



# Water and Wastewater Rate Study

## Municipality of North Middlesex

May 8, 2024

Watson & Associates Economists Ltd.  
905-272-3600  
[info@watsonecon.ca](mailto:info@watsonecon.ca)



# Table of Contents

	Page
<b>Executive Summary .....</b>	<b>i</b>
<b>1. Introduction.....</b>	<b>1-1</b>
1.1 Background.....	1-1
1.2 Study Process.....	1-2
1.3 Regulatory Changes in Ontario.....	1-3
1.4 Sustainable Water and Sewage Systems Act.....	1-4
1.5 Financial Plans Regulation .....	1-6
1.6 Water Opportunities Act, 2010.....	1-7
1.7 Infrastructure for Jobs and Prosperity Act, 2015 (I.J.P.A.) .....	1-9
1.8 Forecast Growth and Servicing Requirements .....	1-11
<b>2. Capital Infrastructure Needs.....</b>	<b>2-1</b>
2.1 Capital Forecast.....	2-1
<b>3. Lifecycle Costing.....</b>	<b>3-1</b>
3.1 Overview of Lifecycle Costing.....	3-1
3.1.1 Definition.....	3-1
3.1.2 Financing Costs .....	3-1
3.1.3 Costing Methods .....	3-4
3.2 Impact on Budgets.....	3-6
<b>4. Capital Cost Financing Options .....</b>	<b>4-1</b>
4.1 Summary of Capital Cost Financing Alternatives.....	4-1
4.2 Development Charges Act, 1997 .....	4-2
4.3 Municipal Act .....	4-4
4.4 Historical Grant Funding Availability .....	4-6
4.5 Existing Reserves/Reserve Funds.....	4-8
4.6 Debenture Financing.....	4-8
4.7 Infrastructure Ontario .....	4-9
4.8 Recommended Capital Financing Approach.....	4-10



# Table of Contents (Cont'd)

	Page
<b>5. Overview of Expenditures and Revenues .....</b>	<b>5-1</b>
5.1 Water Operating Expenditures.....	5-1
5.2 Water Operating Revenues .....	5-1
5.3 Wastewater Operating Expenditures .....	5-4
5.4 Wastewater Operating Revenues .....	5-4
<b>6. Pricing Structures .....</b>	<b>6-1</b>
6.1 Introduction.....	6-1
6.2 Alternative Pricing Structures.....	6-2
6.3 Assessment of Alternative Pricing Structures .....	6-4
6.4 Rate Structures in Ontario .....	6-9
6.5 Recommended Rate Structures.....	6-10
<b>7. Analysis of Water and Wastewater Rates and Policy Matters .....</b>	<b>7-2</b>
7.1 Introduction.....	7-2
7.2 Water Rates.....	7-2
7.3 Wastewater Rates .....	7-3
7.4 Forecast of Combined Water and Wastewater Impact for the Average Residential Customer .....	7-4
<b>8. Recommendations .....</b>	<b>8-1</b>
<b>Appendix A Detailed Water Rate Calculations .....</b>	<b>A-1</b>
<b>Appendix B Detailed Wastewater Rate Calculations .....</b>	<b>B-1</b>



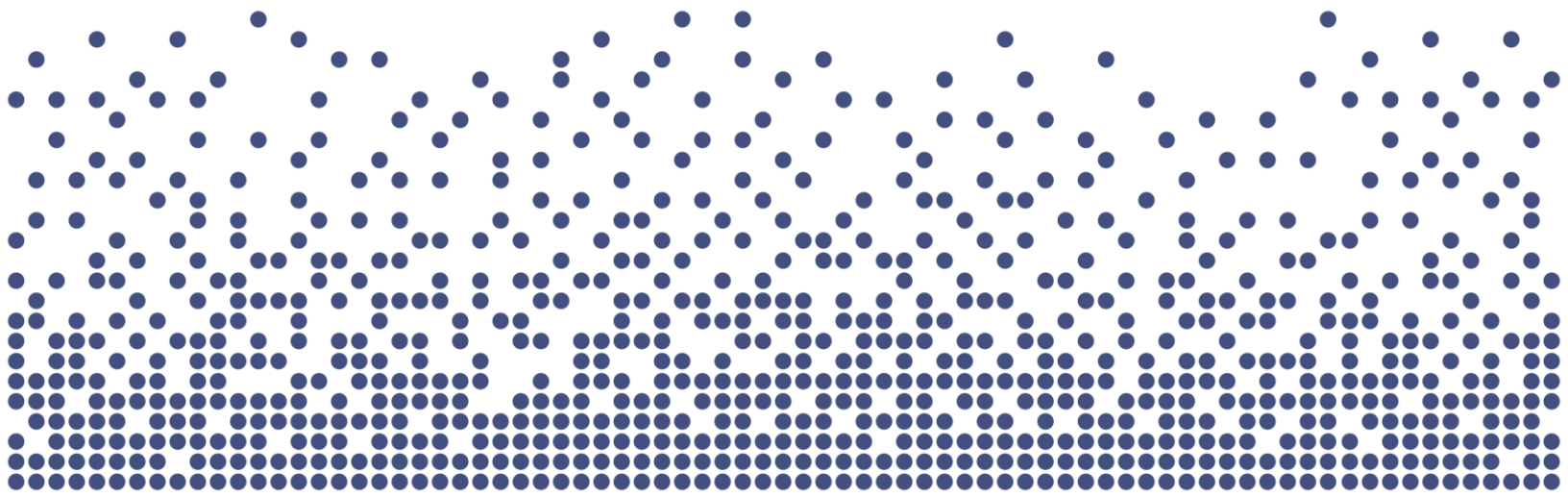
## List of Acronyms and Abbreviations

<b>Acronym</b>	<b>Full Description of Acronym</b>
A.M.O.	Association of Municipalities of Ontario
C.W.W.F.	Clean Water and Wastewater Fund
D.C.A.	Development Charges Act, 1997
F.I.R.	Financial Information Return
I.J.P.A.	Infrastructure for Jobs and Prosperity Act, 2015
I.O.	Infrastructure Ontario
LPAT	Local Planning Appeal Tribunal
M.O.E.	Ministry of Environment
O.C.I.F.	Ontario Community Infrastructure Fund
OLT	Ontario Land Tribunal
O.M.B.	Ontario Municipal Board
O. Reg.	Ontario Regulation
O.S.I.F.A.	Ontario Strategic Infrastructure Financing Authority
P.S.A.B.	Public Sector Accounting Board
P.T.I.F.	Public Transit Infrastructure Fund



## List of Acronyms and Abbreviations (Cont'd)

S.W.S.S.A.            Sustainable Water and Sewage Systems Act, 2002



# Executive Summary



# Executive Summary

The Municipality of North Middlesex retained Watson & Associates Economists Ltd. (Watson) to undertake a water and wastewater rate study. This study aims to prepare an analysis of the Municipality's water and wastewater rate forecast based on current capital and operating forecasts, costing for lifecycle replacement requirements, current volumes and customer profiles. The results of this analysis provide updated water and wastewater base charges and volume rates for customers within the Municipality of North Middlesex. The rate analysis contained herein continues to provide fiscally responsible practices that are in line with current provincial legislation.

The analysis presented herein provides the following:

- The 2024 to 2033 capital spending program for water and wastewater is approximately \$23.12 million and \$78.67 million (inflated), respectively;
- A significant portion of the water capital spending program is related to the Phase 2 Construction of the Queen Street Watermain and the construction of the Mt. Carmel and Parkhill Reservoirs;
- Approximately 47% of the water capital costs are estimated to occur in the first 5-years of the forecast, while approximately 53% are to occur in the latter half of the forecast;
- For wastewater, nearly half (49%) of the capital spending program is related to the construction of the Parkhill Wastewater Treatment Plant, however it is assumed the developing landowners would cashflow the works;
- Approximately 18% of the wastewater capital costs are estimated to occur in the first 5-years of the forecast, while approximately 82% are to occur in the latter half of the forecast;
- Annual operating expenditures related to wages and salaries are increasing by 2% per annum; expenditures related to utilities, fuels, chemicals and other materials have been increased at 5% per annum;
- The present rate structure for water and wastewater (base annual charge by category and an increasing block volume rate) is continued;
- Existing water customers total 2,339; an average of 25 new customers annually is anticipated over the next 10-year period; and
- Existing wastewater customers total 1,226; an average of 25 new customers annually is anticipated over the next 10-year period.



Based on the above information, and that the Municipality has a significant inventory of watermains for which it is financially responsible, the following annual rate increases are required to meet the needs of the water and wastewater forecasts:

Service	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Water	10%	16%	14%	12%	10%	5%	5%	5%	5%	5%
Wastewater	6%	7%	8%	9%	10%	10%	10%	10%	10%	10%

Table ES-1 summarizes the recommended water and wastewater rates and average annual bill (assuming an annual volume of 200 cu.m) based on the analysis provided herein over the forecast period. Note that although the anticipated rate increases over the forecast period are significant, the proposed rates are less than the rates the 2019 rate study had identified. See Table ES-2 for a comparison of the forecasted rates for the years 2024 to 2029. To achieve this, Municipal staff have reviewed the capital program and deferred projects where possible.



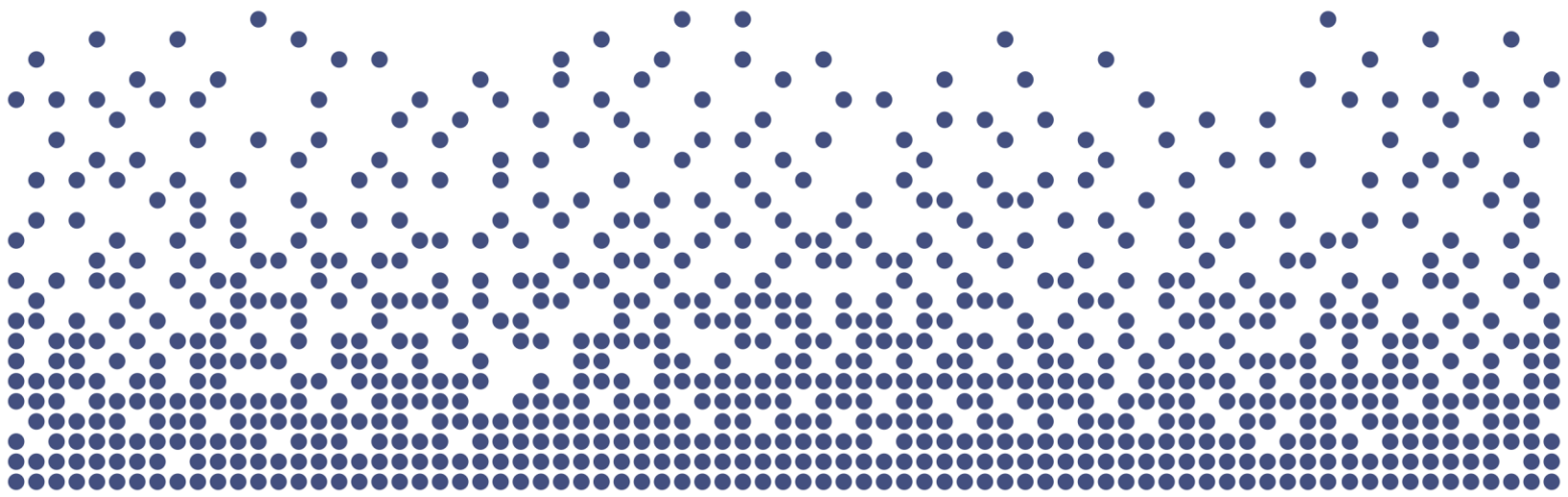


Table ES-1  
Municipality of North Middlesex  
Average Annual Residential Water and Wastewater Bill (Based on Annual Usage of 200 cu.m)

Annual Bill for Residential User with 200 cu.m Volume	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Water</b>											
Base Charge	706	777	901	1,027	1,150	1,265	1,328	1,395	1,465	1,538	1,615
Volume	142	156	181	206	231	254	267	280	294	309	324
<b>Total Water Bill</b>	<b>848</b>	<b>932</b>	<b>1,082</b>	<b>1,233</b>	<b>1,381</b>	<b>1,519</b>	<b>1,595</b>	<b>1,675</b>	<b>1,759</b>	<b>1,847</b>	<b>1,939</b>
<b>Wastewater</b>											
Base Charge	768	814	871	941	1,025	1,128	1,241	1,365	1,501	1,651	1,817
Volume	163	172	184	199	217	239	263	289	318	349	384
<b>Total Wastewater Bill</b>	<b>931</b>	<b>986</b>	<b>1,055</b>	<b>1,140</b>	<b>1,242</b>	<b>1,367</b>	<b>1,503</b>	<b>1,654</b>	<b>1,819</b>	<b>2,001</b>	<b>2,201</b>
<b>Total Combined Bill</b>	<b>1,778</b>	<b>1,919</b>	<b>2,137</b>	<b>2,373</b>	<b>2,623</b>	<b>2,886</b>	<b>3,098</b>	<b>3,329</b>	<b>3,578</b>	<b>3,847</b>	<b>4,140</b>
Annual Percentage Change		8%	11%	11%	11%	10%	7%	7%	7%	8%	8%

Table ES-2  
Municipality of North Middlesex  
Comparison of Forecasts Average Annual Residential Water and Wastewater Bill  
(Based on Annual Usage of 200 cu.m)

Annual Bill for Residential User with 200 cu.m Volume	2024	2025	2026	2027	2028	2029
Total Water and Wastewater Bill Forecast - 2019 Study	2,805	3,075	3,335	3,618	3,927	4,263
Total Water and Wastewater Bill Forecast - 2024 Study	1,919	2,137	2,373	2,623	2,886	3,098



# Report



# Chapter 1

## Introduction



# 1. Introduction

## 1.1 Background

---

The Municipality of North Middlesex is located in Middlesex County, with a population of 6,441 people. The Municipality services 2,339 metered water customers and 1,226 wastewater customers. The Municipality purchases water from the Lake Huron Primary Water Supply System (L.H.P.W.S.S.) which enters the North Middlesex Distribution System from five points. The distribution system is comprised of two water reservoirs, two booster pump stations and multiple water mains. The wastewater system is served by a lagoon facility in Parkhill, a wastewater treatment plant in Ailsa Craig, and a number of pumping stations, forcemains, and sanitary mains throughout the Municipality.

The water system is metered and utilizes a rate structure with an annual base charge as well as a volume charge on a per cubic metre basis. For wastewater, users are charged an annual base charge based on their water consumption, and volume rate similar to water. Table 1-1 provides a summary of the 2023 rates.



**Table 1-1  
Municipality of North Middlesex  
Water and Wastewater Rates – 2023**

<b>Municipality of North Middlesex</b>			<b>Municipality of North Middlesex</b>		
<b>2023 - Water Billing Rates</b>			<b>2023 - Wastewater Billing Rates</b>		
<b>Annual Base Charge</b>			<b>Annual Base Charge</b>		
0 to 75		353	0 to 75		384
76 to 250		706	76 to 250		768
251 to 300		920	251 to 300		768
301 to 400		1,088	301 to 400		768
401 to 500		1,313	401 to 500		768
501 to 600		1,538	501 to 600		1,563
601 to 800		1,875	601 to 800		1,985
801 to 1,000		2,325	801 to 1,000		2,548
1,001 to 1,500		3,112	1,001 to 1,500		3,533
1,501 to 2,000		4,236	1,501 to 2,000		4,940
2,001 to 3,000		5,923	2,001 to 3,000		7,051
3,001 to 4,000		8,172	3,001 to 4,000		9,866
4,001 to 5,000		10,420	4,001 to 5,000		12,680
5,001 to 7,500		14,355	5,001 to 7,500		17,606
7,501 to 10,000		19,977	7,501 to 10,000		24,642
10,001 to 12,000		25,036	10,001 to 12,000		30,975
12,001 to 18,842		29,715	12,001 to 18,842		36,831
<b>Volume Charge</b>			<b>Volume Charge</b>		
\$	0.44	0 to 75 cu.m	\$	0.50	0 to 75 cu.m
\$	0.87	75 cu.m+	\$	1.00	75 cu.m+

Since the Walkerton crisis, the Province has continued to make legislative changes for municipal water and wastewater systems. Noted below are the historical changes along with pending legislation anticipated to be implemented in the future. Watson & Associates Economists Ltd. (Watson) was retained by the Municipality of North Middlesex to assist in addressing these changes in a proactive manner as they relate to the water and wastewater systems. The assessment provided herein addresses changes recommended to the water and wastewater rates based on the most current information and forecasts the implications over the next 10-year period.

## **1.2 Study Process**

The objectives of the study and the steps involved in carrying out this assignment are summarized below:



- Identify all current and future water and wastewater system capital needs to assess the immediate and longer-term implications;
- Identify potential methods of cost recovery from the capital needs listing. These recovery methods may include other statutory authorities (e.g. *Development Charges Act, 1997* (D.C.A.), *Municipal Act*, etc.) as an offset to recovery through the water and wastewater rates;
- Identify existing operating costs by component and estimate future operating costs over the next 10-years. This assessment identifies fixed and variable costs in order to project those costs sensitive to changes to the existing infrastructure inventory, as well as costs which may increase commensurate with growth; and
- Provide staff and Committee/Council the findings to assist in gaining approval of the rates for 2025 and future years.

### 1.3 Regulatory Changes in Ontario

---

Resulting from the water crisis in Walkerton, significant regulatory changes have been made in Ontario. These changes arise as a result of the Walkerton Commission and the 93 recommendations made by the Walkerton Inquiry Part II report. Areas of recommendation include:

- watershed management and source protection;
- quality management;
- preventative maintenance;
- research and development;
- new performance standards;
- sustainable asset management; and
- lifecycle costing.

The legislation which would have most impacted municipal water and wastewater rates was the *Sustainable Water and Sewage Systems Act* (S.W.S.S.A.) which would have required municipalities to implement full cost pricing. The legislation was enacted in 2002, however, it had not been implemented pending the approval of its regulations. The Act was repealed as of January 1, 2013. It is expected that the provisions of the *Water Opportunities Act* will implement the fundamental requirements of S.W.S.S.A. Furthermore, on December 27, 2017, O. Reg. 588/17 was released under the *Infrastructure for Jobs and Prosperity Act, 2015* (I.J.P.A.), which outlines the



requirements for asset management for municipalities. The results of the asset management review under this Act will need to be considered in light of the recent investments undertaken by the Municipality and the capital spending plan provided herein. The following sections describe these various resulting changes.

## 1.4 Sustainable Water and Sewage Systems Act

---

As noted earlier, the S.W.S.S.A. was passed on December 13, 2002. The intent of the Act was to introduce the requirement for municipalities to undertake an assessment of the “full cost” of providing their water and wastewater services. It is noted, however, that this Act has been repealed. To provide broader context and understanding to other legislation discussed herein, a description of the Act is provided below.

Full costs for water service was defined in subsection 3(7) of the Act and included “...source protection costs, operating costs, financing costs, renewal and replacement costs and improvement costs associated with extracting, treating or distributing water to the public and such other costs which may be specified by regulation.” Similar provisions were made for wastewater services in subsection 4(7) with respect to “...collecting, treating or discharging waste water.”

The Act would have required the preparation of two reports for submission to the Ministry of the Environment (or such other member of the Executive Council as may be assigned the administration of this Act under the *Executive Council Act*). The first report was on the “full cost of services” and the second was the “cost recovery plan.” Once these reports were reviewed and approved by the Ministry, the municipality would have been required to implement the plans within a specified time period.

In regard to the **full cost of services** report, the municipality (deemed a regulated entity under the Act) would prepare and approve a report concerning the provision of water and sewage services. This report was to include an inventory of the infrastructure, a management plan providing for the long-term integrity of the systems, and would address the full cost of providing the services (other matters may be specified by the regulations) along with the revenue obtained to provide them. A professional engineer would certify the inventory and management plan portion of the report. The municipality’s auditor would be required to provide a written opinion on the report. The report was to be approved by the municipality and then be forwarded to the Ministry



along with the engineer's certification and the auditor's opinion. The regulations would stipulate the timing for this report.

The second report was referred to as a **cost recovery plan** and would address how the municipality intended to pay for the full costs of providing the service. The regulations were to specify limitations on what sources of revenue the municipality may use. The regulations may have also provided limits as to the level of increases any customer or class of customer may experience over any period of time. Provision was made for the municipality to implement increases above these limits; however, ministerial approval would be required first. Similar to the first report, the municipal auditor would provide a written opinion on the report prior to Council's adoption, and this opinion must accompany the report when submitted to the Province.

The Act provided the Minister the power to approve or not approve the plans. If the Minister was not satisfied with the report or if a municipality did not submit a plan, the Minister may have a plan prepared. The cost to the Crown for preparing the plan would be recovered from the municipality. As well, the Minister may direct two or more regulated municipalities to prepare a joint plan. This joint plan may be directed at the onset or be directed by the Minister after receiving the individual plans from the municipalities.

The Minister also had the power to order a municipality to generate revenue from a specific revenue source or in a specified manner. The Minister may have also ordered a regulated entity to do or refrain from doing such things as the Minister considered advisable to ensure that the entity pays the full cost of providing the services to the public.

Once the plans were approved and in place, the municipality would be required to submit progress reports. The timing of these reports and the information to be contained therein would be established by the regulations. A municipal auditor's opinion must be provided with the progress report. Municipalities would also revise the plans if they deem the estimate does not reflect the full cost of providing the services, as a result of a change in circumstances, regulatory or other changes that affect their plan, etc. The municipality would then revise its prior plan, provide an auditor's opinion, and submit the plan to the Minister.





## 1.5 Financial Plans Regulation

---

On August 16, 2007, the M.O.E. passed O. Reg 453/07 which requires the preparation of financial plans for water (and wastewater) systems. The M.O.E. has also provided a Financial Plan Guidance Document to assist in preparing the plans. A brief summary of the key elements of the regulation is provided below:

- The financial plan will represent one of the key elements for the municipality to obtain its Drinking Water Licence;
- The financial plans shall be for a period of at least six years, but longer planning horizons are encouraged;
- As the regulation is under the *Safe Drinking Water Act, 2002*, the preparation of the plan is mandatory for water and encouraged for wastewater;
- The plan is considered a living document (i.e. will be updated as annual budgets are prepared) but will need to be undertaken, at a minimum, every five years;
- The plans generally require the forecasting of capital, operating and reserve fund positions, providing detailed inventories, forecasting future users and volume usage and corresponding calculation of rates. In addition, P.S.A.B. information on the system must be provided for each year of the forecast (i.e. total non-financial assets, tangible capital asset acquisitions, tangible capital asset construction, betterments, write-downs, disposals, total liabilities and net debt);
- The financial plans must be made available to the public (at no charge) upon request and be available on the municipality's website. The availability of this information must also be advertised; and
- The financial plans are to be approved by Resolution of the Council or governing body indicating that the drinking water system is financially viable.

In general, the financial principles of the draft regulations follow the intent of S.W.S.S.A. to move municipalities towards financial sustainability. Many of the prescriptive requirements, however, have been removed (e.g. preparation of two separate documents for provincial approval, auditor opinions, engineer certifications, etc.).

A Guideline ("Towards Financially Sustainable Drinking Shores – Water and Wastewater Systems") had been developed to assist municipalities in understanding the Province's direction and provided a detailed discussion on possible approaches to



sustainability. The Province's Principles of Financially Sustainable Water and Wastewater Services are provided below:

Principle #1: Ongoing public engagement and transparency can build support for, and confidence in, financial plans and the system(s) to which they relate.

Principle #2: An integrated approach to planning among water, wastewater, and stormwater systems is desirable given the inherent relationship among these services.

Principle #3: Revenues collected for the provision of water and wastewater services should ultimately be used to meet the needs of those services.

Principle #4: Lifecycle planning with mid-course corrections is preferable to planning over the short term, or not planning at all.

Principle #5: An asset management plan is a key input to the development of a financial plan.

Principle #6: A sustainable level of revenue allows for reliable service that meets or exceeds environmental protection standards, while providing sufficient resources for future rehabilitation and replacement needs.

Principle #7: Ensuring users pay for the services they are provided leads to equitable outcomes and can improve conservation. In general, metering and the use of rates can help ensure users pay for services received.

Principle #8: Financial plans are "living" documents that require continuous improvement. Comparing the accuracy of financial projections with actual results can lead to improved planning in the future.

Principle #9: Financial plans benefit from the close collaboration of various groups, including engineers, accountants, auditors, utility staff, and municipal Council.

## 1.6 Water Opportunities Act, 2010

---

As noted earlier, since the passage of the *Safe Drinking Water Act, 2002*, continuing changes and refinements to the legislation have been introduced. Some of these Bills

---



have found their way into law, while others have not been approved. Bill 72, the *Water Opportunities Act, 2010*, was introduced into legislation on May 18, 2010 and received Royal Assent on November 29, 2010.

The Act provides for the following elements:

- The fostering of innovative water, wastewater and stormwater technologies, services and practices in the private and public sectors;
- Preparation of water conservation plans to achieve water conservation targets established by the regulations; and
- Preparation of sustainability plans for municipal water services, municipal wastewater services and municipal stormwater services.

With regard to the sustainability plans:

- The Act extends from the water financial plans and requires a more detailed review of the water financial plan and requires a full plan for wastewater and stormwater services; and
- Regulations will provide performance targets for each service – these targets may vary based on the jurisdiction of the regulated entity or the class of entity.

The financial plan shall include:

- An asset management plan for the physical infrastructure;
- A financial plan;
- For water, a water conservation plan;
- An assessment of risks that may interfere with the future delivery of the municipal service, including, if required by the regulations, the risks posed by climate change and a plan to deal with those risks; and
- Strategies for maintaining and improving the municipal service, including strategies to ensure the municipal service can satisfy future demand, consider technologies, services and practices that promote the efficient use of water and reduce negative impacts on Ontario's water resources, and increase co-operation with other municipal service providers.

Performance indicators will be established by service, with the following considerations:



- May relate to the financing, operation or maintenance of a municipal service or to any other matter in respect of what information may be required to be included in a plan;
- May be different for different municipal service providers or for municipal services in different areas of the Province.

Regulations will prescribe:

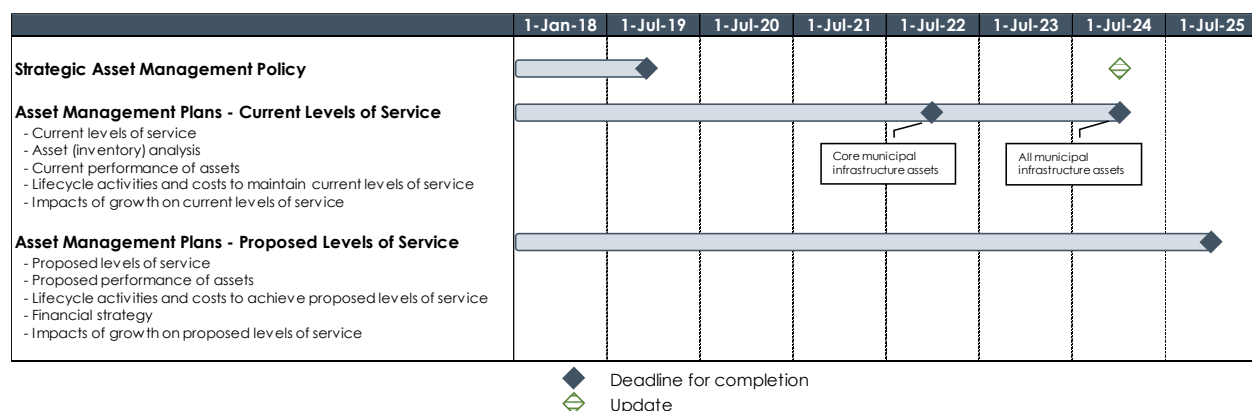
- Timing;
- Contents of the plans;
- Which identified portions of the plan will require certification;
- Public consultation process; and
- Limitations, updates, refinements, etc.

As noted earlier, it is expected that this Act will implement the principles of the S.W.S.S.A. once all regulations are put in place.

## 1.7 Infrastructure for Jobs and Prosperity Act, 2015 (I.J.P.A.)

On June 4, 2015, the Province of Ontario passed the I.J.P.A. which, over time, will require municipalities to undertake and implement asset management plans for all infrastructure they own. On December 27, 2017, the Province released Ontario Regulation 588/17 under the I.J.P.A. which has three phases that municipalities must meet:

Figure 1-1  
Legislative Timelines set out by the Jobs and Prosperity Act  
Legislation related to Asset Management Plans





Note: on March 15, 2021, the Province filed Regulation 193/21 to extend all of the timelines of Regulation 588/17 by one year (reflected in the table above).

Every municipality in Ontario will have to prepare a strategic asset management policy by July 1, 2019. Municipalities will be required to review their strategic asset management policies at least every five years and make updates as necessary. The subsequent phases are as follows:

- Phase 1 – Asset Management Plan (by July 1, 2022):
  - For core assets, municipalities must have the following:
    - Inventory of assets;
    - Current levels of service measured by standard metrics; and
    - Costs to maintain levels of service.
- Phase 2 – Asset Management Plan (by July 1, 2024):
  - Same steps as Phase 1 but for all assets.
- Phase 3 – Asset Management Plan (by July 1, 2025):
  - Builds on Phase 1 and 2 by adding:
    - Proposed levels of service; and
    - Lifecycle management and financial strategy.

In relation to water and wastewater (which is considered a core asset), municipalities will need to have an asset management plan that addresses the related infrastructure by July 1, 2022 (Phase 1). O. Reg. 588/17 specifies that the municipality's asset management plan must include the following for each asset category:

- The current levels of service being provided, determined in accordance with the following qualitative descriptions and technical metrics and based on data from at most the two calendar years prior to the year in which all information required under this section is included in the asset management plan;
- The current performance of each asset category, including:
  - a summary of the assets in the category;
  - the replacement cost of the assets in the category;
  - the average age of the assets in the category, determined by assessing the average age of the components of the assets;
  - the information available on the condition of the assets in the category;



- a description of the municipality's approach to assessing the condition of the assets in the category, based on recognized and generally accepted good engineering practices where appropriate; and
- The lifecycle activities that would need to be undertaken to maintain the current levels of service.

## 1.8 Forecast Growth and Servicing Requirements

---

The Municipality of North Middlesex services 2,339 metered water customers and 1,226 wastewater customers. Information on the existing number of customers and existing billable volumes was obtained from the Municipality.

For forecasting future water volumes, an average volume per customer amount of 150 cu.m. has been assumed for new water customers. This assumption was based on a review of historical residential water bills. For forecasting future billable wastewater volumes, an average volume per residential customer of 150 cu.m. has been used as wastewater charges are based on metered water volumes.

For future water and wastewater customers to be added to the systems, consideration has been given to development potential within the serviced areas of the Municipality over the forecast period 2024 to 2033. The growth forecast utilized in the Municipality's 2022 Development Charges Background Study was used to estimate future development.

Table 1-2 provides for the forecast of water users and volumes for North Middlesex, while Table 1-3 provides the forecast of wastewater users and volumes.



Table 1-2  
Municipality of North Middlesex  
2023 to 2033 Water System Forecast

**Water Users Forecast**

Year	Total Users	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
2023	25	12	25	25	25	25	25	25	25	25	25	25
2024	25		12	25	25	25	25	25	25	25	25	25
2025	25			12	25	25	25	25	25	25	25	25
2026	25				12	25	25	25	25	25	25	25
2027	25					12	25	25	25	25	25	25
2028	25						12	25	25	25	25	25
2029	25							12	25	25	25	25
2030	25								12	25	25	25
2031	25									12	25	25
2032	25										12	25
2033	26											13
<b>Total</b>	<b>275</b>	<b>12</b>	<b>37</b>	<b>62</b>	<b>87</b>	<b>112</b>	<b>137</b>	<b>161</b>	<b>186</b>	<b>211</b>	<b>236</b>	<b>262</b>
m <sup>3</sup> /user	150	150	150	150	150	150	150	150	150	150	150	150
<b>Annual Flow</b>		<b>1,800</b>	<b>5,535</b>	<b>9,270</b>	<b>13,005</b>	<b>16,740</b>	<b>20,475</b>	<b>24,210</b>	<b>27,945</b>	<b>31,680</b>	<b>35,415</b>	<b>39,300</b>

Water Customer Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Existing	2,339	2,339	2,339	2,339	2,339	2,339	2,339	2,339	2,339	2,339	2,339
New - Growth	12	37	62	87	112	137	161	186	211	236	262
<b>Total</b>	<b>2,351</b>	<b>2,376</b>	<b>2,401</b>	<b>2,426</b>	<b>2,451</b>	<b>2,476</b>	<b>2,500</b>	<b>2,525</b>	<b>2,550</b>	<b>2,575</b>	<b>2,601</b>



Table 1-2 Continued  
Municipality of North Middlesex  
2023 to 2033 Water System Forecast

Water Volume Forecast (cu.m)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
0 to 75	20,351	20,351	20,351	20,351	20,351	20,351	20,351	20,351	20,351	20,351	20,351
76 to 250	211,990	215,725	219,460	223,195	226,930	230,665	234,400	238,135	241,870	245,605	249,490
251 to 300	41,638	41,638	41,638	41,638	41,638	41,638	41,638	41,638	41,638	41,638	41,638
301 to 400	41,609	41,609	41,609	41,609	41,609	41,609	41,609	41,609	41,609	41,609	41,609
401 to 500	22,318	22,318	22,318	22,318	22,318	22,318	22,318	22,318	22,318	22,318	22,318
501 to 600	15,842	15,842	15,842	15,842	15,842	15,842	15,842	15,842	15,842	15,842	15,842
601 to 800	21,094	21,094	21,094	21,094	21,094	21,094	21,094	21,094	21,094	21,094	21,094
801 to 1,000	17,203	17,203	17,203	17,203	17,203	17,203	17,203	17,203	17,203	17,203	17,203
1,001 to 1,500	43,876	43,876	43,876	43,876	43,876	43,876	43,876	43,876	43,876	43,876	43,876
1,501 to 2,000	31,201	31,201	31,201	31,201	31,201	31,201	31,201	31,201	31,201	31,201	31,201
2,001 to 3,000	37,868	37,868	37,868	37,868	37,868	37,868	37,868	37,868	37,868	37,868	37,868
3,001 to 4,000	38,669	38,669	38,669	38,669	38,669	38,669	38,669	38,669	38,669	38,669	38,669
4,001 to 5,000	31,687	31,687	31,687	31,687	31,687	31,687	31,687	31,687	31,687	31,687	31,687
5,001 to 7,500	82,412	82,412	82,412	82,412	82,412	82,412	82,412	82,412	82,412	82,412	82,412
7,501 to 10,000	43,855	43,855	43,855	43,855	43,855	43,855	43,855	43,855	43,855	43,855	43,855
10,001 to 12,000	21,591	21,591	21,591	21,591	21,591	21,591	21,591	21,591	21,591	21,591	21,591
12,001 to 18,842+	62,977	62,977	62,977	62,977	62,977	62,977	62,977	62,977	62,977	62,977	62,977
<b>Total</b>	<b>786,181</b>	<b>789,916</b>	<b>793,651</b>	<b>797,386</b>	<b>801,121</b>	<b>804,856</b>	<b>808,591</b>	<b>812,326</b>	<b>816,061</b>	<b>819,796</b>	<b>823,681</b>

Water Purchases	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Total Billable Volumes	786,181	789,916	793,651	797,386	801,121	804,856	808,591	812,326	816,061	819,796	823,681
Water Loss %	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%	45%
Total Purchased Water	1,441,139	1,447,985	1,454,832	1,461,678	1,468,525	1,475,372	1,482,218	1,489,065	1,495,911	1,502,758	1,509,879
Purchased Water Rates	0.5194	0.5454	0.5727	0.6013	0.6314	0.6630	0.6962	0.7240	0.7530	0.7831	0.8144
<b>Total</b>	<b>748,527</b>	<b>789,731</b>	<b>833,182</b>	<b>878,907</b>	<b>927,227</b>	<b>978,171</b>	<b>1,031,920</b>	<b>1,078,083</b>	<b>1,126,421</b>	<b>1,176,810</b>	<b>1,229,682</b>





Table 1-3  
Municipality of North Middlesex  
2023 to 2033 Wastewater System Forecast

**Wastewater Users Forecast**

Year	Total Users	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
2023	25	12	25	25	25	25	25	25	25	25	25	25
2024	25		12	25	25	25	25	25	25	25	25	25
2025	25			12	25	25	25	25	25	25	25	25
2026	25				12	25	25	25	25	25	25	25
2027	25					12	25	25	25	25	25	25
2028	25						12	25	25	25	25	25
2029	25							12	25	25	25	25
2030	25								12	25	25	25
2031	25									12	25	25
2032	25										12	25
2033	26											13
<b>Total</b>	<b>275</b>	<b>12</b>	<b>37</b>	<b>62</b>	<b>87</b>	<b>112</b>	<b>137</b>	<b>161</b>	<b>186</b>	<b>211</b>	<b>236</b>	<b>262</b>
m <sup>3</sup> /user	150	150	150	150	150	150	150	150	150	150	150	150
<b>Annual Flow</b>		<b>1,800</b>	<b>5,535</b>	<b>9,270</b>	<b>13,005</b>	<b>16,740</b>	<b>20,475</b>	<b>24,210</b>	<b>27,945</b>	<b>31,680</b>	<b>35,415</b>	<b>39,300</b>

Wastewater Customer Forecast	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Existing	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226
New - Growth	12	37	62	87	112	137	161	186	211	236	262
<b>Total</b>	<b>1,238</b>	<b>1,263</b>	<b>1,288</b>	<b>1,313</b>	<b>1,338</b>	<b>1,363</b>	<b>1,387</b>	<b>1,412</b>	<b>1,437</b>	<b>1,462</b>	<b>1,488</b>



Table 1-3 Continued  
Municipality of North Middlesex  
2023 to 2033 Wastewater System Forecast

Wastewater Flows Forecast (cu.m)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
0 to 75	10,198	10,198	10,198	10,198	10,198	10,198	10,198	10,198	10,198	10,198	10,198
76 to 250	128,285	132,020	135,755	139,490	143,225	146,960	150,695	154,430	158,165	161,900	165,785
251 to 300	20,885	20,885	20,885	20,885	20,885	20,885	20,885	20,885	20,885	20,885	20,885
301 to 400	16,729	16,729	16,729	16,729	16,729	16,729	16,729	16,729	16,729	16,729	16,729
401 to 500	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120	4,120
501 to 600	3,295	3,295	3,295	3,295	3,295	3,295	3,295	3,295	3,295	3,295	3,295
601 to 800	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985	1,985
801 to 1,000	4,308	4,308	4,308	4,308	4,308	4,308	4,308	4,308	4,308	4,308	4,308
1,001 to 1,500	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561	4,561
1,501 to 2,000	7,181	7,181	7,181	7,181	7,181	7,181	7,181	7,181	7,181	7,181	7,181
2,001 to 3,000	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149	2,149
3,001 to 4,000	6,805	6,805	6,805	6,805	6,805	6,805	6,805	6,805	6,805	6,805	6,805
4,001 to 5,000	-	-	-	-	-	-	-	-	-	-	-
5,001 to 7,500	6,571	6,571	6,571	6,571	6,571	6,571	6,571	6,571	6,571	6,571	6,571
7,501 to 10,000	-	-	-	-	-	-	-	-	-	-	-
10,001 to 12,000	-	-	-	-	-	-	-	-	-	-	-
12,001 to 18,842+	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>217,070</b>	<b>220,805</b>	<b>224,540</b>	<b>228,275</b>	<b>232,010</b>	<b>235,745</b>	<b>239,480</b>	<b>243,215</b>	<b>246,950</b>	<b>250,685</b>	<b>254,570</b>

Note: Above flows are water flows on which the wastewater billing will be calculated



# Chapter 2

## Capital Infrastructure Needs



## 2. Capital Infrastructure Needs

### 2.1 Capital Forecast

Capital forecasts have been provided for the water and wastewater systems and are presented in Tables 2-1 and 2-2 (note: the costs have been provided in uninflated dollars). The basis for these forecasts is the Municipality’s Capital Budgets in addition to capital infrastructure replacement needs based on recommendations from the Municipality’s Asset Management Plan. The capital plan addresses both growth and replacement projects.

A summary of the capital works related to the water and wastewater services is provided in the following tables.

Table 2-1  
Municipality of North Middlesex  
2024 to 2033 Water Capital Forecast Summary (Uninflated \$)

Description	Total 2024 to 2033	Years Undertaken
<b>Capital Expenditures</b>		
Watermain Replacement (Leonard Ave from Ann St to Parkhill Main St)	1,320,000	2031 to 2032
Watermain Replacement (Ardross St from Catherine St to Parkhill Main St)	1,210,000	2032 to 2033
Watermain Replacement (Ann St from Leonard St to John St)	120,000	2033
New West Williams Pumping Station (Design)	275,000	2032
New West Williams Pumping Station	2,000,000	2033
McGillivray Booster Station	100,000	2032
<b>Studies:</b>		
Water Master Plan	200,000	2024
<b>Growth Related:</b>		
Queen Street Watermain - Phase 2 Construction (Ailsa Craig Main St to Mary St; water and sanitary sewer upgrade, and road and drainage improvements)	6,500,000	2024 to 2025
Mt Carmel Reservoir Construction	5,500,000	2029 to 2030
Parkhill Reservoir	3,500,000	2028
<b>Total Capital Expenditures</b>	<b>20,725,000</b>	



Table 2-2  
Municipality of North Middlesex  
2024 to 2033 Wastewater Capital Forecast Summary (Uninflated \$)

Description	Total 2024 to 2033	Years Undertaken
<b>Capital Expenditures</b>		
Bear Creek Pumping Station (SCADA Design)	75,000	2030
Bear Creek Pumping Station (SCADA Renewal)	175,000	2031
Station St Pumping Station (Design)	125,000	2032
Station St Pumping Station (Construction)	600,000	2033
<b>Growth Related:</b>		
Sewer Upgrades and Infrastructure Renewal- Annie Ada Shipley from Queen St to Henderson St	2,180,000	2031 to 2032
Sewer Upgrades on Henderson St from Annie Ada Shiplet to William St (113m)	240,000	2030 to 2031
Sewer Upgrades and Infrastructure Renewal on William St from Henderson to Pumping Station	1,950,000	2030 to 2031
Sewer Upgrades and Infrastructure Renewal on Hastings Street (356m)	120,000	2033
Sewer Upgrades on Mill Street (279m) and Station St (55m)	80,000	2033
Victoria Street Upgrades (Pump Station)	2,000,000	2028 to 2029
Replace and Upgrade Sewers on Petty Street - 1452m 300mm pipe and 16 Manhole Structures	3,322,000	2032 to 2033
New Ontario Pump Station Upgrade	446,000	2030
William St Pumping Station and Forcemain (Upgrade)	6,800,000	2027
De-Sludging of Lagoons	4,000,000	2024
Queen Street Watermain - Phase 2 Construction (Ailsa Craig Main St to Mary St; water and sanitary sewer upgrade, and road and drainage improvements)	2,500,000	2025
Parkhill Wastewater Treatment Plant (Phase 1) - additional 1,150 cu.m + Components for 2,300 cu.m	31,400,000	2033
Ailsa Craig Treatment Plant Expansion and Addition (including filter)	10,966,912	2029 to 2033
<b>Total Capital Expenditures</b>	<b>66,979,912</b>	



# Chapter 3

## Lifecycle Costing



## 3. Lifecycle Costing

### 3.1 Overview of Lifecycle Costing

---

#### 3.1.1 Definition

For many years, lifecycle costing has been used in the field of maintenance engineering and to evaluate the advantages of using alternative materials in construction or production design. The method has gained wider acceptance and use in the areas of industrial decision-making and the management of physical assets.

By definition, lifecycle costs are all the costs which are incurred during the lifecycle 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 stages which the asset goes through in its lifecycle are specification, design, manufacture (or build), install, commission, operate, maintain and disposal. Figure 3-1 depicts these stages in a schematic form.

#### 3.1.2 Financing Costs

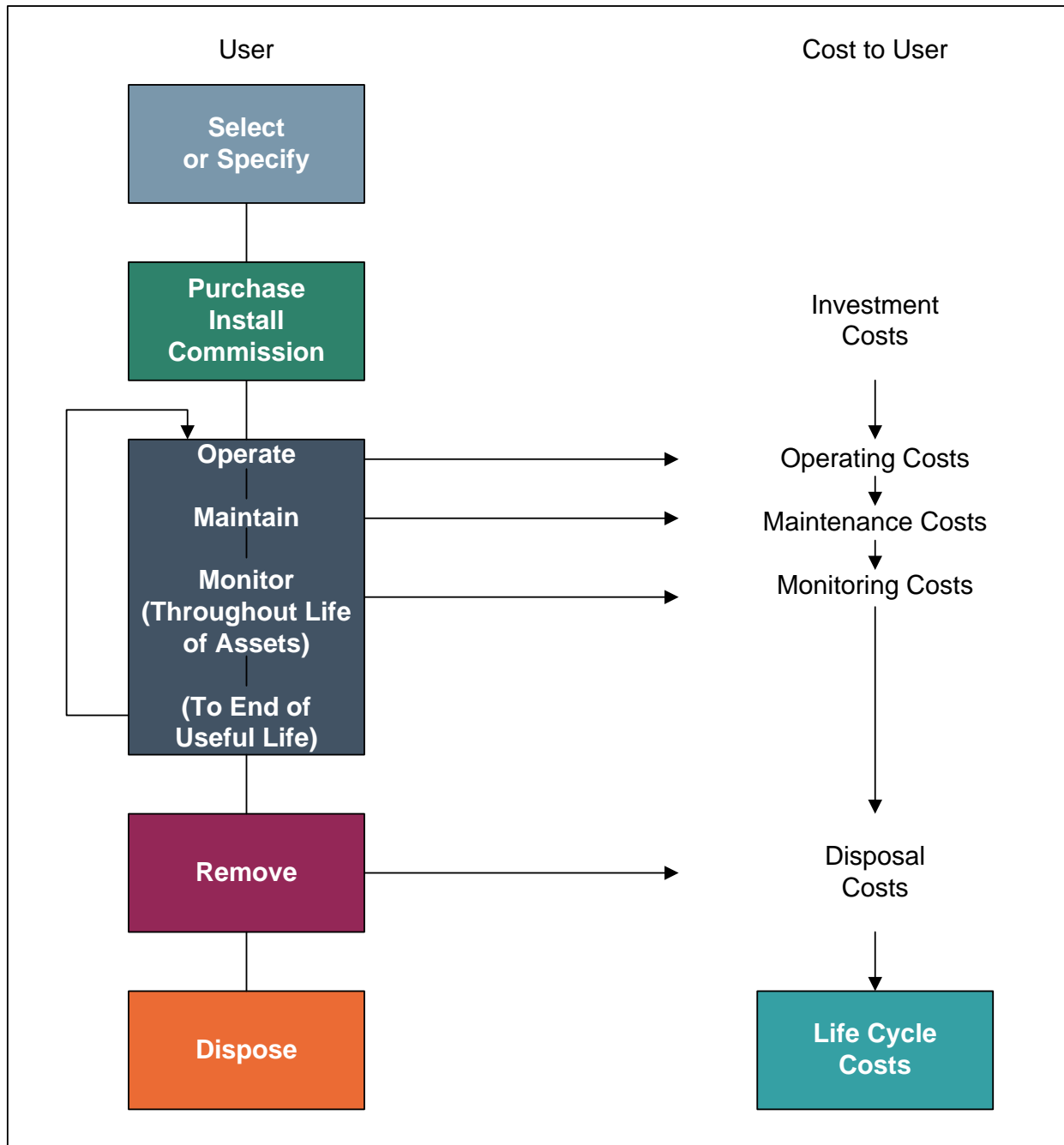
This section will focus on financing mechanisms in place to fund the costs incurred throughout the asset's life.

In a municipal context, services are provided to benefit tax/rate payers. Acquisition of assets is normally timed in relation to direct needs within the community. At times, economies of scale or technical efficiencies will lead to oversizing an asset to accommodate future growth within the Municipality. Over the past few decades, new financing techniques such as development charges have been employed based on the underlying principle of having tax/rate payers who benefit directly from the service paying for that service. Operating costs which reflect the cost of the service for that year are charged directly to all existing tax/rate payers who have received the benefit. Operating costs are normally charged through the tax base or user rates.

Capital expenditures are recouped through several methods, with operating budget contributions, development charges, reserves, developer contributions and debentures, being the most common.



Figure 3-1  
Lifecycle Costing



New construction related to growth could produce development charges and developer contributions (e.g. works internal to a subdivision which are the responsibility of the developer to construct) to fund a significant portion of projects, where new assets are





being acquired to allow growth within the Municipality to continue. As well, debentures could be used to fund such works, with the debt charge carrying costs recouped from taxpayers in the future.

Capital construction to replace existing infrastructure, however, is largely not growth-related and will therefore not yield development charges or developer contributions to assist in financing these works. Hence, a municipality will be dependent upon debentures, reserves and contributions from the operating budget to fund these works.

Figure 3-2 depicts the costs of an asset from its initial conception through to replacement and then continues to follow the associated costs through to the next replacement.

As referred to earlier, growth-related financing methods such as development charges and developer contributions could be utilized to finance the growth-related component of the new asset. These revenues are collected (indirectly) from the new homeowner who benefits directly from the installation of this asset. Other financing methods may be used as well to finance the non-growth-related component of this project, such as reserves which have been collected from past tax/rate payers, operating budget contributions which are collected from existing tax/rate payers and debenturing which will be carried by future tax/rate payers. Ongoing costs for monitoring, operating and maintaining the asset will be charged annually to the existing tax/rate payer.

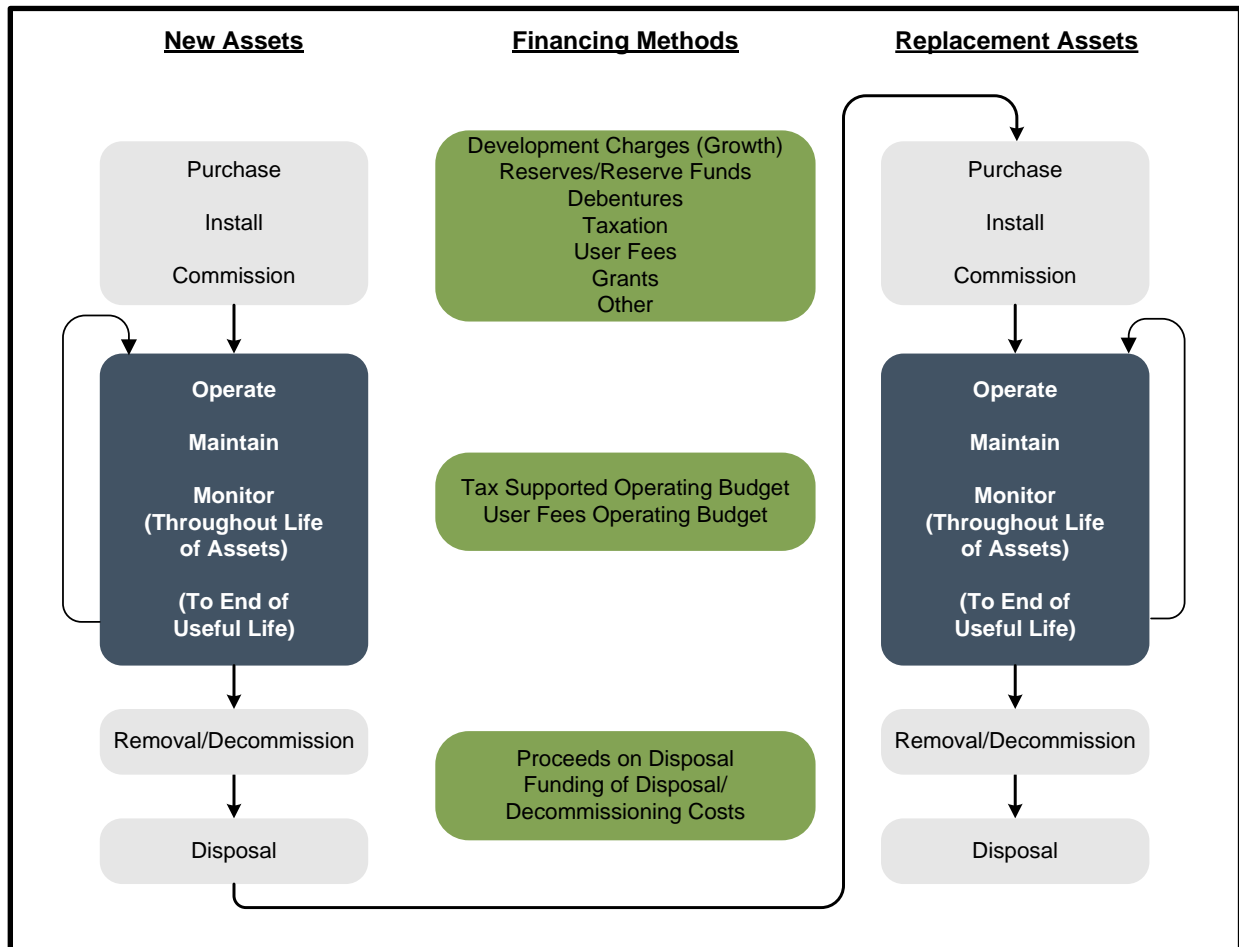
When the asset requires replacement, the sources of financing will be limited to reserves, debentures and contributions from the operating budget. At this point, the question is raised: "If the cost of replacement is to be assessed against the tax/rate payer who benefits from the replacement of the asset, should the past tax/rate payer pay for this cost or should future rate payers assume this cost?" If the position is taken that the past user has used up the asset, hence he should pay for the cost of replacement, then a charge should be assessed annually through the life of the asset, to have funds available to replace it when the time comes. If the position is taken that the future tax/rate payer should assume this cost, then debenturing and, possibly, a contribution from the operating budget should be used to fund this work.

Charging for the cost of using up an asset is the fundamental concept behind depreciation methods utilized by the private sector. This concept allows for expending the asset as it is used up in the production process. The tracking of these costs forms



part of the product's selling price and, hence, end-users are charged for the asset's depreciation. The same concept can be applied in a municipal setting to charge existing users for the asset's use and set those funds aside in a reserve to finance the cost of replacing the asset in the future.

Figure 3-2  
Financing Lifecycle Costs



### 3.1.3 Costing Methods

There are two fundamental methods of calculating the cost of the usage of an asset and for the provision of the revenue required when the time comes to retire and replace it. The first method is the Depreciation Method. This method recognizes the reduction in the value of the asset through wear and tear and aging. There are two commonly used



forms of depreciation: the straight-line method and the reducing balance method (shown graphically in Figure 3-3).

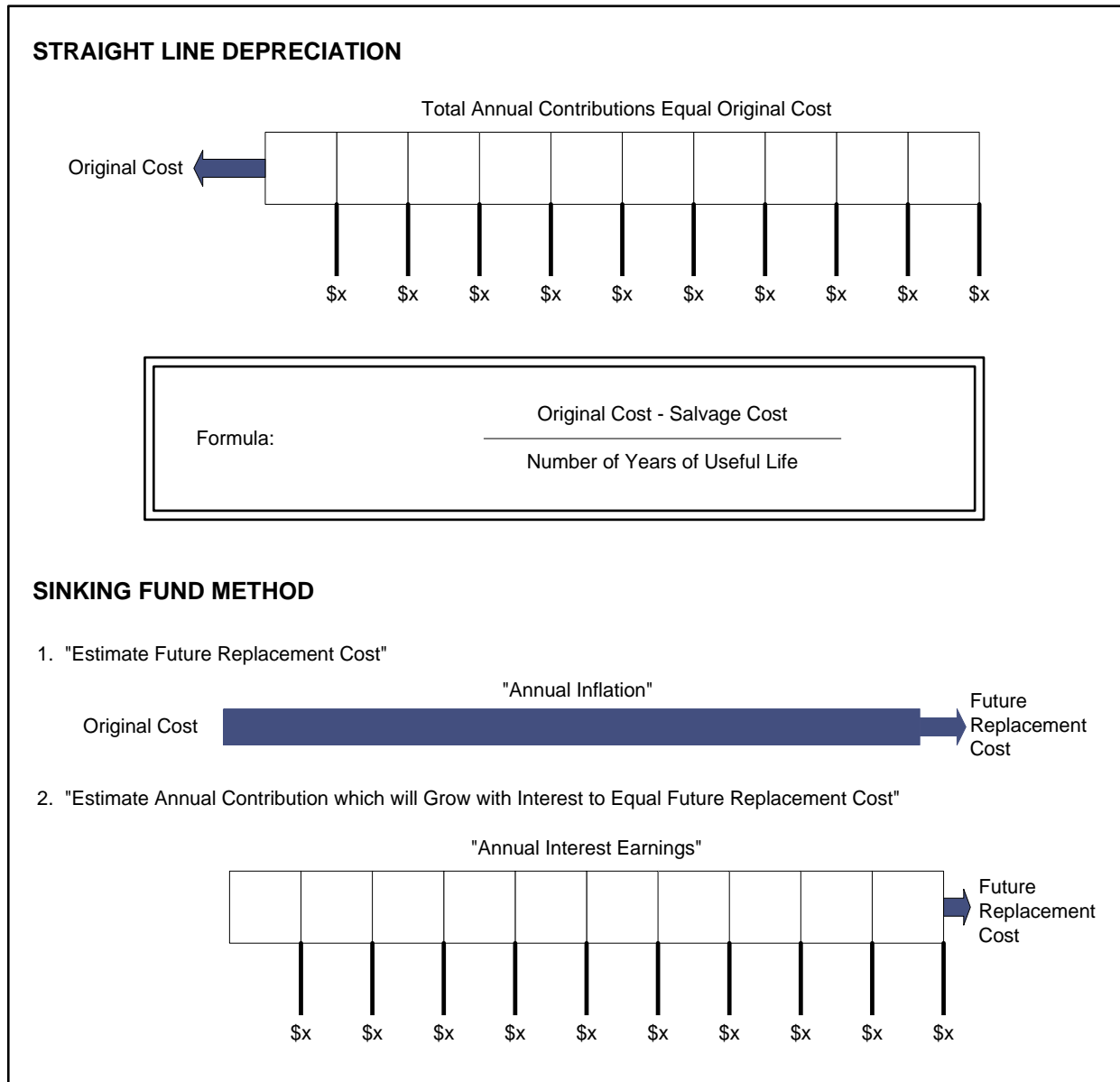
The straight-line method is calculated by taking the original cost of the asset, subtracting its estimated salvage value (estimated value of the asset at the time it is disposed of) and dividing this by the estimated number of years of useful life. The reducing balance method is calculated by utilizing a fixed percentage rate and this rate is applied annually to the undepreciated balance of the asset value.

The second method of lifecycle costing is the sinking fund method. This method first estimates the future value of the asset at the time of replacement. This is done by inflating the original cost of the asset at an assumed annual inflation rate. A calculation is then performed to determine annual contributions (equal or otherwise) which, when invested, will grow with interest to equal the future replacement cost.

The preferred method used herein for forecasting purposes is the sinking fund method of lifecycle costing.



Figure 3-3



## 3.2 Impact on Budgets

The Municipality's Asset Management Plan outlines the total replacement cost of the Municipality's water infrastructure to be approximately \$260.70 million, and the wastewater infrastructure is approximately \$55.91 million.



The average annual level of investment recommended for lifecycle rehabilitation and replacement needs in the Municipality's Asset Management Plan is approximately \$3.50 million for water infrastructure, and approximately \$0.87 million for wastewater infrastructure.

Given the significant capital expenditures anticipated over the 10-year forecast period and the current reserve fund balances, it is not feasible for the Municipality to save the recommended amounts for lifecycle replacements. In total the amount set aside for lifecycle replacement in the analysis herein is \$13.00 million for water services (as compared to the recommended amount of \$35.00 million), and \$3.00 million for wastewater services (as compared to the recommended amount of \$8.70 million). It is important that the Municipality continue to review their asset management/replacement requirements throughout the forecast period and begin to increase contributions to reserves after 2033 to ensure funds are available to Council, should emergency replacements be required.



# Chapter 4

## Capital Cost Financing Options



## 4. Capital Cost Financing Options

### 4.1 Summary of Capital Cost Financing Alternatives

---

Historically, the powers that municipalities had to raise alternative revenues to taxation to fund capital services have been restrictive. Over the past decade, legislative reforms have been introduced. Some of these have expanded municipal powers (e.g. Bill 26 introduced in 1996 to provide for expanded powers for imposing fees and charges), while others appear to restrict them (e.g. Bill 98 in 1997 and Bill 23 in 2022 providing amendments to the D.C.A.).

The Province passed a new *Municipal Act* which came into force on January 1, 2003. Part XII of the Act and O. Reg. 584/06 govern a municipality's ability to impose fees and charges. In contrast to the previous *Municipal Act*, this Act provides municipalities with broadly defined powers and does not differentiate between fees for operating and capital purposes. It is anticipated that the powers to recover capital costs under the previous *Municipal Act* will continue within the new Statutes and Regulations, as indicated by s.9(2) and s.452 of the new *Municipal Act*.

Under s.484 of *Municipal Act, 2001*, the *Local Improvement Act* was repealed with the in-force date of the *Municipal Act* (January 1, 2003). The municipal powers granted under the *Local Improvement Act* now fall under the jurisdiction of the *Municipal Act*. To this end, on December 20, 2002, O. Reg. 390/02 was filed, which allowed for the *Local Improvement Act* to be deemed to remain in force until April 1, 2003. O. Reg. 119/03 was enacted on April 19, 2003, which restored many of the previous *Local Improvement Act* provisions; however, the authority is now provided under the *Municipal Act*.

The methods of capital cost recovery available to municipalities are provided as follows:

Recovery Methods	Section Reference
• <i>Development Charges Act, 1997</i>	4.2
• <i>Municipal Act</i>	4.3
○ Fees and Charges	
○ Sewer and Water Area Charges	
○ Connection Fees	
○ Local Improvements	

---



Recovery Methods	Section Reference
• Historical Grant Funding Availability	4.4
• Existing Reserves/Reserve Funds	4.5
• Debenture Financing	4.6
• Infrastructure Ontario	4.7

## 4.2 Development Charges Act, 1997

---

In November, 1996, the Ontario Government introduced Bill 98, a new *Development Charges Act*. The Province's stated intentions were to "create new construction jobs and make home ownership more affordable" by reducing the charges and to "make municipal Council decisions more accountable and more cost effective." The basis for this Act is to allow municipalities to recover the growth-related capital cost of infrastructure necessary to accommodate new growth within the municipality.

Generally, the Act provided the following changes to the former Act:

- Replace those sections of the 1989 Act that govern municipal development charges;
- Limit services which can be financed from development charges, specifically excluding parkland acquisition, administration buildings, and cultural, entertainment, tourism, solid waste management and hospital facilities;
- Ensure that the level of service used in the calculation of capital costs will not exceed the average level of service over the previous decade. Level of service is to be measured from both a quality and quantity perspective;
- Provide that uncommitted excess capacity available in existing municipal facilities and benefits to existing residents are removed from the calculation of the charge;
- Ensure that the development charge revenues collected by municipalities are spent only on those capital costs identified in the calculation of the development charge;
- Require municipalities to contribute funds (e.g. taxes, user charges or other non-development charge revenues) to the financing of certain projects primarily funded from development charges. The municipal contribution is 10 percent for services such as recreation, parkland development, libraries, etc.;
- Permit (but apparently not require) municipalities to grant developers credits for the direct provision of services identified in the development charge calculation





and, when credits are granted, require the municipality to reimburse the developer for the costs the municipality would have incurred if the project had been financed from the development charge reserve fund;

- Set out provisions for front-end financing capital projects (limited to essential services) required to service new development; and
- Set out provisions for appeals and complaints.

In late 2015, the Province approved further amendments to the D.C.A. With respect to water and wastewater, the only changes are for the municipality to provide an asset management calculation for the growth-related works and for the Council to consider (but not necessarily approve) area-specific rates.

As of 2019, a number of amendments to the D.C.A. were made through the Bill 108 the More Homes, More Choice Act, 2019, Bill 138 the Plan to Build Ontario Together Act, 2019, Bill 197 the COVID-19 Economic Recovery Act, 2020, and Bill 213 the Better for People, Smarter for Business Act, 2020. With respect to water and wastewater, a few changes may impact D.C. revenue collections:

1. Timing of Collection:

- a. D.C. Rate Freeze - For developments proceeding through site plan or zoning by-law amendment, the D.C. rate is frozen at the time the application is submitted. The D.C. remains frozen for two years after the application is approved. Should the D.C. study be updated to increase water and wastewater D.C. rates during this period, the Municipality would not be able to collect for this increase. Note: The Province introduced Bill 185 on April 10, 2024 which if passed would amend the rate freeze from two years to 18 months.
  - b. D.C. Installment Payments - For rental housing and institutional development D.C.s are paid over 5 years. This provides a delay in receipt of D.C. revenues which will need to be cash-flowed by the Municipality.
2. Mandatory Exemption (additional units) – For existing dwellings, one additional dwelling unit could be constructed within the existing dwelling. This additional dwelling unit is exempt from D.C.s. With the changes to the Act, one additional dwelling unit may be constructed within a new residential dwelling, which would be exempt from D.C.s. Further, one ancillary dwelling unit may be constructed



on the same property as a new unit. This ancillary dwelling would be exempt from D.C.s. As these new additional units are exempt from D.C.s, no D.C. revenue may be collected for these units, however, each additional unit provides additional population which requires capacity in the water and wastewater treatment plants. As a result, consideration for these additional units should be made during the D.C. study process to ensure all capacity available to growth is allocated appropriately.

3. Mandatory Exemption (universities) – A new mandatory exemption has been introduced which exempts the payment of D.C.s for developments of land intended for use by a university that receives operating funds from the Government.

The Province introduced Bill 23: More Homes Built Faster Act, on October 25, 2022, which subsequently received Royal Assent on November 28, 2022. The Bill amended several items within the D.C.A. and other legislation. These changes impacted a municipality's ability to recover D.C.s for growth-related water and wastewater capital costs.

### 4.3 Municipal Act

---

Part XII of the *Municipal Act* provides municipalities with broad powers to impose fees and charges via passage of a by-law. These powers, as presented in s.391(1), include imposing fees or charges:

- “for services or activities provided or done by or on behalf of it;
- for costs payable by it for services or activities provided or done by or on behalf of any other municipality or local board; and
- for the use of its property including property under its control.”

Restrictions are provided to ensure that the form of the charge is not akin to a poll tax. Any charges not paid under this authority may be added to the tax roll and collected in a like manner. The fees and charges imposed under this part are not appealable to the Ontario Land Tribunal ((OLT) formerly Local Planning Appeal Tribunal (LPAT), formerly O.M.B.).



Section 221 of the previous *Municipal Act* permitted municipalities to impose charges, by by-law, on owners or occupants of land who would or might derive benefit from the construction of sewage (storm and sanitary) or water works being authorized (in a specific benefit area). For a by-law imposed under this section of the previous Act:

- A variety of different means could be used to establish the rate and recovery of the costs and could be imposed by a number of methods at the discretion of Council (i.e. lot size, frontage, number of benefiting properties, etc.);
- Rates could be imposed with respect to costs of major capital works, even though an immediate benefit was not enjoyed;
- Non-abutting owners could be charged;
- Recovery was authorized against existing works, where a new water or sewer main was added to such works, "notwithstanding that the capital costs of existing works has in whole or in part been paid;"
- Charges on individual parcels could be deferred;
- Exemptions could be established;
- Repayment was secured; and
- OLT approval was not required.

While under the new *Municipal Act* no provisions are provided specific to the previous s.221, the intent to allow capital cost recovery through fees and charges is embraced within s.391. The new *Municipal Act* also maintains the ability of municipalities to impose capital charges for water and sewer services on landowners not receiving an immediate benefit from the works. Under s.391(2) of the Act, "a fee or charge imposed under subsection (1) for capital costs related to sewage or water services or activities may be imposed on persons not receiving an immediate benefit from the services or activities but who will receive a benefit at some later point in time." Also, capital charges imposed under s.391 are not appealable to the OLT on the grounds that the charges are "unfair or unjust."

Section 222 of the previous *Municipal Act* permitted municipalities to pass a by-law requiring buildings to connect to the municipality's sewer and water systems, charging the owner for the cost of constructing services from the mains to the property line. Under the new *Municipal Act*, this power still exists under Part II, General Municipal Powers (s.9 (3) b of the *Municipal Act*). Enforcement and penalties for this use of power are contained in s.427 (1) of the *Municipal Act*.



Under the previous *Local Improvement Act*:

- A variety of different types of works could be undertaken, such as watermain, storm and sanitary sewer projects, supply of electrical light or power, bridge construction, sidewalks, road widening and paving;
- Council could pass a by-law for undertaking such work on petition of a majority of benefiting taxpayers, on a 2/3 vote of Council and on sanitary grounds, based on the recommendation of the Minister of Health. The by-law was required to go to the OLT, which might hold hearings and alter the by-law, particularly if there were objections;
- The entire cost of a work was assessed only upon the lots abutting directly on the work, according to the extent of their respective frontages, using an equal special rate per metre of frontage; and
- As noted, this Act was repealed as of April 1, 2003; however, O. Reg. 119/03 was enacted on April 19, 2003 which restores many of the previous *Local Improvement Act* provisions; however, the authority is now provided under the *Municipal Act*.

## 4.4 Historical Grant Funding Availability

---

### Federal Infrastructure Funding

#### Phase 1 (April 1, 2016 to March 31, 2018)

Funding was provided by the Government of Canada to expressly help municipalities with repair and rehabilitation projects. Funding was mainly provided through the Clean Water and Wastewater Fund (C.W.W.F.) and Public Transit Infrastructure Fund (P.T.I.F.) in Federal Phase 1 projects. The C.W.W.F. was announced in Ontario on September 15, 2016. The Fund was \$1.1 billion for water, wastewater, and storm water systems in Ontario. The federal government provided \$569 million and Ontario and municipal governments provided \$275 million each.

Over 1,300 water, wastewater, and storm water projects have been approved in Ontario through the C.W.W.F. In Ontario, P.T.I.F. accounted for nearly \$1.5 billion of the national total of \$3.4 billion. The program was allocated by ridership numbers from the Canadian Urban Transit Association. The Association of Municipalities of Ontario (A.M.O.) understands that \$1 billion of Ontario's share has been approved.



## Phase 2: Next Steps

The federal government announced Phase 2 of its infrastructure funding plan with a total of \$180 billion spent over 11 years. In addition to the balance of funding for previous green, social, and public transit infrastructure funds (\$20 billion each, including Phase 1), the government added \$10.1 billion for trade and transportation infrastructure and \$2 billion for rural and northern communities.

In Phase 2, Ontario was eligible for \$11.8 billion including \$8.3 billion for transit, \$2.8 billion for green infrastructure, \$407 million for community, culture and recreation and \$250 million for rural and northern communities.

## Canada Community-Building Fund

The Canada Community-Building Fund is a permanent source of funding provided up front, twice-a-year, to Provinces and Territories, who in turn flow this funding to their municipalities to support local infrastructure priorities. Municipalities can pool, bank and borrow against this funding, providing significant financial flexibility. Every year, the Canada Community-Building Fund provides over \$2 billion and supports approximately 2,500 projects in communities across Canada. Each municipality selects how best to direct the funds with the flexibility provided to make strategic investments across 18 different project categories, which include other water and wastewater servicing.

## **Ontario Government**

The Province has taken steps to increase municipal infrastructure funding. The Ontario Community Infrastructure Fund (O.C.I.F.) was increased in 2016 with formula-based support growing to \$200 million, and application funding growing to \$100 million annually by 2018/2019. As well, \$15 million annually will go to the new Connecting Links program to help pay for the construction and repair costs of municipal roads that connect communities to provincial highways. This is on top of the Building Ontario Up investment of \$130 billion in public infrastructure over 10 years starting in 2015.

Recently the Province announced funding through a new Ontario Infrastructure Bank. This new, arms-length, board-governed agency will assist investors and institutions to further participate in large-scale infrastructure projects. The total amount available for municipal water and wastewater infrastructure is not yet known, however, recent



announcements suggested a share of the total available funds would be allocated to housing-enabling infrastructure.

## 4.5 Existing Reserves/Reserve Funds

---

The Municipality has established reserves and reserve funds for water and wastewater costs. The following table summarizes the water and wastewater reserves utilized in this analysis and their respective balances at December 31, 2022:

Table 4-1  
Water and Wastewater Reserves and Reserve Funds  
As of December 31, 2022

Reserve	Dec. 31 2022
<b>Water</b>	
Capital Reserve	426,868
Development Charges Reserve Fund	<b>122,237</b>
Lifecycle Reserve Fund	-
<b>Wastewater</b>	
Capital Reserve	<b>1,792,247</b>
Development Charges Reserve Fund	<b>801,362</b>
Lifecycle Reserve Fund	-

## 4.6 Debenture Financing

---

Although it is not a direct method of minimizing the overall cost to the ratepayer, debentures are used by municipalities to assist in cash flowing large capital expenditures.

The Ministry of Municipal Affairs regulates the level of debt incurred by Ontario municipalities, through its powers established under the *Municipal Act*. Ontario Regulation 403/02 provides the current rules respecting municipal debt and financial obligations. Through the rules established under these regulations, a municipality's debt capacity is capped at a level where no more than 25% of the municipality's own purpose revenue may be allotted for servicing the debt (i.e. debt charges). The Municipality of North Middlesex's 2023 calculation on Debt Capacity is provided by the Province. This calculation provides the Municipality's estimated annual repayment limit of approximately \$3.63 million. However, the Municipality has committed to debt financing for the fire hall as well as the water tower. As such, the restated annual



repayment limit is \$2.90 million. Based upon 20-year financing at an assumed rate of 5.0%, the available debt for the Municipality is approximately \$36.08 million. The amount of debt included in the rate study analysis is \$24.73 million. Issuing this amount of debt would bring the Municipality close to their maximum debt limit (19.5% of net revenues vs. the maximum of 25%).

## 4.7 Infrastructure Ontario

---

Infrastructure Ontario (I.O.) is an arms-length crown corporation, which has been set up as a tool to offer low-cost and longer-term financing to assist municipalities in renewing their infrastructure (this corporation has merged the former O.S.I.F.A. into its operations). I.O. combines the infrastructure renewal needs of municipalities into an infrastructure investment “pool.” I.O. will raise investment capital to finance loans to the public sector by selling a new investment product called Infrastructure Renewal Bonds to individual and institutional investors.

I.O. provides access to infrastructure capital that would not otherwise be available to smaller borrowers. Larger borrowers receive a longer term on their loans than they could obtain in the financial markets, and can also benefit from significant savings on transaction costs such as legal costs and underwriting commissions. Under the I.O. approach, all borrowers receive the same low interest rate. I.O. will enter into a financial agreement with each municipality subject to technical and credit reviews, for a loan up to the maximum amount of the loan request.

The first round of the former O.S.I.F.A.’s 2004/2005 infrastructure renewal program was focused on municipal priorities of clean water infrastructure, sewage treatment facilities, municipal roads and bridges, public transit and waste management infrastructure. The focus of the program was expanded in 2005/2006 somewhat to include:

- clean water infrastructure;
- sewage infrastructure;
- waste management infrastructure;
- municipal roads and bridges;
- public transit;
- municipal long-term care homes;
- renewal of municipal social housing and culture; and



- tourism and recreation infrastructure.

With the merging of O.S.I.F.A. and I.O., the program was broadened in late 2006 to also include municipal administrative buildings, local police and fire stations, emergency vehicles and equipment, ferries, docks and municipal airports.

To be eligible to receive these loans, municipalities must submit a formal application along with pertinent financial information. Allotments are prioritized and distributed based upon the Province’s assessment of need.

The analysis provided herein assumes that the Municipality will require both growth related and non-growth-related debt financing for the capital projects identified. For water services, approximately \$2.38 million, and \$3.12 million for growth and non-growth-related debt is required, respectively. For wastewater services, approximately \$19.23 million for growth-related debt is required.

## 4.8 Recommended Capital Financing Approach

Of the various funding alternatives provided in this section, the following are recommended for further consideration by the Municipality of North Middlesex for the capital expenditures (inflated) provided in Chapter 2.

Table 4-2  
Municipality of North Middlesex  
Capital Forecasting Financing Sources  
Inflated \$

Description	Water	Wastewater
<b>Capital Financing</b>		
Provincial/Federal Grants	-	5,373,530
Development Charges Reserve Fund	1,203,580	9,515,495
Non-Growth Related Debenture Requirements	2,380,000	19,229,684
Growth Related Debenture Requirements	3,117,800	-
Front-Ending Contributions	-	37,862,434
Operating Contributions	-	-
Lifecycle Reserve Fund	-	-
Reserve	16,413,620	6,692,857
<b>Total Capital Financing</b>	<b>23,115,000</b>	<b>78,674,000</b>





Tables 4-3 and 4-4 provide for the full capital expenditure and funding program by year for water and wastewater, respectively.



Table 4-3  
Capital Budget Forecast – Water (inflated \$)

Description	Budget 2023	Total	Forecast										
			2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
<b>Capital Expenditures</b>													
Watermain Replacement (Leonard Ave from Ann St to Parkhill Main St)	-	1,575,000	-	-	-	-	-	-	-	-	141,000	1,434,000	-
Watermain Replacement (Ardross St from Catherine St to Parkhill Main St)	-	1,472,000	-	-	-	-	-	-	-	-	-	131,000	1,341,000
Watermain Replacement (Ann St from Leonard St to John St)	-	146,000	-	-	-	-	-	-	-	-	-	-	146,000
New West Williams Pumping Station (Design)	-	329,000	-	-	-	-	-	-	-	-	-	329,000	-
New West Williams Pumping Station	-	2,438,000	-	-	-	-	-	-	-	-	-	-	2,438,000
McGillivray Booster Station	-	120,000	-	-	-	-	-	-	-	-	-	120,000	-
<b>Studies:</b>													
Water Engineering Studies	100,000	-	-	-	-	-	-	-	-	-	-	-	-
Water Master Plan	-	204,000	204,000	-	-	-	-	-	-	-	-	-	-
<b>Growth Related:</b>													
Queen Street Watermain - Phase 2 Construction (Ailsa Craig Main St to Mary St; water and sanitary sewer upgrade, and road and drainage improvements)	-	6,681,000	4,080,000	2,601,000	-	-	-	-	-	-	-	-	-
Mt Carmel Reservoir Construction	-	6,286,000	-	-	-	-	-	1,548,000	4,738,000	-	-	-	-
Parkhill Reservoir	-	3,864,000	-	-	-	-	3,864,000	-	-	-	-	-	-
<b>Total Capital Expenditures</b>	<b>100,000</b>	<b>23,115,000</b>	<b>4,284,000</b>	<b>2,601,000</b>	<b>-</b>	<b>-</b>	<b>3,864,000</b>	<b>1,548,000</b>	<b>4,738,000</b>	<b>141,000</b>	<b>2,014,000</b>	<b>3,925,000</b>	
<b>Capital Financing</b>													
Provincial/Federal Grants		-											
Development Charges Reserve Fund	-	1,203,580	-	-	-	-	386,400	201,240	615,940	-	-	-	-
Non-Growth Related Debenture Requirements	-	2,380,000	2,380,000	-	-	-	-	-	-	-	-	-	-
Growth Related Debenture Requirements	-	3,117,800	1,904,000	1,213,800	-	-	-	-	-	-	-	-	-
Operating Contributions	100,000	-	-	-	-	-	-	-	-	-	-	-	-
Lifecycle Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Reserve	-	16,413,620	-	1,387,200	-	-	3,477,600	1,346,760	4,122,060	141,000	2,014,000	3,925,000	
<b>Total Capital Financing</b>	<b>100,000</b>	<b>23,115,000</b>	<b>4,284,000</b>	<b>2,601,000</b>	<b>-</b>	<b>-</b>	<b>3,864,000</b>	<b>1,548,000</b>	<b>4,738,000</b>	<b>141,000</b>	<b>2,014,000</b>	<b>3,925,000</b>	



**Table 4-4  
Capital Budget Forecast – Wastewater (inflated \$)**

Description	Budget 2023	Total	Forecast									
			2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Capital Expenditures</b>												
Bear Creek Pumping Station (SCADA Design)	-	86,000	-	-	-	-	-	-	86,000	-	-	-
Bear Creek Pumping Station (SCADA Renewal)	-	205,000	-	-	-	-	-	-	-	205,000	-	-
Station St Pumping Station (Design)	-	149,000	-	-	-	-	-	-	-	-	149,000	-
Station St Pumping Station (Construction)	-	731,000	-	-	-	-	-	-	-	-	-	731,000
<b>Growth Related:</b>												
Sewer Upgrades and Infrastructure Renewal- Annie Ada Shipley from Queen St to Henderson St	-	2,601,000	-	-	-	-	-	-	-	211,000	2,390,000	-
Sewer Upgrades on Henderson St from Annie Ada Shiplet to William St (113m)	-	280,000	-	-	-	-	-	-	46,000	234,000	-	-
Sewer Upgrades and Infrastructure Renewal on William St from Henderson to Pumping Station	-	2,281,000	-	-	-	-	-	-	172,000	2,109,000	-	-
Sewer Upgrades and Infrastructure Renewal on Hastings Street (356m)	-	146,000	-	-	-	-	-	-	-	-	-	146,000
Sewer Upgrades on Mill Street (279m) and Station St (55m)	-	98,000	-	-	-	-	-	-	-	-	-	98,000
Gravity Sewer Upgrades on Parkhill Main Street (23m)	308,000	-	-	-	-	-	-	-	-	-	-	-
Victoria Street Upgrades (Pump Station)	-	2,251,000	-	-	-	-	72,000	2,179,000	-	-	-	-
Replace and Upgrade Sewers on Petty Street - 1452m 300mm pipe and 16 Manhole Structures	-	4,010,000	-	-	-	-	-	-	-	-	1,985,000	2,025,000
New Ontario Pump Station Upgrade	-	512,000	-	-	-	-	-	-	512,000	-	-	-
William St Pumping Station and Forcemain (Upgrade)	-	7,361,000	-	-	-	7,361,000	-	-	-	-	-	-
De-Sludging of Lagoons	-	4,080,000	4,080,000	-	-	-	-	-	-	-	-	-
Queen Street Watermain - Phase 2 Construction (Ailsa Craig Main St to Mary St; water and sanitary sewer upgrade, and road and drainage improvements)	-	2,601,000	-	2,601,000	-	-	-	-	-	-	-	-
Parkhill Wastewater Treatment Plant (Phase 1) - additional 1,150 cu.m + Components for 2,300 cu.m	-	38,276,000	-	-	-	-	-	-	-	-	-	38,276,000
Ailsa Craig Treatment Plant Expansion and Addition (including filter)	-	13,006,000	-	-	-	-	-	1,235,000	-	4,283,000	4,369,000	3,119,000
<b>Total Capital Expenditures</b>	<b>308,000</b>	<b>78,674,000</b>	<b>4,080,000</b>	<b>2,601,000</b>	<b>-</b>	<b>7,361,000</b>	<b>72,000</b>	<b>3,414,000</b>	<b>816,000</b>	<b>7,042,000</b>	<b>8,893,000</b>	<b>44,395,000</b>
<b>Capital Financing</b>												
Provincial/Federal Grants		5,373,530		-		5,373,530						
Development Charges Reserve Fund	-	9,515,495	-	1,213,800	-	1,987,470	72,000	2,179,000	537,897	527,134	1,728,311	1,269,882
Front-Ending Contributions		37,862,434						1,235,000		4,283,000	4,369,000	27,975,434
Non-Growth Related Debenture Requirements	138,600	19,229,684	4,080,000	-	-	-	-	-	-	-	-	15,149,684
Growth Related Debenture Requirements	169,400	-	-	-	-	-	-	-	-	-	-	-
Operating Contributions	-	-	-	-	-	-	-	-	-	-	-	-
Lifecycle Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	-
Wastewater Reserve	-	6,692,857	-	1,387,200	-	-	-	-	278,103	2,231,866	2,795,689	-
<b>Total Capital Financing</b>	<b>308,000</b>	<b>78,674,000</b>	<b>4,080,000</b>	<b>2,601,000</b>	<b>-</b>	<b>7,361,000</b>	<b>72,000</b>	<b>3,414,000</b>	<b>816,000</b>	<b>7,042,000</b>	<b>8,893,000</b>	<b>44,395,000</b>



# Chapter 5

## Overview of Expenditures and Revenues



## 5. Overview of Expenditures and Revenues

### 5.1 Water Operating Expenditures

---

In this report, the forecast water budget figures (2024 to 2033) are based on the 2024 operating budgets. The costs for each component of the operating budget have been reviewed with staff to establish forecast inflationary adjustments. Annual water operating expenditures are assumed to increase by 2% per annum, and expenditures related to utilities, fuels, chemicals and other materials have been increased at 5% per annum.

Annual contributions have been provided to the capital reserves over the forecast period in order to minimize the need for additional debt to finance the capital program. Also included are any debenture expenditures and contributions to reserve funds.

The Municipality purchases water from the Lake Huron Primary Water Supply System. Based on existing and future customers over the forecast period, the Municipality is forecasted to spend approximately \$1.23 million in 2033 on purchased water. The total water billing recovery in 2033 is approximately \$1.62 million, therefore purchased water makes up approximately 76% of the total. Over the 10-year forecast period the Municipality is expected to spend approximately \$10.05 million on purchased water. Based on a review of the billable water volumes relative to the purchased water volumes over the past four years, it was determined that on average, the unaccounted-for water was approximately 45%. Watson has found that the average water-loss for various municipalities across the Province is closer to 15%. If the Municipality's water loss was decreased to 15%, the purchased water expenditure would decrease to approximately \$6.45 million over the 10-year forecast period, saving the Municipality almost \$3.60 million. Therefore, it is recommended the Municipality dedicate resources to rectifying this issue or seek funding assistance from senior levels of government.

### 5.2 Water Operating Revenues

---

The Municipality has miscellaneous revenue sources to help contribute towards operating expenditures. These miscellaneous revenues including water final reads, returned cheque fees, reconnection fees, etc. are assumed to increase at 2% per year.



Base charges for the Municipality are discussed further in Chapter 6. Table 5-1 provides for the operating budget for the water system.





### **5.3 Wastewater Operating Expenditures**

---

In this report, the forecast wastewater budget figures (2024 to 2033) are based on the 2024 operating budgets. The costs for each component of the operating budget have been reviewed with staff to establish forecast inflationary adjustments. Annual wastewater operating expenditures related to wages and salaries are assumed to increase by 2% per annum, and expenditures related to utilities, fuels, chemicals and other materials have been increased at 5% per annum.

Annual contributions have been provided to the capital reserves over the forecast period in order to minimize the need for additional debt to finance the capital program. Also included are any debenture expenditures and contributions to reserve funds.

### **5.4 Wastewater Operating Revenues**

---

The Municipality has miscellaneous revenue sources to help contribute towards operating expenditures. These miscellaneous revenues including connection permits and inspection fees, etc. are assumed to increase at 2% per year. Base charges for the Municipality are discussed further in Chapter 6. Table 5-2 outlines the operating budget for the North Middlesex wastewater system.





**Table 5-2  
Operating Budget Forecast – Wastewater (inflated \$)**

Description	Budget	Forecast										
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
<b>Expenditures</b>												
<b>Operating Costs</b>												
<b>Dept 4110 - Administration</b>												
Salaries & Wages	97,475	99,400	101,400	103,400	105,500	107,600	109,800	112,000	114,200	116,500	118,800	
Employee Benefits - CPP	4,525	4,600	4,700	4,800	4,900	5,000	5,100	5,200	5,300	5,400	5,500	
Employee Benefits - EI	1,710	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	
Employee Benefits - WSIB	3,420	3,500	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400	
Employee Benefits - EHT	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	
Employee Benefits	8,680	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500	10,700	
Employee Benefits - OMERS	9,845	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	
Mileage	200	200	200	200	200	200	200	200	200	200	200	
Conferences	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Meal Expenses	250	300	300	300	300	300	300	300	300	300	300	
Office Supplies-office/shop	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Education & Training	500	500	500	500	500	500	500	500	500	500	500	
Postage & Courier	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000	4,100	4,200	
Memberships	100	100	100	100	100	100	100	100	100	100	100	
Advertising	500	500	500	500	500	500	500	500	500	500	500	
Telephone-office/shop	650	700	700	700	700	700	700	700	700	700	700	
Clothing Allowance & Safetywear	100	100	100	100	100	100	100	100	100	100	100	
Small Tools	100	100	100	100	100	100	100	100	100	100	100	
Municipal Drains Maintenance	20,000	20,400	20,800	21,200	21,600	22,000	22,400	22,800	23,300	23,800	24,300	
Prog Maint & Enhance(Keystone)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Professional - Consulting	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000	
Professional - Engineering	5,000	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	6,000	
Vehicle Fuel	2,200	2,300	2,400	2,500	2,600	2,700	2,800	2,900	3,000	3,200	3,400	
Vehicle Maint.	500	500	500	500	500	500	500	500	500	500	500	
Parts & Repairs	500	500	500	500	500	500	500	500	500	500	500	
Sewer Debenture Interest	24,550	25,000	25,500	26,000	26,500	27,000	27,500	28,100	28,700	29,300	29,900	
Hydro	130,000	136,500	143,300	150,500	158,000	165,900	174,200	182,900	192,000	201,600	211,700	
Insurance Premiums	22,395	22,800	23,300	23,800	24,300	24,800	25,300	25,800	26,300	26,800	27,300	
Telephone	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	
Equip Repairs & Maintenance - Shop	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000	
Rd Rep & Restoration Materials	2,500	2,600	2,700	2,800	2,900	3,000	3,200	3,400	3,600	3,800	4,000	
Materials Purchased	500	500	500	500	500	500	500	500	500	500	500	
Repairs & Maintenance (System)	5,000	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	6,000	
Sewage Pump/Life Repairs & Maintenance	60,000	61,200	62,400	63,600	64,900	66,200	67,500	68,900	70,300	71,700	73,100	
Contracted Services-OCWA	366,421	373,700	381,200	388,800	396,600	404,500	412,600	420,900	429,300	437,900	446,700	
Scada Support	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000	
Rd Rep & Restoration -Subcontractors	5,000	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	6,000	
Sanitary Line Maint-Subcontractor	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000	
Equip Repairs & Maintenance - Shop	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000	
Repairs & Maintenance (System) Subcontractor	25,000	25,500	26,000	26,500	27,000	27,500	28,100	28,700	29,300	29,900	30,500	
CCTV Inspections	40,000	40,800	41,600	42,400	43,200	44,100	45,000	45,900	46,800	47,700	48,700	
Equipment Rental Exp.	500	500	500	500	500	500	500	500	500	500	500	
Property Tax	35,000	35,700	36,400	37,100	37,800	38,600	39,400	40,200	41,000	41,800	42,600	
<b>Sub Total Operating</b>	<b>932,221</b>	<b>954,600</b>	<b>977,700</b>	<b>1,001,300</b>	<b>1,025,600</b>	<b>1,050,600</b>	<b>1,076,500</b>	<b>1,103,200</b>	<b>1,130,500</b>	<b>1,158,700</b>	<b>1,187,700</b>	
<b>Capital-Related</b>												
Existing Debt (Principal) - Growth Related	-	-	-	-	-	-	-	-	-	-	-	
Existing Debt (Interest) - Growth Related	-	-	-	-	-	-	-	-	-	-	-	
New Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-	-	
New Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-	-	
Existing Debt (Principal) - Non-Growth Related	-	-	-	-	-	-	-	-	-	-	-	
Existing Debt (Interest) - Non-Growth Related	-	-	-	-	-	-	-	-	-	-	-	
New Non-Growth Related Debt (Principal)	-	-	132,803	138,513	144,469	150,681	157,161	163,918	170,967	178,319	185,986	
New Non-Growth Related Debt (Interest)	-	-	175,440	169,729	163,773	157,561	151,082	144,324	137,276	129,924	122,256	
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	
Transfer to Capital Reserve	329,464	405,362	193,035	312,328	460,635	644,373	851,405	584,651	847,364	1,142,653	476,538	
<b>Sub Total Capital Related</b>	<b>329,464</b>	<b>405,362</b>	<b>501,278</b>	<b>620,570</b>	<b>768,877</b>	<b>952,615</b>	<b>1,159,647</b>	<b>892,894</b>	<b>1,155,607</b>	<b>1,450,895</b>	<b>784,780</b>	
<b>Total Expenditures</b>	<b>1,261,685</b>	<b>1,359,962</b>	<b>1,478,978</b>	<b>1,621,870</b>	<b>1,794,477</b>	<b>2,003,215</b>	<b>2,236,147</b>	<b>1,996,094</b>	<b>2,286,107</b>	<b>2,609,595</b>	<b>1,972,480</b>	
<b>Revenues</b>												
Base Charge	1,008,384	1,089,158	1,187,088	1,305,480	1,448,506	1,621,443	1,814,482	2,029,915	2,270,289	2,538,439	2,839,332	
<b>Other Revenue</b>												
Ward # 1 Utility Penalty	3,500	3,570	3,640	3,640	3,640	3,640	3,640	3,640	3,640	3,640	3,640	
Connections Permits & Insp. Fees	1,000	1,020	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	
Debt Debt Paid By Ratepayers	36,830	37,567	38,320	38,320	38,320	38,320	38,320	38,320	38,320	38,320	38,320	
Contributions from Development Charges Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	
Contributions from Reserves / Reserve Funds	-	-	-	-	-	-	-	-	-	-	-	
<b>Total Operating Revenue</b>	<b>1,049,714</b>	<b>1,131,314</b>	<b>1,230,088</b>	<b>1,348,480</b>	<b>1,491,506</b>	<b>1,664,443</b>	<b>1,857,482</b>	<b>2,072,915</b>	<b>2,313,289</b>	<b>2,581,439</b>	<b>2,882,332</b>	
<b>Wastewater Billing Recovery - Operating</b>	<b>211,971</b>	<b>228,648</b>	<b>248,890</b>	<b>273,390</b>	<b>302,971</b>	<b>338,772</b>	<b>378,665</b>	<b>(76,821)</b>	<b>(27,182)</b>	<b>28,157</b>	<b>(909,852)</b>	
Lifecycle Reserve Contribution (\$)	-	-	-	-	-	-	-	500,000	500,000	500,000	1,500,000	
<b>Wastewater Billing Recovery - Total</b>	<b>211,971</b>	<b>228,648</b>	<b>248,890</b>	<b>273,390</b>	<b>302,971</b>	<b>338,772</b>	<b>378,665</b>	<b>423,179</b>	<b>472,818</b>	<b>528,157</b>	<b>590,148</b>	



# Chapter 6

## Pricing Structures

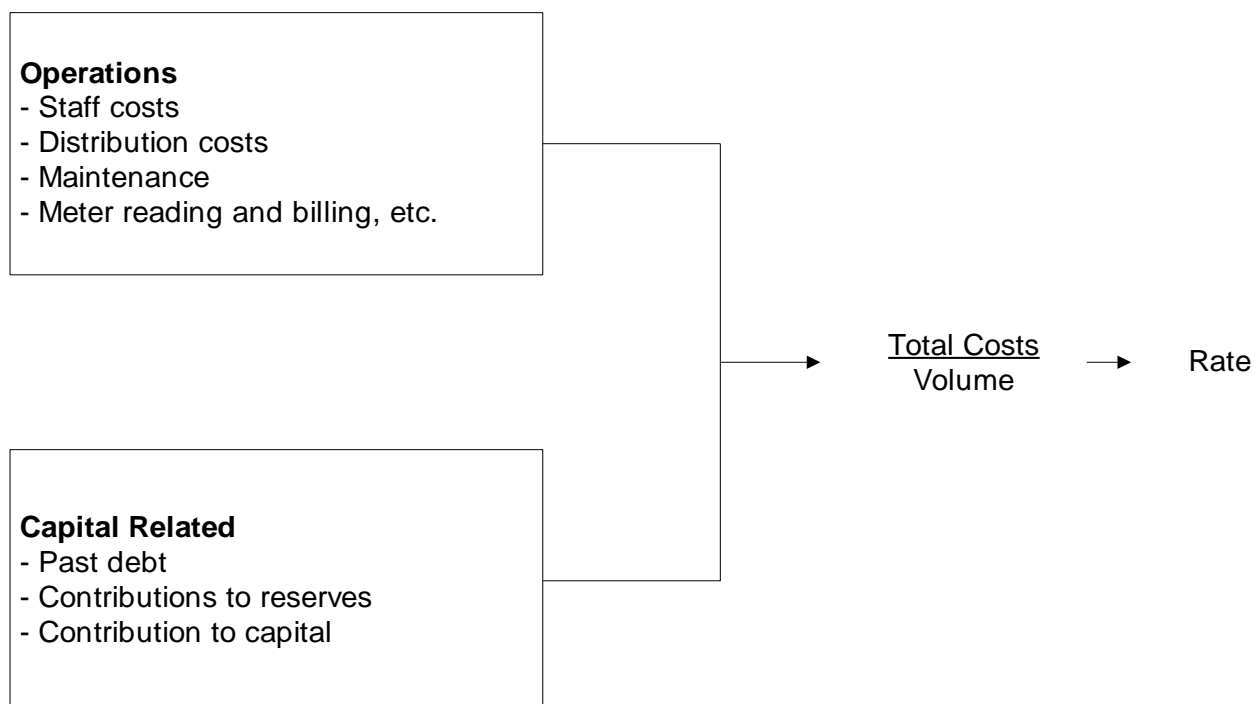


## 6. Pricing Structures

### 6.1 Introduction

Rates, in their simplest form, can be defined as total costs to maintain the utility function divided by the total expected volume to be generated for the period. Total costs are usually a combination of operating costs (e.g. staff costs, distribution costs, maintenance, administration, etc.) and capital-related costs (e.g. past debt to finance capital projects, transfers to reserves to finance future expenditures, etc.). The schematic below provides a simplified illustration of the rate calculation for water.

#### “Annual Costs”



These operating and capital expenditures will vary over time. Examples of factors that will affect the expenditures over time are provided below.

#### Operations

- Inflation;
- Increased maintenance as system ages; and



- Changes to provincial legislation.

### Capital Related

- New capital will be built as areas expand;
- Replacement capital needed as system ages; and
- Financing of capital costs are a function of policy regarding reserves and direct financing from rates (pay as you go), debt and user pay methods (development charges, *Municipal Act*).

## 6.2 Alternative Pricing Structures

---

Throughout Ontario, and as well, Canada, the use of pricing mechanisms varies between municipalities. The use of a particular form of pricing depends upon numerous factors, including Council preference, administrative structure, surplus/deficit system capacities, economic/demographic conditions, to name a few.

Municipalities within Ontario have two basic forms of collecting revenues for water purposes, those being through incorporation of the costs within the tax rate charged on property assessment and/or through the establishment of a specific water rate billed to the customer. Within the rate methods, there are five basic rate structures employed along with other variations:

- Flat Rate (non-metered customers);
- Constant Rate;
- Declining Block Rate;
- Increasing (or Inverted) Block Rate;
- Hump Back Block Rate; and
- Base Charges.

The definitions and general application of the various methods are as follows:

**Property Assessment:** This method incorporates the total costs of providing water into the general requisition or the assessment base of the municipality. This form of collection is a "wealth tax," as payment increases directly with the value of property owned and bears no necessary relationship to actual consumption. This form is easy to



administer as the costs to be recovered are incorporated in the calculation for all general services, normally collected through property taxes.

**Flat Rate:** This rate is a constant charge applicable to all customers served. The charge is calculated by dividing the total number of user households and other entities (e.g. businesses) into the costs to be recovered. This method does not recognize differences in actual consumption but provides for a uniform spreading of costs across all users. Some municipalities define users into different classes of similar consumption patterns, that is, a commercial user, residential user and industrial user, and charge a flat rate by class. Each user is then billed on a periodic basis. No meters are required to facilitate this method, but an accurate estimate of the number of users is required. This method ensures set revenue for the collection period but is not sensitive to consumption, hence may cause a shortfall or surplus of revenues collected.

**Constant Rate:** This rate is a volume-based rate, in which the consumer pays the same price per unit consumed, regardless of the volume. The price per unit is calculated by dividing the total cost of the service by the total volume used by total consumers. The bill to the consumer climbs uniformly as the consumption increases. This form of rate requires the use of meters to record the volume consumed by each user. This method closely aligns the revenue recovery with consumption. Revenue collected varies directly with the consumption volume.

**Declining Block Rates:** This rate structure charges a successively lower price for set volumes, as consumption increases through a series of "blocks." That is to say that within set volume ranges, or blocks, the charge per unit is set at one rate. Within the next volume range, the charge per unit decreases to a lower rate, and so on. Typically, the first, or first and second blocks cover residential and light commercial uses. Subsequent blocks normally are used for heavier commercial and industrial uses. This rate structure requires the use of meters to record the volume consumed by each type of user. This method requires the collection and analysis of consumption patterns by user classification to establish rates at a level which does not over or under collect revenue from rate payers.

**Increasing or Inverted Block Rates:** The increasing block rate works essentially the same way as the declining block rate, except that the price of water in successive blocks increases rather than declines. Under this method the consumer's bill rises faster with higher volumes used. This rate structure also requires the use of meters to



record the volume consumed by each user. This method requires, as with the declining block structure, the collection and analysis of consumption patterns by user classification to establish rates at a level which does not over or under collect from rate payers.

**The Hump Back Rate:** The hump back rate is a combination of an increasing block rate and the declining block rate. Under this method the consumer's bill rises with higher volumes used up to a certain level and then begins to fall for volumes in excess of levels set for the increasing block rate.

## 6.3 Assessment of Alternative Pricing Structures

---

The adoption by a municipality or utility of any one particular pricing structure is normally a function of a variety of administrative, social, demographic and financial factors. The number of factors, and the weighting each particular factor receives, can vary between municipalities. The following is a review of some of the more prevalent factors.

### Cost Recovery

Cost recovery is a prime factor in establishing a particular pricing structure. Costs can be loosely defined into different categories: operations, maintenance, capital, financing and administration. These costs often vary between municipalities and even within a municipality, based on consumption patterns, infrastructure age, economic growth, etc.

The pricing alternatives defined earlier can all achieve the cost recovery goal, but some do so more precisely than others. Fixed pricing structures, such as Property Assessment and Flat Rate, are established on the value of property or on the number of units present in the municipality, but do not adjust in accordance with consumption. Thus, if actual consumption for the year is greater than projected, the municipality incurs a higher cost of production, but the revenue base remains static (since it was determined at the beginning of the year), thus potentially providing a funding shortfall. Conversely, if the consumption level declines below projections, fixed pricing structures will produce more revenue than actual costs incurred.



The other pricing methods (declining block, constant rate, increasing block) are consumption-based and generally will generate revenues in proportion to actual consumption.

### Administration

Administration is defined herein as the staffing, equipment and supplies required to support the undertaking of a particular pricing strategy. This factor not only addresses the physical tangible requirements to support the collection of the revenues, but also the intangible requirements, such as policy development.

The easiest pricing structure to support is the Property Assessment structure. As municipalities undertake the process of calculating property tax bills and the collection process for their general services, the incorporation of the water costs into this calculation would have virtually no impact on the administrative process and structure.

The Flat Rate pricing structure is relatively easy to administer as well. It is normally calculated to collect a set amount, either on a monthly, quarterly, semi-annual or annual basis, and is billed directly to the customer. The impact on administration centres mostly on the accounts receivable or billing area of the municipality, but normally requires minor additional staff or operating costs to undertake.

The three remaining methods, those being Increasing Block Rate, Constant Rate and Declining Block Rate, have a more dramatic effect on administration. These methods are dependent upon actual consumption and hence involve a major structure in place to administer. First, meters must be installed in all existing units in the municipality, and units to be subsequently built must be required to include these meters. Second, meter readings must be undertaken periodically. Hence staff must be available for this purpose or a service contract must be negotiated. Third, the billings process must be expanded to accommodate this process. Billing must be done per a defined period, requiring staff to produce the bills. Lastly, either through increased staffing or by service contract, an annual maintenance program must be set up to ensure meters are working effectively in recording consumed volumes.

The benefit derived from the installation of meters is that information on consumption patterns becomes available. This information provides benefit to administration in calculating rates which will ensure revenue recovery. Additionally, when planning what services are to be constructed in future years, the municipality or utility has documented



consumption patterns distinctive to its own situation, which can be used to project sizing of growth-related works.

### Equity

Equity is always a consideration in the establishment of pricing structures but its definition can vary depending on a municipality's circumstances and based on the subjective interpretation of those involved. For example: is the price charged to a particular class of rate payer consistent with those of a similar class in surrounding municipalities; through the pricing structure does one class of rate payer pay more than another class; should one pay based on ability to pay, or on the basis that a unit of water costs the same to supply no matter who consumes it; etc.? There are many interpretations. Equity therefore must be viewed broadly in light of many factors as part of achieving what is best for the municipality as a whole.

### Conservation

In today's society, conservation of natural resources is increasingly being more highly valued. Controversy continuously focuses on the preservation of non-renewable resources and on the proper management of renewable resources. Conservation is also a concept which applies to a municipality facing physical limitations in the amount of water which can be supplied to an area. As well, financial constraints can encourage conservation in a municipality where the cost of providing each additional unit is increasing.

Pricing structures such as property assessment and flat rate do not, in themselves, encourage conservation. In fact, depending on the price which is charged, they may even encourage resource "squandering," either because consumers, without the price discipline, consume water at will, or the customer wants to get his money's worth and hence adopts more liberal consumption patterns. The fundamental reason for this is that the price paid for the service bears no direct relationship to the volume consumed and hence is viewed as a "tax," instead of being viewed as the price of a purchased commodity.

The Declining Block Rate provides a decreasing incentive towards conservation. By creating awareness of volumes consumed, the consumer can reduce his total costs by restricting consumption; however, the incentive lessens as more water is consumed, because the marginal cost per unit declines as the consumer enters the next block





pricing range. Similarly, those whose consumption level is at the top end of a block have less incentive to reduce consumption.

The Constant Rate structure presents the customer with a linear relationship between consumption and the cost thereof. As the consumer pays a fixed cost per unit, his bill will vary directly with the amount consumed. This method presents tangible incentive for consumers to conserve water. As metering provides direct feedback as to usage patterns and the consumer has direct control over the total amount paid for the commodity, the consumer is encouraged to use only those volumes that are reasonably required.

The Inverted Block method presents the most effective pricing method for encouraging conservation. Through this method, the price per unit consumed increases as total volumes consumed grow. The consumer becomes aware of consumption through metering with the charges increasing dramatically with usage. Hence, there normally is awareness that exercising control over usage can produce significant savings. This method not only encourages conservation methods, but may also penalize legitimate high-volume users if not properly structured.

Figure 6-1 provides a schematic representation of the various rate structures (note property tax as a basis for revenue recovery has not been presented for comparison, as the proportion of taxes paid varies in direct proportion to the market value of the property). The graphs on the left-hand side of the figure present the cost per unit for each additional amount of water consumed. The right-hand side of the figure presents the impact on the customer's bill as the volume of water increases. Following the schematic is a table summarizing each rate structure.



Figure 6-1

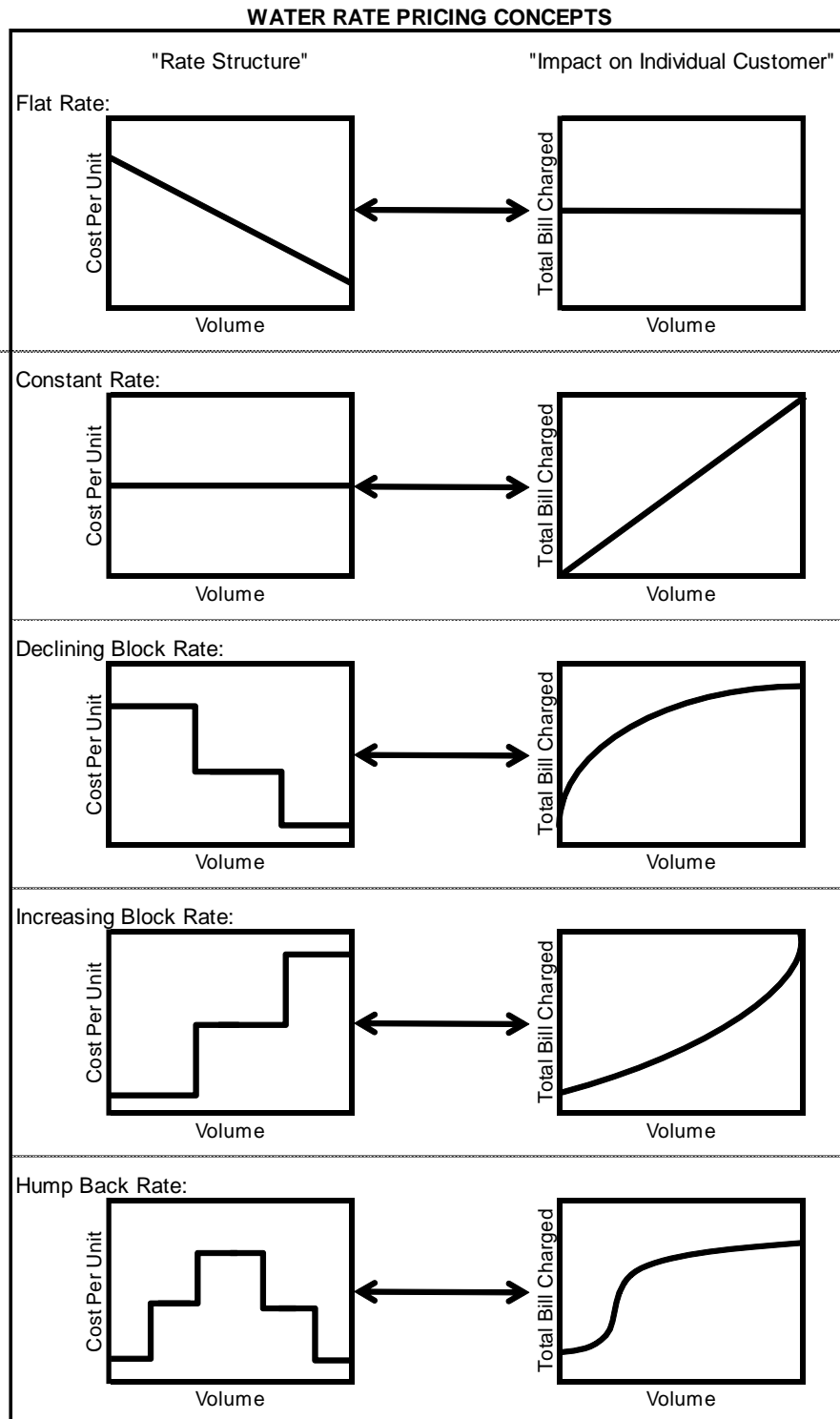




Figure 6-2  
Summary of Various Rate Structures and their Impact on Customer Bills as Volume Usage Increases

Rate Structure	Cost Per Unit As Volume Increases	Impact On Customer Bill As Volume Increases
Flat Rate	Cost per unit decreases as more volume consumed	Bill remains the same no matter how much volume is consumed
Constant Rate	Cost per unit remains the same	Bill increases in direct proportion to consumption
Declining Block	Cost per unit decreases as threshold targets are achieved	Bill increases at a slower rate as volumes increase
Increasing Block	Cost per unit increases as threshold targets are achieved	Bill increases at a faster rate as volumes increase
Hump Back Rate	Combination of an increasing block at the lower consumption volumes and then converts to a declining block for the high consumption	Bill increases at a faster rate at the lower consumption amounts and then slows as volumes increase

## 6.4 Rate Structures in Ontario

In a past survey of over 170 municipalities (approximately half of the municipalities who provide water and/or sewer), all forms of rate structures are in use by Ontario municipalities. The most common rate structure is the constant rate (for metered municipalities). Most municipalities (approximately 92%) who have volume rate structures also impose a base monthly charge.

Historically, the development of a base charge often reflected either the recovery of meter reading/billing/collection costs, plus administration or those costs plus certain fixed costs (such as capital contributions or reserve contributions). More recently, many municipalities have started to establish base charges based on ensuring a secure



portion of the revenue stream which does not vary with volume consumption. Selection of the quantum of the base charge is a matter of policy selected by individual municipalities.

## 6.5 Recommended Rate Structures

---

Based on the foregoing, it is recommended that the same rate structures be continued in the future.

The needs for water and wastewater are significant throughout the forecast period. Additional operating expenditures and the requirement for significant capital expenditures create pressure on the financial sustainability of the water and wastewater systems. Further, through the previous rate study update process, it was determined that the flat rate be replaced with a base charge and constant rate. Further, this rate structure was replaced with a tiered base charge and increasing block volume rate structure. This analysis maintains the current rate structure.

The water capital reserve fund was a balance of \$426,868 as of December 31, 2022. The Municipality has an extensive amount of linear infrastructure for the number of customers. As a result, the lifecycle replacement costs are high in addition to the forecasted capital needs (note that the lifecycle costs included in the forecast as less than the estimated amount included in the Asset Management Plan). Additionally, the 2019 rate study process identified significant rate increases to begin saving for lifecycle replacement needs. The Municipality increased rates at a slower rate than was recommended, which is reflected in the reserve fund balance and future required rate increases. Since the reserve fund does not have a significant balance, the capital program will need to be funded, in part, through debenture issuances.

As a result, rate increases are recommended to increase over the forecast period. The recommendation to meet the needs for water is to increase both the base and volume rates (all tiers) by 10% in 2024, 16% in 2025, 14% in 2026, 12% in 2027, 10% in 2028, and 5% every year thereafter. The forecast base charges are presented in Table 6-1. The volume rates are presented in section 7.2.

As for wastewater, the capital reserve fund has a balance of approximately \$1.79 million as of December 31, 2022. The Municipality has numerous required capital expenditures planned for the forecast period. Similar to the water rates, the Municipality



increased the wastewater rates slower than the recommendation from the 2019 rate study. Since the reserve fund does not have a significant balance, the capital program will need to be partially funded through debenture issuances.

As a result, rate increases are recommended over the forecast period. The recommendation to meet the needs for wastewater is to increase both the base and volume rates (all tiers) by 6% in 2024, 7% in 2025, 8% in 2026, 9% in 2027, and 10% every year thereafter. The forecast base charges are presented in Table 6-2. The volume rates are presented in section 7.3.

The above increases are recommended to ensure that the Municipality can fund the capital and operating costs while keeping the overall reserve fund balance in a positive position.



**Table 6-1  
Municipality of North Middlesex  
Base Charge Forecast – Water**

Water	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Existing	2,339	2,339	2,339	2,339	2,339	2,339	2,339	2,339	2,339	2,339	2,339
New	12	37	62	87	112	137	161	186	211	236	262
<b>Total Customers</b>	<b>2,351</b>	<b>2,376</b>	<b>2,401</b>	<b>2,426</b>	<b>2,451</b>	<b>2,476</b>	<b>2,500</b>	<b>2,525</b>	<b>2,550</b>	<b>2,575</b>	<b>2,601</b>
<b>Total Annual Revenue</b>	<b>\$2,525,942</b>	<b>\$2,797,872</b>	<b>\$3,267,962</b>	<b>\$3,751,047</b>	<b>\$4,229,811</b>	<b>\$4,684,295</b>	<b>\$4,951,587</b>	<b>\$5,233,898</b>	<b>\$5,532,061</b>	<b>\$5,846,956</b>	<b>\$6,181,125</b>

0 to 75	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Existing	441	441	441	441	441	441	441	441	441	441	441
New											
<b>Subtotal Customers</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>	<b>441</b>
Monthly Base Charge	\$29.42	\$32.36	\$37.53	\$42.79	\$47.92	\$52.72	\$55.35	\$58.12	\$61.02	\$64.08	\$67.28
Annual Base Charge	\$352.98	\$388.28	\$450.40	\$513.46	\$575.07	\$632.58	\$664.21	\$697.42	\$732.29	\$768.91	\$807.35
<b>Total Annual Revenue</b>	<b>\$155,664</b>	<b>\$171,231</b>	<b>\$198,627</b>	<b>\$226,435</b>	<b>\$253,608</b>	<b>\$278,968</b>	<b>\$292,917</b>	<b>\$307,563</b>	<b>\$322,941</b>	<b>\$339,088</b>	<b>\$356,042</b>

76 to 250	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Existing	1,383	1,383	1,383	1,383	1,383	1,383	1,383	1,383	1,383	1,383	1,383
New	12	37	62	87	112	137	161	186	211	236	262
<b>Subtotal Customers</b>	<b>1,395</b>	<b>1,420</b>	<b>1,445</b>	<b>1,470</b>	<b>1,495</b>	<b>1,520</b>	<b>1,544</b>	<b>1,569</b>	<b>1,594</b>	<b>1,619</b>	<b>1,645</b>
Monthly Base Charge	\$58.83	\$64.71	\$75.07	\$85.58	\$95.85	\$105.43	\$110.70	\$116.24	\$122.05	\$128.15	\$134.56
Annual Base Charge	\$705.96	\$776.56	\$900.80	\$1,026.92	\$1,150.15	\$1,265.16	\$1,328.42	\$1,394.84	\$1,464.58	\$1,537.81	\$1,614.70
<b>Total Annual Revenue</b>	<b>\$984,814</b>	<b>\$1,102,632</b>	<b>\$1,301,483</b>	<b>\$1,509,261</b>	<b>\$1,719,011</b>	<b>\$1,922,414</b>	<b>\$2,051,613</b>	<b>\$2,188,925</b>	<b>\$2,334,839</b>	<b>\$2,489,873</b>	<b>\$2,656,187</b>

251 to 300	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Existing	153	153	153	153	153	153	153	153	153	153	153
New											
<b>Subtotal Customers</b>	<b>153</b>	<b>153</b>	<b>153</b>	<b>153</b>	<b>153</b>	<b>153</b>	<b>153</b>	<b>153</b>	<b>153</b>	<b>153</b>	<b>153</b>
Monthly Base Charge	\$76.63	\$84.29	\$97.78	\$111.47	\$124.85	\$137.33	\$144.20	\$151.41	\$158.98	\$166.93	\$175.28
Annual Base Charge	\$919.58	\$1,011.54	\$1,173.38	\$1,337.66	\$1,498.18	\$1,647.99	\$1,730.39	\$1,816.91	\$1,907.76	\$2,003.15	\$2,103.30
<b>Total Annual Revenue</b>	<b>\$140,696</b>	<b>\$154,765</b>	<b>\$179,528</b>	<b>\$204,662</b>	<b>\$229,221</b>	<b>\$252,143</b>	<b>\$264,750</b>	<b>\$277,988</b>	<b>\$291,887</b>	<b>\$306,482</b>	<b>\$321,806</b>

301 to 400	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Existing	122	122	122	122	122	122	122	122	122	122	122
New											
<b>Subtotal Customers</b>	<b>122</b>	<b>122</b>	<b>122</b>	<b>122</b>	<b>122</b>	<b>122</b>	<b>122</b>	<b>122</b>	<b>122</b>	<b>122</b>	<b>122</b>
Monthly Base Charge	\$90.69	\$99.75	\$115.72	\$131.92	\$147.75	\$162.52	\$170.65	\$179.18	\$188.14	\$197.54	\$207.42
Annual Base Charge	\$1,088.23	\$1,197.05	\$1,388.58	\$1,582.98	\$1,772.94	\$1,950.23	\$2,047.75	\$2,150.13	\$2,257.64	\$2,370.52	\$2,489.05
<b>Total Annual Revenue</b>	<b>\$132,764</b>	<b>\$146,040</b>	<b>\$169,407</b>	<b>\$193,124</b>	<b>\$216,299</b>	<b>\$237,929</b>	<b>\$249,825</b>	<b>\$262,316</b>	<b>\$275,432</b>	<b>\$289,204</b>	<b>\$303,664</b>

401 to 500	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Existing	50	50	50	50	50	50	50	50	50	50	50
New											
<b>Subtotal Customers</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>
Monthly Base Charge	\$109.42	\$120.37	\$139.63	\$159.17	\$178.27	\$196.10	\$205.91	\$216.20	\$227.01	\$238.36	\$250.28
Annual Base Charge	\$1,313.09	\$1,444.40	\$1,675.50	\$1,910.07	\$2,139.28	\$2,353.21	\$2,470.87	\$2,594.41	\$2,724.13	\$2,860.34	\$3,003.36
<b>Total Annual Revenue</b>	<b>\$65,655</b>	<b>\$72,220</b>	<b>\$83,775</b>	<b>\$95,504</b>	<b>\$106,964</b>	<b>\$117,661</b>	<b>\$123,544</b>	<b>\$129,721</b>	<b>\$136,207</b>	<b>\$143,017</b>	<b>\$150,168</b>

501 to 600	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Existing	29	29	29	29	29	29	29	29	29	29	29
New											
<b>Subtotal Customers</b>	<b>29</b>	<b>29</b>	<b>29</b>	<b>29</b>	<b>29</b>	<b>29</b>	<b>29</b>	<b>29</b>	<b>29</b>	<b>29</b>	<b>29</b>
Monthly Base Charge	\$128.16	\$140.98	\$163.54	\$186.43	\$208.80	\$229.68	\$241.17	\$253.23	\$265.89	\$279.18	\$293.14
Annual Base Charge	\$1,537.96	\$1,691.76	\$1,962.44	\$2,237.18	\$2,505.64	\$2,756.20	\$2,894.01	\$3,038.71	\$3,190.65	\$3,350.18	\$3,517.69
<b>Total Annual Revenue</b>	<b>\$44,601</b>	<b>\$49,061</b>	<b>\$56,911</b>	<b>\$64,878</b>	<b>\$72,664</b>	<b>\$79,930</b>	<b>\$83,926</b>	<b>\$88,123</b>	<b>\$92,529</b>	<b>\$97,155</b>	<b>\$102,013</b>

601 to 800	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Existing	30	30	30	30	30	30	30	30	30	30	30
New											
<b>Subtotal Customers</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>
Monthly Base Charge	\$56.27	\$61.90	\$71.90	\$82.73	\$94.40	\$106.96	\$116.20	\$126.06	\$136.54	\$147.73	\$159.63
Annual Base Charge	\$1,688.16	\$1,857.00	\$2,157.00	\$2,481.90	\$2,832.00	\$3,207.84	\$3,486.00	\$3,768.00	\$4,054.50	\$4,345.50	\$4,641.00
<b>Total Annual Revenue</b>	<b>\$56,258</b>	<b>\$61,884</b>	<b>\$71,785</b>	<b>\$81,835</b>	<b>\$91,655</b>	<b>\$100,821</b>	<b>\$105,862</b>	<b>\$111,155</b>	<b>\$116,712</b>	<b>\$122,548</b>	<b>\$128,675</b>



**Table 6-1 Continued  
Municipality of North Middlesex  
Base Charge Forecast – Water**

<b>801 to 1,000</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Existing	19	19	19	19	19	19	19	19	19	19	19
New											
<b>Subtotal Customers</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>	<b>19</b>
Monthly Base Charge	\$193.75	\$213.12	\$247.22	\$281.84	\$315.66	\$347.22	\$364.58	\$382.81	\$401.95	\$422.05	\$443.15
Annual Base Charge	\$2,324.99	\$2,557.49	\$2,966.69	\$3,382.02	\$3,787.87	\$4,166.65	\$4,374.99	\$4,593.73	\$4,823.42	\$5,064.59	\$5,317.82
<b>Total Annual Revenue</b>	<b>\$44,175</b>	<b>\$48,592</b>	<b>\$56,367</b>	<b>\$64,258</b>	<b>\$71,969</b>	<b>\$79,166</b>	<b>\$83,125</b>	<b>\$87,281</b>	<b>\$91,645</b>	<b>\$96,227</b>	<b>\$101,039</b>
<b>1,001 to 1,500</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Existing	36	36	36	36	36	36	36	36	36	36	36
New											
<b>Subtotal Customers</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>	<b>36</b>
Monthly Base Charge	\$259.34	\$285.27	\$330.91	\$377.24	\$422.51	\$464.76	\$488.00	\$512.40	\$538.02	\$564.92	\$593.16
Annual Base Charge	\$3,112.02	\$3,423.22	\$3,970.94	\$4,526.87	\$5,070.09	\$5,577.10	\$5,855.96	\$6,148.76	\$6,456.19	\$6,779.00	\$7,117.95
<b>Total Annual Revenue</b>	<b>\$112,033</b>	<b>\$123,236</b>	<b>\$142,954</b>	<b>\$162,967</b>	<b>\$182,523</b>	<b>\$200,776</b>	<b>\$210,814</b>	<b>\$221,355</b>	<b>\$232,423</b>	<b>\$244,044</b>	<b>\$256,246</b>
<b>1,501 to 2,000</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Existing	18	18	18	18	18	18	18	18	18	18	18
New											
<b>Subtotal Customers</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>	<b>18</b>
Monthly Base Charge	\$353.03	\$388.33	\$450.47	\$513.53	\$575.15	\$632.67	\$664.30	\$697.52	\$732.39	\$769.01	\$807.46
Annual Base Charge	\$4,236.35	\$4,659.99	\$5,405.58	\$6,162.36	\$6,901.85	\$7,592.03	\$7,971.63	\$8,370.22	\$8,788.73	\$9,228.16	\$9,689.57
<b>Total Annual Revenue</b>	<b>\$76,254</b>	<b>\$83,880</b>	<b>\$97,300</b>	<b>\$110,923</b>	<b>\$124,233</b>	<b>\$136,657</b>	<b>\$143,489</b>	<b>\$150,664</b>	<b>\$158,197</b>	<b>\$166,107</b>	<b>\$174,412</b>
<b>2,001 to 3,000</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Existing	16	16	16	16	16	16	16	16	16	16	16
New											
<b>Subtotal Customers</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>	<b>16</b>
Monthly Base Charge	\$493.57	\$542.93	\$629.80	\$717.97	\$804.12	\$884.53	\$928.76	\$975.20	\$1,023.96	\$1,075.16	\$1,128.92
Annual Base Charge	\$5,922.84	\$6,515.12	\$7,557.54	\$8,615.60	\$9,649.47	\$10,614.42	\$11,145.14	\$11,702.40	\$12,287.52	\$12,901.89	\$13,546.99
<b>Total Annual Revenue</b>	<b>\$94,765</b>	<b>\$104,242</b>	<b>\$120,921</b>	<b>\$137,850</b>	<b>\$154,392</b>	<b>\$169,831</b>	<b>\$178,322</b>	<b>\$187,238</b>	<b>\$196,600</b>	<b>\$206,430</b>	<b>\$216,752</b>
<b>3,001 to 4,000</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Existing	11	11	11	11	11	11	11	11	11	11	11
New											
<b>Subtotal Customers</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>
Monthly Base Charge	\$680.96	\$749.05	\$868.90	\$990.55	\$1,109.42	\$1,220.36	\$1,281.37	\$1,345.44	\$1,412.72	\$1,483.35	\$1,557.52
Annual Base Charge	\$8,171.50	\$8,988.65	\$10,426.83	\$11,886.59	\$13,312.98	\$14,644.28	\$15,376.49	\$16,145.32	\$16,952.58	\$17,800.21	\$18,690.22
<b>Total Annual Revenue</b>	<b>\$89,887</b>	<b>\$98,875</b>	<b>\$114,695</b>	<b>\$130,752</b>	<b>\$146,443</b>	<b>\$161,087</b>	<b>\$169,141</b>	<b>\$177,599</b>	<b>\$186,478</b>	<b>\$195,802</b>	<b>\$205,592</b>
<b>4,001 to 5,000</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Existing	7	7	7	7	7	7	7	7	7	7	7
New											
<b>Subtotal Customers</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>	<b>7</b>
Monthly Base Charge	\$868.35	\$955.18	\$1,108.01	\$1,263.13	\$1,414.71	\$1,556.18	\$1,633.99	\$1,715.69	\$1,801.47	\$1,891.54	\$1,986.12
Annual Base Charge	\$10,420.16	\$11,462.18	\$13,296.12	\$15,157.58	\$16,976.49	\$18,674.14	\$19,607.85	\$20,588.24	\$21,617.65	\$22,698.53	\$23,833.46
<b>Total Annual Revenue</b>	<b>\$72,941</b>	<b>\$80,235</b>	<b>\$93,073</b>	<b>\$106,103</b>	<b>\$118,835</b>	<b>\$130,719</b>	<b>\$137,255</b>	<b>\$144,118</b>	<b>\$151,324</b>	<b>\$158,890</b>	<b>\$166,834</b>
<b>5,001 to 7,500</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Existing	13	13	13	13	13	13	13	13	13	13	13
New											
<b>Subtotal Customers</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>	<b>13</b>
Monthly Base Charge	\$1,196.28	\$1,315.90	\$1,526.45	\$1,740.15	\$1,948.97	\$2,143.87	\$2,251.06	\$2,363.61	\$2,481.79	\$2,605.88	\$2,736.18
Annual Base Charge	\$14,355.31	\$15,790.84	\$18,317.38	\$20,881.81	\$23,387.63	\$25,726.39	\$27,012.71	\$28,363.34	\$29,781.51	\$31,270.58	\$32,833.11
<b>Total Annual Revenue</b>	<b>\$186,619</b>	<b>\$205,281</b>	<b>\$238,126</b>	<b>\$271,464</b>	<b>\$304,039</b>	<b>\$334,443</b>	<b>\$351,165</b>	<b>\$368,723</b>	<b>\$387,160</b>	<b>\$406,518</b>	<b>\$426,843</b>
<b>7,501 to 10,000</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Existing	5	5	5	5	5	5	5	5	5	5	5
New											
<b>Subtotal Customers</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
Monthly Base Charge	\$1,664.75	\$1,831.22	\$2,124.22	\$2,421.61	\$2,712.20	\$2,983.42	\$3,132.59	\$3,289.22	\$3,453.68	\$3,626.36	\$3,807.68
Annual Base Charge	\$19,976.95	\$21,974.65	\$25,490.59	\$29,059.27	\$32,546.38	\$35,801.02	\$37,591.07	\$39,470.63	\$41,444.16	\$43,516.37	\$45,692.18
<b>Total Annual Revenue</b>	<b>\$99,885</b>	<b>\$109,873</b>	<b>\$127,453</b>	<b>\$145,296</b>	<b>\$162,732</b>	<b>\$179,005</b>	<b>\$187,955</b>	<b>\$197,353</b>	<b>\$207,221</b>	<b>\$217,582</b>	<b>\$228,461</b>
<b>10,001 to 12,000</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Existing	2	2	2	2	2	2	2	2	2	2	2
New											
<b>Subtotal Customers</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
Monthly Base Charge	\$2,086.37	\$2,295.01	\$2,662.21	\$3,034.92	\$3,399.11	\$3,739.02	\$3,925.97	\$4,122.27	\$4,328.38	\$4,544.80	\$4,772.04
Annual Base Charge	\$25,036.43	\$27,540.07	\$31,946.48	\$36,418.99	\$40,789.27	\$44,868.20	\$47,111.61	\$49,467.19	\$51,940.55	\$54,537.58	\$57,264.45
<b>Total Annual Revenue</b>	<b>\$50,073</b>	<b>\$55,080</b>	<b>\$63,893</b>	<b>\$72,838</b>	<b>\$81,579</b>	<b>\$89,736</b>	<b>\$94,223</b>	<b>\$98,934</b>	<b>\$103,881</b>	<b>\$109,075</b>	<b>\$114,529</b>
<b>12,001 to 18,842+</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Existing	4	4	4	4	4	4	4	4	4	4	4
New											
<b>Subtotal Customers</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
Monthly Base Charge	\$2,476.23	\$2,723.85	\$3,159.67	\$3,602.02	\$4,034.27	\$4,437.69	\$4,659.58	\$4,892.56	\$5,137.19	\$5,394.04	\$5,663.75
Annual Base Charge	\$29,714.77	\$32,686.25	\$37,916.05	\$43,224.29	\$48,411.21	\$53,252.33	\$55,914.95	\$58,710.69	\$61,646.23	\$64,728.54	\$67,964.97
<b>Total Annual Revenue</b>	<b>\$118,859</b>	<b>\$130,745</b>	<b>\$151,664</b>	<b>\$172,897</b>	<b>\$193,645</b>	<b>\$213,009</b>	<b>\$223,660</b>	<b>\$234,843</b>	<b>\$246,585</b>	<b>\$258,914</b>	<b>\$271,860</b>



**Table 6-2  
Municipality of North Middlesex  
Base Charge Forecast – Wastewater**

Wastewater	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Existing	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226	1,226
New	12	37	62	87	112	137	161	186	211	236	262
<b>Subtotal Customers</b>	<b>1,238</b>	<b>1,263</b>	<b>1,288</b>	<b>1,313</b>	<b>1,338</b>	<b>1,363</b>	<b>1,387</b>	<b>1,412</b>	<b>1,437</b>	<b>1,462</b>	<b>1,488</b>
<b>Total Annual Revenue</b>	<b>\$1,008,384</b>	<b>\$1,089,158</b>	<b>\$1,187,088</b>	<b>\$1,305,480</b>	<b>\$1,448,506</b>	<b>\$1,621,443</b>	<b>\$1,814,482</b>	<b>\$2,029,915</b>	<b>\$2,270,289</b>	<b>\$2,538,439</b>	<b>\$2,839,332</b>
<b>0 to 75</b>											
Existing	223	223	223	223	223	223	223	223	223	223	223
New											
<b>Subtotal Customers</b>	<b>223</b>	<b>223</b>	<b>223</b>	<b>223</b>	<b>223</b>	<b>223</b>	<b>223</b>	<b>223</b>	<b>223</b>	<b>223</b>	<b>223</b>
Monthly Base Charge	\$32.00	\$33.92	\$36.29	\$39.20	\$42.73	\$47.00	\$51.70	\$56.87	\$62.55	\$68.81	\$75.69
Annual Base Charge	\$384.00	\$407.04	\$435.53	\$470.38	\$512.71	\$563.98	\$620.38	\$682.42	\$750.66	\$825.72	\$908.30
<b>Total Annual Revenue</b>	<b>\$85,632</b>	<b>\$90,770</b>	<b>\$97,124</b>	<b>\$104,894</b>	<b>\$114,334</b>	<b>\$125,768</b>	<b>\$138,344</b>	<b>\$152,179</b>	<b>\$167,397</b>	<b>\$184,136</b>	<b>\$202,550</b>
<b>76 to 250</b>											
Existing	838	838	838	838	838	838	838	838	838	838	838
New	12	37	62	87	112	137	161	186	211	236	262
<b>Subtotal Customers</b>	<b>850</b>	<b>875</b>	<b>900</b>	<b>925</b>	<b>950</b>	<b>975</b>	<b>999</b>	<b>1,024</b>	<b>1,049</b>	<b>1,074</b>	<b>1,100</b>
Monthly Base Charge	\$64.00	\$67.84	\$72.59	\$78.40	\$85.45	\$94.00	\$103.40	\$113.74	\$125.11	\$137.62	\$151.38
Annual Base Charge	\$768.00	\$814.08	\$871.07	\$940.75	\$1,025.42	\$1,127.96	\$1,240.76	\$1,364.83	\$1,501.32	\$1,651.45	\$1,816.59
<b>Total Annual Revenue</b>	<b>\$652,800</b>	<b>\$712,239</b>	<b>\$783,785</b>	<b>\$869,912</b>	<b>\$973,737</b>	<b>\$1,099,197</b>	<b>\$1,240,012</b>	<b>\$1,397,997</b>	<b>\$1,575,180</b>	<b>\$1,773,819</b>	<b>\$1,998,250</b>
<b>251 to 300</b>											
Existing	77	77	77	77	77	77	77	77	77	77	77
New											
<b>Subtotal Customers</b>	<b>77</b>	<b>77</b>	<b>77</b>	<b>77</b>	<b>77</b>	<b>77</b>	<b>77</b>	<b>77</b>	<b>77</b>	<b>77</b>	<b>77</b>
Monthly Base Charge	\$64.00	\$67.84	\$72.59	\$78.40	\$85.45	\$94.00	\$103.40	\$113.74	\$125.11	\$137.62	\$151.38
Annual Base Charge	\$768.00	\$814.08	\$871.07	\$940.75	\$1,025.42	\$1,127.96	\$1,240.76	\$1,364.83	\$1,501.32	\$1,651.45	\$1,816.59
<b>Total Annual Revenue</b>	<b>\$59,136</b>	<b>\$62,684</b>	<b>\$67,072</b>	<b>\$72,438</b>	<b>\$78,957</b>	<b>\$86,853</b>	<b>\$95,538</b>	<b>\$105,092</b>	<b>\$115,601</b>	<b>\$127,161</b>	<b>\$139,878</b>
<b>301 to 400</b>											
Existing	50	50	50	50	50	50	50	50	50	50	50
New											
<b>Subtotal Customers</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>
Monthly Base Charge	\$64.00	\$67.84	\$72.59	\$78.40	\$85.45	\$94.00	\$103.40	\$113.74	\$125.11	\$137.62	\$151.38
Annual Base Charge	\$768.00	\$814.08	\$871.07	\$940.75	\$1,025.42	\$1,127.96	\$1,240.76	\$1,364.83	\$1,501.32	\$1,651.45	\$1,816.59
<b>Total Annual Revenue</b>	<b>\$38,400</b>	<b>\$40,704</b>	<b>\$43,553</b>	<b>\$47,038</b>	<b>\$51,271</b>	<b>\$56,398</b>	<b>\$62,038</b>	<b>\$68,242</b>	<b>\$75,066</b>	<b>\$82,572</b>	<b>\$90,830</b>
<b>401 to 500</b>											
Existing	9	9	9	9	9	9	9	9	9	9	9
New											
<b>Subtotal Customers</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>9</b>
Monthly Base Charge	\$64.00	\$67.84	\$72.59	\$78.40	\$85.45	\$94.00	\$103.40	\$113.74	\$125.11	\$137.62	\$151.38
Annual Base Charge	\$768.00	\$814.08	\$871.07	\$940.75	\$1,025.42	\$1,127.96	\$1,240.76	\$1,364.83	\$1,501.32	\$1,651.45	\$1,816.59
<b>Total Annual Revenue</b>	<b>\$6,912</b>	<b>\$7,327</b>	<b>\$7,840</b>	<b>\$8,467</b>	<b>\$9,229</b>	<b>\$10,152</b>	<b>\$11,167</b>	<b>\$12,283</b>	<b>\$13,512</b>	<b>\$14,863</b>	<b>\$16,349</b>
<b>501 to 600</b>											
Existing	6	6	6	6	6	6	6	6	6	6	6
New											
<b>Subtotal Customers</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>
Monthly Base Charge	\$130.25	\$138.07	\$147.73	\$159.55	\$173.91	\$191.30	\$210.43	\$231.47	\$254.62	\$280.08	\$308.09
Annual Base Charge	\$1,563.00	\$1,656.78	\$1,772.75	\$1,914.57	\$2,086.89	\$2,295.58	\$2,525.13	\$2,777.65	\$3,055.41	\$3,360.95	\$3,697.05
<b>Total Annual Revenue</b>	<b>\$9,378</b>	<b>\$9,941</b>	<b>\$10,637</b>	<b>\$11,487</b>	<b>\$12,521</b>	<b>\$13,773</b>	<b>\$15,151</b>	<b>\$16,666</b>	<b>\$18,332</b>	<b>\$20,166</b>	<b>\$22,182</b>
<b>601 to 800</b>											
Existing	3	3	3	3	3	3	3	3	3	3	3
New											
<b>Subtotal Customers</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>
Monthly Base Charge	\$165.42	\$175.34	\$187.62	\$202.62	\$220.86	\$242.95	\$267.24	\$293.97	\$323.36	\$355.70	\$391.27
Annual Base Charge	\$1,985.00	\$2,104.10	\$2,251.39	\$2,431.50	\$2,650.33	\$2,915.37	\$3,206.90	\$3,527.59	\$3,880.35	\$4,268.39	\$4,695.23
<b>Total Annual Revenue</b>	<b>\$5,955</b>	<b>\$6,312</b>	<b>\$6,754</b>	<b>\$7,294</b>	<b>\$7,951</b>	<b>\$8,746</b>	<b>\$9,621</b>	<b>\$10,583</b>	<b>\$11,641</b>	<b>\$12,805</b>	<b>\$14,086</b>





**Table 6-2 Continued  
Municipality of North Middlesex  
Base Charge Forecast – Wastewater**

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>801 to 1,000</b>											
Existing	5	5	5	5	5	5	5	5	5	5	5
New											
<b>Subtotal Customers</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
Monthly Base Charge	\$212.33	\$225.07	\$240.83	\$260.09	\$283.50	\$311.85	\$343.04	\$377.34	\$415.08	\$456.58	\$502.24
Annual Base Charge	\$2,548.00	\$2,700.88	\$2,889.94	\$3,121.14	\$3,402.04	\$3,742.24	\$4,116.47	\$4,528.11	\$4,980.93	\$5,479.02	\$6,026.92
<b>Total Annual Revenue</b>	<b>\$12,740</b>	<b>\$13,504</b>	<b>\$14,450</b>	<b>\$15,606</b>	<b>\$17,010</b>	<b>\$18,711</b>	<b>\$20,582</b>	<b>\$22,641</b>	<b>\$24,905</b>	<b>\$27,395</b>	<b>\$30,135</b>
<b>1,001 to 1,500</b>											
Existing	5	5	5	5	5	5	5	5	5	5	5
New											
<b>Subtotal Customers</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>5</b>
Monthly Base Charge	\$294.42	\$312.08	\$333.93	\$360.64	\$393.10	\$432.41	\$475.65	\$523.22	\$575.54	\$633.09	\$696.40
Annual Base Charge	\$3,533.00	\$3,744.98	\$4,007.13	\$4,327.70	\$4,717.19	\$5,188.91	\$5,707.80	\$6,278.58	\$6,906.44	\$7,597.08	\$8,356.79
<b>Total Annual Revenue</b>	<b>\$17,665</b>	<b>\$18,725</b>	<b>\$20,036</b>	<b>\$21,638</b>	<b>\$23,586</b>	<b>\$25,945</b>	<b>\$28,539</b>	<b>\$31,393</b>	<b>\$34,532</b>	<b>\$37,985</b>	<b>\$41,784</b>
<b>1,501 to 2,000</b>											
Existing	4	4	4	4	4	4	4	4	4	4	4
New											
<b>Subtotal Customers</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>
Monthly Base Charge	\$411.67	\$436.37	\$466.91	\$504.27	\$549.65	\$604.61	\$665.08	\$731.58	\$804.74	\$885.22	\$973.74
Annual Base Charge	\$4,940.00	\$5,236.40	\$5,602.95	\$6,051.18	\$6,595.79	\$7,255.37	\$7,980.91	\$8,779.00	\$9,656.90	\$10,622.59	\$11,684.85
<b>Total Annual Revenue</b>	<b>\$19,760</b>	<b>\$20,946</b>	<b>\$22,412</b>	<b>\$24,205</b>	<b>\$26,383</b>	<b>\$29,021</b>	<b>\$31,924</b>	<b>\$35,116</b>	<b>\$38,628</b>	<b>\$42,490</b>	<b>\$46,739</b>
<b>2,001 to 3,000</b>											
Existing	1	1	1	1	1	1	1	1	1	1	1
New											
<b>Subtotal Customers</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
Monthly Base Charge	\$587.58	\$622.84	\$666.44	\$719.75	\$784.53	\$862.98	\$949.28	\$1,044.21	\$1,148.63	\$1,263.49	\$1,389.84
Annual Base Charge	\$7,051.00	\$7,474.06	\$7,997.24	\$8,637.02	\$9,414.36	\$10,355.79	\$11,391.37	\$12,530.51	\$13,783.56	\$15,161.91	\$16,678.11
<b>Total Annual Revenue</b>	<b>\$7,051</b>	<b>\$7,474</b>	<b>\$7,997</b>	<b>\$8,637</b>	<b>\$9,414</b>	<b>\$10,356</b>	<b>\$11,391</b>	<b>\$12,531</b>	<b>\$13,784</b>	<b>\$15,162</b>	<b>\$16,678</b>
<b>3,001 to 4,000</b>											
Existing	2	2	2	2	2	2	2	2	2	2	2
New											
<b>Subtotal Customers</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
Monthly Base Charge	\$822.17	\$871.50	\$932.50	\$1,007.10	\$1,097.74	\$1,207.51	\$1,328.27	\$1,461.09	\$1,607.20	\$1,767.92	\$1,944.71
Annual Base Charge	\$9,866.00	\$10,457.96	\$11,190.02	\$12,085.22	\$13,172.89	\$14,490.18	\$15,939.19	\$17,533.11	\$19,286.43	\$21,215.07	\$23,336.58
<b>Total Annual Revenue</b>	<b>\$19,732</b>	<b>\$20,916</b>	<b>\$22,380</b>	<b>\$24,170</b>	<b>\$26,346</b>	<b>\$28,980</b>	<b>\$31,878</b>	<b>\$35,066</b>	<b>\$38,573</b>	<b>\$42,430</b>	<b>\$46,673</b>
<b>4,001 to 5,000</b>											
Existing	0	0	0	0	0	0	0	0	0	0	0
New											
<b>Subtotal Customers</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
Monthly Base Charge	\$1,056.67	\$1,120.07	\$1,198.47	\$1,294.35	\$1,410.84	\$1,551.92	\$1,707.12	\$1,877.83	\$2,065.61	\$2,272.17	\$2,499.39
Annual Base Charge	\$12,680.00	\$13,440.80	\$14,381.66	\$15,532.19	\$16,930.09	\$18,623.09	\$20,485.40	\$22,533.94	\$24,787.34	\$27,266.07	\$29,992.68
<b>Total Annual Revenue</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>
<b>5,001 to 7,500</b>											
Existing	1	1	1	1	1	1	1	1	1	1	1
New											
<b>Subtotal Customers</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
Monthly Base Charge	\$1,467.17	\$1,555.20	\$1,664.06	\$1,797.19	\$1,958.93	\$2,154.83	\$2,370.31	\$2,607.34	\$2,868.07	\$3,154.88	\$3,470.37
Annual Base Charge	\$17,606.00	\$18,662.36	\$19,968.73	\$21,566.22	\$23,507.18	\$25,857.90	\$28,443.69	\$31,288.06	\$34,416.87	\$37,858.55	\$41,644.41
<b>Total Annual Revenue</b>	<b>\$17,606</b>	<b>\$18,662</b>	<b>\$19,969</b>	<b>\$21,566</b>	<b>\$23,507</b>	<b>\$25,858</b>	<b>\$28,444</b>	<b>\$31,288</b>	<b>\$34,417</b>	<b>\$37,859</b>	<b>\$41,644</b>
<b>7,501 to 10,000</b>											
Existing	1	1	1	1	1	1	1	1	1	1	1
New											
<b>Subtotal Customers</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
Monthly Base Charge	\$2,053.50	\$2,176.71	\$2,329.08	\$2,515.41	\$2,741.79	\$3,015.97	\$3,317.57	\$3,649.33	\$4,014.26	\$4,415.68	\$4,857.25
Annual Base Charge	\$24,642.00	\$26,120.52	\$27,948.96	\$30,184.87	\$32,901.51	\$36,191.66	\$39,810.83	\$43,791.91	\$48,171.10	\$52,988.21	\$58,287.03
<b>Total Annual Revenue</b>	<b>\$24,642</b>	<b>\$26,121</b>	<b>\$27,949</b>	<b>\$30,185</b>	<b>\$32,902</b>	<b>\$36,192</b>	<b>\$39,811</b>	<b>\$43,792</b>	<b>\$48,171</b>	<b>\$52,988</b>	<b>\$58,287</b>
<b>10,001 to 12,000</b>											
Existing	1	1	1	1	1	1	1	1	1	1	1
New											
<b>Subtotal Customers</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
Monthly Base Charge	\$2,581.25	\$2,736.13	\$2,927.65	\$3,161.87	\$3,446.43	\$3,791.08	\$4,170.19	\$4,587.20	\$5,045.92	\$5,550.52	\$6,105.57
Annual Base Charge	\$30,975.00	\$32,833.50	\$35,131.85	\$37,942.39	\$41,357.21	\$45,492.93	\$50,042.22	\$55,046.44	\$60,551.09	\$66,606.20	\$73,266.82
<b>Total Annual Revenue</b>	<b>\$30,975</b>	<b>\$32,834</b>	<b>\$35,132</b>	<b>\$37,942</b>	<b>\$41,357</b>	<b>\$45,493</b>	<b>\$50,042</b>	<b>\$55,046</b>	<b>\$60,551</b>	<b>\$66,606</b>	<b>\$73,267</b>
<b>12,001 to 18,842+</b>											
Existing	0	0	0	0	0	0	0	0	0	0	0
New											
<b>Subtotal Customers</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
Monthly Base Charge	\$3,069.25	\$3,253.41	\$3,481.14	\$3,759.63	\$4,098.00	\$4,507.80	\$4,958.58	\$5,454.44	\$5,999.88	\$6,599.87	\$7,259.86
Annual Base Charge	\$36,831.00	\$39,040.86	\$41,773.72	\$45,115.62	\$49,176.02	\$54,093.63	\$59,502.99	\$65,453.29	\$71,998.62	\$79,198.48	\$87,118.33
<b>Total Annual Revenue</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>



# Chapter 7

## Analysis of Water and Wastewater Rates and Policy Matters



## 7. Analysis of Water and Wastewater Rates and Policy Matters

### 7.1 Introduction

---

To summarize the analysis undertaken thus far, Chapter 2 reviewed capital-related issues and responds to the provincial directives to maintain and upgrade infrastructure to required levels. Chapter 4 provided a review of capital financing options to which water and wastewater reserve contributions will be the predominant basis for financing future capital replacement. Chapter 5 established the 10-year operating forecast of expenditures including an annual capital reserve contribution. The base charge revenues are to ensure that fixed costs are recovered regardless of the amount of volume used by customers. This chapter will provide for the calculation of the volume rates over the forecast period. These calculations will be based on the net operating expenditures (the variable costs) provided in Chapter 5, divided by the water consumption forecast and wastewater volumes provided in section 1.8.

### 7.2 Water Rates

---

Based on the discussion of rate structures provided in section 6.5 and the recommendation to continue with the present structures, the rates are calculated by taking the net recoverable amounts from Table 5-1 (the product of total expenditures less non-rate revenues and deduct the base charge amounts provided in section 6.5) and completes the calculation by dividing them by the volumes resulting in the forecasted rates. The base charge and volume rates (all tiers) are anticipated to increase by 10% in 2024, 16% in 2025, 14% in 2026, 12% in 2027, 10% in 2028, and 5% every year thereafter. The volume rates are presented in Table 7-1. Detailed calculations of the volume rates are provided in Appendix A. A summary of the recommended base charge and volume rates along with the total annual bill for an average residential user who consumes 200 cu.m. per year are as follows:



**Table 7-1**  
**Municipality of North Middlesex**  
**Average Annual Residential Water Bill (Based on an Annual Usage of 200 cu.m.)**

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Monthly Base Rate	\$58.83	\$64.71	\$75.07	\$85.58	\$95.85	\$105.43	\$110.70	\$116.24	\$122.05	\$128.15	\$134.56
<b>Annual Base Rate Bill</b>	<b>\$705.96</b>	<b>\$776.56</b>	<b>\$900.80</b>	<b>\$1,026.92</b>	<b>\$1,150.15</b>	<b>\$1,265.16</b>	<b>\$1,328.42</b>	<b>\$1,394.84</b>	<b>\$1,464.58</b>	<b>\$1,537.81</b>	<b>\$1,614.70</b>
Volume Rate (0 to 75 cu.m)	0.44	0.48	0.56	0.64	0.72	0.79	0.83	0.87	0.91	0.96	1.01
Volume Rate (75 cu.m +)	0.87	0.96	1.11	1.27	1.42	1.56	1.64	1.72	1.80	1.90	1.99
Volume Bill (0 to 75 cu.m)	75	75	75	75	75	75	75	75	75	75	75
Volume Bill (75 cu.m +)	125	125	125	125	125	125	125	125	125	125	125
<b>Annual Volume Bill</b>	<b>\$141.75</b>	<b>\$155.93</b>	<b>\$180.86</b>	<b>\$206.18</b>	<b>\$230.92</b>	<b>\$254.02</b>	<b>\$266.72</b>	<b>\$280.05</b>	<b>\$294.07</b>	<b>\$308.76</b>	<b>\$324.19</b>
<b>Total Annual Bill</b>	<b>\$847.71</b>	<b>\$932.48</b>	<b>\$1,081.67</b>	<b>\$1,233.10</b>	<b>\$1,381.07</b>	<b>\$1,519.18</b>	<b>\$1,595.14</b>	<b>\$1,674.89</b>	<b>\$1,758.65</b>	<b>\$1,846.57</b>	<b>\$1,938.89</b>
<b>%Increase - Total Annual Bill</b>		10.0%	16.0%	14.0%	12.0%	10.0%	5.0%	5.0%	5.0%	5.0%	5.0%

### 7.3 Wastewater Rates

Similar to water, the calculation of the wastewater rates takes the net recoverable amounts from Table 5-2 and completes the calculation by dividing them by the volumes, resulting in the forecast rates. Detailed calculations are provided in Appendix B.

The wastewater base and volume rates are anticipated to increase by 6% in 2024, 7% in 2025, 8% in 2026, 9% in 2027, and 10% every year thereafter.

The following summarizes the recommended rates for wastewater and provides the average annual bill for a residential customer who uses 200 cu.m per year:

**Table 7-2**  
**Municipality of North Middlesex**  
**Average Annual Residential Wastewater Bill (Based on an Annual Usage of 200 cu.m.)**

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Monthly Base Rate	\$64.00	\$67.84	\$72.59	\$78.40	\$85.45	\$94.00	\$103.40	\$113.74	\$125.11	\$137.62	\$151.38
<b>Annual Base Rate Bill</b>	<b>\$768.00</b>	<b>\$814.08</b>	<b>\$871.07</b>	<b>\$940.75</b>	<b>\$1,025.42</b>	<b>\$1,127.96</b>	<b>\$1,240.76</b>	<b>\$1,364.83</b>	<b>\$1,501.32</b>	<b>\$1,651.45</b>	<b>\$1,816.59</b>
Volume Rate (0 to 75 cu.m)	0.50	0.53	0.57	0.61	0.67	0.73	0.81	0.89	0.98	1.08	1.18
Volume Rate (75 cu.m +)	1.00	1.06	1.13	1.23	1.34	1.47	1.62	1.78	1.96	2.15	2.37
Volume Bill (0 to 75 cu.m)	75	75	75	75	75	75	75	75	75	75	75
Volume Bill (75 cu.m +)	125	125	125	125	125	125	125	125	125	125	125
<b>Annual Volume Bill</b>	<b>\$162.50</b>	<b>\$172.25</b>	<b>\$184.31</b>	<b>\$199.06</b>	<b>\$216.97</b>	<b>\$238.68</b>	<b>\$262.54</b>	<b>\$288.80</b>	<b>\$317.69</b>	<b>\$349.47</b>	<b>\$384.41</b>
<b>Total Annual Bill</b>	<b>\$930.50</b>	<b>\$986.33</b>	<b>\$1,055.37</b>	<b>\$1,139.81</b>	<b>\$1,242.39</b>	<b>\$1,366.64</b>	<b>\$1,503.29</b>	<b>\$1,653.63</b>	<b>\$1,819.00</b>	<b>\$2,000.92</b>	<b>\$2,201.00</b>
<b>%Increase - Total Annual Bill</b>		6.0%	7.0%	8.0%	9.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%



## 7.4 Forecast of Combined Water and Wastewater Impact for the Average Residential Customer

Based on the foregoing information, the combined impact of the water and wastewater base charge and volume rate charges equal to annual increases to the total bill for residential customers of 8% in 2024, 11% in 2025 to 2027, 10% in 2028, 7% in 2029 to 2031, and 8% in 2032 and 2033. Table 7-3 presents the forecast combined annual bill for customers based on an annual usage of 200 cu.m.

Table 7-3  
Municipality of North Middlesex  
Annual Average Water and Wastewater Bill Based on 200 cu.m.

Annual Bill for Residential User with 200 cu.m Volume	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Water</b>											
Base Charge	706	777	901	1,027	1,150	1,265	1,328	1,395	1,465	1,538	1,615
Volume	142	156	181	206	231	254	267	280	294	309	324
<b>Total Water Bill</b>	<b>848</b>	<b>932</b>	<b>1,082</b>	<b>1,233</b>	<b>1,381</b>	<b>1,519</b>	<b>1,595</b>	<b>1,675</b>	<b>1,759</b>	<b>1,847</b>	<b>1,939</b>
<b>Wastewater</b>											
Base Charge	768	814	871	941	1,025	1,128	1,241	1,365	1,501	1,651	1,817
Volume	163	172	184	199	217	239	263	289	318	349	384
<b>Total Wastewater Bill</b>	<b>931</b>	<b>986</b>	<b>1,055</b>	<b>1,140</b>	<b>1,242</b>	<b>1,367</b>	<b>1,503</b>	<b>1,654</b>	<b>1,819</b>	<b>2,001</b>	<b>2,201</b>
<b>Total Combined Bill</b>	<b>1,778</b>	<b>1,919</b>	<b>2,137</b>	<b>2,373</b>	<b>2,623</b>	<b>2,886</b>	<b>3,098</b>	<b>3,329</b>	<b>3,578</b>	<b>3,847</b>	<b>4,140</b>
Annual Percentage Change		8%	11%	11%	11%	10%	7%	7%	7%	8%	8%



# Chapter 8

## Recommendations

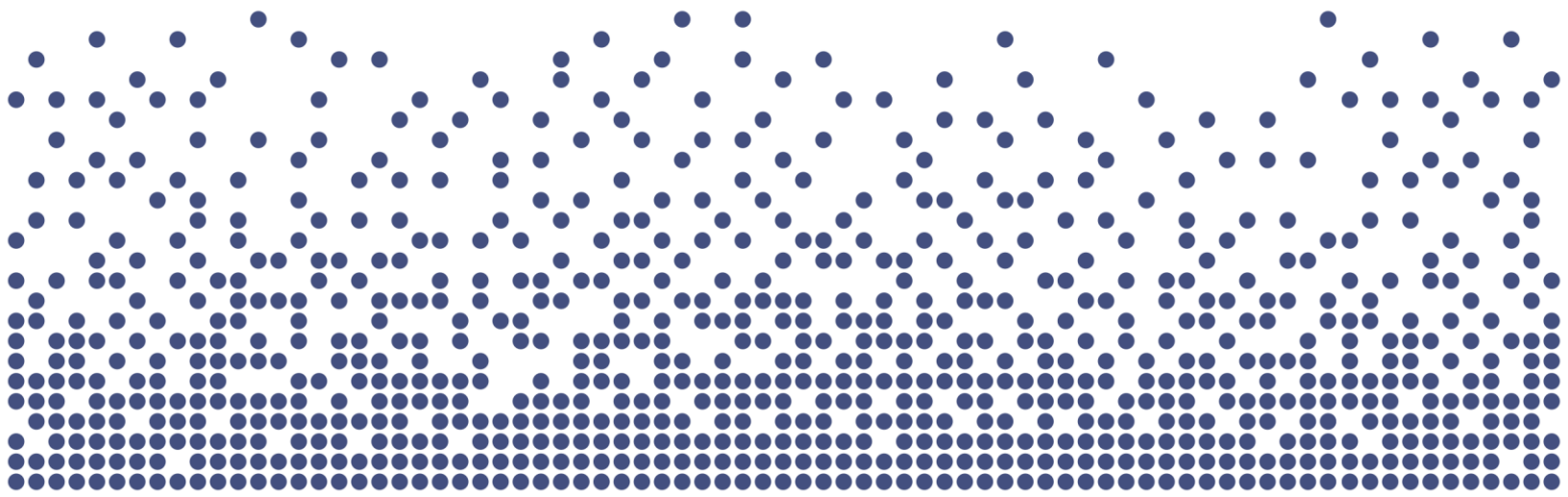


## 8. Recommendations

As presented within this report, capital and operating expenditures have been identified and forecast over a 10-year period for water and wastewater services.

Based upon the foregoing, the following recommendations are identified for consideration by the Municipality's Council:

1. That Council provide for the recovery of all water and wastewater costs through full cost recovery rates.
2. That Council consider the Capital Plan for water and wastewater as provided in Tables 2-1 and 2-2 and the associated Capital Financing Plan as set out in Tables 4-3 and 4-4.
3. That Council consider the base charges provided in Table 6-1 for water and Table 6-2 for wastewater.
4. That Council consider the volume rates for water and wastewater as provided in Tables 7-1 through 7-3 respectively.



# Appendices





# Appendix A

## Detailed Water Rate Calculations



# Appendix A: Water System Inventory Data

Table A-1  
Municipality of North Middlesex  
Water Capital Budget Forecast (Uninflated \$)

Description	Budget 2023	Total	Forecast										
			2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
<b>Capital Expenditures</b>													
Watermain Replacement (Leonard Ave from Ann St to Parkhill Main St)		1,320,000	-	-	-	-	-	-	-	-	120,000	1,200,000	-
Watermain Replacement (Ardross St from Catherine St to Parkhill Main St)		1,210,000	-	-	-	-	-	-	-	-	-	110,000	1,100,000
Watermain Replacement (Ann St from Leonard St to John St)		120,000	-	-	-	-	-	-	-	-	-	-	120,000
New West Williams Pumping Station (Design)		275,000	-	-	-	-	-	-	-	-	-	275,000	-
New West Williams Pumping Station		2,000,000	-	-	-	-	-	-	-	-	-	-	2,000,000
McGillivray Booster Station		100,000	-	-	-	-	-	-	-	-	-	100,000	-
<b>Studies:</b>													
Water Engineering Studies	100,000	-											
Water Master Plan		200,000	200,000										
<b>Growth Related:</b>													
Queen Street Watermain - Phase 2 Construction (Ailsa Craig Main St to Mary St; water and sanitary sewer upgrade, and road and drainage improvements)		6,500,000	4,000,000	2,500,000	-	-	-	-	-	-	-	-	-
Mt Carmel Reservoir Construction		5,500,000	-	-	-	-	-	1,375,000	4,125,000	-	-	-	-
Parkhill Reservoir		3,500,000					3,500,000						
<b>Total Capital Expenditures</b>	<b>100,000</b>	<b>20,725,000</b>	<b>4,200,000</b>	<b>2,500,000</b>	<b>-</b>	<b>-</b>	<b>3,500,000</b>	<b>1,375,000</b>	<b>4,125,000</b>	<b>120,000</b>	<b>1,685,000</b>	<b>3,220,000</b>	



Table A-2  
Municipality of North Middlesex  
Water Capital Budget Forecast (Inflated \$)

Description	Forecast									
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Capital Expenditures</b>										
Watermain Replacement (Leonard Ave from Ann St to Parkhill Main St)	-	-	-	-	-	-	-	141,000	1,434,000	-
Watermain Replacement (Ardross St from Catherine St to Parkhill Main St)	-	-	-	-	-	-	-	-	131,000	1,341,000
Watermain Replacement (Ann St from Leonard St to Parkhill Main St)	-	-	-	-	-	-	-	-	-	146,000
New West Williams Pumping Station (Design)	-	-	-	-	-	-	-	-	329,000	-
New West Williams Pumping Station	-	-	-	-	-	-	-	-	-	2,438,000
McGillivray Booster Station	-	-	-	-	-	-	-	-	120,000	-
<b>Studies:</b>										
Water Engineering Studies	-	-	-	-	-	-	-	-	-	-
Water Master Plan	204,000	-	-	-	-	-	-	-	-	-
<b>Growth Related:</b>										
Queen Street Watermain - Phase 2 Construction (Ailsa Craig Main St to Mary St; water and sanitary sewer upgrade, and road and drainage improvements)	4,080,000	2,601,000	-	-	-	-	-	-	-	-
Mt Carmel Reservoir Construction	-	-	-	-	-	1,548,000	4,738,000	-	-	-
Parkhill Reservoir	-	-	-	-	3,864,000	-	-	-	-	-
<b>Total Capital Expenditures</b>	<b>4,284,000</b>	<b>2,601,000</b>	<b>-</b>	<b>-</b>	<b>3,864,000</b>	<b>1,548,000</b>	<b>4,738,000</b>	<b>141,000</b>	<b>2,014,000</b>	<b>3,925,000</b>
<b>Capital Financing</b>										
Provincial/Federal Grants										
Development Charges Reserve Fund	-	-	-	-	386,400	201,240	615,940	-	-	-
Non-Growth Related Debenture Requirements	2,380,000	-	-	-	-	-	-	-	-	-
Growth Related Debenture Requirements	1,904,000	1,213,800	-	-	-	-	-	-	-	-
Operating Contributions	-	-	-	-	-	-	-	-	-	-
Lifecycle Reserve Fund	-	-	-	-	-	-	-	-	-	-
Water Reserve	-	1,387,200	-	-	3,477,600	1,346,760	4,122,060	141,000	2,014,000	3,925,000
<b>Total Capital Financing</b>	<b>4,284,000</b>	<b>2,601,000</b>	<b>-</b>	<b>-</b>	<b>3,864,000</b>	<b>1,548,000</b>	<b>4,738,000</b>	<b>141,000</b>	<b>2,014,000</b>	<b>3,925,000</b>



Table A-3  
Municipality of North Middlesex  
Water Schedule of Non-Growth Related Debenture Repayments

Debenture Year	Forecast									
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
2024		179,808	179,808	179,808	179,808	179,808	179,808	179,808	179,808	179,808
2025			-	-	-	-	-	-	-	-
2026				-	-	-	-	-	-	-
2027					-	-	-	-	-	-
2028						-	-	-	-	-
2029							-	-	-	-
2030								-	-	-
2031									-	-
2032										-
2033										
<b>Total Annual Debt Charges</b>	-	179,808	179,808	179,808	179,808	179,808	179,808	179,808	179,808	179,808

Table A-4  
Municipality of North Middlesex  
Water Schedule of Growth Related Debenture Repayments

Debenture Year	Forecast									
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
2024		143,847	143,847	143,847	143,847	143,847	143,847	143,847	143,847	143,847
2025			91,702	91,702	91,702	91,702	91,702	91,702	91,702	91,702
2026				-	-	-	-	-	-	-
2027					-	-	-	-	-	-
2028						-	-	-	-	-
2029							-	-	-	-
2030								-	-	-
2031									-	-
2032										-
2033										
<b>Total Annual Debt Charges</b>	-	143,847	235,549	235,549	235,549	235,549	235,549	235,549	235,549	235,549



Table A-5  
Municipality of North Middlesex  
Water Reserve Continuity  
Inflated \$

Description	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Opening Balance	1,624,949	3,207,296	3,752,669	6,266,704	9,364,070	9,474,104	9,971,814	6,906,658	7,625,527	7,781,001
Transfer from Operating	1,519,459	1,858,991	2,391,159	2,913,756	3,401,868	1,648,944	921,479	710,349	2,016,905	3,111,609
Transfer to Capital		1,387,200	-	-	3,477,600	1,346,760	4,122,060	141,000	2,014,000	3,925,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	268,186
<b>Closing Balance</b>	<b>3,144,407</b>	<b>3,679,087</b>	<b>6,143,827</b>	<b>9,180,460</b>	<b>9,288,337</b>	<b>9,776,288</b>	<b>6,771,233</b>	<b>7,476,007</b>	<b>7,628,432</b>	<b>6,699,424</b>
Interest	62,888	73,582	122,877	183,609	185,767	195,526	135,425	149,520	152,569	133,988

Table A-6  
Municipality of North Middlesex  
Water Development Charges Reserve Continuity  
Inflated \$

Description	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Opening Balance	241,014	(232,888)	(849,925)	(1,563,034)	(2,280,604)	(3,402,729)	(4,354,431)	(5,744,083)	(6,529,112)	(7,325,598)
Development Charge Proceeds	160,147	172,956	182,569	192,178	196,025	199,949	203,948	208,022	212,183	216,421
Transfer to Capital			-	-	386,400	201,240	615,940	-	-	-
Transfer to Operating	629,481	773,328	865,030	865,030	865,030	865,030	865,030	865,030	865,030	865,030
<b>Closing Balance</b>	<b>(228,321)</b>	<b>(833,260)</b>	<b>(1,532,386)</b>	<b>(2,235,886)</b>	<b>(3,336,009)</b>	<b>(4,269,050)</b>	<b>(5,631,454)</b>	<b>(6,401,090)</b>	<b>(7,181,959)</b>	<b>(7,974,207)</b>
Interest	(4,566)	(16,665)	(30,648)	(44,718)	(66,720)	(85,381)	(112,629)	(128,022)	(143,639)	(159,484)
Required from Development Charges	1,904,000	1,213,800	-	-	386,400	201,240	615,940	-	-	-



Table A-7  
Municipality of North Middlesex  
Water Lifecycle Reserve Continuity  
Inflated \$

Description	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Opening Balance	-	-	-	-	-	-	2,040,000	5,140,800	8,813,616	11,539,888
Transfer from Operating	-	-	-	-	-	2,000,000	3,000,000	3,500,000	2,500,000	2,000,000
Transfer to Capital	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-
<b>Closing Balance</b>	-	-	-	-	-	<b>2,000,000</b>	<b>5,040,000</b>	<b>8,640,800</b>	<b>11,313,616</b>	<b>13,539,888</b>
Interest	-	-	-	-	-	40,000	100,800	172,816	226,272	270,798



Table A-8  
Municipality of North Middlesex  
Water Operating Budget Forecast  
Inflated \$

Description	Forecast									
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Expenditures</b>										
<u>Operating Costs</u>										
<b>Department 4305 - Administration</b>										
Salaries & Wages	99,400	101,400	103,400	105,500	107,600	109,800	112,000	114,200	116,500	118,800
Employee Benefits - CPP	4,600	4,700	4,800	4,900	5,000	5,100	5,200	5,300	5,400	5,500
Employee Benefits - EI	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700
Employee Benefits - WSIB	3,500	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400
Employee Benefits - EHT	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900
Employee Benefits	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500	10,700
Employee Benefits - OMERS	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800
Mileage	500	500	500	500	500	500	500	500	500	500
Conferences	900	900	900	900	900	900	900	900	900	900
Meals	300	300	300	300	300	300	300	300	300	300
Office Supplies-office/shop	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Education & Training-all	2,600	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500
Professional - Audit-QMS/MECP	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Postage & Courier-ALL	7,700	7,900	8,100	8,300	8,500	8,700	8,900	9,100	9,300	9,500
Memberships-ALL	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Advertising	800	800	800	800	800	800	800	800	800	800
Telephone-office/shop	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Clothing Allowances & Safetywear-all	500	500	500	500	500	500	500	500	500	500
Materials Purchased misc shop supplies	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Small Tool Purchases	500	500	500	500	500	500	500	500	500	500
Municipal Drain Maintenance	2,600	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500
Photocopier	200	200	200	200	200	200	200	200	200	200
Prog Maint & Enhance(Keystone)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Professional - Consulting	2,600	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500
Professional - Engineering	15,300	15,600	15,900	16,200	16,500	16,800	17,100	17,400	17,700	18,100
Legal	15,300	15,600	15,900	16,200	16,500	16,800	17,100	17,400	17,700	18,100



Table A-8 Continued  
Municipality of North Middlesex  
Water Operating Budget Forecast  
Inflated \$

Description	Forecast									
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Expenditures</b>										
<u>Operating Costs</u>										
<b>Department 4311 - Water - All Wards</b>										
Valve Maint.-Materials	18,900	19,800	20,800	21,800	22,900	24,000	25,200	26,500	27,800	29,200
Valve Maint.-Subcontractor	6,900	7,000	7,100	7,200	7,300	7,400	7,500	7,700	7,900	8,100
Hydro	36,800	38,600	40,500	42,500	44,600	46,800	49,100	51,600	54,200	56,900
Insurance Premiums	22,800	23,300	23,800	24,300	24,800	25,300	25,800	26,300	26,800	27,300
Building Repairs & Maintenance	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000
Telephone	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Materials	12,600	13,200	13,900	14,600	15,300	16,100	16,900	17,700	18,600	19,500
Water Meter Maint.-Materials	63,000	66,200	69,500	73,000	76,700	80,500	84,500	88,700	93,100	97,800
Water Purchased	789,731	833,182	878,907	927,227	978,171	1,031,920	1,078,083	1,126,421	1,176,810	1,229,682
Materials Purchased (INVENTORY)	26,300	27,600	29,000	30,500	32,000	33,600	35,300	37,100	39,000	41,000
Repairs & Maintenance (System)	25,500	26,000	26,500	27,000	27,500	28,100	28,700	29,300	29,900	30,500
Equipment Repairs & Maintenance	5,600	5,700	5,800	5,900	6,000	6,100	6,200	6,300	6,400	6,500
Contracted Services	672,300	685,700	699,400	713,400	727,700	742,300	757,100	772,200	787,600	803,400
Subcontractor - Locates	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Customer Acct Write Offs	200	200	200	200	200	200	200	200	200	200
Property Taxes	3,100	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000
Loan Interest	85,700	87,400	89,100	90,900	92,700	94,600	96,500	98,400	100,400	102,400
Service/Curb Stop - Materials	26,300	27,600	29,000	30,500	32,000	33,600	35,300	37,100	39,000	41,000
Service/Curb Stop - Subcontractor	20,400	20,800	21,200	21,600	22,000	22,400	22,800	23,300	23,800	24,300
Watermain Breaks-Subcontractor	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000
Watermain Breaks-Rentals	100	100	100	100	100	100	100	100	100	100
Waterline Maint. - Materials	15,800	16,600	17,400	18,300	19,200	20,200	21,200	22,300	23,400	24,600
Scada Program Support	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	6,000
Water Loss Materials	10,500	11,000	11,600	12,200	12,800	13,400	14,100	14,800	15,500	16,300
Water Loss OCWA	15,300	15,600	15,900	16,200	16,500	16,800	17,100	17,400	17,700	18,100





Table A-8 Continued  
Municipality of North Middlesex  
Water Operating Budget Forecast  
Inflated \$

Description	Forecast									
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Expenditures</b>										
<u>Operating Costs</u>										
Water Loss Subcontractor	27,500	28,100	28,700	29,300	29,900	30,500	31,100	31,700	32,300	32,900
Water Loss Rentals	100	100	100	100	100	100	100	100	100	100
Meter Pit Subcontractor	100	100	100	100	100	100	100	100	100	100
Disruptions - OCWA OT	6,600	6,700	6,800	6,900	7,000	7,100	7,200	7,300	7,400	7,500
Disruptions - Trucking	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000
<b>Sub Total Operating</b>	<b>2,121,331</b>	<b>2,197,382</b>	<b>2,276,707</b>	<b>2,359,727</b>	<b>2,446,071</b>	<b>2,536,420</b>	<b>2,620,083</b>	<b>2,707,221</b>	<b>2,797,510</b>	<b>2,891,882</b>
<u>Capital-Related</u>										
Existing Debt (Principal) - Growth Related	247,881	259,705	272,093	285,072	298,670	312,917	327,843	343,481	359,865	377,031
Existing Debt (Interest) - Growth Related	381,600	369,776	357,388	344,409	330,811	316,565	301,639	286,001	269,616	252,451
New Growth Related Debt (Principal)	-	61,975	104,148	108,627	113,298	118,169	123,251	128,550	134,078	139,843
New Growth Related Debt (Interest)	-	81,872	131,400	126,922	122,251	117,379	112,298	106,998	101,471	95,705
Existing Debt (Principal) - Non-Growth Related	-	-	-	-	-	-	-	-	-	-
Existing Debt (Interest) - Non-Growth Related	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Principal)	-	77,468	80,799	84,274	87,897	91,677	95,619	99,731	104,019	108,492
New Non-Growth Related Debt (Interest)	-	102,340	99,009	95,534	91,911	88,131	84,189	80,077	75,789	71,316
Transfer to Capital	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	1,519,459	1,858,991	2,391,159	2,913,756	3,401,868	1,648,944	921,479	710,349	2,016,905	3,111,609
<b>Sub Total Capital Related</b>	<b>2,148,940</b>	<b>2,812,128</b>	<b>3,435,997</b>	<b>3,958,595</b>	<b>4,446,706</b>	<b>2,693,782</b>	<b>1,966,318</b>	<b>1,755,187</b>	<b>3,061,744</b>	<b>4,156,448</b>
<b>Total Expenditures</b>	<b>4,270,271</b>	<b>5,009,510</b>	<b>5,712,704</b>	<b>6,318,321</b>	<b>6,892,778</b>	<b>5,230,202</b>	<b>4,586,400</b>	<b>4,462,409</b>	<b>5,859,253</b>	<b>7,048,330</b>



Table A-8 Continued  
Municipality of North Middlesex  
Water Operating Budget Forecast  
Inflated \$

Description	Forecast									
	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Expenditures</b>										
<u>Operating Costs</u>										
<b>Revenues</b>										
Base Charge	2,797,872	3,267,962	3,751,047	4,229,811	4,684,295	4,951,587	5,233,898	5,532,061	5,846,956	6,181,125
<b>Other Revenue</b>										
Water/Sewer final reads	3,366	3,400	3,500	3,600	3,700	3,800	3,900	4,000	4,100	4,200
Returned Cheque Charges	204	200	200	200	200	200	200	200	200	200
Utility Penalty Charges	30,600	31,200	31,800	32,400	33,000	33,700	34,400	35,100	35,800	36,500
Sale of Waterline Parts & Meters	15,300	15,600	15,900	16,200	16,500	16,800	17,100	17,400	17,700	18,100
Misc. Utility Revenue	204	200	200	200	200	200	200	200	200	200
Water Connection & Insp. Fees	45,900	46,800	47,700	48,700	49,700	50,700	51,700	52,700	53,800	54,900
Reconnection Fees	1,020	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Contributions from Development Charges Reserve Fund	629,481	773,328	865,030	865,030	865,030	865,030	865,030	865,030	865,030	865,030
Contributions from Reserves / Reserve Funds	-	-	-	-	-	-	-	-	-	268,186
<b>Total Operating Revenue</b>	<b>3,523,948</b>	<b>4,139,690</b>	<b>4,716,377</b>	<b>5,197,141</b>	<b>5,653,625</b>	<b>5,923,017</b>	<b>6,207,428</b>	<b>6,507,691</b>	<b>6,824,786</b>	<b>7,429,441</b>
<b>Water Billing Recovery - Operating</b>	<b>746,324</b>	<b>869,820</b>	<b>996,327</b>	<b>1,121,180</b>	<b>1,239,152</b>	<b>(692,815)</b>	<b>(1,621,028)</b>	<b>(2,045,283)</b>	<b>(965,533)</b>	<b>(381,111)</b>
Lifecycle Reserve Contribution (\$)						2,000,000	3,000,000	3,500,000	2,500,000	2,000,000
<b>Water Billing Recovery - Total</b>	<b>746,324</b>	<b>869,820</b>	<b>996,327</b>	<b>1,121,180</b>	<b>1,239,152</b>	<b>1,307,185</b>	<b>1,378,972</b>	<b>1,454,717</b>	<b>1,534,467</b>	<b>1,618,889</b>



Table A-9  
Municipality of North Middlesex  
Water Rate Forecast  
Inflated \$

Description	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Total Water Billing Recovery	746,324	869,820	996,327	1,121,180	1,239,152	1,307,185	1,378,972	1,454,717	1,534,467	1,618,889
Total Weighted Volume (cu.m)	1,541,991	1,549,376	1,556,761	1,564,146	1,571,531	1,578,916	1,586,302	1,593,687	1,601,072	1,608,754
<b>Constant Rate - 0 to 75 cu.m</b>	<b>0.48</b>	<b>0.56</b>	<b>0.64</b>	<b>0.72</b>	<b>0.79</b>	<b>0.83</b>	<b>0.87</b>	<b>0.91</b>	<b>0.96</b>	<b>1.01</b>
<b>Constant Rate - 75+ cu.m</b>	<b>0.96</b>	<b>1.11</b>	<b>1.27</b>	<b>1.42</b>	<b>1.56</b>	<b>1.64</b>	<b>1.72</b>	<b>1.80</b>	<b>1.90</b>	<b>1.99</b>
<b>Annual Percentage Change</b>	<b>10%</b>	<b>16%</b>	<b>14%</b>	<b>12%</b>	<b>10%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>



Table A-10  
Municipality of North Middlesex  
Water Flat Rate Forecast  
Inflated \$

Annual Flat Rate Category	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
0 to 75	388	450	513	575	633	664	697	732	769	807
76 to 250	777	901	1,027	1,150	1,265	1,328	1,395	1,465	1,538	1,615
251 to 300	1,012	1,173	1,338	1,498	1,648	1,730	1,817	1,908	2,003	2,103
301 to 400	1,197	1,389	1,583	1,773	1,950	2,048	2,150	2,258	2,371	2,489
401 to 500	1,444	1,676	1,910	2,139	2,353	2,471	2,594	2,724	2,860	3,003
501 to 600	1,692	1,962	2,237	2,506	2,756	2,894	3,039	3,191	3,350	3,518
601 to 800	2,063	2,393	2,728	3,055	3,361	3,529	3,705	3,890	4,085	4,289
801 to 1,000	2,557	2,967	3,382	3,788	4,167	4,375	4,594	4,823	5,065	5,318
1,001 to 1,500	3,423	3,971	4,527	5,070	5,577	5,856	6,149	6,456	6,779	7,118
1,501 to 2,000	4,660	5,406	6,162	6,902	7,592	7,972	8,370	8,789	9,228	9,690
2,001 to 3,000	6,515	7,558	8,616	9,649	10,614	11,145	11,702	12,288	12,902	13,547
3,001 to 4,000	8,989	10,427	11,887	13,313	14,644	15,376	16,145	16,953	17,800	18,690
4,001 to 5,000	11,462	13,296	15,158	16,976	18,674	19,608	20,588	21,618	22,699	23,833
5,001 to 7,500	15,791	18,317	20,882	23,388	25,726	27,013	28,363	29,782	31,271	32,834
7,501 to 10,000	21,975	25,491	29,059	32,546	35,801	37,591	39,471	41,444	43,516	45,692
10,001 to 12,000	27,540	31,946	36,419	40,789	44,868	47,112	49,467	51,941	54,538	57,264
12,001 to 18,842+	32,686	37,916	43,224	48,411	53,252	55,915	58,711	61,646	64,729	67,965
<b>Annual Percentage Change</b>	<b>10%</b>	<b>16%</b>	<b>14%</b>	<b>12%</b>	<b>10%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>	<b>5%</b>
<b>Total Revenue</b>	<b>2,797,872</b>	<b>3,267,962</b>	<b>3,751,047</b>	<b>4,229,811</b>	<b>4,684,295</b>	<b>4,951,587</b>	<b>5,233,898</b>	<b>5,532,061</b>	<b>5,846,956</b>	<b>6,181,125</b>



# Appendix B

## Detailed Wastewater Rate Calculations



# Appendix B: Detailed Wastewater Rate Calculations

Table B-1  
Municipality of North Middlesex  
Wastewater Capital Budget Forecast (Uninflated \$)

Description	Budget 2023	Total	Forecast										
			2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
<b>Capital Expenditures</b>													
Bear Creek Pumping Station (SCADA Design)		75,000	-	-	-	-	-	-	75,000	-	-	-	-
Bear Creek Pumping Station (SCADA Renewal)		175,000	-	-	-	-	-	-	-	175,000	-	-	-
Station St Pumping Station (Design)		125,000	-	-	-	-	-	-	-	-	125,000	-	-
Station St Pumping Station (Construction)		600,000	-	-	-	-	-	-	-	-	-	-	600,000
<b>Growth Related:</b>													
Sewer Upgrades and Infrastructure Renewal- Annie Ada Shipley from Queen St to Henderson St		2,180,000	-	-	-	-	-	-	-	-	180,000	2,000,000	-
Sewer Upgrades on Henderson St from Annie Ada Shiplet to William St (113m)		240,000	-	-	-	-	-	-	40,000	200,000	-	-	-
Sewer Upgrades and Infrastructure Renewal on William St from Henderson to Pumping Station		1,950,000	-	-	-	-	-	-	150,000	1,800,000	-	-	-
Sewer Upgrades and Infrastructure Renewal on Hastings Street (356m)		120,000	-	-	-	-	-	-	-	-	-	-	120,000
Sewer Upgrades on Mill Street (279m) and Station St (55m)		80,000	-	-	-	-	-	-	-	-	-	-	80,000
Gravity Sewer Upgrades on Parkhill Main Street (23m)	308,000	-	-	-	-	-	-	-	-	-	-	-	-
Victoria Street Upgrades (Pump Station)		2,000,000	-	-	-	-	65,000	1,935,000	-	-	-	-	-
Replace and Upgrade Sewers on Petty Street - 1452m 300mm pipe and 16 Manhole Structures		3,322,000	-	-	-	-	-	-	-	-	1,661,000	1,661,000	-
New Ontario Pump Station Upgrade		446,000	-	-	-	-	-	-	446,000	-	-	-	-
William St Pumping Station and Forcemain (Upgrade)		6,800,000	-	-	-	6,800,000	-	-	-	-	-	-	-
De-Sludging of Lagoons		4,000,000	4,000,000	-	-	-	-	-	-	-	-	-	-
Queen Street Watermain - Phase 2 Construction (Ailsa Craig Main St to Mary St; water and sanitary sewer upgrade, and road and drainage improvements)		2,500,000	-	2,500,000	-	-	-	-	-	-	-	-	-
Parkhill Wastewater Treatment Plant (Phase 1) - additional 1,150 cu.m + Components for 2,300 cu.m		31,400,000	-	-	-	-	-	-	-	-	-	-	31,400,000
Ailsa Craig Treatment Plant Expansion and Addition (including filter)		10,966,912	-	-	-	-	-	1,096,691	-	3,655,637	3,655,637	2,558,946	-
<b>Total Capital Expenditures</b>	<b>308,000</b>	<b>66,979,912</b>	<b>4,000,000</b>	<b>2,500,000</b>	<b>-</b>	<b>6,800,000</b>	<b>65,000</b>	<b>3,031,691</b>	<b>711,000</b>	<b>6,010,637</b>	<b>7,441,637</b>	<b>36,419,946</b>	



Table B-2  
Municipality of North Middlesex  
Wastewater Capital Budget Forecast (Inflated \$)

Description	Budget 2023	Total	Forecast										
			2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
<b>Capital Expenditures</b>													
Bear Creek Pumping Station (SCADA Design)	-	86,000	-	-	-	-	-	-	-	86,000	-	-	-
Bear Creek Pumping Station (SCADA Renewal)	-	205,000	-	-	-	-	-	-	-	-	205,000	-	-
Station St Pumping Station (Design)	-	149,000	-	-	-	-	-	-	-	-	-	149,000	-
Station St Pumping Station (Construction)	-	731,000	-	-	-	-	-	-	-	-	-	-	731,000
<b>Growth Related:</b>	-	-	-	-	-	-	-	-	-	-	-	-	-
Sewer Upgrades and Infrastructure Renewal- Annie Ada Shipley from Queen St to Henderson St	-	2,601,000	-	-	-	-	-	-	-	-	211,000	2,390,000	-
Sewer Upgrades on Henderson St from Annie Ada Shiplet to William St (113m)	-	280,000	-	-	-	-	-	-	-	46,000	234,000	-	-
Sewer Upgrades and Infrastructure Renewal on William St from Henderson to Pumping Station	-	2,281,000	-	-	-	-	-	-	-	172,000	2,109,000	-	-
Sewer Upgrades and Infrastructure Renewal on Hastings Street (356m)	-	146,000	-	-	-	-	-	-	-	-	-	-	146,000
Sewer Upgrades on Mill Street (279m) and Station St (55m)	-	98,000	-	-	-	-	-	-	-	-	-	-	98,000
Gravity Sewer Upgrades on Parkhill Main Street (23m)	308,000	-	-	-	-	-	-	-	-	-	-	-	-
Victoria Street Upgrades (Pump Station)	-	2,251,000	-	-	-	-	-	72,000	2,179,000	-	-	-	-
Replace and Upgrade Sewers on Petty Street - 1452m 300mm pipe and 16 Manhole Structures	-	4,010,000	-	-	-	-	-	-	-	-	-	1,985,000	2,025,000
New Ontario Pump Station Upgrade	-	512,000	-	-	-	-	-	-	-	512,000	-	-	-
William St Pumping Station and Forcemain (Upgrade)	-	7,361,000	-	-	-	7,361,000	-	-	-	-	-	-	-
De-Sludging of Lagoons	-	4,080,000	4,080,000	-	-	-	-	-	-	-	-	-	-



Table B-2 Continued  
Municipality of North Middlesex  
Wastewater Capital Budget Forecast (Inflated \$)

Description	Budget 2023	Total	Forecast									
			2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Capital Expenditures</b>												
Queen Street Watermain - Phase 2 Construction (Ailsa Craig Main St to Mary St; water and sanitary sewer upgrade, and road and drainage improvements)	-	2,601,000	-	2,601,000	-	-	-	-	-	-	-	-
Parkhill Wastewater Treatment Plant (Phase 1) - additional 1,150 cu.m + Components for 2,300 cu.m	-	38,276,000	-	-	-	-	-	-	-	-	-	38,276,000
Ailsa Craig Treatment Plant Expansion and Addition (including filter)	-	13,006,000	-	-	-	-	-	1,235,000	-	4,283,000	4,369,000	3,119,000
<b>Total Capital Expenditures</b>	<b>308,000</b>	<b>78,674,000</b>	<b>4,080,000</b>	<b>2,601,000</b>	<b>-</b>	<b>7,361,000</b>	<b>72,000</b>	<b>3,414,000</b>	<b>816,000</b>	<b>7,042,000</b>	<b>8,893,000</b>	<b>44,395,000</b>
<b>Capital Financing</b>												
Provincial/Federal Grants		5,373,530		-		5,373,530						
Development Charges Reserve Fund	-	9,515,495	-	1,213,800	-	1,987,470	72,000	2,179,000	537,897	527,134	1,728,311	1,269,882
Front-Ending Contributions		37,862,434			-	-	-	1,235,000	-	4,283,000	4,369,000	27,975,434
Non-Growth Related Debenture Requirements	138,600	19,229,684	4,080,000	-	-	-	-	-	-	-	-	15,149,684
Growth Related Debenture Requirements	169,400	-	-	-	-	-	-	-	-	-	-	-
Operating Contributions	-	-	-	-	-	-	-	-	-	-	-	-
Lifecycle Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	-
Wastewater Reserve	-	6,692,857	-	1,387,200	-	-	-	-	278,103	2,231,866	2,795,689	-
<b>Total Capital Financing</b>	<b>308,000</b>	<b>78,674,000</b>	<b>4,080,000</b>	<b>2,601,000</b>	<b>-</b>	<b>7,361,000</b>	<b>72,000</b>	<b>3,414,000</b>	<b>816,000</b>	<b>7,042,000</b>	<b>8,893,000</b>	<b>44,395,000</b>





Table B-3  
Municipality of North Middlesex  
Wastewater Schedule of Non-Growth Related Debenture Repayments

Debenture Year	2023	Principal (Inflated)	Forecast									
			2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
2024		4,080,000		308,243	308,243	308,243	308,243	308,243	308,243	308,243	308,243	308,243
2025		-			-	-	-	-	-	-	-	-
2026		-										
2027		-										
2028		-										
2029		-										
2030		-										
2031		-										
2032		-										
2033		15,149,684										
<b>Total Annual Debt Charges</b>	-	<b>19,229,684</b>	-	308,243	308,243	308,243	308,243	308,243	308,243	308,243	308,243	308,243

Table B-4  
Municipality of North Middlesex  
Wastewater Schedule of Growth Related Debenture Repayments

Debenture Year	2023	Principal (Inflated)	Forecast									
			2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
2024		-		-	-	-	-	-	-	-	-	-
2025		-			-	-	-	-	-	-	-	-
2026		-										
2027		-										
2028		-										
2029		-										
2030		-										
2031		-										
2032		-										
2033		-										
<b>Total Annual Debt Charges</b>	-	-	-	-	-	-	-	-	-	-	-	-



Table B-5  
Municipality of North Middlesex  
Wastewater Reserve Continuity  
Inflated \$

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Opening Balance	1,792,247	2,164,145	2,620,897	1,455,267	1,802,947	2,308,853	3,012,290	3,940,969	4,332,468	3,006,926	1,380,968
Transfer from Operating	329,464	405,362	193,035	312,328	460,635	644,373	851,405	584,651	847,364	1,142,653	476,538
Transfer to Capital			1,387,200	-	-	-	-	278,103	2,231,866	2,795,689	
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
<b>Closing Balance</b>	<b>2,121,711</b>	<b>2,569,507</b>	<b>1,426,732</b>	<b>1,767,595</b>	<b>2,263,581</b>	<b>2,953,226</b>	<b>3,863,695</b>	<b>4,247,517</b>	<b>2,947,966</b>	<b>1,353,890</b>	<b>1,857,505</b>
Interest	42,434	51,390	28,535	35,352	45,272	59,065	77,274	84,950	58,959	27,078	37,150

Table B-6  
Municipality of North Middlesex  
Wastewater Development Charges Reserve Continuity  
Inflated \$

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Opening Balance	801,362	1,080,244	1,534,728	794,855	1,304,228	(177,455)	275,405	(1,401,228)	(1,426,661)	(1,430,607)	1,807,786
Development Charge Proceeds	257,701	424,392	458,341	483,800	509,267	519,460	529,841	540,438	551,240	562,258	573,507
Front-Ending Contributions							1,235,000	-	4,283,000	4,369,000	27,975,434
Transfer to Capital		-	1,213,800	-	1,987,470	72,000	3,414,000	537,897	4,810,134	1,728,311	29,245,316
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Front-Ending Loan Payback											
<b>Closing Balance</b>	<b>1,059,063</b>	<b>1,504,636</b>	<b>779,270</b>	<b>1,278,655</b>	<b>(173,975)</b>	<b>270,005</b>	<b>(1,373,753)</b>	<b>(1,398,688)</b>	<b>(1,402,556)</b>	<b>1,772,340</b>	<b>1,111,412</b>
Interest	21,181	30,093	15,585	25,573	(3,480)	5,400	(27,475)	(27,974)	(28,051)	35,447	22,228
Required from Development Charges	169,400	-	1,213,800	-	6,992,950	72,000	3,414,000	537,897	4,810,134	6,097,311	29,245,316



Table B-7  
Municipality of North Middlesex  
Wastewater Lifecycle Reserve Continuity  
Inflated \$

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Opening Balance	-	-	-	-	-	-	-	-	510,000	1,030,200	1,560,804
Transfer from Operating	-	-	-	-	-	-	-	500,000	500,000	500,000	1,500,000
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
<b>Closing Balance</b>	-	-	-	-	-	-	-	<b>500,000</b>	<b>1,010,000</b>	<b>1,530,200</b>	<b>3,060,804</b>
Interest	-	-	-	-	-	-	-	10,000	20,200	30,604	61,216



Table B-8  
Municipality of North Middlesex  
Wastewater Operating Budget Forecast  
Inflated \$

Description	Budget 2023	Forecast									
		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Expenditures</b>											
<u>Operating Costs</u>											
<b>Dept 4110 - Administration</b>											
Salaries & Wages	97,475	99,400	101,400	103,400	105,500	107,600	109,800	112,000	114,200	116,500	118,800
Employee Benefits - CPP	4,525	4,600	4,700	4,800	4,900	5,000	5,100	5,200	5,300	5,400	5,500
Employee Benefits - EI	1,710	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700	1,700
Employee Benefits - WSIB	3,420	3,500	3,600	3,700	3,800	3,900	4,000	4,100	4,200	4,300	4,400
Employee Benefits - EHT	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900
Employee Benefits	8,680	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500	10,700
Employee Benefits - OMERS	9,845	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800
Mileage	200	200	200	200	200	200	200	200	200	200	200
Conferences	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Meal Expenses	250	300	300	300	300	300	300	300	300	300	300
Office Supplies-office/shop	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Education & Training	500	500	500	500	500	500	500	500	500	500	500
Postage & Courier	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	4,000	4,100	4,200
Memberships	100	100	100	100	100	100	100	100	100	100	100
Advertising	500	500	500	500	500	500	500	500	500	500	500
Telephone-office/shop	650	700	700	700	700	700	700	700	700	700	700
Clothing Allowance & Safetywear	100	100	100	100	100	100	100	100	100	100	100
Small Tools	100	100	100	100	100	100	100	100	100	100	100
Municipal Drains Maintenance	20,000	20,400	20,800	21,200	21,600	22,000	22,400	22,800	23,300	23,800	24,300
Prog Maint & Enhance(Keystone)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Professional - Consulting	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000
Professional - Engineering	5,000	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	6,000
Vehicle Fuel	2,200	2,300	2,400	2,500	2,600	2,700	2,800	2,900	3,000	3,200	3,400
Vehicle Maint.	500	500	500	500	500	500	500	500	500	500	500



Table B-8 Continued  
Municipality of North Middlesex  
Wastewater Operating Budget Forecast  
Inflated \$

Description	Budget 2023	Forecast										
		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
<b>Expenditures</b>												
<u>Operating Costs</u>												
Parts & Repairs	500	500	500	500	500	500	500	500	500	500	500	500
Sewer Debenture Interest	24,550	25,000	25,500	26,000	26,500	27,000	27,500	28,100	28,700	29,300	29,900	29,900
Hydro	130,000	136,500	143,300	150,500	158,000	165,900	174,200	182,900	192,000	201,600	211,700	211,700
Insurance Premiums	22,395	22,800	23,300	23,800	24,300	24,800	25,300	25,800	26,300	26,800	27,300	27,300
Telephone	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Equip Repairs & Maitnenace - Shop	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000	12,000
Rd Rep & Restoration Materials	2,500	2,600	2,700	2,800	2,900	3,000	3,200	3,400	3,600	3,800	4,000	4,000
Materials Purchased	500	500	500	500	500	500	500	500	500	500	500	500
Repairs & Maintenance (System)	5,000	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	6,000	6,000
Sewage Pump/Life Repairs & Maintenance	60,000	61,200	62,400	63,600	64,900	66,200	67,500	68,900	70,300	71,700	73,100	73,100
Contracted Services-OCWA	366,421	373,700	381,200	388,800	396,600	404,500	412,600	420,900	429,300	437,900	446,700	446,700
Scada Support	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000	12,000
Rd Rep & Restoration -Subcontractors	5,000	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900	6,000	6,000
Sanitary Line Maint-Subcontractor	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000	12,000
Equip Repairs & Maitnenace - Shop	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000	12,000
Repairs & Maintenance (System) Subcontractor	25,000	25,500	26,000	26,500	27,000	27,500	28,100	28,700	29,300	29,900	30,500	30,500
CCTV Inspections	40,000	40,800	41,600	42,400	43,200	44,100	45,000	45,900	46,800	47,700	48,700	48,700
Equipment Rental Exp.	500	500	500	500	500	500	500	500	500	500	500	500
Property Tax	35,000	35,700	36,400	37,100	37,800	38,600	39,400	40,200	41,000	41,800	42,600	42,600
<b>Sub Total Operating</b>	<b>932,221</b>	<b>954,600</b>	<b>977,700</b>	<b>1,001,300</b>	<b>1,025,600</b>	<b>1,050,600</b>	<b>1,076,500</b>	<b>1,103,200</b>	<b>1,130,500</b>	<b>1,158,700</b>	<b>1,187,700</b>	<b>1,187,700</b>



Table B-8 Continued  
Municipality of North Middlesex  
Wastewater Operating Budget Forecast  
Inflated \$

Description	Budget 2023	Forecast										
		2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	
<b>Capital-Related</b>												
Existing Debt (Principal) - Growth Related		-	-	-	-	-	-	-	-	-	-	-
Existing Debt (Interest) - Growth Related		-	-	-	-	-	-	-	-	-	-	-
New Growth Related Debt (Principal)		-	-	-	-	-	-	-	-	-	-	-
New Growth Related Debt (Interest)		-	-	-	-	-	-	-	-	-	-	-
Existing Debt (Principal) - Non-Growth Related		-	-	-	-	-	-	-	-	-	-	-
Existing Debt (Interest) - Non-Growth Related		-	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Principal)		-	132,803	138,513	144,469	150,681	157,161	163,918	170,967	178,319	185,986	
New Non-Growth Related Debt (Interest)		-	175,440	169,729	163,773	157,561	151,082	144,324	137,276	129,924	122,256	
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	329,464	405,362	193,035	312,328	460,635	644,373	851,405	584,651	847,364	1,142,653	476,538	
<b>Sub Total Capital Related</b>	<b>329,464</b>	<b>405,362</b>	<b>501,278</b>	<b>620,570</b>	<b>768,877</b>	<b>952,615</b>	<b>1,159,647</b>	<b>892,894</b>	<b>1,155,607</b>	<b>1,450,895</b>	<b>784,780</b>	
<b>Total Expenditures</b>	<b>1,261,685</b>	<b>1,359,962</b>	<b>1,478,978</b>	<b>1,621,870</b>	<b>1,794,477</b>	<b>2,003,215</b>	<b>2,236,147</b>	<b>1,996,094</b>	<b>2,286,107</b>	<b>2,609,595</b>	<b>1,972,480</b>	
<b>Revenues</b>												
Base Charge	1,008,384	1,089,158	1,187,088	1,305,480	1,448,506	1,621,443	1,814,482	2,029,915	2,270,289	2,538,439	2,839,332	
<b>Other Revenue</b>												
Ward # 1 Utility Penalty	3,500	3,570	3,640	3,640	3,640	3,640	3,640	3,640	3,640	3,640	3,640	
Connections Permits & Insp. Fees	1,000	1,020	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	
Debt Debt Paid By Ratepayers	36,830	37,567	38,320	38,320	38,320	38,320	38,320	38,320	38,320	38,320	38,320	
Contributions from Development Charges Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	
Contributions from Reserves / Reserve Funds	-	-	-	-	-	-	-	-	-	-	-	
<b>Total Operating Revenue</b>	<b>1,049,714</b>	<b>1,131,314</b>	<b>1,230,088</b>	<b>1,348,480</b>	<b>1,491,506</b>	<b>1,664,443</b>	<b>1,857,482</b>	<b>2,072,915</b>	<b>2,313,289</b>	<b>2,581,439</b>	<b>2,882,332</b>	
<b>Wastewater Billing Recovery - Operating</b>	<b>211,971</b>	<b>228,648</b>	<b>248,890</b>	<b>273,390</b>	<b>302,971</b>	<b>338,772</b>	<b>378,665</b>	<b>(76,821)</b>	<b>(27,182)</b>	<b>28,157</b>	<b>(909,852)</b>	
Lifecycle Reserve Contribution (\$)		-	-	-	-	-	-	500,000	500,000	500,000	1,500,000	
<b>Wastewater Billing Recovery - Total</b>	<b>211,971</b>	<b>228,648</b>	<b>248,890</b>	<b>273,390</b>	<b>302,971</b>	<b>338,772</b>	<b>378,665</b>	<b>423,179</b>	<b>472,818</b>	<b>528,157</b>	<b>590,148</b>	



Table B-9  
Municipality of North Middlesex  
Wastewater Rate Forecast  
Inflated \$

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Total Wastewater Billing Recovery	211,971	228,648	248,890	273,390	302,971	338,772	378,665	423,179	472,818	528,157	590,148
Total Weighted Volume (cu.m)	423,941	431,411	438,881	446,351	453,821	461,291	468,761	476,231	483,701	491,171	498,941
<b>Constant Rate - 0 to 75 cu.m</b>	<b>0.50</b>	<b>0.53</b>	<b>0.57</b>	<b>0.61</b>	<b>0.67</b>	<b>0.73</b>	<b>0.81</b>	<b>0.89</b>	<b>0.98</b>	<b>1.08</b>	<b>1.18</b>
<b>Constant Rate - 75+ cu.m</b>	<b>1.00</b>	<b>1.06</b>	<b>1.13</b>	<b>1.23</b>	<b>1.34</b>	<b>1.47</b>	<b>1.62</b>	<b>1.78</b>	<b>1.96</b>	<b>2.15</b>	<b>2.37</b>
<b>Annual Percentage Change</b>		<b>6%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>



Table B-10  
Municipality of North Middlesex  
Wastewater Flat Rate Forecast  
Inflated \$

Annual Flat Rate Category	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
0 to 75	384	407	436	470	513	564	620	682	751	826	908
76 to 250	768	814	871	941	1,025	1,128	1,241	1,365	1,501	1,651	1,817
251 to 300	768	814	871	941	1,025	1,128	1,241	1,365	1,501	1,651	1,817
301 to 400	768	814	871	941	1,025	1,128	1,241	1,365	1,501	1,651	1,817
401 to 500	768	814	871	941	1,025	1,128	1,241	1,365	1,501	1,651	1,817
501 to 600	1,563	1,657	1,773	1,915	2,087	2,296	2,525	2,778	3,055	3,361	3,697
601 to 800	1,985	2,104	2,251	2,431	2,650	2,915	3,207	3,528	3,880	4,268	4,695
801 to 1,000	2,548	2,701	2,890	3,121	3,402	3,742	4,116	4,528	4,981	5,479	6,027
1,001 to 1,500	3,533	3,745	4,007	4,328	4,717	5,189	5,708	6,279	6,906	7,597	8,357
1,501 to 2,000	4,940	5,236	5,603	6,051	6,596	7,255	7,981	8,779	9,657	10,623	11,685
2,001 to 3,000	7,051	7,474	7,997	8,637	9,414	10,356	11,391	12,531	13,784	15,162	16,678
3,001 to 4,000	9,866	10,458	11,190	12,085	13,173	14,490	15,939	17,533	19,286	21,215	23,337
4,001 to 5,000	12,680	13,441	14,382	15,532	16,930	18,623	20,485	22,534	24,787	27,266	29,993
5,001 to 7,500	17,606	18,662	19,969	21,566	23,507	25,858	28,444	31,288	34,417	37,859	41,644
7,501 to 10,000	24,642	26,121	27,949	30,185	32,902	36,192	39,811	43,792	48,171	52,988	58,287
10,001 to 12,000	30,975	32,834	35,132	37,942	41,357	45,493	50,042	55,046	60,551	66,606	73,267
12,001 to 18,842+	36,831	39,041	41,774	45,116	49,176	54,094	59,503	65,453	71,999	79,198	87,118
<b>Annual Percentage Change</b>		<b>6%</b>	<b>7%</b>	<b>8%</b>	<b>9%</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>	<b>10%</b>
<b>Total Revenue</b>	<b>1,008,384</b>	<b>1,089,158</b>	<b>1,187,088</b>	<b>1,305,480</b>	<b>1,448,506</b>	<b>1,621,443</b>	<b>1,814,482</b>	<b>2,029,915</b>	<b>2,270,289</b>	<b>2,538,439</b>	<b>2,839,332</b>