Unrelated to a specific development – Region Wide

New or upgraded noise and/or odour control facilities unrelated to a specific development are considered to be Regional development charge projects.

E.5.4 Treatment Facilities – Region Wide

New or upgraded wastewater treatment facilities are considered to be Regional development charge projects.

E.5.5 Direct Connection to Treatment Facilities – Region Wide

New or upgraded conveyance infrastructure directly connecting the closest point of a municipally serviced area to a wastewater treatment plant located in another area municipality are considered to be Regional development charge projects. When the municipally serviced area consists of more than one area municipality, the Region will only be responsible for connecting to its wastewater treatment plant the area municipal system closer to its plant. Conveyance infrastructure internal to each of these area municipalities or interconnecting each other will be the responsibility of these municipalities.

E.5.6 Land Acquisition (including right-of-way, utility easements, and building setbacks) – Region Wide

E.5.6.1 Related to a specific development

- a. All land acquisition associated with providing access right-of-ways and utility easements to new or existing Regional facilities, as well as property intended to accommodate the necessary building setbacks from Regional facilities, as per MOE requirements and/or other engineering design standards, are considered to



be the developer's responsibility through the *Planning Act* and/or development agreement with the applicable area municipality.

- b. Land acquisitions for major infrastructure are considered to be Regional development charge projects (normally included as part of the capital works project).

E.5.6.2 Unrelated to a specific development – Region Wide

Land acquisition for Regional facilities and utilities unrelated to a specific development will be considered to be Regional development charge projects.

E.5.7 Land for Lift Stations, Booster Stations, Pumping Stations and Treatment Facilities – Region Wide

Where required, land acquisition for Lift Stations, Booster Stations, Pumping Stations, Treatment Facilities or any other Regional infrastructure, to the size required by the design of the facility, is to be provided by the developer as part of the development approval process. The market value of the land is considered to be part of the capital cost of the related Regional development charge project.

The detailed engineering requirements of the above items are governed by the approved detailed engineering standards.

E.6 Small Wastewater Systems

Small wastewater systems, include:

- The Heidelberg Wastewater System (HWWS);
- The Conestoga Golf Course Wastewater System (CGCWWS); and
- The Foxboro Wastewater System (FWWS).

Future capacity availability would be evaluated on an individual basis prior to commenting on development applications. Any works approved by the Region to increase and/or expand these small wastewater systems to service growth would be considered the responsibility of the developer as a local service through a development agreement with the applicable area municipality and/or the Region.



E.7 Services Related to a Highway

A highway and services related to a highway are intended for the transportation of people and goods via many different modes including, but not limited to passenger automobiles, commercial vehicles, transit vehicles, bicycles and pedestrians. The highway shall consist of all land and associated infrastructure built to support (or service) this movement of people and goods regardless of the mode of transportation employed, thereby achieving a complete street. A complete street is the concept whereby a highway is planned, designed, operated and maintained to enable pedestrians, cyclists, public transit users and motorists to safely and comfortably be moved, thereby allowing for the efficient movement of persons and goods.

The associated infrastructure to achieve this concept shall include, but is not limited to: road pavement structure and curbs; grade separation/bridge structures (for any vehicles, railways and/or pedestrians); grading, drainage and retaining wall features; culvert structures; storm water drainage systems; utilities (fiber, phone, hydro, etc.); traffic control systems; signage; roundabouts; gateway features; street furniture; active transportation facilities (e.g. sidewalks and pedestrian facilities, cycling facilities, bike lanes, multi-use trails which interconnect the transportation network, etc.); transit lanes, stops, lay-bys and amenities; roadway illumination systems; boulevard and median surfaces (e.g. sod & topsoil, paving, etc.); street trees and landscaping; parking lanes & lay-bys; and driveway entrances; noise walls; railings and safety barriers.

The following guideline sets out, in general, the range of infrastructure for Services Related to a Highway that constitutes development charge projects.

E.7.1 Regional Roads and Other Roads

E.7.1.1 Related to a specific development

- a. All new roads, other than Regional roads internal to a development, as well as those local roads primarily acting as a connection serving a development, are considered to be the developer's responsibility through a development agreement with the applicable area municipality.
- b. New or upgraded Regional roads necessitated by abutting or nearby development(s) and relating to Regional roads, including but not limited to



urbanization, turn lanes, and illumination are considered to be the developer's responsibility through an agreement with the Region.

E.7.1.2 Unrelated to a specific development

New or upgraded Regional roads necessitated by increased traffic volumes and unrelated (and not abutting) to a specific development are considered to be development charge projects, including but not limited to urbanization, road widening, new roads, and intersection improvements.

E.7.2 Traffic Signals and Intersection Improvements

E.7.2.1 Related to a specific development

Intersection improvements to all roads, private entrances or entrances to specific developments necessitated by abutting or nearby development(s) and relating to Regional roads are considered to be the developer's responsibility through an agreement with the Region, including but not limited to urbanization, road widening, new roads, and intersection improvements.

E.7.2.2 Unrelated to a specific development

Intersection improvements to Regional roads, necessitated by increased traffic volumes, are considered to be development charge projects.

E.7.3 Streetlights

E.7.3.1 Related to a specific development

- a. Streetlights on all new roads within a specific development are considered to be the developer's responsibility through a development agreement with the applicable area municipality.
- b. Streetlights at new or existing intersections of Regional roads necessitated by a specific development (with or without intersection improvements) are considered to be the developer's responsibility through an agreement with the applicable area municipality and/or Region.



E.7.3.2 Unrelated to a specific development

- a. Streetlights on Regional roads are considered to be the mandated responsibility of the applicable area municipality.
- b. Streetlights at intersections along Regional roads, necessitated by increased traffic volumes, safety concerns, and unrelated to new development(s), are considered to be development charge projects.

E.7.4 Sidewalks

E.7.4.1 Related to a specific development

- a. Sidewalks on all internal roads and abutting road frontages, whether on local or Regional roads, are considered to be the developer's responsibility through a development agreement with the area municipality.
- b. Sidewalks external to a development, whether on local or Regional roads, which are needed to connect the development to public spaces and/or existing sidewalks, are considered to be the developer's responsibility through a development agreement with the area municipality.

E.7.4.2 Unrelated to a specific development

New sidewalks on Regional roads are considered to be the mandated responsibility of the applicable area municipality.

E.7.5 Cycling Facilities

E.7.5.1 Related to a specific development

- a. Cycling facilities within and outside road allowances within a specific development are considered to be the developer's responsibility through a development agreement with the applicable area municipality.
- b. Cycling facilities external to a development, which are needed to connect the development to public spaces and/or other bike infrastructure, are considered to be the developer's responsibility through a development agreement with the applicable area municipality.



E.7.5.2 Unrelated to a specific development

Bike paths/lanes within Regional road allowances located separate from or combined with the road pavement are considered to be development charge projects.

E.7.6 Noise Abatement Measures

E.7.6.1 Related to a specific development

New or improved noise abatement measures internal to a development, related or unrelated to Regional roads, are considered to be the developer's responsibility through a development agreement with the applicable area municipality.

E.7.6.2 Unrelated to a specific development

New or improved noise abatement measures unrelated to a specific development(s) on Regional roads are considered to be development charge projects in accordance the Region's Noise Implementation Guidelines for Noise Policies.

E.7.7 Traffic Control Systems

E.7.7.1 Related to a specific development

New or upgraded traffic control systems, intended to service a specific and/or several development(s) are considered to be the developer's responsibility through an agreement with the Region.

E.7.7.2 Unrelated to a specific development

On Regional roads, new and upgraded traffic control systems necessitated by increased traffic volumes and unrelated to a specific development(s), are considered to be development charge projects.

E.7.8 Transportation Studies (traffic studies, master plans, secondary corridor studies)

E.7.8.1 Related to a specific development

Transportation impact studies undertaken for the benefit of a specific development(s) are considered to be the responsibility of the developer.



E.7.8.2 Unrelated to a specific development

Master plans and secondary transportation corridor studies, are considered to be development charge projects

E.7.9 Land Acquisition (including right-of-ways and utility easements)

E.7.9.1 Related to a specific development

- a. Land acquisition to upgrade Regional roads and/or provide utility corridors to the widths required by approved engineering design standards, is considered to be the developer's responsibility and primarily provided by dedications under the Planning Act.
- b. Land acquisition for grade separations, new Regional roads or other excessive needs beyond normal dedication requirements are considered to be development charge projects (normally included as part of the capital project).

E.7.9.2 Unrelated to a specific development

In areas where limited or no development is anticipated and direct dedication is unlikely within the time constraints of the proposed capital works project, such land acquisitions are considered to be development charge projects (normally included as part of the capital project).



Appendix F

Asset Management Plan



Appendix F: Asset Management Plan

The recent changes to the D.C.A. (new section 10(2) (c.2)) require that the Background Study must include an asset management plan related to new infrastructure. Section 10(3) of the D.C.A. provides:

The asset management plan shall,

- (a) deal with all assets whose capital costs are proposed to be funded under the development charge by-law;**
- (b) demonstrate that all the assets mentioned in clause (a) are financially sustainable over their full life cycle;**
- (c) contain any other information that is prescribed; and**
- (d) be prepared in the prescribed manner.**

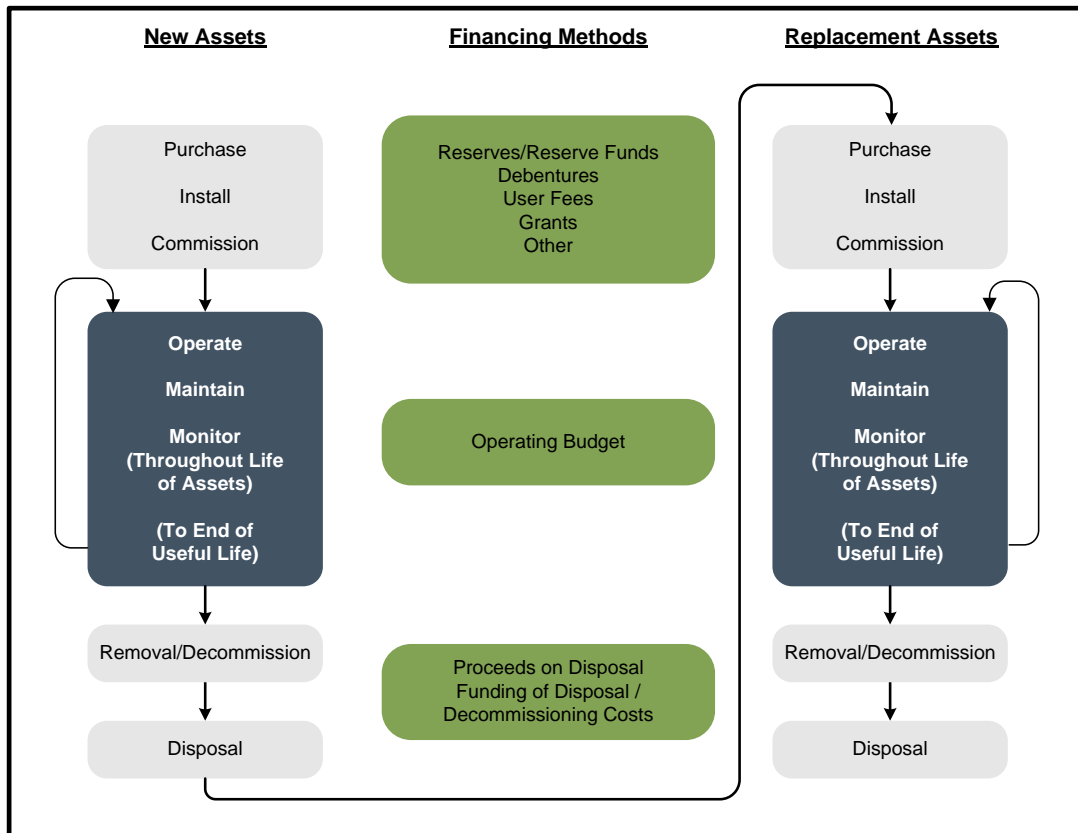
In regard to the above, section 8 of the Regulations was amended to include subsections (2), (3) and (4) which set out for specific detailed requirements for transit (only). For all services except transit, there are no prescribed requirements at this time thus requiring the municipality to define the approach to include within the Background Study.

At a broad level, the Asset Management Plan provides for the long-term investment in an asset over its entire useful life along with the funding. The schematic below identifies the costs for an asset through its entire lifecycle. For growth-related works, the majority of capital costs will be funded by the D.C. non-growth-related expenditures will then be funded from non-D.C. revenues as noted below. During the useful life of the asset, there will be minor maintenance costs to extend the life of the asset along with additional program related expenditures to provide the full services to the residents. At the end of the life of the asset, it will be replaced by non-D.C. financing sources.

It should be noted that with the recent passing of the Infrastructure for Jobs and Prosperity Act (I.J.P.A.) municipalities are now required to complete asset management plans, based on certain criteria, which are to be completed by 2021 for core municipal services and 2023 for all other services. The amendments to the D.C.A. do not require municipalities to complete these asset management plans (required under I.J.P.A.) for



the D.C. background study, rather the D.C.A. requires that the D.C. background study include information to show the assets to be funded by the D.C. are sustainable over their full lifecycle.



In 2012, the Province developed Building Together: Guide for municipal asset management plans which outlines the key elements for an asset management plan (A.M.P.), as follows:

State of local infrastructure: asset types, quantities, age, condition, financial accounting valuation and replacement cost valuation.

Desired levels of service: defines levels of service through performance measures and discusses any external trends or issues that may affect expected levels of service or the municipality's ability to meet them (for example, new accessibility standards, climate change impacts).



Asset management strategy: the asset management strategy is the set of planned actions that will seek to generate the desired levels of service in a sustainable way, while managing risk, at the lowest lifecycle cost.

Financing strategy: having a financial plan is critical for putting an A.M.P. into action. By having a strong financial plan, municipalities can also demonstrate that they have made a concerted effort to integrate the A.M.P. with financial planning and municipal budgeting and are making full use of all available infrastructure financing tools.

Commensurate with the above, the Region prepared an Asset Management Plan in 2015 for its existing assets however, did not take into account future growth-related assets. As a result, the asset management requirement for the D.C. must be undertaken in the absence of this information.

In recognition to the schematic above, the following table (presented in 2019 \$) has been developed to provide the annualized expenditures and revenues associated with new growth. Note that the D.C.A. does not require an analysis of the non-D.C. capital needs or their associated operating costs so these are omitted from the table below. As well, as all capital costs included in the D.C. eligible capital costs are not included in the Region's Asset Management Plan, the present infrastructure gap and associated funding plan have not been considered at this time. Hence the following does not represent a fiscal impact assessment (including future tax/rate increases) but provides insight into the potential affordability of the new assets:

1. The non-D.C. recoverable portion of the projects which will require financing from municipal financial resources (i.e. taxation, rates, fees, etc.). This amount has been presented on an annual debt charge amount based on 20-year financing.
2. Lifecycle costs for the 2019 D.C. capital works have been presented based on a sinking fund basis. The assets have been considered over their estimated useful lives.
3. Incremental operating costs for the D.C. services (only) have been included.
4. The resultant total annualized expenditures are \$225.18 million.
5. Consideration was given to the potential new taxation and user fee revenues which will be generated as a result of new growth. These revenues will be



available to finance the expenditures above. The new operating revenues are \$650.54 million. This amount, totalled with the existing operating revenues of \$1.19 billion, provide annual revenues of \$1.85 billion by the end of the period.

6. In consideration of the above, the capital plan is deemed to be financially sustainable.

Table F-1
Region of Waterloo
Asset Management – Future Expenditures and Associated Revenues
2019\$

	Longer Term (Total)
Expenditures (Annualized)	
Annual Debt Payment on Non-Growth Related Capital ¹ (2014 D.C. and 2016 updates)	7,221,859
Annual Debt Payment on Post Period Capital ²	43,441,401
Lifecycle:	
Sub-Total - Annual Lifecycle	\$100,563,428
Incremental Operating Costs (for D.C. Services)	\$117,392,790
Total Expenditures	\$225,178,077
Revenue (Annualized)	
Total Existing Revenue ⁴	\$1,198,026,094
Incremental Tax and Non-Tax Revenue (User Fees, Fines, Licences, etc.)	\$650,537,666
Total Revenues	\$1,848,563,760

¹ Non-Growth Related component of Projects including 10% mandatory deduction on soft services

² Interim Debt Financing for Post Period Benefit

³ As per Sch. 10 of FIR



Regarding the D.C.A. requirements for asset management for the Transit Service, Ontario Regulation 82/98 (as amended) provides the following:

8 (3) If a council of a municipality proposes to impose a development charge in respect of transit services, the asset management plan referred to in subsection 10 (2) (c.2) of the Act shall include the following in respect of those services:

The following table provides the individual items prescribed by subsection 8(3) of the Regulation (as amended) and provides how these items were addressed for this D.C. Background Study in the Region's 2015 Transit Asset Management Plan, G.R.T. Business Plan, and the Region of Waterloo Budget Book:



Table F-2
Summary of Transit Asset Management Plan Requirements
as per O.Reg. 82/98, as amended

Ontario Regulation 82/98, as amended subsection 8(3) Requirements	Compliance
1. A section that sets out the state of local infrastructure and that sets out:	See A.M.P.
i. the types of assets and their quantity or extent,	See A.M.P., Table on page 23-24
ii. the financial accounting valuation and replacement cost valuation for all assets,	See A.M.P., Page 11 for the financial accounting valuation and Table 0-1 for the replacement cost valuation
iii. the asset age distribution and asset age as a proportion of expected useful life for all assets, and	See A.M.P., Figure 0-2
iv. the asset condition based on standard engineering practices for all assets.	See A.M.P., Table on page 23-24
2. A section that sets out the proposed level of service and that:	
i. defines the proposed level of service through timeframes and performance measures,	See A.M.P., page 27 and Table on page 34
ii. discusses any external trends or issues that may affect the proposed level of service or the municipality's ability to meet it, and	See A.M.P., (Page 37 identifies a number of external trends that may impact the service in the future)
iii. shows current performance relative to the targets set out.	See GRT Business Plan, p. 66-76; see table p.75



Table F-2 (continued)
 Summary of Transit Asset Management Plan Requirements
 as per O.Reg. 82/98, as amended

Ontario Regulation 82/98, as amended subsection 8(3) Requirements	Compliance
3. An asset management strategy that:	See A.M.P., pages 42-45 and Table on pages 58-60
i. sets out planned actions that will enable the assets to provide the proposed level of service in a sustainable way, while managing risk, at the lowest life cycle cost,	See A.M.P., pages 42-45 and Table on pages 58-60
ii. is based on an assessment of potential options to achieve the proposed level of service, which assessment compares,	See A.M.P., pages 42-45 and Table on pages 58-60 See A.M.P., pages 42-45 and Table on pages 58-60
A. life cycle costs,	See A.M.P., pages 42-45 and Table on pages 58-60 See A.M.P., pages 42-45 and Table on pages 58-60
B. all other relevant direct and indirect costs and benefits, and	See A.M.P., pages 42-45 and Table on pages 58-60
C. the risks associated with the potential options,	See A.M.P., pages 42-45 and Table on pages 58-60
iii. contains a summary of, in relation to achieving the proposed level of service, (not defined clearly)	See A.M.P., pages 42-45 and Table on pages 58-60 See A.M.P., pages 42-45 and Table on pages 58-60
A. non-infrastructure solutions,	See A.M.P., pages 42-45 and Table on pages 58-60
B. maintenance activities,	See A.M.P., pages 42-45 and Table on pages 58-60
C. renewal and rehabilitation activities,	See A.M.P., pages 42-45 and Table on pages 58-60
D. replacement activities,	See A.M.P., pages 42-45 and Table on pages 58-60
E. disposal activities, and	See A.M.P., pages 42-45 and Table on pages 58-60
F. expansion activities,	See A.M.P., pages 42-45 and Table on pages 58-60
iv. discusses the procurement measures that are intended to achieve the proposed level of service, and	See A.M.P., page 44
v. includes an overview of the risks associated with the strategy and any actions that will be taken in response to those risks.	See A.M.P., pages 39-41



Table F-2 (continued)
Summary of Transit Asset Management Plan Requirements
as per O.Reg. 82/98, as amended

Ontario Regulation 82/98, as amended subsection 8(3) Requirements	Compliance
4. A financial strategy that: i. shows the yearly expenditure forecasts that are proposed to achieve the proposed level of service, categorized by, A. non-infrastructure solutions, B. maintenance activities, C. renewal and rehabilitation activities, D. replacement activities, E. disposal activities, and F. expansion activities,	See 2019 Region of Waterloo Budget Book, P. 151 - 159
ii. provides actual expenditures in respect of the categories set out in sub-subparagraphs i A to F from the previous two years, if available, for comparison purposes,	See COR-FSD-10-12 Periodic Financial Report for the year ended December 31, 2018, page 16
iii. gives a breakdown of yearly revenues by source,	See 2019 Region of Waterloo Budget Book, P. 153 See TES-TRS-17-15 Proposed Business Plan 2017-2021 report to committee, Table 3 on p.19
iv. discusses key assumptions and alternative scenarios where appropriate, (see associated text) and	See GRT Business Plan 2017-2021 p.154-157
v. identifies any funding shortfall relative to financial requirements that cannot be eliminated by revising service levels, asset management or financing strategies, and discusses the impact of the shortfall and how the impact will be managed.	See GRT Business Plan 2017-2021 p. 154-157

Note – Reference to A.M.P. means “Region of Waterloo 2015 Asset Management Plan, September 13, 2016”



Appendix G

Proposed D.C. By-law



Proposed D.C. By-law is provided under separate cover.



Appendix H

Dillon Consulting Limited



Region of Waterloo

Transit Development Charges

Technical Appendix

April 2019 – 18-8078

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Appendices

Appendix A: Annual Conventional Transit Summary

1.0 Introduction

The Region of Waterloo (Region) has experienced significant growth over the last several years, and will continue to experience growth over the next ten years. Population is anticipated to increase from approximately 583,962 in 2019 to about 656,000 in 2029 and employment is anticipated to increase from 290,483 in 2019 approximately to about 324,809 in 2029 (Source: Watson & Associates Economists Ltd).

The Development Charges Act, 1997, as amended (D.C.A.) regulates when and how municipalities may collect Development Charges (D.C.). The provincial government recently enacted changes to the D.C.A. with direct implications for how the Region plans and funds future transit services. Historically, transit services could only be funded through D.C. in the following manner:

- Service costs could only be recovered at up to 90% of total capital cost due to a D.C.A. mandatory 10% reduction of eligible growth-related capital cost applied to transit services; and,
- Growth-related capital expenditures for transit infrastructure were limited to expenditures that supported maintaining historic service levels. This was calculated based on the average level of service over the prior ten years.

Changes in the D.C.A., which came into effect in January 2016, have resulted in alterations to the Region's growth-related transit funding mechanisms. These changes are summarized as follows:

- The mandatory 10% reduction of eligible growth-related capital costs has been removed for transit services, allowing growth related transit services to be 100% eligible for recovery through D.C.; and
- The introduction of planned levels of services for transit, with the prescribed method and criteria to establish the service level (outlined in O.Reg. 428/15). This allows municipalities to be forward-looking in estimating future level of service for transit D.C. calculations and apportion them to growth accordingly. It also included new highly prescriptive reporting requirements associated with the background reporting for D.C.

The new reporting requirements that need to be outlined in the D.C. background study related to transit include:

- The calculations that were used to prepare the estimate for the planned level of service for transit services;
- An identification of the portion of the total estimated capital costs related to the transit service that would benefit the anticipated development over the ten-year D.C. period and after the ten-year D.C. period;
- An identification of the anticipated excess capacity that would exist at the end of the ten-year D.C. period;
- An assessment of ridership forecasts for all modes of transit services proposed to be funded, categorized by development types and whether the ridership will be from existing or planned development; and,
- An assessment of the ridership capacity for all modes of transit services proposed to be funded by the D.C.

The Region's current D.C. By-law was updated in 2016 for transit services provided within the urban area of the Region of Waterloo (Waterloo, Kitchener and Cambridge) under the amended 2016 D.C.A. The current D.C. By-law (which includes all services) will expire in mid-2019 and the Region is preparing a new by-law. The purpose of this technical appendix is to identify the growth and benefit attributed to existing conventional (bus and Light Rail Transit) and specialized transit capital costs, as well as the in-period and post-period shares to inform the Region's 2019 D.C. Background Study for Transit prepared by Watson & Associates Economists Ltd. (Watson).

2.0 Growth Forecasts

2.1 Region-Wide Population and Employment Growth

Table 1 presents the population and employment growth anticipated in the Region of Waterloo. Population and employment data for mid-2019, mid-2029, mid-2031 and for the long-term planning horizon were provided by Watson. The long-term planning horizon used for this study matches the same horizon used in the 2019 Regional Transportation Master Plan (R.T.M.P.). Population and employment were assumed to grow linearly between these horizon years. Population and employment data used was based on the population forecast excluding the net census undercount, but including institutional population and off-campus students. Employment forecast excluded work at home and no fixed place of work.

Table 1: Population and Employment Forecasts (2019- Long-term Planning Horizon)

	In-Period	In-Period	Post-Period	Post-Period
	Mid-2019	Mid-2029	Mid-2031	Long-term Planning Horizon
Population ¹	583,962	656,000	671,459	742,982
Employment	290,483	324,809	331,674	366,000
Population and Employment	874,444	980,809	1,003,133	1,108,982

¹ Population count includes institutional population and off-campus students, but excludes census undercount.

3.0 Reconciling Data with the Region's Previous Transit D.C Studies

The Region undertook an update to the Transit D.C. in 2016 to review and update the 2014 Transportation and Transit Study (undertaken by Dillon Consulting in March 2014) based on the new legislative requirements provided by the 2016 D.C.A. The 2016 Transit D.C. was undertaken using the best available information at that time, including the Region of Waterloo 2010 R.T.M.P., which established Council's approved policies and practices to guide transportation decision making and the planned transit level of service to 2031. The 2010 R.T.M.P. P.M. peak hour ridership was used as the source for all assessment of benefits, as it presented the Council approved forecast that was used to determine the planned transit capital program. The 2010 R.T.M.P. P.M. peak hour transit ridership was based on the 2006 base year data, and identified transit ridership associated with horizon years 2016, 2021 and 2031.

The 2016 Transit D.C. base year was 2016, and the 10-year D.C. period was up to 2025. The 2016 Transit D.C. utilized the 2016 horizon year total person trips and an interim year 2025 transit and total person trips from the 2010 R.T.M.P. for the D.C. calculations. As the need and justification for the transit program was based on a planning horizon of 2031 (and associated transit ridership forecast), post period capacity was assessed based on infrastructure associated with growth between the end of the D.C. period (2025) and the end of the planning horizon (2031). Table 2 presents a summary of the data used in the 2016 Transit D.C. Study.

Table 2: Summary of Data Used in 2016 Transit D.C. Study (Excerpt from 2016 D.C. Figure 4.1)

Statistic	2016	2025	2031	Growth (2016-2025)	Growth (2016-2031)
P.M. Peak Hour Transit Ridership	9,200	22,840	27,101	13,640	17,901
P.M. Peak Hour All Trips	146,687	173,004	183,486	26,317	36,779
Existing Base Transit Mode Share	6.3%	12.5%	14.0%		
New Growth Transit Mode Share	N/A	16.9%	17.7%		
Region-wide Transit Mode Share	6.3%	13.2%	14.8%		

At the time of this 2019 Transit D.C. Study, the R.T.M.P. has been updated. Some of the key changes include:

1. 2016 is no longer forecast year but is considered a base-year, taken from the 2016 Transportation Tomorrow Survey (T.T.S.).
2. A long-term planning horizon beyond 2031 was established.
3. The mode share targets in the R.T.M.P. were adjusted to be measured across the whole P.M. peak period (three hours between 2:30 p.m. and 5:30 p.m., compared to one hour) to allow for more school and discretionary trips to be included.
4. The 14.8% transit mode share target established in the 2010 R.T.M.P. was extended beyond 2031 to the long-term to allow more time for travellers to change their travel behaviours (due to slower than predicted uptake in transit services).

This 2019 Transit D.C. Study uses a base year of 2019 and a 10-year D.C. period to 2028. It utilizes the approach established in the 2016 Transit D.C., but updated data sources including the 2019 R.T.M.P. and the 2016 T.T.S. survey. Table 3 shows the summary of data used in the 2019 Transit D.C.

Table 3: Summary of Data Used in the 2019 Transit DC Study

	R.T.M.P. Base Year (2016)	2019	2028	Long- term (Post- 2031)	In-Period Growth (2019- 2028)	Entire Growth (2016-Long Term, Post- 2031)
P.M. Peak Period Transit Ridership	17,096	21,175	35,564	68,422	14,389	51,326
P.M. Peak Period Person Trips	348,894	361,360	406,908	462,308	45,548	100,948
Existing Base P.M. Peak Period Transit Mode Share	4.9%	5.9%	7.35%			
New Growth P.M. Peak Period Transit Mode Share	N/A	N/A	12.42%			
Region-wide P.M. Peak Period Transit Mode Share	N/A	5.9%	8.74%	14.8%		

4.0

Ten-Year Conventional Fleet Capital Plan for D.C. Application

The Region's ten-year capital plan for transit was informed by the draft 2019 Regional Transportation Master Plan (R.T.M.P.). The R.T.M.P. outlines the need and justification for transit infrastructure and associated capital costs in order to achieve the planned transit level of service for the Region between 2019 and the long-term period beyond 2031. Capital costs reported in the R.T.M.P. include conventional bus fleet growth (including technology), bus maintenance and storage facility expansions, transit priority technology and other ancillary costs. The following section provides further detail of D.C. eligible conventional transit fleet costs included in the R.T.M.P. by horizon year. The 2019 R.T.M.P. used a long-term planning beyond 2031 to assess transit infrastructure needs. This planning horizon has been used in the D.C. analysis to determine the post-period benefit.

To ensure consistency in how the data is interpreted, the following definitions apply:

P.M. Peak Period Person Trips: The total number of trips by all modes within the Region of Waterloo that occur between 2:30 p.m. and 5:30 p.m.

P.M. Peak Period Total Transit Trips: The total number of linked transit trips from origin to destination within the Region of Waterloo that occur between 2:30 p.m. and 5:30 p.m. by either G.R.T. bus or ION L.R.T. Transit trips is used interchangeably with "Transit ridership" or "Transit rides".

P.M. Peak Period Transit Boardings: An entry onto a G.R.T. bus or ION L.R.T. transit vehicle within the Region of Waterloo between 2:30 p.m. and 5:30 p.m. Boardings onto multiple transit vehicles (a transfer) may be required to complete a transit trip or ride.

P.M. Peak Period Transit Mode Share: The percent of transit trips within the Region of Waterloo relative to total person trips within the Region of Waterloo that occur during the P.M. peak period (between 2:30 p.m. and 5:30 p.m.)

4.1 Transit Mode Share

The R.T.M.P. presents a 14.8% transit mode share target for the entire Region of Waterloo during P.M. peak period for the long-term planning horizon beyond 2031. By interpolating the mode share linearly between 2016 and the 2031 and in the long-term horizon (identified in the R.T.M.P.), the following transit mode share targets are assumed in **Table 4**. Mode share by bus transit and Light Rail Transit were also assumed based on the 2016 calculated mode share and mode share projections developed in the R.T.M.P for the 2031 and long-term horizons. The mode share targets were used in the R.T.M.P. to develop transit ridership forecasts and conventional transit vehicles requirements up to the long-term horizon period. It should be noted that the majority of existing G.R.T. ridership occurs in the three urban municipalities of Waterloo, Kitchener and Cambridge, with only two bus routes that service the more rural townships (constituting less than 1% of G.R.T.'s P.M. peak period ridership). The growth in transit fleet as identified in the R.T.M.P. is also planned within these three urban municipalities.

Table 4: P.M. Peak Period Person Trips and Mode Share Targets

	R.T.M.P Base Year	In- Period	In- Period	Post- Period	Post- Period
Trip Statistics	2016	2019	2028	2031	Long- term
P.M. Peak Transit Period Mode Share	4.9%	5.9%	8.7%	9.7%	14.8%
P.M. Peak Period G.R.T. Bus Mode Share	4.9%	5.2%	6.0%	6.3%	9.6%
P.M. Peak Period ION L.R.T. Mode Share	0.0%	0.7%	2.7%	3.4%	5.2%
P.M. Peak Period Total Transit Trips	17,096	21,175	35,564	40,877	68,422
P.M. Peak Period Person Trips (all modes)	348,894	361,360	406,908	421,411	462,308

4.2 New Conventional Local Transit Vehicles

The 2019 update to the R.T.M.P. outlines transit related capital costs for the Region up to the post-2031 long-term horizon year for iXpress, high-frequency local service and low-frequency local service. The fleet requirements for the 2019 D.C. in-period and post-period are shown in **Table 5** (starting in 2019). For a year-over-year breakdown of conventional fleet purchases see **Appendix A**.

Most future vehicles are assumed to be 40-foot accessible buses. G.R.T. has advised that they do plan on acquiring a limited number of larger 60-foot articulated buses and therefore a “blended” cost representing future fleet acquisitions was formulated for the 2019 R.T.M.P. update. This “blended” figure was updated for this D.C. study, based on updated costs provided by G.R.T. Based on this, additional fleet capital costs were calculated using a unit cost of \$636,865.98 per bus. Unit costs are in 2019 dollars and include all onboard equipment for a vehicle to run in revenue service, including farebox, Automatic Vehicle Location (A.V.L) system, security features, and more.

Table 5: Conventional Transit Bus Requirements (2028, 2031 and Long-term)

	In-Period	In-Period	Post-Period	Post-Period
	2019	2028	2031	Long-term (post2031)
Peak Fleet iXpress	-	77	77	96
Peak Fleet High-Frequency Local	-	85	94	117
Peak Fleet Low-Frequency Local	-	116	130	210
Total Peak Fleet	215	278	301	428
Total Fleet (including Spares)	267	366	402	546
Additional Vehicles Required by Horizon Year (cumulative)	6	97	133	277

4.3 ION Light Rail Transit Vehicles

The Region of Waterloo's Ten Year Capital Budget and Forecast (2019 – 2028) details future ION Light Rail Vehicle (L.R.V.) purchases between 2022 and 2023. These vehicles will be used to increase service frequency along the Phase 1 corridor. Vehicles procured and delivered for the commencement of service in 2019 were included in the previous 2016 D.C. study. Any post-period benefit identified in the 2016 D.C. study will need to be re-examined for inclusion in this 2019 D.C.

Discussion with the Region of Waterloo indicated that six additional vehicles will be purchased and placed into revenue service within this 2019 D.C. study period. In line with the Capital Plan, each vehicle is expected to cost \$5,150,000. Unit costs provided by the Region are in 2019 dollars and include all onboard equipment for a vehicle to run in revenue service, including farebox, A.V.L. system, security features, and more. Additional L.R.V. purchases have been identified in the Region's Baseline Service Plans, 2017-2047. Those years that align with the 2019 R.T.M.P planning horizon have been included in **Table 6** below.

Table 6: ION Phase 1 Light Rail Vehicle Requirements and Capital Costs (2028, 2031, long-term)

	In-Period	In-Period	Post-Period	Post-Period
Statistic	2019	2028	2031	Long-term
Total L.R.V. Fleet (incl. Spares)	14	20	22	27
Additional Vehicles Required by Horizon Year (cumulative)	0	6	6	13

5.0 Ten-Year MobilityPLUS Fleet Capital Plan for D.C. Application

5.1 Existing Specialized Transit (MobilityPLUS)

The Region of Waterloo operates a specialized public transportation service called MobilityPLUS, which includes a publically-owned purpose-built bus fleet and a third-party sedan service. The service is provided in the Cities of Waterloo, Kitchener and Cambridge. A third-party sedan service is contracted out to the taxi industry and is used to fill in gaps in service where demand exceeds the supply of the publically-owned fleet. Note that capital costs are only included for an increase in demand on the publically-owned MobilityPLUS fleet.

In 2018, 1,754 residents were active registrants of the MobilityPLUS service. This reflects a significant drop from 2017, which was due to a clean-up in G.R.T.'s records as opposed to a decrease in actual active registrants.

These active registrants made a total of 200,048 trips in 2018 on both publically-owned and third-party vehicles. On average in 2017, approximately 62% of trips are delivered using publically-owned MobilityPLUS vehicles while the remaining 38% are delivered using third-party vehicles. It should be noted that in 2018, the number of trips delivered by third-party vehicles was higher than average. Based on discussions with G.R.T., this was considered an anomaly, and therefore a target of 62% (same as 2017) delivered by publically-owned MobilityPLUS vehicles was carried forward for future forecasting.

Based on discussion with G.R.T. staff, approximately 8% of all trip requests are denied due to capacity limitations on the existing system. The goal of G.R.T. is to move from an 8% trip denial rate to a 5% trip denial rate over the ten-year D.C. period. This will increase the number of trips per registrant made by both existing and future residents and the number of vehicles required to accommodate service demands. Table 7 includes the operating statistics for MobilityPLUS.

Table 7: MobilityPLUS Operating Statistics (2017-2018)

Year	Total Active Registrants	Annual Trips by Mobility-PLUS vehicles	Annual Trips by Third-Party	Annual Total Trips on Mobility-PLUS	Peak Vehicles (Total Vehicles)	Annual Trips per Registrant on Mobility-PLUS vehicles	Trips Per Peak Mobility PLUS Vehicle
2017	2,886	129,057	79,099	208,156	28 (34)	73.58	4,609
2018	1,754	102,024	98,024	200,048	28 (34)	58.17	3,644

Currently MobilityPLUS operates 34 cutaway vehicles with lifts, of which up to 28 are utilized for peak service. All vehicles are equipped with Automatic Vehicle Location (A.V.L.). The existing spare ratio for these vehicles is 18%. Based on discussions with G.R.T., the ideal spare ratio which will be targeted for this service is 20%.

5.2 Ridership Forecast

Ridership growth on MobilityPLUS (specialized transit) will grow as a result of three main reasons:

- Population growth in the community;
- Aging population; and
- Increase in number of trips per registrant (based on a planned reduction in the trip denial rate).

Population growth will see an increase in the number of MobilityPLUS registrants that will request trips on the service. This will increase the vehicle requirements over the ten-year D.C. period.

An aging population (from both the existing and growth population) will also see an increase in the number of MobilityPLUS registrants. The Region of Waterloo's Planning, Development and Legislative Services department provided their population by age forecast for the D.C. period. The forecasts in the report were adjusted to align with the D.C. population forecasts provided by Watson (see **Section 2.1**). The ratio of each age

group to the total population provided in the Region of Waterloo forecast was maintained and updated to reflect the D.C. population forecast provided by Watson.

The results of this adjustment are shown in **Table 8** below and illustrate that the existing Region of Waterloo population is aging. Stats Canada notes that approximately 13.7% of the Canadian population has a disability. The prevalence of disability rises as we age, from 4.4% of the population in the 15 to 24 year cohort to 42.5% of the population in the 75+ year cohort. With an aging population, there will be a growth in the number of MobilityPLUS registrants from the existing population over the 10-year D.C. period.

Table 8: Population by Age Cohort

Age Group	2018	2019	2028 ¹	2031	Long-term
0-14	100,574	101,535	110,200	111,326	111,973
15-24	74,186	74,068	79,441	80,733	84,812
25-44	164,425	165,976	178,050	178,050	177,478
45-54	79,197	78,606	82,657	85,830	94,823
55-64	73,071	74,623	78,758	76,918	82,852
65-74	49,430	51,465	69,499	73,801	71,404
75+	36,356	37,688	57,396	64,800	90,120
Total	577,239	583,962	656,000	671,459	713,462
New Growth Population	--	6,723	78,761	94,220	136,223

¹ 2028 population reflects mid-2029 values noted in **Table 1** (provided by Watson)

To calculate the growth in registrants, the prevalence of disability by each age cohort was multiplied by the number of residents in each corresponding age cohort between 2018 and the long-term. This provided the potential number of persons with disabilities each year (as illustrated in **Table 9** below).

Table 9: Potential Persons with Disabilities by Age Group

Age Group	Prevalence of Disability¹	2018	2019	2028	2031	Long-term (post-2031)
15-24	4.4%	3,264	3,259	3,495	3,552	3,732
25-44	6.5%	10,688	10,788	11,573	11,573	11,536
45-54	16.1%	12,751	12,656	13,308	13,819	15,266
55-64	16.1%	11,764	12,014	12,680	12,384	13,339
65-74	26.3%	13,000	13,535	18,278	19,410	18,779
75+	42.5%	15,451	16,017	24,393	27,540	38,301
Total Persons with Disabilities	-	66,918	68,270	83,728	88,278	100,954

¹ Source: Prevalence of disability, by age group, aged 15 years or older, Canada, 2012 (Statistics Canada - <http://www.statcan.gc.ca/pub/89-654-x/2015001/tbl/tbl02-eng.htm>)

It should be noted that not all persons with disabilities would be eligible for MobilityPLUS. The definition of disability is broad and could include disabilities that would not prevent a resident from using the conventional bus service. Therefore, a ratio of existing (2018) MobilityPLUS registrants to potential persons with disabilities in 2018 was calculated and applied to each corresponding year to forecast the future number of MobilityPLUS registrants. The formula to calculate this is noted below using the 2028 horizon year as an example:

Formula: 2028 MobilityPLUS Active Registrants

2028 MobilityPLUS Active Registrants =

- 2018 MobilityPLUS Active Registrants / 2018 Potential Persons with Disabilities = MobilityPLUS Registrant Trip Rate per Potential Person with a Disability
- X 2028 Potential Persons with Disabilities

Calculation

$$1,754 / 66,918 = 0.026$$

$$\times 83,728 = 2,117$$

The forecasted number of MobilityPLUS registrants during the ten-year 2019 D.C. period is illustrated in **Table 10** below. To calculate ridership, the number of trips made by each registrant was also calculated. As identified above, MobilityPLUS uses both publically-owned purpose-built bus fleet and a third-party sedan service to provide trips for registered passengers. Approximately 62% of trips were provided on publically-owned vehicles in 2017. Based on direction from G.R.T., a ratio of 62% was continued over the ten-year D.C. period to forecast future ridership.

In 2019, 70.71 trips are forecasted to be made annually per registrant on MobilityPLUS using publically-owned purpose-built buses. This includes the 8% trip denial rate. As mentioned above, G.R.T. indicated a need to reduce the number of trip denials from 8% to 5% to be more in line with industry standards. This goal was assumed to be achieved gradually between 2019 and 2028.

The formula to calculate the impact on changing the trip denial rate on the number of trips per registrant in 2028 is noted below:

Formula

2028 Trips per registrant (based on proposed trip denial rate) =

- 2018 MobilityPLUS Trips (Using 2017 proportions as per 2018 anomaly) / 2018 Percent of Completed to Requested Trips (i.e. inverse of trip denial rate) X 2028 Proposed Percent of Completed to Requested Trips (i.e. inverse of proposed trip denial rate) / 2018 MobilityPLUS Registrants

Calculation

124,030 / 0.92

X 0.95

/ 1,754

= 73.02

Table 10: Registrant Forecast for MobilityPLUS (2018-2028)

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Registrants	1,754	1,775	1,814	1,853	1,898	1,943	1,989	2,034	2,079	2,128	2,177
Trip Denial Rate	8.0%	8.0%	8.0%	7.5%	7.5%	7.0%	7.0%	6.5%	6.0%	5.5%	5.0%
Trips by MobilityPLUS Vehicles*	102,024	125,517	128,278	131,753	134,962	138,917	142,143	146,150	150,192	154,553	158,956
Trips by Third Party	98,024	76,929	78,622	80,752	82,718	85,142	87,120	89,576	92,053	94,726	97,424
Total Trips	200,048	202,446	206,899	212,505	217,680	224,059	229,262	235,726	242,245	249,279	256,380
MobilityPLUS Vehicle Trips Per Registrant	58.17	70.71	70.71	71.10	71.10	71.48	71.48	71.87	72.25	72.63	73.02

* Note: Trips on Third-Party vehicles in 2018 was higher than average. This was adjusted in future years to reflect 62% of total MobilityPLUS trips in future calculations (same rate as 2017).

To calculate the number of forecasted trips over the ten-year 2019 D.C. period, the trip rate (adjusted to reflect a reduced trip denial rate) was multiplied by the number of forecasted registrants for each year and split between the publically-owned purpose-built buses and contracted third-party taxis. The outcome of this analysis is illustrated in **Table 10** above. As illustrated, trips provided by G.R.T MobilityPLUS buses are expected to grow from 124,030 in 2019 to 158,956 in 2028. This will require an increase in bus fleet to accommodate the additional demand.

5.3 New MobilityPLUS Vehicles

To understand the future fleet requirements for MobilityPLUS, the following assumptions are made:

- Capital costs are solely attributed to the publicly-owned fleet of purpose-built vehicles;
- The capital cost per vehicle is \$150,000 (2019\$). This cost includes installation of Trapeze communication system, farebox and other miscellaneous items (e.g. signage). All future vehicles are assumed to be similar to the current fleet;
- The 17.6% spare ratio in 2018 is gradually increased to a 20% spare ratio as soon as practicable;
- In 2018 (assuming MobilityPLUS vehicles make 62% of all trips as noted above), each peak period vehicle makes approximately 4,430 trips annually. This productivity level was gradually increased to 4,500 in 2028; and
- G.R.T.'s current MobilityPLUS Business Plan provides an additional bus each year up to 2021. Beyond 2021, peak MobilityPLUS requirements are calculated based on applying the 4,430 trips per peak period bus.

Table 11 outlines the publically-owned transit vehicle requirements to 2028. By the end of the ten-year 2019 D.C. period (2028), G.R.T. will need eleven (11) new vehicles to accommodate growing registrants attributed to population growth, an aging population, a reduction in trip denials, and an improved spare ratio. Note that spare ratio is calculated by G.R.T. as spare vehicles divided by total fleet, rather than by the peak fleet standard calculation.

Table 11: Specialized Transit (MobilityPLUS) Vehicle Requirements (2028)

	2018	2019	2028
Total Peak Fleet	28	29	36
Total Spare Fleet	6	6	9
Total Fleet (incl. Spares)	34	35	45
Spare Ratio	17.6%	17.1%	20.0%
Additional Vehicles Required (cumulative)	--	1	11

6.0 Apportioning Benefit

This section details how the transit capital program is apportioned between benefit to growth and existing base.

6.1 In-Period Growth and Existing Benefit

The 2016 D.C.A. requires that the increased need for service be reduced by the extent to which a service would benefit existing population. The in-period benefit is therefore further broken down into benefit to existing populations and benefit to growth populations.

6.1.1 Conventional Transit Vehicles (L.R.T. and Conventional Bus)

To determine the extent to which new transit capital will benefit the existing population and the growth population, it is first important to understand the propensity of each to use transit. The 2016 Transit D.C. update completed by Dillon Consulting Limited concluded that the growth population was more likely to use transit than the existing population.

New developments and their corresponding populations often have an increased propensity to use transit due to changing views on transit, higher densities of new built form, and increased adoption of transit-oriented design in new developments. Existing populations have a lower propensity to use transit due to the existing auto-oriented built form and challenges in changing established behaviours.

New development that is being planned within the Region over the next ten years will on average be denser than existing development. **Table 12** illustrates the percentage of population from both existing and new growth by unit type for the cities of Waterloo, Kitchener and Cambridge. As seen, 58.9% of new population growth will reside in high or medium density housing, compared to only 32.5% of existing population. An additional 5.3% of new population will be students that reside in institutional or off-campus housing, which are traditionally higher density forms of development. This change in built form has an impact on the propensity to use transit by the different portions of the population.

Table 12: Existing and Growth in Population by Housing Type

Category	Existing Population (2018)	% of Existing Population	Growth Population (2019 – 2028)	% of Growth Population
Low Density (singles and semis)	327,800	67.5%	21,676	35.9%
Medium Density (multiples)	71,710	14.8%	10,659	17.7%
High Density (apartments)	86,130	17.7%	24,848	41.2%
Off-campus Housing	-	-	369	0.6%
Institutional Housing	-	-	2,818	4.7%
Total	485,640	100.0%	60,370	100.0%

Data was derived from the 2016 Transportation Tomorrow Survey (T.T.S.) to understand how housing choice correlates with the propensity to use transit. The T.T.S. is a comprehensive travel survey conducted in the Greater Golden Horseshoe Area every five years. The purpose of the survey is to provide data that help governments and transportation agencies make transportation investment decisions.

Table 13 illustrates the average 2016 transit mode share of residents in the City of Waterloo, City of Kitchener and City of Cambridge during the P.M. peak period by housing type (based on 2016 T.T.S. data).

Table 13: Transit Mode Share by Housing Type in Waterloo, Kitchener and Cambridge

Housing Type	Transit Mode Share
Low Density (singles and semis)	2.6%
Medium Density (multiples)	5.5%
High Density (apartments)	10.1%

As seen above, residents that live in higher density developments are more likely to use transit than residents that live in lower density developments. The T.T.S. data did not include a transit mode share for population associated with institutional and off-campus housing, so the transit mode share for high density development was used since this population typically resides in high density housing and has a higher propensity to use transit due to the U-Pass agreement with the University of Waterloo and Conestoga College, which provides students with unlimited transit use included with their tuition.

To understand how this impacts the apportionment of transit capital to the existing and growth population, the above 2016 transit mode share was applied to the existing (2019) and growth (2019 – 2028) population based on unit type/density. This is illustrated in **Table 14**.

Table 14: Comparison of Average P.M. Peak Period Transit Mode Share between Existing and Growth Population**

Housing Type	2019 Total Person trips	2019 Transit Trips	Transit mode share*	Growth (2019 – 2028) Total Person Trips	Growth (2019 – 2028) Transit Trips	Growth Transit Mode Share*
Low Density (singles and semis)	243,913	6,342	2.6%	16,354	425	2.6%
Medium Density (multiples)	53,359	2,935	5.5%	8,042	442	5.5%
High Density (apartments)	64,088	6,473	10.1%	18,747	1,893	10.1%
Off-campus Housing	N/A	N/A	N/A	278.40	28	10.1%
Institutional Housing	N/A	N/A	N/A	2,126	215	10.1%
Total	361,360	15,749*	4.4%*	45,548	3,004	6.6%

*Based on 2016 Transit Mode Share from T.T.S. survey data

Note: The transit mode share and existing transit trips presented in this table does match the 2019 transit mode share and existing transit trips presented in **Table 2 as **Table 14** uses 2016 T.T.S. data applied to 2019 population and growth in population between 2019 to 2028. **Table 14** should only be used as a comparison of average P.M. peak period transit mode share based on 2016 T.T.S. data between existing and growth population when considering the distribution of housing types (density).

Based on the above, the average transit mode share by the growth population is 6.6% compared to 4.4% by the existing population (or 50% higher). This is due to the higher percentage of high and medium density housing that will be built over the next ten years compared to what exists today. This is considered to be a conservative estimate as it does not account for the likelihood of changes in travel behaviour nor the increase in

transit supportive design features in new developments compared to existing residential units (of the same density type).

To calculate mode share target for both the existing population and growth population required to meet the 8.74% P.M. peak period mode share target by 2028, the following methodology was used:

Step 1: Determine Growth in Transit Trips

The number of P.M. peak period transit trips attributed to growth and existing population and their respective transit mode shares can be calculated using the following formula. The transit mode share target for 2028 is forecasted to be 8.74%.

Formula

Growth in Transit Trips during the P.M. Peak Period between 2019 and 2028 =

- Region-wide P.M. Peak Period Transit Mode Share Target in 2028 X All P.M. Peak Period Person Trips in 2028 (see **Table 2**) – 2019 P.M. Peak Period Transit Trips (see **Table 2**)

Calculation

$$= (8.74\% \times 406,908)$$

$$= 35,564$$

$$- 21,175$$

$$= 14,389$$

Step 2: Determine Growth in Transit Trips Attributed to Growth Population

The next step is to determine the breakdown between transit trips from the growth population and existing population that are required to reach 14,389 new P.M. peak period transit trips between 2019 and 2028.

Table 14 above determined that the average mode share from the growth population would be 50% higher than the existing population (based on travel data from the 2016 T.T.S. survey). This was applied to the 2019 P.M. peak period transit mode share to get the mode share and corresponding number of transit trips from the growth population. This was calculated using the following formula:

Formula

2028 P.M. Peak Period Transit Trips by New Population Assuming No Change in 2019 P.M. Peak Period Transit Mode Share by Existing Population =

- (2019 P.M. Peak Period Transit Mode Share X 50% increase in transit mode share for growth, based on 2016 T.T.S. data calculated in **Table 14** and assuming no change in 2019 transit mode share by existing population) + 2019 P.M. Peak Period Transit Mode Share

Calculation

$$= (5.86\% \times 50\%) + 5.86\%$$

$$= 8.79\%$$

Formula

2028 P.M. Peak Period Transit Trips from Growth Population (assuming no change in transit trips from existing population) =

- 2028 P.M. Peak Period Transit Mode Share from Growth Population X Growth in P.M. Peak Period Total Person Trips between 2019 and 2028

Calculation

$$= 8.79\% \times 45,548 \text{ (calculation = } 406,908 \text{ person trips in 2028 – } 361,360 \text{ person trips in 2019 – Table 2)}$$

$$= 4,004$$

Applying the 50% mode share increase to the existing P.M. peak period transit mode share results in an 8.79% mode share for the growth population, or 4,004 additional transit trips, compared to a 5.86% P.M. peak period transit mode share from the existing 2019 population. Adding the 4,004 increase in transit trips from the growth population to the existing 2019 P.M. peak period transit trips (21,175) results in 25,179 P.M. peak period transit trips by 2028 (resulting in a 6.19% P.M. peak period transit mode share). This is approximately 10,385 transit trips short of the 35,564 total P.M. peak period transit trips required to meet the 8.74% transit mode share target by 2028.

This illustrates that to achieve the 2028 transit mode share target, both the existing and growth population will need to use transit more than they do today, increasing the corresponding transit mode shares for both.

To calculate this increase, the ratio of new transit trips that result from the growth population (4,004) to the total transit trips (4,004 plus 21,175 existing transit trips in 2019) was calculated and applied to the total number of transit trips required to reach the 8.74% transit mode share target by 2028 (35,564). This results in an increase in new transit trips from population growth that maintains the same proportion between the growth population and the existing population described above. The remaining trips required to achieve the 14,389 new P.M. peak period transit trips were a result of the existing population using transit more. This is illustrated in **Table 15** and calculated below:

Formula

Transit Trips by Growth Population Required to Reach the 8.74% P.M. Peak Period Transit Mode Share Target by 2028 =

- (2028 P.M. Peak Period Transit Trips from Growth Population (assuming no change in transit trips from existing population) / Total 2028 P.M. Peak Period Transit Trips (assuming no change in transit trips from existing population)) X Total 2028 P.M. Peak Period Transit Trips required to Achieve the 8.74% Transit Mode Share Target

Calculation

$$= (4,004 / 25,179) \times 35,564$$

$$= 5,655$$

To calculate the adjusted P.M. peak period transit mode share from the growth population required to reach the 8.74% total transit mode share target by 2028, the following formula was used:

Formula

2028 P.M. Peak Period Transit Mode Share by Growth Population Required to Reach the 8.74% Total Transit Mode Share Target =

- Transit Trips by Growth Population Required to Reach the 8.74% P.M. Peak Period Transit Mode Share Target by 2028 / Growth in P.M. Peak Period Total Person Trips between 2028 and 2019

Calculation

$$= 5,655 / 45,548$$

$$= 12.42\%$$

Table 15: Mode Share Scenarios between Growth and Existing Population

Statistic	2019 P.M. Peak Period	2028 P.M. Peak Period (no change in existing transit trips)	2028 P.M. Peak Period Transit Trips (adjusted to mode share)
Transit Trips by Growth Population	0	4,004	5,655
Transit Trips by Existing Population	21,175	21,175	29,909
Total Transit Trips	21,175	25,179	35,564
P.M. Peak Period Transit Mode Share	5.86%	6.19%	8.74%

Step 3: Determine Growth in Transit Trips Attributed to Existing Population

To calculate future 2028 P.M. peak period transit trips and mode share by the existing population required to reach the total 8.74% transit mode share target, the following formula was used:

Formula

Growth in P.M. Peak Period Transit Trips (2019 – 2028) by Existing Population =

- Growth in P.M. Peak Period Transit Trips (2019 – 2028) - Growth in P.M. Peak Period Transit Trips between by Growth Population Required to Reach the 8.74% Transit Mode Share Target

Calculation

$$= 14,389 - 5,655$$

$$= 8,734$$

To calculate the 2028 P.M. peak period transit mode share target for the existing population required to reach the total 2028 P.M. peak period transit mode share, the following formula was used:

Formula

2028 P.M. Peak Period Transit Mode Share Target for Existing 2019 Population =

- (Growth in P.M. Peak Period Transit Trips (2019 – 2028) by Existing Population + 2019 P.M. Peak Period Transit Trips) / P.M. Peak Period Person Trips in 2028 (see **Table 2**)

Calculation

$$= (8,734 + 21,175)$$

$$/ 406,908$$

$$= 7.35\%$$

Therefore, the 2028 mode share target for both existing and growth population is summarized below:

2028 Mode Share Target by Existing Population = 7.35%

2028 Mode Share Target by Growth Population = 12.42%

2028 Mode Share Target for all Population = 8.74%

Step 4: Determine Benefit to Existing and Benefit to Growth

Using the above mode share target values, the benefit to existing and growth populations can be calculated below:

Formula

Benefit to Existing =

- Growth in P.M. Peak Period Transit Trips between 2019 and 2028 by Existing Population / Growth in P.M. Peak Period Transit Trips between 2019 and 2028

Calculation

$$= 8,734 / 14,389$$

$$= 60.70\%$$

Formula

Benefit to Growth =

- Growth in P.M. Peak Period Transit Trips between 2019 and 2028 by New Growth Population / Growth in P.M. Peak Period Transit Trips between 2019 and 2028

Calculation

$$= 5,655 / 14,389$$

$$= 39.30\%$$

Therefore, the in-period benefit to existing and growth for conventional transit vehicles is as follows:

60.70% benefit to existing

39.30% benefit to growth

6.1.2

MobilityPLUS Vehicles

The method used to apportion growth relating to specialized vehicles is different than conventional transit as benefits are allocated on a registrant basis instead of trips. Similarly there are benefits to the existing and growth populations. Thus, benefits are allocated to two groups of customers:

1. New registrants of MobilityPLUS based on the existing population (attributed to an aging population that will register for the service - as mentioned in **Section 5.1**); and
2. New registrants of MobilityPLUS based on growth in population.

As mentioned in **Section 5.1**, a trip denial rate of five percent is targeted within a ten-year period meaning MobilityPLUS needs to expand their fleet to accommodate more trips that will be taken as a result of a reduction in trip denials. These trips benefit the existing population but also benefit new growth based on the adjusted trips per registrant.

To calculate the apportionment of benefit, trips were separated into:

1. Growth of Active Registrants (as a result of an aging population and population growth); and
2. Growth of Trips per Active Registrant (as a result of reduction in trip denial rate).

Growth of Active Registrants

To determine the number of new registrants that come from the existing population and those that are from the new population, the impacts of an aging population on the prevalence of disability (and thus the potential to register for MobilityPLUS) was calculated.

The population with a disability as illustrated in **Table 16** in each age cohort in 2028 was multiplied by the ratio of existing 2019 population to the total 2028 population (including growth). This provided the growth in the existing population with a disability in 2028. The net growth between 2019 and 2028 was the number of new existing residents that could potentially have a disability over the 10-year D.C. period and be eligible for MobilityPLUS.

The growth population with a disability was calculated by multiplying the total 2028 population with a disability (**Table 16**) in each age cohort by the ratio of growth population (2019 to 2028) to the 2028 total population.

Table 16: Allocation of New Active Registrants to Growth and Non-Growth

	2018	2019	2028
Population	577,239	583,962	656,000
% Existing Population	100.0%	98.8%	88.8%
% Growth Population	0.0%	1.2%	12.0%
Population with a disability	66,918	68,270	83,728
Proportion resulting from population growth	--	786	10,047
Proportion resulting from an aging population	--	566	6,757
Total Change in existing population with a disability due to aging	--	1,352	16,804
% of new active registrants from existing aging population	--	41.9%	40.20%
% of new active registrants from population growth	--	58.1%	59.80%

Growth in Trips per Active Registrant

A different allocation was identified for the in the number of trips per registrant that would result in the reduction of the trip denial rate from 8% to 5%. The reduction in trip denial would not only benefit new active registrants to the service, but also existing active registrants that currently use MobilityPLUS. This would result in a higher allocation of cost to the existing population than identified above.

To calculate this, the 2018 trip rate using MobilityPLUS vehicles per active registrant was used to calculate 2028 trips (assuming no change in trip denial). This provides the total

number of 2028 trips using MobilityPLUS vehicles assuming no change in trips per active registrant. This was then subtracted by the total 2028 MobilityPLUS vehicle trip forecast (assuming the 5% trip denial rate) to get the total number of additional trips per active registrant. Between 2018¹ and 2028, an additional 34,926 new MobilityPLUS trips were forecasted, of which 29,906 are new trips by new registrants to the service (assuming a slightly higher trip rate by 2028 based on the decrease in trip denials) and 5,020 are increased trips per registrant (as a result of the change in the trip denial rate).

To calculate the apportionment to growth and existing population, the following formula was used:

Formula

Trips attributed to new registrants by existing population in 2028 =

- Total MobilityPLUS Trips in 2028 – (Total Active Registrants in 2028 x MobilityPLUS Trip Rate in 2017)

Calculation

$$= 158,956 - (2,177 \times 70.71)$$

$$= 5,020$$

Formula

Trips attributed to new active registrants by growth population in 2028 =

- (Total Active Registrants by 2028 – Total Active Registrants in 2018) x 2018 MobilityPLUS municipally-owned vehicle Trip Rate

Calculation

$$= (2,177 - 1,754) \times 70.71$$

$$= 34,926$$

¹ 2018 MobilityPLUS ridership on municipally-owned vehicles was adjusted to 62% of all MobilityPLUS trips to reflect the typical split with third-party provided services.

Therefore, the allocation of benefits to existing registrants and growth registrants can be summarized by the following formulas:

Formula

Benefit to Existing =

- (Trips attributed to new registrants by existing population in 2028 X Percent of 2028 Population that was existing in 2019) + (Trips attributed to new active registrants by 2028 X Percent growth of 2019 population with a disability) = Increase in Rides by Existing Active Registrants in 2028
- / (Increase in Rides by New Active Registrants in 2028 + Increase in Rides by Existing Active Registrants in 2028 due to reduction in trip denial rate)

Calculation

$$= (5,020 \times 88\%) + (29,906 \times 40.2\%) = 16,440$$

$$/ (18,486 + 16,440)$$

$$= 47.10\%$$

Formula

Benefit to Growth =

- (Trips attributed to new registrants by existing population in 2028 X Percent of 2028 growth population) + (Trips attributed to new active registrants by 2028 X Percent growth of new (growth) population with a disability) = Increase in Rides by New Active Registrants in 2028
- / (Increase in Rides by New Active Registrants in 2028 + Increase in Rides by Existing Active Registrants in 2028 due to reduction in trip denial rate)

Calculation

$$= (5,020 \times 12\%) + (29,906 \times 59.8\%) = 18,486$$

$$/ (18,486 + 16,440)$$

$$= 52.90\%$$

Therefore, the benefit to existing and growth for specialized vehicles is as follows:

47.10% to benefit to existing

52.9% to benefit to growth

6.2 In-Period and Post-Period

The 2016 D.C.A. requires that no portion of the service intended to benefit anticipated development within the ten-year D.C. period remain as excess capacity at the end of the ten-year D.C. period. For the purposes of this 2019 D.C. Study, in-period is identified as the horizon year of 2019-2028 and the post-period is assumed to be 2028 to the long-term planning horizon (post-2031).

6.2.1 Conventional Transit Vehicles (G.R.T. Bus and ION L.R.T.)

Vehicle capacity is based on the number of seats and room for standees on a transit vehicle. This is a fixed unit based on the size of the vehicle. If a service level trigger is reached and additional frequency is required to accommodate demand, the entire transit vehicle is needed to accommodate this demand, whether the vehicle is full or not. There is limited ability to right-size a transit vehicle to limit the amount of excess vehicle capacity that results in a service change. Therefore, the post-period benefit needs to be considered based on the overall transit capital program which is needed to achieve the long-term transit mode share target.

The 2019 R.T.M.P. and associated Regional transit documents identified a comprehensive transit infrastructure program to achieve the P.M. peak period transit mode share target and corresponding transit trips in the long-term planning horizon (post-2031). In order to increase the transit mode share from 4.9% (2016 base year T.T.S. data) to 14.8% in the long-term planning horizon (post-2031), the following major transit infrastructure capital investments were identified:

- Construction and implementation of the Stage 1 ION L.R.T. and a.B.R.T;
- Expansion of the bus network including 277 additional 40-foot equivalent buses to support growth (97 identified for purchase in-period and 180 buses intended to be purchase post-period);

- Need for additional bus facilities including the Northfield transit garage and a second new transit garage to accommodate buses within the long-term planning horizon; and
- Construction and implementation of Stage 2 ION L.R.T. to Cambridge (post-2028).

Some of these capital items are intended to be purchased in the 2019 10-year D.C. period and some are not. As the entire transit capital program is needed to achieve the transit mode share and associated transit trips within the long-term planning horizon (post-2031), a full capacity perspective was used to identify the in-period growth related costs. Based on the full transit capital program needed to achieve the 14.8% transit mode share in the long term (post-2031), a cost per trip was identified and apportioned to in-period new growth transit trips versus in-period existing population transit trips. The following formula was used to determine the total trip growth associated with the transit capital program and the portion that is in-period growth related versus the in-period benefit to existing. For the identification of the full capital program (2016 to long-term post-2031) and the cost per trip calculations, please see Watson's 2019 Transit D.C. Study.

Formula

Transit Trip Growth Associated with the Transit Capital Program across the full planning horizon, between 2016 and the long-term (post-2031) =

- Long-term (post-2031) P.M. Peak Period Transit Trips – 2016 Base Year Transit Trips

Calculation

$$= 68,422 - 17,096$$

$$= 51,326$$

Formula

In-period Transit Trip Growth =

- 2028 Transit Trips – 2019 Transit Trips

Calculation

$$= 35,564 - 21,175$$

$$= 14,389$$

As outlined in **Section 6.1.1** of this report, the following summarizes the apportionment of the in-period trips (identified as 14,389 above) between growth and existing population:

- In-Period Growth Related Trips = 5,655
- In-Period Existing Population Trips = 8,734

To determine the eligible 2019 transit D.C. growth related costs, the cost per capita for the full transit capital program (2016 to long term post-2031 planning horizon) should be applied to the In-period Growth Related Trips. The remaining trips are assumed to be post period, and would be re-examined during the Region's next D.C. update.

6.2.2

MobilityPLUS Vehicles

Unlike conventional transit, there is no post-period benefit for the purchase of the specialized fleet during the in-period. Since MobilityPLUS currently denies 8% of trip requests with a goal of moving to 5% of trip requests within the ten-year D.C. period, the existing population within the ten-year period are not meeting all of their travel demands. Any increase in registrants and trips beyond 2028 will require additional capacity if the trip denial rate is to remain at 5%.

As a result, there is no post-period benefit.

7.0 Summary of Key Values

Table 17 provides a summary of key values for the conventional transit D.C. calculations. **Table 18** provides a summary of key values for specialized transit D.C. calculations.

Table 17: Key Values for Transit D.C. Calculations (2019, 2028)

Statistic	2019	2028	Long-term (post-2031)
Annual Transit Ridership (All Modes)*	24,100,000	36,470,000	53,500,000
P.M. Peak Period Total Person Trips by All Modes	361,360	406,908	462,308
P.M. Peak Period Transit Trips	21,175	35,564	68,422
P.M. Peak Period Transit Mode Share	5.86%	8.74%	14.8%
P.M. Peak Period Transit Mode Share for Existing Population	--	7.35%	--
P.M. Peak Period Transit Mode Share for Growth	--	12.42%	--
In-Period Existing Population Transit Trips	--	8,734	--
In-Period New Growth Transit Trips	--	5,655	--

* Note: Numbers have been rounded to nearest 1,000.

Table 18: Key Values for Specialized Transit D.C. Calculations (2019, 2028)

Statistic	2019	2028
Annual Specialized Transit (MobilityPLUS) Trips (on MobilityPLUS Vehicles)*	129,000	159,000
MobilityPLUS Active Registrants	1,818	2,177
Additional Specialized Transit Vehicles Required from 2018 (cumulative)	1	11
In-Period Benefit to Existing		52.90%
In-Period Benefit to Growth		47.10%
Post-Period Benefit to Growth		0.00%

* Note: Numbers have been rounded to nearest 100.

Appendix A

Annual Conventional Transit Summary

Table A1: Annual Summary of Key Values (Conventional Transit)

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2031	Long-term (post-2031)
Population	555,253	562,420	569,587	576,754	583,921	591,088	598,255	605,422	612,589	619,756	642,308	713,462
Employment	290,482	293,915	297,347	300,780	304,213	307,646	311,078	314,511	317,944	321,376	330,301	366,000
Population & Employment	845,735	856,335	866,934	877,534	888,134	898,734	909,333	919,933	930,533	941,132	972,609	1,079,462
P.M. Peak Period Transit Period Mode Share	5.86%	6.18%	6.50%	6.82%	7.14%	7.46%	7.78%	8.10%	8.42%	8.74%	9.70%	14.80%
P.M. Peak Period G.R.T. Bus Mode Share	5.18%	5.27%	5.37%	5.46%	5.55%	5.65%	5.74%	5.83%	5.93%	6.02%	6.30%	9.60%
P.M. Peak Period ION L.R.T. Mode Share	0.68%	0.91%	1.13%	1.36%	1.59%	1.81%	2.04%	2.27%	2.49%	2.72%	3.40%	5.20%
Bus Fleet Growth	6	12	8	8	11	10	10	10	11	11	36	144
ION L.R.T. Fleet Growth	0	0	0	2	1	1	1	1	0	0	0	7



Appendix I

Non-Residential Calculations



Non-Residential Calculation Scenarios

The following non-residential calculations presented herein have been requested by Council as part of their consideration as part of the D.C. process. The four scenarios provided are as follows:

- One Uniform Non-Residential Charge;
- Industrial vs. Non-Industrial;
- Retail vs. Non-Retail; and
- Industrial vs. Commercial vs. Institutional (I.C.I.).

The method to calculate the Non-residential D.C.s are to take the non-residential portion of the Net D.C.-eligible costs and divide them into the respective non-residential gross floor area for each forecast period (i.e. 10-year Region-wide, 10-year Cities (for Transit), 10-year Townships (for Library), Region-wide longer term, and Region-wide Urban Longer Term). With respect to the four scenarios, the non-residential costs and the associated gross floor area for each of the scenarios will be separated into each respective type of development based on employment.

One Uniform Non-Residential Charge

Using this method, the Region-wide total non-residential recovery amount will be divided by the Region's combined non-residential gross floor area. This provides the following recovery:



Table 1
Uniform Non-Residential Calculations

	2019\$ D.C.-Eligible Cost		2019\$ D.C.-Eligible Cost	
	Non-Residential	per sq.m.	per sq.m.	per sq.ft.
Urban-wide Services Longer Term	\$ \$235,564,885	\$ \$66.69	\$	\$ \$6.19
Region-wide Services Longer Term	219,192,047	74.41		6.91
Region-wide Services 10 Year	14,893,043	11.15		1.02
TOTAL REGION-WIDE	\$469,649,975	\$152.25		\$14.12
City Specific Services 10 Year	22,981,156	20.97		1.95
Township Specific Services 10 Year	134,139	0.56		0.05
TOTAL CITIES	\$492,631,131	\$173.22		\$16.07
TOTAL TOWNSHIPS	\$469,784,114	\$152.81		\$14.17

Based on the Table 1, the Region's non-residential charge for all non-residential development is \$173.22 per sq.m. (\$16.07 per sq.ft.) for Cities, and \$152.81 per sq.m. (\$14.17 per sq.ft.) for Townships.



Industrial vs. Non-Industrial Charge

Using this method, the Region-wide total non-residential recovery amount has been divided in the proportionate share of industrial development vs. non-industrial development based on employment within those categories. The forecasted non-residential gross floor area has also been separated into industrial vs. non-Industrial and provides the following recovery:

Table 2
Industrial vs. Non-Industrial Calculations

SERVICE	2019\$ D.C.-Eligible Cost		2019\$ D.C.-Eligible Cost			
	Industrial	Non-Industrial	Industrial per sq.m.	Non-Industrial per sq.m.	Industrial per sq.ft.	Non-Industrial per sq.ft.
Urban-wide Services Longer Term	\$42,716,248	\$192,848,637	\$40.12	\$78.16	\$3.72	\$7.26
Region-wide Services Longer Term	35,950,092	183,241,955	\$42.72	87.08	\$3.97	8.09
Region-wide Services 10 Year	2,442,600	12,450,443	\$6.40	13.07	\$0.60	1.21
TOTAL REGION-WIDE	\$81,108,940	\$388,541,035	\$89.24	\$178.31	\$8.29	\$16.56
City Specific Services 10 Year	3,044,960	19,936,196	12.17	23.57	1.13	2.19
Township Specific Services 10 Year	49,965	84,174	0.38	0.79	0.04	0.07
TOTAL CITIES	\$84,153,899	\$408,477,232	\$101.41	\$201.88	\$9.42	\$18.75
TOTAL TOWNSHIPS	\$81,158,905	\$388,625,209	\$89.62	\$179.10	\$8.33	\$16.63

Based on Table 2, the Region's non-residential charge for industrial development is \$101.41 per sq.m. (\$9.42 per sq.ft.) for Cities, and \$89.62 per sq.m. (\$8.33 per sq.ft.) for Townships.

Alternatively, the non-industrial charges are \$201.88 per sq.m. (\$18.75 per sq.ft.) for Cities, and \$179.10 per sq.m. (\$16.63 per sq.ft.) for Townships.



Retail vs. Non-Retail

Using this method, the Region-wide total non-residential recovery amount has been divided in the proportionate share of retail development vs. non-retail development based on employment within those categories. The forecasted non-residential gross floor area has also been separated into retail vs. non-retail and provides the following recovery:

Table 3
Retail vs. Non-Retail Calculations

SERVICE	2019\$ D.C.-Eligible Cost		2019\$ D.C.-Eligible Cost			
	Retail	Non-Retail	Retail per sq.m.	Non-Retail per sq.m.	Retail per sq.ft.	Non-Retail per sq.ft.
Urban-wide Services Longer Term	\$47,653,988	\$187,910,897	\$77.17	\$64.47	\$7.17	\$5.99
Region-wide Services Longer Term	29,562,707	189,629,340	\$83.83	73.12	\$7.78	6.79
Region-wide Services 10 Year	1,937,752	12,955,291	\$12.93	10.92	\$1.20	1.01
TOTAL REGION-WIDE	\$79,154,447	\$390,495,528	\$173.93	\$148.51	\$16.15	\$13.79
City Specific Services 10 Year	2,665,430	20,315,726	23.71	20.65	2.20	1.92
Township Specific Services 10 Year	25,867	108,272	0.69	0.54	0.06	0.05
TOTAL CITIES	\$81,819,877	\$410,811,254	\$197.64	\$169.16	\$18.35	\$15.71
TOTAL TOWNSHIPS	\$79,180,314	\$390,603,800	\$174.62	\$149.05	\$16.21	\$13.84

Based on Table 3, the Region's non-residential charge for retail development is \$197.64 per sq.m. (\$18.35 per sq.ft.) for Cities, and \$174.62 per sq.m. (\$16.21 per sq.ft.) for Townships.

Alternatively, the non-retail charges are \$169.16 per sq.m. (\$15.71 per sq.ft.) for Cities, and \$149.05 per sq.m. (\$13.84 per sq.ft.) for Townships.



Industrial/Commercial/Institutional Calculations

Using this method, the Region-wide total non-residential recovery amount has been divided in the proportionate share of industrial development vs. commercial development vs. institutional development based on employment within those categories. The forecasted non-residential gross floor area has also been separated into I.C.I. and provides the following recovery:

Table 4
Industrial/Commercial/Institutional Calculations

SERVICE	2019\$ D.C.-Eligible Cost			2019\$ D.C.-Eligible Cost					
	Industrial	Commercial	Institutional	Industrial per sq.m.	Commercial per sq.m.	Institutional per sq.m.	Industrial per sq.ft.	Commercial per sq.ft.	Institutional per sq.ft.
	\$	\$	\$	\$	\$	\$	\$	\$	\$
Urban-wide Services Longer Term	\$42,716,248	\$104,954,652	\$87,893,985	\$40.12	\$81.88	\$74.13	\$3.72	\$7.61	\$6.89
Region-wide Services Longer Term	35,950,092	96,685,701	86,556,254	\$42.72	\$92.02	82.15	\$3.97	\$8.54	7.63
Region-wide Services 10 Year	2,442,600	6,569,364	5,881,080	\$6.40	\$13.85	12.28	\$0.60	\$1.29	1.14
TOTAL REGION-WIDE	\$81,108,940	\$208,209,717	\$180,331,318	\$89.24	\$187.75	\$168.56	\$8.29	\$17.44	\$15.66
City Specific Services 10 Year	3,044,960	10,061,890	9,874,306	12.17	25.53	21.86	1.13	2.37	2.03
Township Specific Services 10 Year	49,965	62,098	22,076	0.38	0.78	0.81	0.04	0.07	0.08
TOTAL CITIES	\$84,153,899	\$218,271,607	\$190,205,625	\$101.41	\$213.28	\$190.42	\$9.42	\$19.81	\$17.69
TOTAL TOWNSHIPS	\$81,158,905	\$208,271,815	\$180,353,394	\$89.62	\$188.53	\$169.37	\$8.33	\$17.51	\$15.74

Based on Table 4, the Region's non-residential charge for industrial development is \$101.41 per sq.m. (\$9.42 per sq.ft.) for Cities, and \$89.62 per sq.m. (\$8.33 per sq.ft.) for Townships.

The commercial charges are \$213.28 per sq.m. (\$19.81 per sq.ft.) for Cities, and \$188.53 per sq.m. (\$17.51 per sq.ft.) for Townships.

Finally, the institutional charges are \$190.42 per sq.m. (\$17.69 per sq.ft.) for Cities, and \$169.37 per sq.m. (\$15.74 per sq.ft.) for Townships