Financial Plan

Lake Huron Primary Water Supply System

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Table of Contents

Table of Contents (Cont'd)

Page

List of Acronyms and Abbreviations

Acronym	Full Description of Acronym
A.M.O.	Association of Municipalities of Ontario
A.W.W.A.	American Water Works Association
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

List of Acronyms and Abbreviations (Cont'd)

P.T.I.F.	Public Transit Infrastructure Fund
S.W.S.S.A.	Sustainable Water and Sewage Systems Act, 2002

Executive Summary

Executive Summary

The Lake Huron Primary Water Supply System (L.H.P.W.S.S.) retained Watson & Associates Economists Ltd. (Watson) to undertake a water financial plan (water rate study). This study aims to provide an analysis of current capital and operating forecasts, costing for asset management and lifecycle cost requirements, current volumes, and customer profiles. The results of this analysis provide updated water rates for customers of the L.H.P.W.S.S. The rate analysis contained herein continues to provide fiscally responsible practices that are in line with current provincial legislation at a level of rate increases that are reasonable.

The analysis presented herein is based on the following:

- The 2023 to 2032 capital spending program is approximately $168.70 million (inflated);
- Annual operating expenditures are assumed to increase by an average of 3.35% per annum (as per the Board's 2023 budget);
- The present rate structure (constant volume rate) is recommended to continue;
- Existing water customers include the City of London, Township of Lucan-Biddulph and Municipalities of Bluewater, South Huron, Lambton Shores, North Middlesex, Middlesex Centre, and Strathroy-Caradoc. The addition of the Oneida Nation of the Thames as a L.H.P.W.S.S. water customer has been identified in the forecast;
- Projected volumes for existing and new customers anticipated over the forecast period have been included in the analysis; and
- Annual contributions to the new capital and asset replacement reserve funds have been incorporated to provide the system with a sustainable level of funding to address the capital program and future asset replacement needs.

Based on the analysis, the volume rates are recommended to increase by 5% annually from 2024 to 2029, and 4% annually for the remainder of the forecast period (2030 to 2032).

Table ES-1 summarizes the recommended water rates based on the analysis provided herein over the forecast period.

Table ES-1
Lake Huron Primary Water Supply System
Summary of Recommended Water Rates

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Constant Rate	$0.5194	$0.5454	$0.5727	$0.6013	$0.6314	$0.6630	$0.6962	$0.7240	$0.7530	$0.7831
Annual % Increase		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	4.0%	4.0%	4.0%

Report

Chapter 1
Study Purpose

1. Study Purpose

The Lake Huron Primary Water Supply System (L.H.P.W.S.S.) retained Watson & Associates Economists Ltd. (Watson) to undertake a Financial Plan Update for the area water supply system. This Financial Plan Update requires a report on the full cost of water services and cost recovery for the system.

The L.H.P.W.S.S. Strategic Financial Plan, completed in 2007 and subsequently updated in 2016, sets out strategies and actions to ensure the long-term financial sustainability of the L.H.P.W.S.S. An analysis of financial requirements, including a presentation of a utility funding structure, rate plan, and structure for charging costs, was included.

This current Financial Plan Update provides for the ongoing review of the water system and incorporates the findings of the 2022 Asset Management Plan (A.M.P.).

Therefore, the objectives of the study and the steps involved in conducting this assignment are summarized below:

- Identify all current and future water system capital needs to assess the immediate and longer-term implications;
- Identify potential methods of cost recovery from the capital needs listing;
- Identify existing operating costs by component and estimate future operating costs over the next ten 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 the Joint Board the findings to assist in gaining approval of the financial plan, including rates, for 2024 and future years.

Chapter 2
Water Board Governance and Mandate

2. Water Board Governance and Mandate

2.1 Water Board

The L.H.P.W.S.S. Board of Management was created as a water board in 2000 pursuant to the Transfer Order as per the Municipal Water and Sewage Systems Transfer Act, 1997. At that time, the system's benefiting municipalities were jointly transferred ownership of the water system (including the land associated with the properties) from the Ontario Clean Water Agency as an undivided share and tenant in common.

The L.H.P.W.S.S.'s Board of Management (Water Board) governs the system with Board Members who have been appointed from each of the benefiting municipalities. These benefiting municipalities include the City of London, Township of Lucan-Biddulph and Municipalities of Bluewater, South Huron, Lambton Shores, North Middlesex, Middlesex Centre, and Strathroy-Caradoc.

The Water Board retains governance, management, ownership and therefore, full responsibility for the system. The City of London was designated as the administering municipality for the L.H.P.W.S.S. under the transfer order issued by the Ministry of Environment and Climate Change (M.O.E.C.C.), formally the Ministry of Environment. The City provides the Water Board with management and administrative services through seconded staff of the Regional Water Division acting under the direction of the Water Board.

2.2 Operating Contract

The operation and maintenance of the water system is currently contracted to the Ontario Clean Water Agency (OCWA). The current contract with OCWA is for five years and expires in December 2027; however, there is an option within the contract to extend the contract for an additional five years if the Water Board wishes. Currently the contract is to manage, operate and maintain the system. In the future, the Water Board could choose to assume the responsibilities currently set out in the contract or continue to contract for this service.

2.3 Administration by City of London

The City of London assumed administrative responsibility in 2000 for the L.H.P.W.S.S. in accordance with the Provincial Transfer Order. The Managing Director of the Environmental & Engineering Services Department and City Engineer, through the Director of the Regional Water Supply provides the administration of the system. The approach to the administration includes the following "four pillars":

- Operational Plan – related to risk management and operational control
- Master Water Plan – long term strategic planning for growth and corresponding identification of new capacity requirements
- Administrative Plan – strategic plan for governance and administrative support of goals and objectives
- Financial Plan – long term strategic plan for cost control and full cost recovery

Management success depends on the success of the four pillars working symbiotically. Therefore, there is a need for technical support and administrative protocols to ensure the system is managed effectively and efficiently.

2.4 Water Board's Guiding Principles

The Water Board's guiding principles were adopted in 2000 for administration and operation of the system. These principles include the following:

- Quality of Service;
- Operating Flexibility/Innovation, Efficiency;
- Asset Protection and Maintenance;
- Continuity of Service;
- Environmental Impact;
- Municipal Control;
- Value for Service;
- Capital Projects; and
- Appropriate Allocation of Risk.

In addition to these guiding principles, the Water Board approved business guidelines as part of the 2007 Strategic Financial Plan to ensure business is conducted in an

ethical manner to ensure the system is run efficiently, is fiscally responsible and provides rates that are fair and equitable to its benefiting members, supports its members, and provides innovation to manage the system.

Chapter 3
Water System Background and Legislation

3. Water System Background and Legislation

3.1 Water System Background

The L.H.P.W.S.S. is serviced via the water treatment plant located near Grand Bend, Ontario. To distribute the water to its member municipalities, the L.H.P.W.S.S. utilizes the following: transmission system which comprise of the McGillivray Booster Pumping Station and Reservoir, the Exeter-Hensall Booster Pumping Station and Reservoir, Arva Terminal Reservoir, Komoka-Mt. Brydges Booster Pumping Station (PS#4) and associated interconnecting transmission water mains, which includes the primary, Strathroy, Exeter-Hensall, and Komoka-Mt. Brydges transmission water mains.

The primary system imposes a rate per cubic metre to each of its member municipalities based upon the volume of water supplied. The rate in effect for 2023 is $0.5194 per cubic metre and is presented in Table 1-1. Currently, all expenses, both operating and capital, are funded through the revenue generated from the volume rate.

Table 1-1
Lake Huron Primary Water Supply System
2023 Water Rate

2023 - Water Billing Rates		
Volume Charge		
$	0.5194	per cu.m

With the legislative changes made across Ontario as a result of the Walkerton crisis, municipalities are required to conform to new statutes governing the management of water and wastewater systems. Watson & Associates Economists Ltd. was retained by the L.H.P.W.S.S. to assist in addressing these changes in a proactive manner as they relate to the primary water systems. The assessment provided herein addresses changes recommended to the water financial plan based on the most current information, including updates to the Asset Management Plan (A.M.P.), and forecasts the implications over the next 10-year period.

3.2 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 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 following sections describe these various resulting changes.

3.3 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.
- 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.

3.4 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;

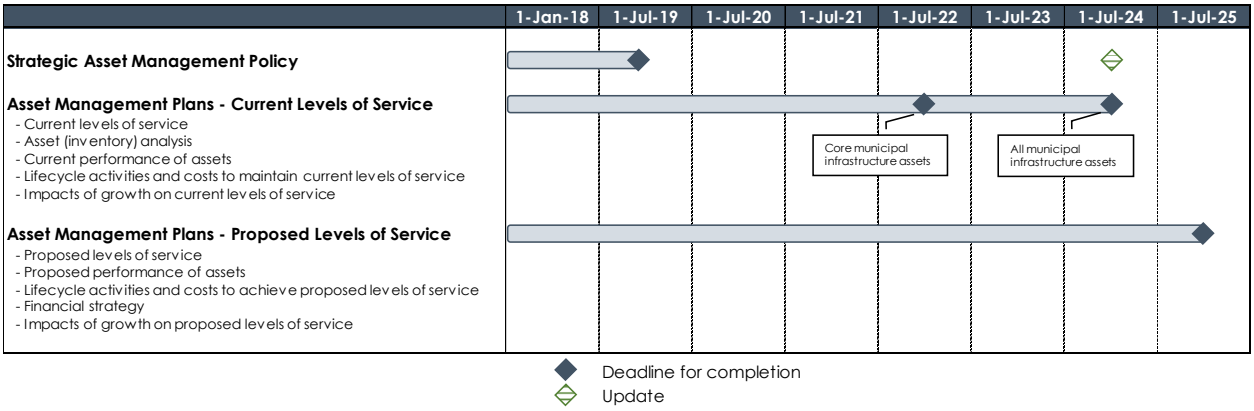
- Contents of the plans;
- Which identified portions of the plan will require certification;
- Public consultation process; and
- Limitations, updates, refinements, etc.

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.

3.5 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 3-1
Legislative Timelines set out by the Infrastructure for 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 were required 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; and
    - 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.
- The lifecycle activities that would need to be undertaken to maintain the current levels of service.'

While the L.H.P.W.S.S. is not subject to I.J.P.A. requirements, the Board has incorporated these practices as part of their asset management process.

Chapter 4
Forecast Growth and Servicing Requirements and Capital Infrastructure Needs

4. Forecast Growth and Servicing Requirements and Capital Infrastructure Needs

4.1 Forecast Growth and Servicing Requirements

The L.H.P.W.S.S. currently services eight municipalities; Bluewater, South Huron, Lambton Shores, North Middlesex, Lucan-Biddulph, Middlesex Centre, Strathroy-Caradoc, and most of the City of London. Information on the historical billable volumes supplied to each municipality was obtained from staff at the L.H.P.W.S.S.

For future water customers to be added to the systems, consideration has been given to development potential within the serviced areas of the L.H.P.W.S.S. over the forecast period 2023 to 2032. Based on discussions with staff, Oneida Nation of the Thames will be added to the L.H.P.W.S.S. in 2025, subject to the completion of a Water Supply Agreement. The volume projections in this analysis have been updated to include Oneida starting in 2025.

For the purposes of this Financial Plan and for all benefiting municipalities supplied by the L.H.P.W.S.S. the volumes are anticipated to increase from 47.1 million cubic metres to 54.3 million cubic metres from 2023 to 2032.

Table 4-1 provides for the forecast of water users and volumes for L.H.P.W.S.S.

Table 4-1
Lake Huron Primary Water Supply System
2023 to 2032 Water System Forecast

Water Volume Forecast (m^3)	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Total Projected Volumes	47,114,500	49,026,612	49,995,804	50,635,501	51,283,025	51,938,475	52,613,820	53,165,841	53,723,170	54,287,081

4.2 Capital Expenditure Forecast

A capital expenditure forecast has been provided for the water system and is presented on Tables 4-2 and 4-3 (note: the costs are provided in inflated dollars). The basis for the forecast is L.H.P.W.S.S.'s Capital Forecasts and works identified as asset replacement needs based on the A.M.P. for the water system. These capital needs address full asset replacement projects, mid-life interventions (major repair/rehabilitation) projects, enhancements and growth-related projects, efficiency projects, and various plans/documentation projects anticipated over the forecast period (2023 to 2032).

It is noted that L.H.P.W.S.S., as part of their guiding principles, continue to research best practices and implement new technologies as they become available. They also review the financial plan on an annual basis to ensure that the most immediate needs are addressed in the short-term and adjust the capital forecast where necessary. Therefore, the capital forecast presented below is considered to be the best estimate based on the conditions known today and will become a living document to be updated over the forecast period as required.

A summary of the capital works related to the water services is provided in Table 4-2.

Table 4-2
Lake Huron Primary Water Supply System
2023 to 2032 Water Capital Forecast Summary (Inflated $)

Description	Forecast Period 2023 to 2032
Enhancement	$40,816,000
Renewal	$32,461,000
Growth	$65,253,000
Plans/Documentation	$385,000
Legislative	$130,000
Asset Management Projects	$29,647,000
Total	**$168,692,000**

Table 4-3 provides for the full capital expenditure program by year.

Table 4-3
Lake Huron Primary Water Supply System
Capital Expenditure Forecast
Inflated $

Description	Total	Forecast									
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Capital Expenditures											
Description											
Huron Safety Railing Replacement	104,000	104,000	-	-	-	-	-	-	-	-	-
Huron Low Lift Pump Rebuild	396,000	130,000	133,000	133,000	-	-	-	-	-	-	-
Concrete Crack Injection	105,000	52,000	53,000	-	-	-	-	-	-	-	-
Security Upgrades	583,000	263,000	106,000	106,000	108,000	-	-	-	-	-	-
Hydraulic/Transient Model Update & Transient Monitoring	104,000	104,000	-	-	-	-	-	-	-	-	-
Flocculator Walking Beam Rehab	208,000	208,000	-	-	-	-	-	-	-	-	-
McGillivray Pumps & Valves Refurbishment	4,077,000	-	-	4,077,000	-	-	-	-	-	-	-
PAC Feed/Transfer Pump System Replacement	1,269,000	166,000	1,103,000	-	-	-	-	-	-	-	-
Plant Interior Person Door Replacement	42,000	21,000	21,000	-	-	-	-	-	-	-	-
Service Water Pipe Replacement	53,000	26,000	27,000	-	-	-	-	-	-	-	-
IT Asset Replacement Program	1,146,000	-	150,000	239,000	124,000	66,000	135,000	57,000	375,000	-	-
Arva Reservoir Expansion	40,092,000	-	-	-	-	-	5,631,000	34,461,000	-	-	-
Flocc Gear Drives	78,000	78,000	-	-	-	-	-	-	-	-	-
2023 Annual Maintenance Allowance	125,000	125,000	-	-	-	-	-	-	-	-	-
Distressed Pipe Replacement Program	4,030,000	416,000	371,000	371,000	379,000	386,000	450,000	402,000	410,000	418,000	427,000
Arva Reservoir Structural Repairs	2,174,000	52,000	2,122,000	-	-	-	-	-	-	-	-
WTP Modification/Renovation	5,295,000	520,000	1,591,000	3,184,000	-	-	-	-	-	-	-
Clarifier Upgrades	242,000	120,000	122,000	-	-	-	-	-	-	-	-
Oneida Transmission Pipeline	26,000,000	26,000,000	-	-	-	-	-	-	-	-	-
WTP Storage Reservoir & UV	39,253,000	520,000	3,183,000	35,550,000	-	-	-	-	-	-	-
Roof Drain Replacement	107,000	26,000	27,000	27,000	27,000	-	-	-	-	-	-
Chamber Flood Prevention/Rehab	402,000	78,000	80,000	80,000	81,000	83,000	-	-	-	-	-
Sub-basement Drain Study	26,000	26,000	-	-	-	-	-	-	-	-	-
Monitoring Station Controls Upgrades	286,000	286,000	-	-	-	-	-	-	-	-	-
Asset Condition Field Assessment	385,000	114,000	128,000	143,000	-	-	-	-	-	-	-
Electric Vehicle Charging Stations	63,000	10,000	53,000	-	-	-	-	-	-	-	-
De-chlorination at Remote Stations	130,000	130,000	-	-	-	-	-	-	-	-	-
Asset Management (Planned & Placeholders)											
Annual Maintenance (projected) - ALL	1,000,000	-	-	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000
Asset Management Plan Update - ALL	415,000	-	-	-	182,000	-	-	-	-	233,000	-
Financial Plan Update - ALL	139,000	-	-	-	61,000	-	-	-	-	78,000	-
Master Water Plan Update - ALL	376,000	-	165,000	-	-	-	-	211,000	-	-	-
Climate Change Risk Assessment - ALL	55,000	-	55,000	-	-	-	-	-	-	-	-
Optimization Opportunities - Short-Term - Raw Water Handling	12,000	-	2,000	2,000	2,000	3,000	3,000	-	-	-	-
Optimization Opportunities - Short-Term - Pre-Treatment	281,000	-	51,000	53,000	56,000	59,000	62,000	-	-	-	-

Table 4-3 (continued)
Lake Huron Primary Water Supply System
Capital Expenditure Forecast
Inflated $

Description	Total	Forecast									
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Optimization Opportunities - Short-Term - Filtration, Disinfection, and High Lift Pumping	220,000	-	40,000	42,000	44,000	46,000	48,000	-	-	-	-
Optimization Opportunities - Short-Term - Digital Technology	220,000	-	40,000	42,000	44,000	46,000	48,000	-	-	-	-
Optimization Opportunities - Long-Term - Pre-Treatment	1,692,000	-	-	-	-	-	-	393,000	412,000	433,000	454,000
Optimization Opportunities - Long-Term - Filtration, Disinfection, and High Lift Pumping	13,252,000	-	-	-	-	-	-	3,075,000	3,228,000	3,390,000	3,559,000
Optimization Opportunities - Long-Term - Primary - Reservoirs and Pumping Stations	5,258,000	-	-	-	-	-	-	1,220,000	1,281,000	1,345,000	1,412,000
Mid-Life Intervention & Lifecycle Replacment - Raw Water Handling	197,000	-	36,000	6,000	6,000	6,000	7,000	35,000	16,000	26,000	59,000
Mid-Life Intervention & Lifecycle Replacment - Pre-Treatment	1,847,000	-	33,000	147,000	47,000	148,000	926,000	267,000	58,000	99,000	122,000
Mid-Life Intervention & Lifecycle Replacment - Filtration, Disinfection, and High Lift Pumping	4,683,000	-	203,000	260,000	95,000	60,000	839,000	1,555,000	72,000	918,000	681,000
Mid-Life Intervention & Lifecycle Replacment - Residuals Management	455,000	-	-	267,000	-	1,000	-	4,000	177,000	6,000	-
Mid-Life Intervention & Lifecycle Replacment - General Site, Building Services, Fleet, and Security	4,090,000	-	178,000	332,000	101,000	179,000	409,000	1,172,000	1,229,000	171,000	319,000
Mid-Life Intervention & Lifecycle Replacment - Primary Power	425,000	-	7,000	91,000	-	13,000	32,000	17,000	139,000	121,000	5,000
Mid-Life Intervention & Lifecycle Replacment - Digital Technology	3,227,000	-	141,000	1,451,000	132,000	193,000	184,000	141,000	309,000	326,000	350,000
Mid-Life Intervention & Lifecycle Replacment - Primary - Reservoirs and Pumping Stations	2,649,000	-	431,000	996,000	35,000	94,000	138,000	462,000	62,000	327,000	104,000
Mid-Life Intervention & Lifecycle Replacment - Primary - Pipes and Chambers	186,000	-	15,000	16,000	32,000	18,000	19,000	20,000	21,000	22,000	23,000
Mid-Life Intervention & Lifecycle Replacment - Secondary - Reservoirs and Pumping Stations	1,238,000	-	30,000	19,000	4,000	4,000	168,000	59,000	442,000	380,000	132,000
Total Capital Expenditures	**168,692,000**	**29,575,000**	**10,697,000**	**47,759,000**	**1,685,000**	**1,530,000**	**9,224,000**	**43,676,000**	**8,356,000**	**8,418,000**	**7,772,000**

Chapter 5
Lifecycle Costing

5. Lifecycle Costing

5.1 Overview of Lifecycle Costing

5.1.1 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 5-1 depicts these stages in a schematic form.

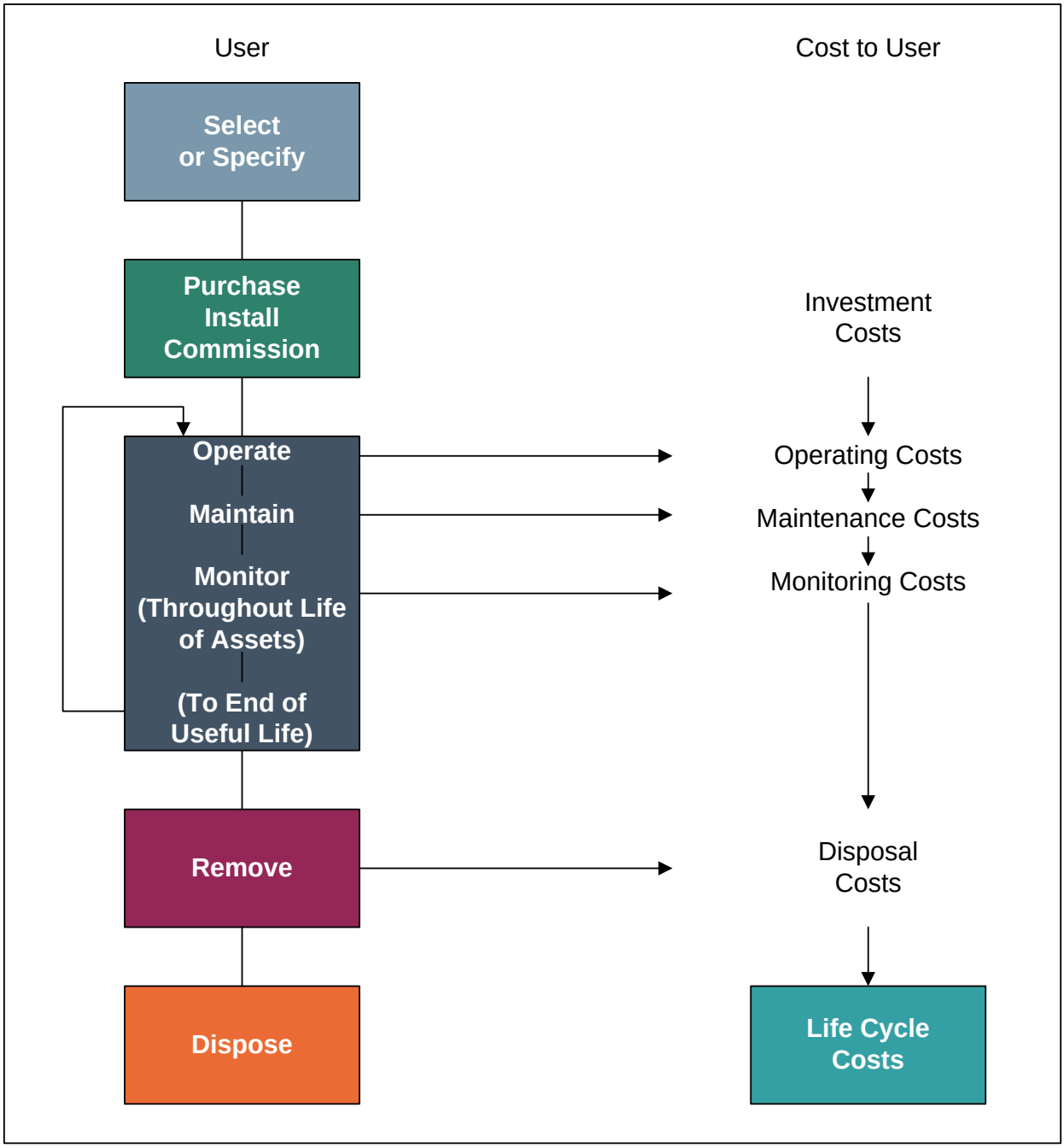
5.1.2 Financing Costs

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 system. 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 5-1
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 sizable portion of projects, where new assets are being

acquired to allow for growth (although the L.H.P.W.S.S. does not have D.C.s, it utilizes the contributions in their new capital reserve fund from the wholesale rates to fund new capital). 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 5-2 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.

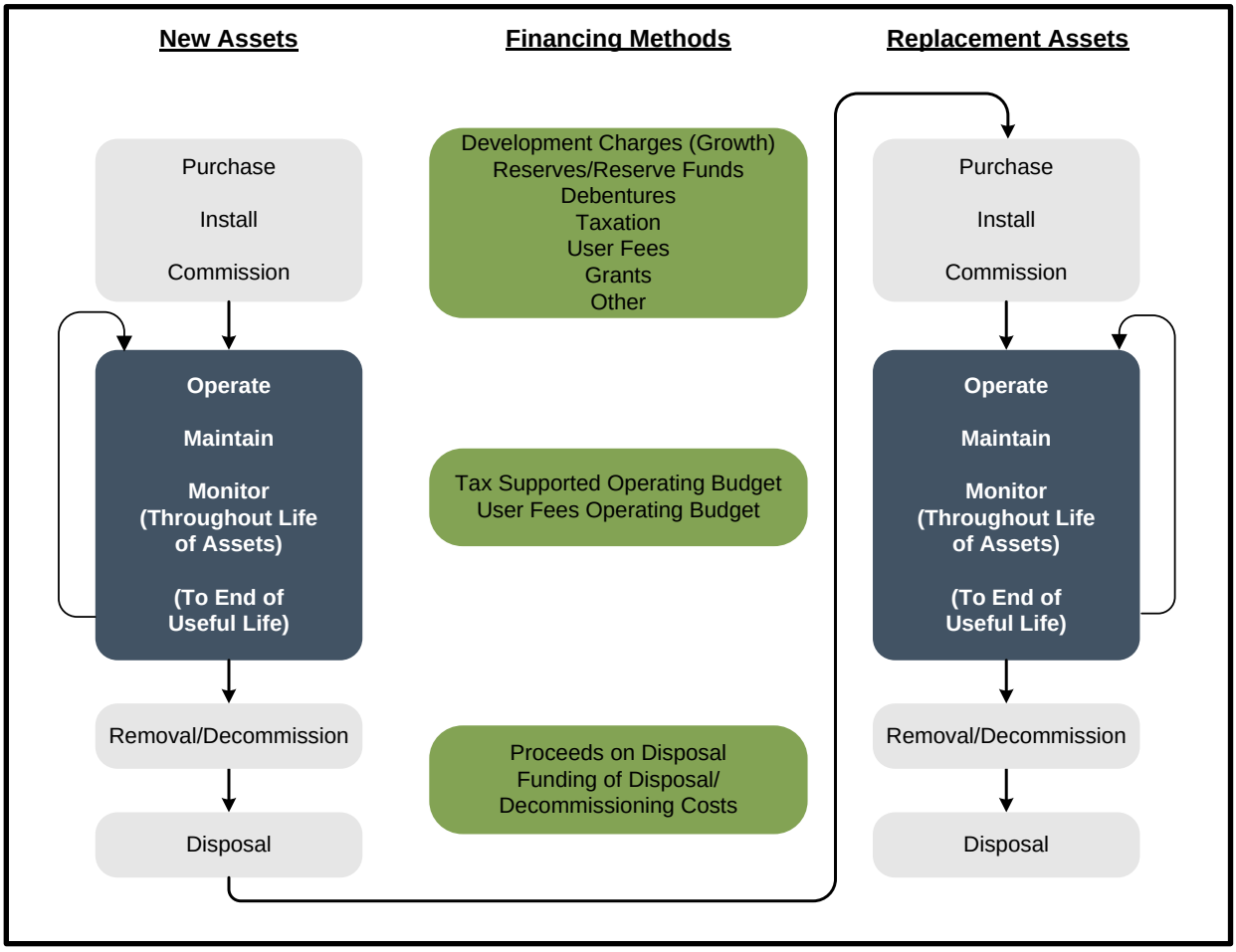
As referred to earlier, growth-related financing methods could be utilized to finance the growth-related component of the new asset. Other financing methods may be used as well to finance the non-growth-related component of this project, such as reserves which have been collected from past tax/rate payers, operating budget contributions which are collected from existing tax/rate payers and debentures 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 they 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 debentures 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 5-2
Financing Lifecycle Costs



5.1.3 Costing Methods

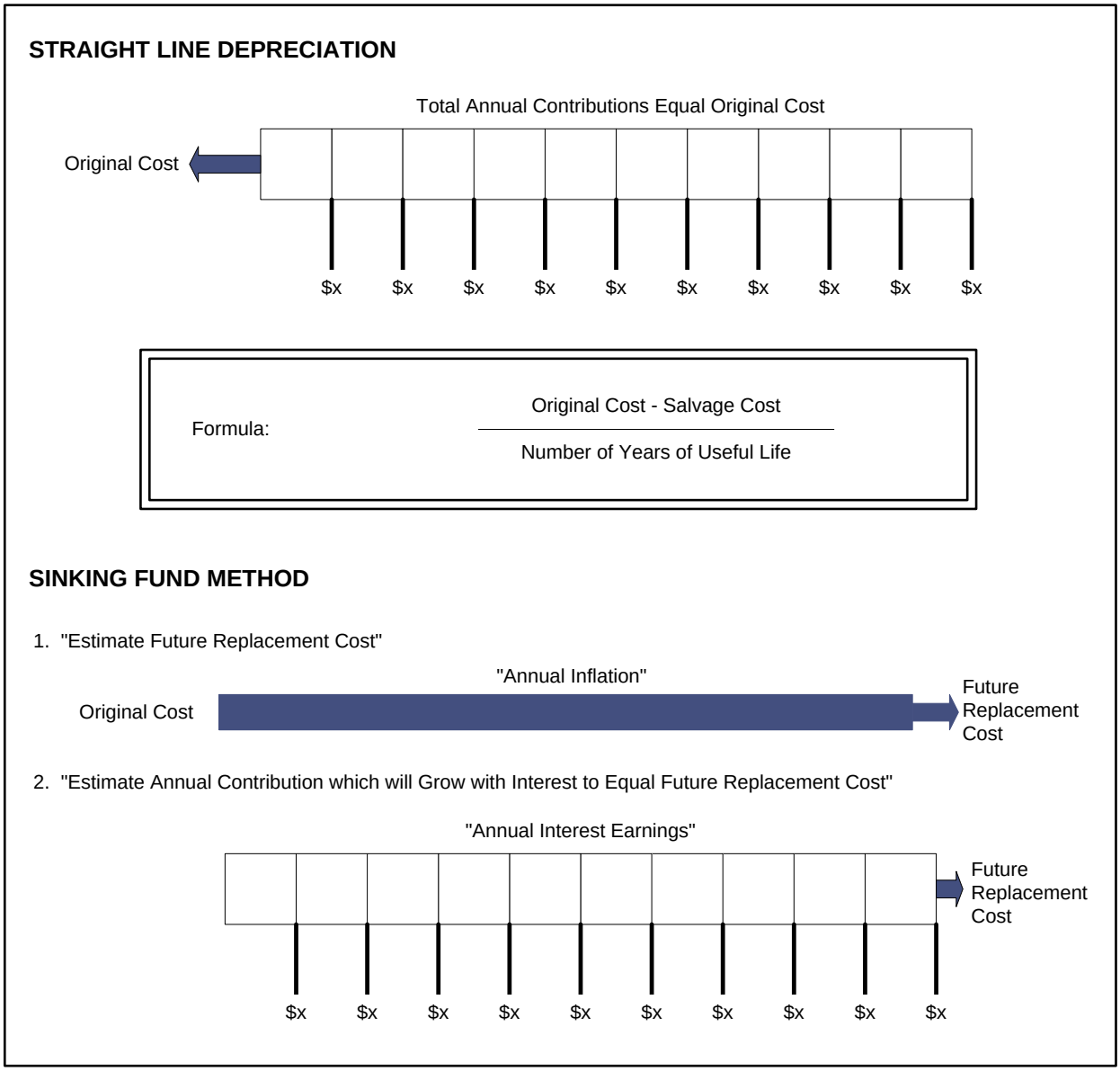
There are two fundamental methods of calculating the cost of the usage of an asset and for the provision of the revenue required when the time comes to retire and replace it. The first method is the Depreciation Method. This method recognizes the reduction in the value of the asset through wear and tear and aging. There are two commonly used forms of depreciation: the straight-line method and the reducing balance method (shown graphically in Figure 5-3).

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 5-3



5.2 Impact on Budgets

Detailed water system inventory information was obtained from staff at the Board. The age of the water system dates to the late 1960s. The system has been expanded throughout the years. The total replacement value of existing infrastructure is approximately $489 million.

The detailed water inventory is provided as part of the water system's Asset Management Plan. The following figure summarizes the non-growth-related capital identified in this rate study and the total replacement value of the water system's infrastructure.

Figure 5-4
Lake Huron Primary Water Supply System
Summary of Water Infrastructure (2022$)

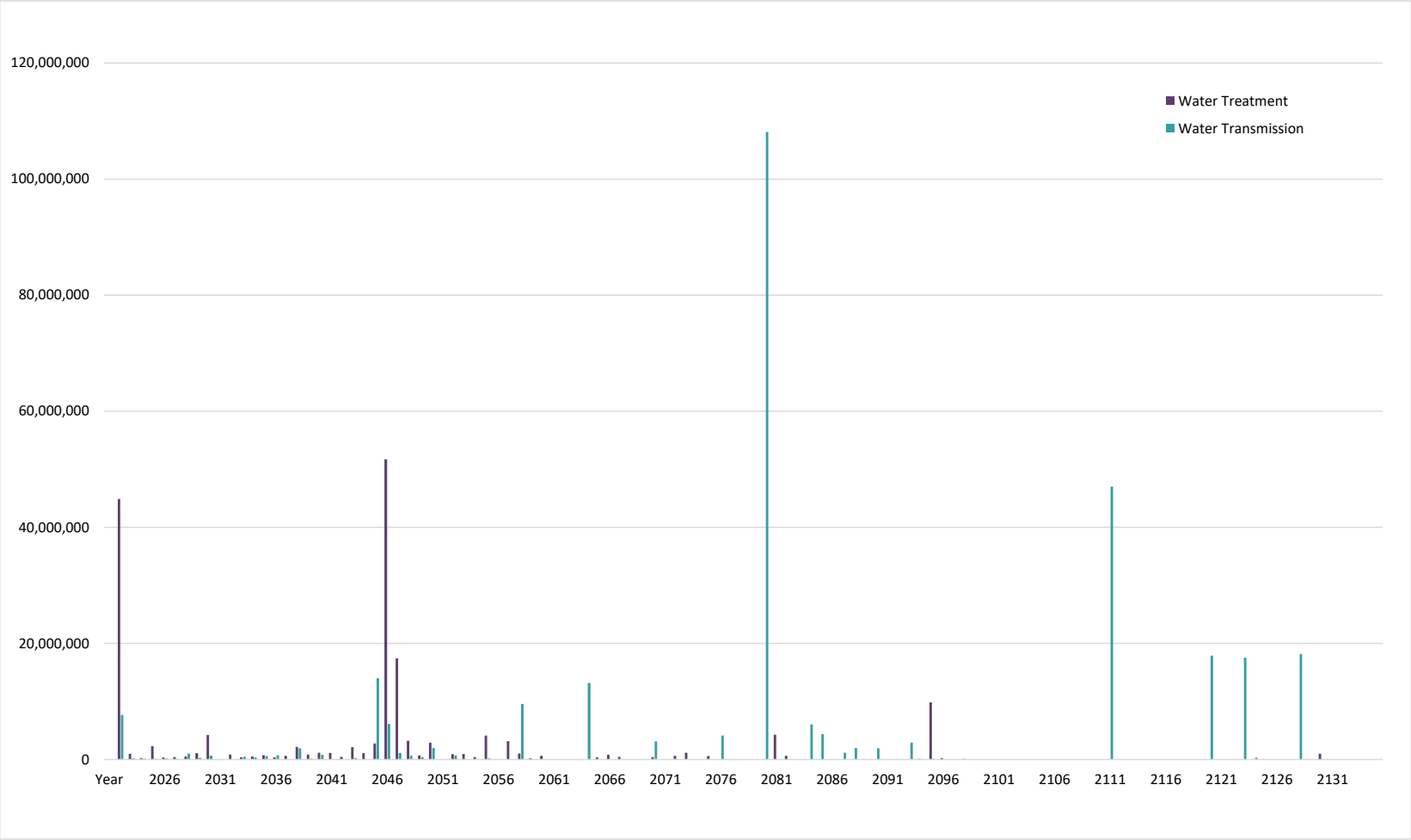
Area	Total Replacement Value (2022$)	Amount included in 2023 to 2032 forecast excluding studies (Uninflated)	Net Replacement for Future Lifecycle
Water			
Water Treatment	183,375,000	146,471,500	342,528,500
Water Transmission	305,625,000		
Total	**489,000,000**	**146,471,500**	**342,528,500**

With respect to lifecycle costing contained in the Appendices, the following information was taken into consideration:

- approximate age;
- estimated useful life; and
- estimated replacement costs.

A summary of water assets is shown in Figure 5-5. This figure shows when the assets are anticipated to be replaced and the cost of replacement in 2022 dollars. Note: the information is for illustrative purposes as it is only based on approximate age, estimated useful life, and estimated replacement costs. This figure does not include any performance measures.

Figure 5-5
Lake Huron Primary Water Supply System
Summary of Water Infrastructure Replacement Years (2022$)



Chapter 6
Capital Cost Financing Options

6. Capital Cost Financing Options

6.1 Overview of Capital Cost Financing Alternatives

With each of the municipalities having an undivided interest/ownership, the powers to finance capital expenditures are generally the same as the member municipalities. The following sections present the funding opportunities available, discussion on the policies the L.H.P.W.S.S. presently has established, a discussion of all the funding opportunities and then a final recommendation for funding the expenditures provided in Chapter 4.

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 (Bill 98 in 1997 providing amendments to the D.C.A.).

The province passed a new *Municipal Act, 2001,* 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 in the following subsections.

6.1.1 Development Charges Act, 1997

Development charges are one-time costs paid by land developers or builders to recover the capital costs associated with residential and non-residential growth within a municipality. This includes capital costs incurred or proposed to be incurred by a local board. These capital costs are in addition to what costs would normally be constructed as part of a subdivision (e.g., internal watermains). Municipalities impose these charges by passing Development Charge by-laws under the authority of the Development Charges Act, 1997 (D.C.A.).

There have been numerous changes to the D.C.A. since 1997. Since 2015, there have been several bills that have resulted in revisions to the way D.C.s are calculated and implemented. These changes have significant financial implications for municipalities imposing these charges.

It is noted that the L.H.P.W.S.S. does not impose D.C.s. and would require the member municipalities to implement.

6.1.2 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) and Ontario Municipal Board (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 newer 2001 *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 2001 *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 diverse 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*.

6.1.3 Historical Grant Funding

Federal Infrastructure Funding

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

The Government of Canada provided funding 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 is $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 has added $10.1 billion for trade and transportation infrastructure and $2 billion for rural and northern communities. This funding must be implemented by agreements with each Province and Territory.

In Phase 2, Ontario will be 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.

Federal Gas Tax

The federal Gas Tax 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 federal Gas Tax 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.

For the 2023 to 2032 capital forecast, there is no grant funding anticipated however, the Board is encouraged to pursue future opportunities for funding towards capital works. Any successful future grant funding received would allow the Board to further enhance

their reserves, allow for new initiatives to be funded and/or reduce the need for future increases to rates.

6.1.4 Existing Reserves/Reserve Funds

Municipalities in Ontario use fund accounting as the basis for budgeting and recording their financial matters (note that P.S.A.B. reporting requirements for financial statement purposes are often different than the budgeting format). There are three funds; the operating fund (to address day-to-day expenditures), capital fund (to record expenditures on the acquisition or construction of large assets) and reserve/reserve funds (accumulation of funds set aside for specific purposes).

In its simplest form, a reserve represents monies which are set aside for future known expenditures or for contingent purposes. The establishment of a reserve is at the discretion of Council (or the Board) and represents a financial tool for smoothing out fluctuations in taxes and rates over a period of time.

Generally, when reserves or reserve funds are established, they will have a specific use established and most often will have policies regarding how the funds are used, what they are to be used for, how to replenish the funds, etc. For capital purposes, many municipalities utilize the following reserves/reserve funds:

- Capital Reserve – generally used for any type of capital expenditure;
- Lifecycle Reserve – used to replace existing assets over their useful life (also referred to as Asset Management Reserve);
- Development Charge Reserve Funds – funds collected under the D.C.A. and used to fund growth related capital; and
- Emergency Reserve – used to fund unexpected and/or momentous events that require capital expenditures.

6.1.5 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 and Housing 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).

Infrastructure Ontario (I.O.) is an arms-length crown corporation, which has been established 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.

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.

Alternatively, larger municipalities such as London, can seek to issue debentures on their own credit. Often, depending on the market conditions, similar or better interest rates as I.O. may be obtained.

6.1.6 Operating Contributions

Often, municipalities use direct transfers from the operating budget to the capital budget. These amounts can vary on an annual basis. While many municipalities may provide for direct transfers, the Board utilizes a system of transferring directly to reserves and then drawing from those funds. This practice allows for smoother annual budgetary rate planning.

6.2 Capital Funding Policies for the L.H.P.W.S.S.

6.2.1 Development Charges Act, 1997

The Water Board does not have the ability to pass a Development Charge (D.C.) by-law directly under the D.C.A. however, it can undertake a D.C. background study which would identify the capital costs associated with growth. The Development Charge calculated through the study could then be imposed on municipalities whose growth requires the need to expand the capacity of the system (beyond existing capacity). The member municipalities would then in turn decide if they would include the calculated development charge/capital charge as part of their municipal development charge by-law or if they would fund the development charge/capital charge through their water rates.

6.2.2 Buy-In Charge

While the L.H.P.W.S.S. cannot implement a D.C. for new capital, it does impose a buy-in charge for new customers to recognize their utilization of the system's water capacity. The buy-in charge is further discussed in section 9.3.

6.2.3 Grant Funding

For this study, there is no grant funding for any of the identified capital projects. The Water Board continues to pursue grant funding opportunities, where available.

6.2.4 Existing Reserves/Reserve Funds

The need for strong reserves is part of the Financial Plan for the L.H.P.W.S.S. providing the Water Board with the tools necessary to:

- Ensure a financially sustainable utility;
- Stabilize rates;
- Appropriately fund asset replacement;
- Move toward self-funding/pay-as-you-go for smaller and modest sized capital works; and
- Consider opportunities for internal borrowing.

The following Table 6-1 summarizes the water reserves utilized in this analysis and their respective balances at the end of 2022.

Table 6-1
Lake Huron Primary Water Supply System
Water Reserves and Reserve Funds
2022 Ending Balances

Reserve	2023
New Capital Reserve Fund	16,207,815
Emergency Reserve Fund	4,806,000
Asset Replacement Reserve Fund	5,335,353

The following provides an evaluation of each reserve fund:

- The New Capital Reserve Fund, which is to be used for funding of major capital works associated with additions and expansions to the system, is in a healthy position currently based on the 2023 capital budget and short-term forecast. Over the 10-year forecast, the transfers to this reserve (anticipated to be funded entirely from the volume rates) are projected to grow based on the capital needs set out in the A.M.P. Changes to the funding of this reserve from the volume rates may result in changes to the following assumptions:
    - Of the approximately $79.35 million required for the Water Treatment Plant storage reservoir and UV as well as the Arva Reservoir expansion projects, $69.35 million is anticipated to be funded from the capital reserve, with the remaining $10 million being debentured.
    - No other additional debt is anticipated over the forecast period based on the analysis provided herein. The Water Board must monitor the reserve funds and cash flow of the capital forecast and adjust the list of capital projects and/or their funding sources annually.
    - No revenue from the sale/lease of assets is anticipated over the forecast however, if these types of transactions were to occur, the funding would be deposited into the capital reserve.
    - An additional contribution of $26 million is anticipated over the forecast for works related to the Oneida Transmission Pipeline. These funds would be provided by the new member to the system.

- The Emergency Reserve Fund is not identified as a funding source over the forecast period as it is anticipated to be used only for emergency situations that arise due to unforeseen events.
- The Asset Replacement Reserve's primary purpose is for funding lifecycle costs of the system including repairs, refurbishments, and replacements of the Water Board's assets. In keeping with the principles of full cost recovery, this reserve is intended to grow over time to a level where the assets are fully financially sustainable based on the capital forecast set out in the A.M.P. Contributions to this reserve are anticipated to come entirely from the volume rates over the forecast period. If additional existing capacity is sold to existing and/or new members over the forecast, the revenue would be transferred to this reserve (note the forecast does not currently anticipate any funding from the sale of existing capacity). The transfers to this reserve were established to meet the needs of the capital plan while maintaining a $7.50 million ending balance as per the Board's policy, to ensure the necessary funding is in place to pay for the asset replacement needs into the future.

6.2.5 Debenture Financing

L.H.P.W.S.S. takes a strategic approach to incurring and managing debt to further enhance the effectiveness of the Financial Plan. The desire is to shorten repayment periods to reduce financing costs or to pay slightly less each year over time. This needs to be balanced with the overall cost burden levels on member municipalities. There may be instances where the Water Board chooses slightly longer debt repayment time frames in order to ensure the financial burden on some members does not become unmanageable.

As part of the Funding Structure discussions, the mix of revenue sources is addressed in relation to debt vs. other sources (base rates, reserves, grants, etc.). With the strengthening of reserves and adoption of a pay-as-you-go approach to capital works, whenever possible, the reliance on debt will be reduced over time. Grants, when available, may further reduce the need to borrow. Ensuring that lifecycle asset replacement is properly funded through annual water rates will further reduce the need to borrow. These combined actions will significantly reduce the reliance on borrowing in the future.

The following policies and approaches are used in order to make best use of debt while protecting the capacity of member municipalities to incur debt for their own internal purposes:

- Integrate the use of debt with the rate plan, the use of reserves, and the asset management plan;
- Reduce reliance on external debt over time, especially for small and medium sized capital projects, by strengthening reserves and applying a pay-as-you-go approach to capital works, whenever possible;
- Manage utility debt in order to ensure members have access to their debt capacity for their own purposes;
- When debt is retired, commit freed-up funds to addressing historical infrastructure challenges and strengthening the Asset Replacement Reserve; and
- Adjust the timing of large capital works to “even out” demands on reserve funds and to help stabilize annual rate increase.

L.H.P.W.S.S.’s policy on Debt Capacity is set at 20% of own revenue.

When debt is required for the regional water systems, and at the sole direction of the Board, the City of London issues debt on the water system’s behalf as needed.

Based on the 10-year capital forecast provided by the Board, there is an anticipated debenture amount of $10 million, which will be required in 2025. This amount is associated with the Water Treatment Storage Reservoir and UV project.

On an annual basis, the water system completes a financial audit and produces financial statements for the respective water supply system. The financial statements, among other things, provide specific information about system debt/debentures. As part of the year-end process, the volumes that each municipality received from the system are reconciled. Upon approval of the financial statements by the Board, the financial statements and the reconciled volumes are provided to each of the benefiting municipalities. These municipalities, in turn, report an allocated amount of the debt on an annual basis in their financial audits and corresponding statements in proportion to their respective volume versus the total volume produced by the system.

For example, if the reconciliation of volumes for 2021 reported that the Municipality of North Middlesex received 30.22% of the water from the Huron Area water system, in completing their corresponding financial statements in early 2022, the Municipality of North Middlesex would include 30.22% of any system debt that was identified within the regional water systems' financial statements.

Of the Board's 20% debt capacity policy, the current (2023) net debt charges as a percent of total own revenues are 5%. This amount is anticipated to decrease from 2024 to 2025 to 4%, and 3% respectively, then increase to 5% in 2026 and decrease to 4% from 2027 to 2030 after which it will decrease to 3% for the remaining two years (2031 and 2032). Table 6-2 below provides a summary of the debt capacity based on the forecast and continuation of the anticipated debt on prior years' projects being issued as originally intended:

Table 6-2
Lake Huron Primary Water Supply System
2023 to 2032 Forecast Debt Capacity

Debt Capacity	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Annual Debt Payments	1,165,645	986,230	975,885	1,404,175	1,403,979	1,358,680	1,358,680	1,358,680	1,358,680	1,358,680
Total Annual Revenue	25,460,003	26,764,114	28,657,597	30,472,126	32,405,102	34,460,209	36,654,741	38,517,069	40,478,547	42,537,213
%Debt to Revenue Ratio	**5%**	**4%**	**3%**	**5%**	**4%**	**4%**	**4%**	**4%**	**3%**	**3%**

6.2.6 Operating Contributions

The Water Board does not fund capital works directly from the operating budget. The operating contributions are made to the various reserves and then the funding from the reserves is used to finance the capital program.

6.3 Recommended Capital Financing Approach

Of the various funding alternatives provided in this section, the following are recommended for further consideration by the Joint Water Board for the capital expenditures (inflated) provided in Chapter 4:

Table 6-3
Lake Huron Primary Water Supply System
Capital Financing Sources
Inflated $

Description	Forecast Period
	2023 to 2032
Provincial/Federal Grants	-
Capital Contributions	26,000,000
Debt	10,000,000
Operating Contributions	-
Asset Replacement Reserve Fund	56,226,800
Emergency Reserve Fund	-
New Capital Reserve Fund	76,465,200
Total Capital Financing	**168,692,000**

Table 6-4 provides for the full capital funding program by year.

Table 6-4
Lake Huron Primary Water Supply System
Capital Financing Forecast
Inflated $

Description	Total	Forecast									
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Capital Financing											
Provincial/Federal Grants	-										
Other Contributions	26,000,000	26,000,000									
Debt Requirements	10,000,000	-	-	10,000,000	-	-	-	-	-	-	-
Operating Contributions	-										
Asset Replacement Reserve Fund	56,226,800	1,819,150	5,584,050	8,709,550	1,493,100	1,465,400	3,545,750	9,195,050	8,224,750	8,418,000	7,772,000
Water Emergency Reserve Fund	-	-	-	-	-	-	-	-	-	-	-
Water Capital Reserve	76,465,200	1,755,850	5,112,950	29,049,450	191,900	64,600	5,678,250	34,480,950	131,250	-	-
Total Capital Financing	**168,692,000**	**29,575,000**	**10,697,000**	**47,759,000**	**1,685,000**	**1,530,000**	**9,224,000**	**43,676,000**	**8,356,000**	**8,418,000**	**7,772,000**

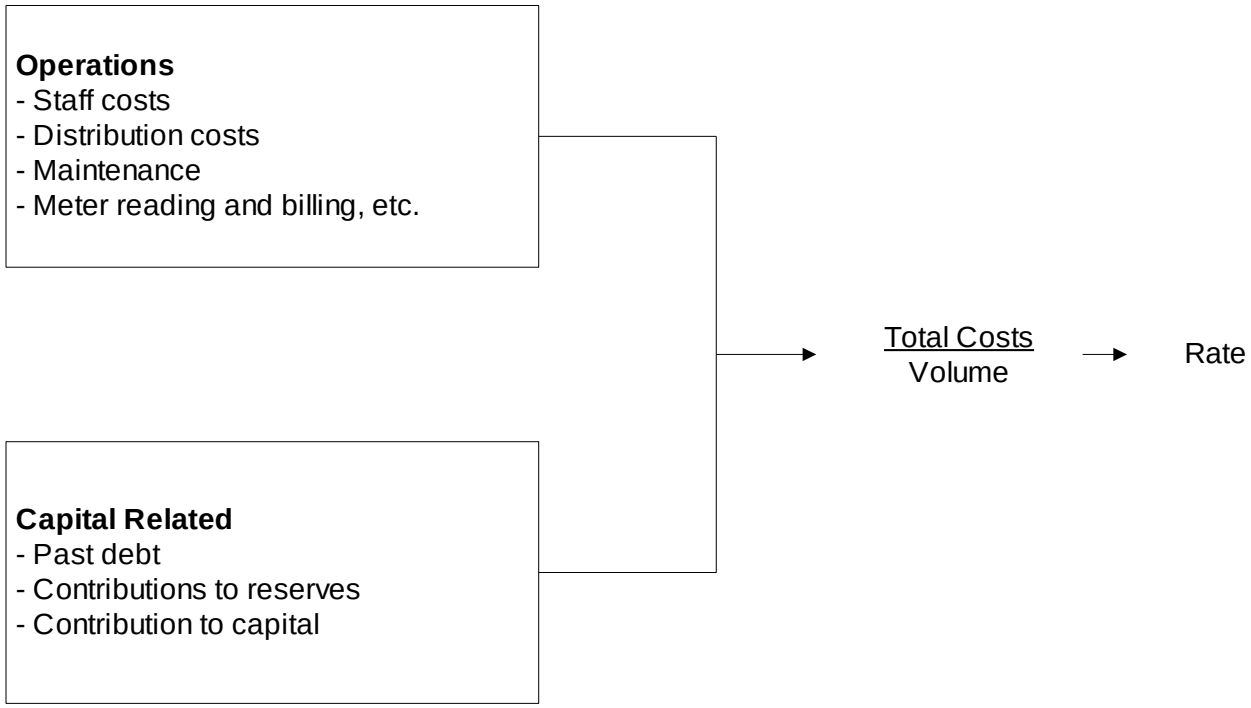
Chapter 7
Pricing Structures

7. Pricing Structures

7.1 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*).

7.2 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 (note that the terms used herein are based upon the American Water Works Association (A.W.W.A.) standards):

- 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 typical 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.

Base Charges: Base charges are a flat fee charged to each consumer imposed on a monthly/bimonthly/quarterly basis regardless of volume utilized, typically used to ensure a minimum source of revenue is recovered. This charge is different from a flat rate in that it is imposed in addition to a volume rate.

7.3 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 distinct 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 considering several 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 7-1 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 7-1

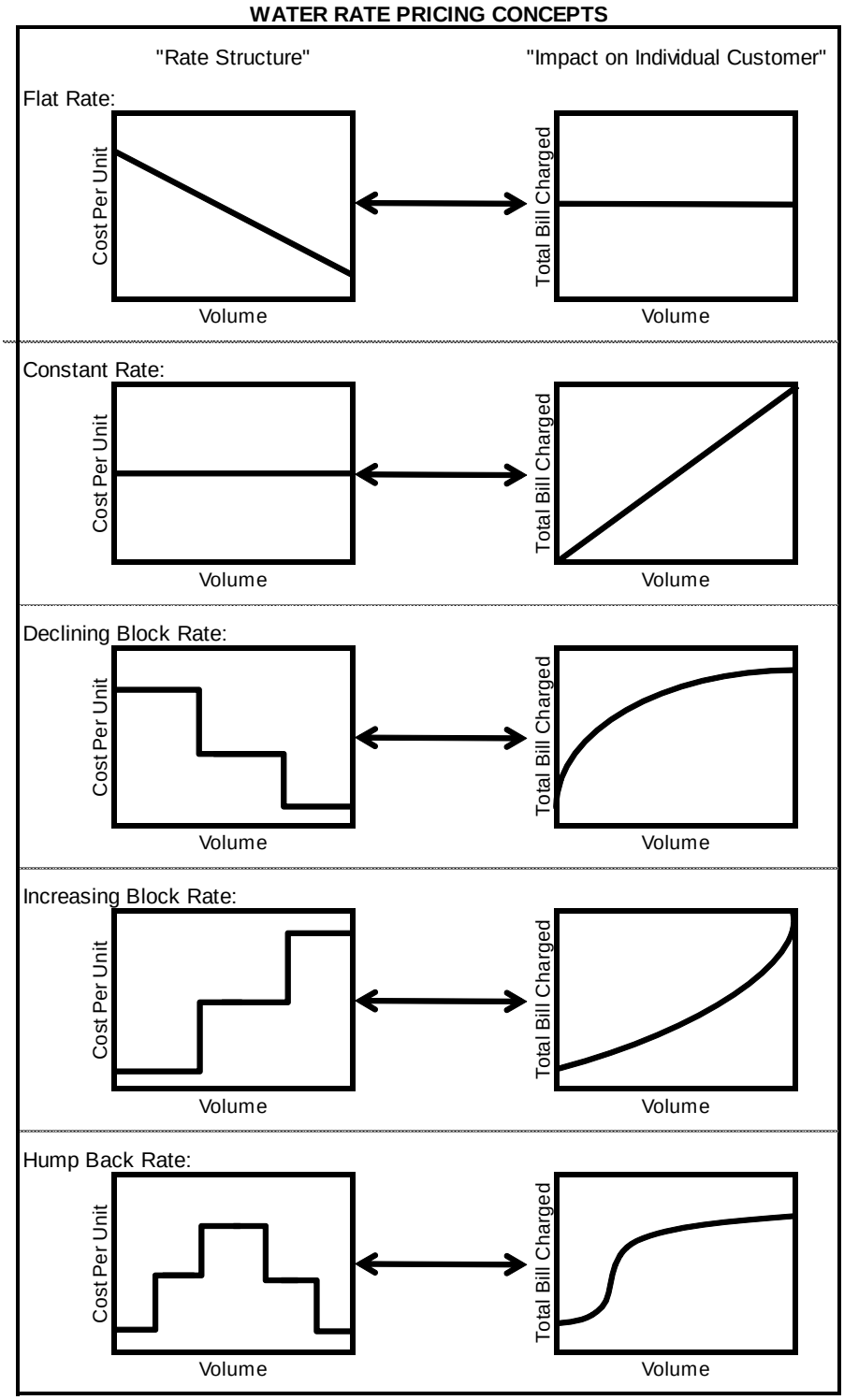

WATER RATE PRICING CONCEPTS
"Rate Structure"
"Impact on Individual Customer"
Flat Rate:
Cost Per Unit
Volume
Total Bill Charged
Volume
Constant Rate:
Cost Per Unit
Volume
Total Bill Charged
Volume
Declining Block Rate:
Cost Per Unit
Volume
Total Bill Charged
Volume
Increasing Block Rate:
Cost Per Unit
Volume
Total Bill Charged
Volume
Hump Back Rate:
Cost Per Unit
Volume
Total Bill Charged
Volume

Figure 7-2
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

7.4 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.

7.5 Water Board Funding Structure and Recommended Rate Structure

7.5.1 Water Board Funding Structure

Based on the Transfer Order, the Water Board is authorized to establish a System Rate to be charged to all benefiting municipalities to pay for the costs of the water system.

The System Rate may include a Base Rate, an Infrastructure Surcharge and Buy-in Charge.

- The Base Rate is a per cubic metre charge imposed for water supplied based on the constant rate structure (note that this Base Rate is different from a fixed monthly Base Charge discussed earlier).
- The Infrastructure Surcharge (not currently implemented by the Board) is a per cubic metre charge applied to the Base Volume (the annual volume of water measured by the Water Board, being consumed by a benefiting municipality, for which the benefiting municipality has been charged the Base Rate).
- The Buy-in Charge is a one-time charge paid by new benefiting members that join the water system.

The Base Rate is the wholesale charge determined by dividing the total system costs by the system water usage (volume), providing a constant rate (Base Rate) per cubic meter of water supplied. The Base Rate is to pay for operation and maintenance costs; capital repair, replacement, and rehabilitation costs; contributions to the emergency reserve fund, contribution to the new capital reserve fund, and contribution to the asset replacement reserve fund.

While not currently implemented by the Board, the Infrastructure Surcharge could pay for capital works necessary to address the capital costs required for increasing water demands of its members. These capital works may be growth or non-growth related. The capital works may be required to meet the water demands from benefiting users, costs of non-growth-related works to improve service levels or to meet changing

regulatory requirements. The funds collected through the Infrastructure Surcharge are to be directed to the capital reserve fund to pay for the associated capital works.

Since the existing benefiting members have been contributing to their share of the costs of surplus capacity through the Base Rate since the creation of the Water Board, Buy-in Charges are imposed on a new municipality wanting to connect to the system for the first time. This Buy-in charge addresses the need for the new municipality to pay a fair share of the sunk costs of the Water Board in order to receive the same Base Rate as the existing benefiting members.

The Buy-In Charge is utilized to compensate the Water Board for the following:

- For a new Municipality connecting to the system:

    (a) Capital costs of any infrastructure required by the new member to connect to the system.

    (b) The value of existing surplus capacity required to be used.

    (c) A combination of both (a) and (b).

- For an existing member who is projecting growth in their water usage that exceeds 10% of their average annual Base Volume averaged over the last three (3) years:

    (a) Capital costs of providing new infrastructure.

    (b) The value of surplus system capacity requested that is in excess of a normal volume increase resulting from annual growth in demand.

    (c) A combination of both (a) and (b).

It is noted that the Buy-In Charge is not a “growth” charge and is not for growth related works, nor is the charge related to a specific allocation of capacity to an individual municipality. Revenue from this charge is a reimbursement to the Water Board for existing infrastructure being provided by the Water Board for the benefit of the member.

7.5.2 Recommended Rate Structure

As noted earlier the L.H.P.W.S.S. wholesales water to the member municipalities based upon the volume of water consumed. Generally, it is difficult to implement a base charge (I.e., A.W.W.A. defined term of base charge as defined in Section 7.2) for a water wholesaler, however one could be implemented to perhaps reflect administrative overhead. Consideration of the amount charges per member municipality would need to be considered from an equity perspective.

The L.H.P.W.S.S.'s constant rate is the most straightforward approach for implementation and administration purposes. Other rates such as increasing and decreasing block rates are normally used to facilitate an end result (e.g., increasing block is used to encourage conservation whereas a decreasing block rate is used to benefit high volume users). These policies are difficult to achieve at the wholesale level.

Therefore, based on the foregoing, it is recommended that the current rate structure be continued in the future.

Additionally, it was noted that a Buy-In Charge is imposed for new customers and is calculated based on remaining age and value of the assets. This is also proposed to continue and is discussed further in Section 9.3.

Chapter 8
Overview of Expenditures and Revenues

8. Overview of Expenditures and Revenues

8.1 Operating Expenditures

In this report, the forecast budget figures (2023 to 2032) are based on the 2023 operating budget. The costs have been allocated into two main categories:

- Operating Costs, which include expenditures related to the daily operation of the water system including contracted operations, electricity, chemicals, etc.; and
- Capital Related, which include expenditures related to annual debt payments and transfers to reserves.

The operating costs for each component of the budget were provided by staff based on the Board's 2023 budget. The expenditures have been assumed to increase at an average rate of 3.35% annually.

Additionally, annual contributions have been provided to the asset replacement reserve fund and capital reserve funds.

- With respect to the asset replacement reserve fund, the transfers average to approximately $5.72 million annually over the forecast period. This level of investment aims to provide the system with a sustainable level of funding to address the asset replacement needs in the post-2032 forecast period when several significant replacements are anticipated.
- With respect to the new capital reserve fund, the transfers average to approximately $8.98 million annually over the forecast period, to ensure that capital works related to efficiencies, enhancements plans/documentation and growth are funded.

8.2 Operating Revenues

The L.H.P.W.S.S. has miscellaneous revenue sources to help contribute towards operating expenditures. These miscellaneous revenues, including interest earnings, have been included over the forecast period. Table 8-1 provides for the operating budget for the water system.

Table 8-1
Lake Huron Primary Water Supply System
Operating Budget Forecast (inflated $)

Description	Forecast									
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Expenditures										
Operating Costs										
HUR001 HURON WATER SUPPLY										
Management & Admnistrative										
Personnel										
SALARY-PERM-MGMT & ADMIN	521,468	531,900	542,500	553,400	564,500	575,800	587,300	599,100	611,100	623,400
SALARY-PERM-LOCAL 101	360,206	366,900	290,453	297,353	304,353	311,500	318,800	326,300	334,000	341,900
SALARY-TEMP-LOCAL 101	19,512	19,900	20,300	20,700	21,100	21,500	21,900	22,300	22,700	23,100
OVERTIME-LOCAL 101	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
OVERTIME-TEMP-LOCAL 101	-	-	-	-	-	-	-	-	-	-
OVERTIME-MGMT & ADMIN	-	-	-	-	-	-	-	-	-	-
FRINGE-PERM-MGMT & ADMIN	137,042	139,800	142,600	145,400	148,400	151,500	154,600	157,800	161,100	164,400
FRINGE-PERM-LOCAL 101	109,397	113,000	89,810	91,910	94,110	96,400	98,700	101,100	103,500	106,000
FRINGE-TEMP-LOCAL 101	1,848	1,900	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
WORKERS COMP-LOCAL 101	-	-	-	-	-	-	-	-	-	-
WAGES BILLED	-	-	-	-	-	-	-	-	-	-
EXPENSE RECOVERY - CAPITAL	(108,537)	(108,500)	-	-	-	-	-	-	-	-
Support and Overhead Costs						-	-	-	-	-
ADMINISTRATIVE SERVICE	328,174	333,100	338,100	343,200	348,300	353,500	358,800	364,100	369,500	375,000
Payments in Lieu of Taxes						-	-	-	-	-
REALTY TAXES	340,000	350,200	360,700	371,500	382,600	394,000	405,800	417,900	430,400	443,300
Insurance						-	-	-	-	-
INSURANCE BROKER FEE	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000
INSURANCE PREMIUMS	710,000	766,800	828,100	894,300	965,800	1,043,000	1,126,400	1,216,500	1,313,800	1,418,800
Financial/Office Expense						-	-	-	-	-
EDUCATION/TUITION REIMB	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
TRAVEL & CONVENTIONS	15,000	15,200	15,400	15,600	15,800	16,000	16,200	16,400	16,600	16,800
TRAINING AND DEVELOPMENT	-	-	-	-	-	-	-	-	-	-
SUBSCRIPTION & MEMBERSHIP	35,000	35,500	36,000	36,500	37,000	37,500	38,000	38,500	39,000	39,500
SAFETY APPAREL	500	500	500	500	500	500	500	500	500	500
CAR ALLOWANCES	5,000	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900
PARKING EXPENSES	250	300	300	300	300	300	300	300	300	300

Table 8-1 Continued
Lake Huron Primary Water Supply System
Operating Budget Forecast (inflated $)

Description	Forecast									
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Expenditures										
Operating Costs										
PROF FEES - ACCOUNTING/AUDIT	8,000	8,100	8,200	8,300	8,400	8,500	8,600	8,700	8,800	8,900
MTCE-OTHER (POMA)	125,000	126,900	128,800	130,700	132,700	134,700	136,800	138,900	141,000	143,200
TELEPHONE-SERVICE CHARGE	12,500	12,700	12,900	13,100	13,300	13,500	13,700	13,900	14,100	14,300
OFFICE SPACE RENTAL	92,000	93,400	94,800	96,200	97,600	99,000	100,400	101,900	103,400	104,900
CATERING - INTERNAL	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
OFFICE & STATIONERY SUPPLIES	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
OPERATING SUPPLIES	-	-	-	-	-	-	-	-	-	-
INTERNAL RENTAL-(vehicles)	12,250	12,400	12,600	12,800	13,000	13,200	13,400	13,600	13,800	14,000
REPLACE OFFICE FURN & EQUIP	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
FUEL REBATE	-	-	-	-	-	-	-	-	-	-
INTEREST/BANK CHG CUR	25,000	25,400	25,800	26,200	26,600	27,000	27,400	27,800	28,200	28,600
Information Technology Maintenance & Fees						-	-	-	-	-
MTCE-COMPUTER & IMS	175,000	177,600	180,300	183,000	185,700	188,400	191,200	194,000	196,900	199,800
COMPUTER SERVICES	38,500	39,100	39,700	40,300	40,900	41,500	42,100	42,700	43,300	43,900
COMPUTER - ADDITIONAL EQUIP (Instrumentation)	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000
COMPUTER-EXISTING EQUIPMENT	41,000	41,600	42,200	42,800	43,400	44,000	44,600	45,200	45,800	46,400
Research & Optimization						-	-	-	-	-
PROF FEES-OTHER (Research/Optimization)	75,000	76,100	77,200	78,400	79,600	80,800	82,000	83,300	84,600	85,900
Purchased Services						-	-	-	-	-
PROF FEES-LEGAL	25,000	25,400	25,800	26,200	26,600	27,000	27,400	27,800	28,200	28,600
PROF FEES-CONSULTANT	60,000	60,900	61,800	62,700	63,600	64,500	65,400	66,300	67,300	68,300
PROF FEES-SECURITY	295,000	299,400	303,900	308,500	313,100	317,800	322,500	327,300	332,200	337,200
LOCATE COSTS	30,000	30,500	31,000	31,500	32,000	32,500	33,000	33,500	34,000	34,500
PRINTING	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
OTHER PURCHASED SERVICES	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800
OTHER ADMIN. EXPENSES	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000

Table 8-1 Continued
Lake Huron Primary Water Supply System
Operating Budget Forecast (inflated $)

Description	Forecast									
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Expenditures										
Operating Costs										
Total Service Contract Costs						-	-	-	-	-
PURCHASE OF WATER-CHEMICAL (SL 5030)	762,581	774,000	785,600	797,400	809,400	821,600	834,000	846,600	859,300	872,200
PURCHASE OF WATER-GENERAL (SL 5020)	7,665,119	7,952,709	8,256,824	8,573,628	9,203,684	9,141,470	9,492,200	9,856,400	10,234,600	10,627,300
PURCHASE OF WATER-QUALITY (SL 5040)	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000
ENERGY-ELECTRICITY	3,000,000	3,090,000	3,182,700	3,278,200	3,376,500	3,477,700	3,582,000	3,689,400	3,800,000	3,913,900
Sub Total Operating	**15,153,310**	**15,654,509**	**16,178,987**	**16,724,991**	**17,593,547**	**17,779,670**	**18,389,300**	**19,023,700**	**19,683,900**	**20,371,100**
Capital-Related										
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	1,113,205	957,696	968,922	44,000	45,066	-	-	-	-	-
Existing Debt (Interest) - Non-Growth Related	52,439	28,534	6,963	1,496	233	-	-	-	-	-
New Non-Growth Related Debt (Principal)	-	-	-	758,680	804,200	852,452	903,600	957,815	1,015,284	1,076,201
New Non-Growth Related Debt (Interest)	-	-	-	600,000	554,479	506,227	455,080	400,864	343,395	282,478
Transfer to Asset Replacement (Lifecycle) Reserve Fund	1,111,049	5,154,802	5,211,982	5,873,530	4,145,166	2,500,000	2,500,000	11,000,000	10,000,000	9,661,906
Transfer to Emergency Reserve Fund	150,000	-	-	-	-					
Transfer to Capital Reserve Fund	7,880,000	4,968,573	6,290,743	6,469,430	9,262,410	12,821,859	14,406,762	7,134,689	9,435,967	11,145,527
Sub Total Capital Related	**10,306,694**	**11,109,605**	**12,478,610**	**13,747,135**	**14,811,555**	**16,680,538**	**18,265,441**	**19,493,369**	**20,794,647**	**22,166,113**
Total Expenditures	**25,460,003**	**26,764,114**	**28,657,597**	**30,472,126**	**32,405,102**	**34,460,209**	**36,654,741**	**38,517,069**	**40,478,547**	**42,537,213**
Revenues										
Other Revenues										
MISCELLANEOUS REVENUE	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Oneida Buy-in Charge	962,262	-	-	-	-	-	-	-	-	-
OTHER SHORT-TERM INTEREST	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Total Operating Revenue	**987,262**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**
Water Billing Recovery - Operating	**24,472,741**	**26,739,114**	**28,632,597**	**30,447,126**	**32,380,102**	**34,435,209**	**36,629,741**	**38,492,069**	**40,453,547**	**42,512,213**
Water Billing Recovery - Total	**24,472,741**	**26,739,114**	**28,632,597**	**30,447,126**	**32,380,102**	**34,435,209**	**36,629,741**	**38,492,069**	**40,453,547**	**42,512,213**

Chapter 9
Analysis of Water Rates

9. Analysis of Water Rates

9.1 Introduction

To summarize the analysis undertaken thus far, Chapter 4 reviewed capital-related issues and responds to the provincial directives to maintain and upgrade infrastructure to required levels. Chapter 6 provided a review of capital financing options to which water reserve contributions will be the predominant basis for financing future capital replacement. Chapter 8 established the 10-year operating forecast of expenditures including an annual capital reserve contribution. Based on the discussions provided in Chapter 7, the current rate structure is recommended to continue. This chapter will provide for the calculation of the constant volume rates over the forecast period. These calculations will be based on the net operating expenditures (the variable costs) provided in Chapter 8, divided by the water volume forecast provided in section 4.1. The rate analysis contained herein embraces and achieves the principles of full cost recovery.

9.2 Water Rates

Based on the discussion of rate structures provided in section 7.5 and the recommendation to continue with the present structures, the rates are calculated by taking the net recoverable amounts from Table 8-1 (the product of total expenditures less miscellaneous revenues) and completes the calculation by dividing them by the volumes from Table 4-1 resulting in the forecasted rates. The volume rate is anticipated to increase by 5% annually from 2024 to 2029, and 4% annually for the remainder of the forecast (2030 to 2032), as presented in Table 9-1.

Detailed calculations of the rates are provided in Appendix A. A summary of the recommended volume rates per year are as follows:

Table 9-1
Lake Huron Primary Water Supply System
Summary of Recommended Water Rates

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Constant Rate	$0.5194	$0.5454	$0.5727	$0.6013	$0.6314	$0.6630	$0.6962	$0.7240	$0.7530	$0.7831
Annual %Increase		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	4.0%	4.0%	4.0%

9.3 Buy-In Charge

The L.H.P.W.S.S. currently imposes a buy-in charge for new customers/municipalities joining the system. The buy-in charge recovers the past expenditures made by the member municipalities and reflects the aging (or using-up) of the existing capacity of the assets pending newer users joining the system. The calculations for this charge are summarizes in the following steps:

- Step 1: Identify the total replacement value and available daily capacity of the water system, broken out by treatment and transmission assets.
- Step 2: Divide the total replacement values by the available capacity (cu.m/day) of the treatment and transmission assets. This will calculate a replacement cost per cu.m/day.
- Step 3: Identify the portion of the system assets that has been "used to date" (e.g. if an asset had a 100-year life and has been in place for 60 years, the value of the system used would equal 60% of the total value of that asset).
- Step 4: Multiply the "used to date" percentage of the system assets from Step 3 with the replacement cost per cu.m/day from Step 2.

Based on the steps noted above, Table 9-2 provides the calculations and recommended Buy-in charges:

Table 9-2
Buy-in Charge Calculation

Step	Capacity Calculation	Total	Treatment	Transmission
Step 1	Total Replacement Cost of System	$489,000,000	$183,375,000	$305,625,000
	Capacity (cu.m/day)		340,000	308,000
Step 2	**Cost of System per cu.m/day**	**$1,532**	**$539**	**$992**
Step 3	Value of System Used to 2022	$234,049,229	$115,561,211	$118,488,018
	Percentage of System Used		63%	39%
Step 4	**Prorated Cost per cu.m/day based on Proportion of System Used to 2022**	**$725**	**$340**	**$385**

While the Buy-in charges presented above outline the recommended recovery amounts based on the methodology described earlier, it is recognized that the Board may amend this amount from time to time as they enter into agreements with potential new water customers.

Chapter 10
Recommendations

10. Recommendations

As presented within this report, capital and operating expenditures have been identified and forecast over a 10-year period for the L.H.P.W.S.S.

Based upon the foregoing, the following recommendations are identified for consideration by the Joint Board:

1. That the Joint Water Board of the L.H.P.W.S.S. provide for the recovery of all water costs through full cost recovery wholesale rates.

2. That the Joint Water Board of the L.H.P.W.S.S. consider the Capital Plan for water as provided in Tables 4-2 and 4-3 and the associated Capital Financing Plan as set out in Tables 6-3 and 6-4.

3. That the Joint Water Board of the L.H.P.W.S.S. consider the constant volume rates provided in Table 9-1.

4. That the Joint Water Board of the L.H.P.W.S.S. consider the Buy-in charge provided in Table 9-2.

5. That the Joint Water Board of the L.H.P.W.S.S. continue to monitor and pursue opportunities for grant funding to assist in funding of capital works and minimize future rate increases.

6. That the Joint Water Board of the L.H.P.W.S.S. continue to reduce the reliance on debt over time by strengthening the reserves and reserve funds and moving to a pay-as-you-go approach to funding capital works, where possible.

Appendices

Appendix A
Detailed Water Rate Calculations

Appendix A: Detailed Water Rate Calculations

Table A-1
Lake Huron Primary Water Supply System
Water Capital Budget Forecast (Uninflated $)

Description	Total	Forecast									
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Capital Expenditures											
Description	-										
Huron Safety Railing Replacement	100,000	100,000	-	-	-	-	-	-	-	-	-
Huron Low Lift Pump Rebuild	375,000	125,000	125,000	125,000	-	-	-	-	-	-	-
Concrete Crack Injection	100,000	50,000	50,000	-	-	-	-	-	-	-	-
Security Upgrades	553,000	253,000	100,000	100,000	100,000	-	-	-	-	-	-
Hydraulic/Transient Model Update & Transient Monitoring	100,000	100,000	-	-	-	-	-	-	-	-	-
Flocculator Walking Beam Rehab	200,000	200,000	-	-	-	-	-	-	-	-	-
McGillivray Pumps & Valves Refurbishment	3,841,500	-	-	3,841,500	-	-	-	-	-	-	-
PAC Feed/Transfer Pump System Replacement	1,200,000	160,000	1,040,000	-	-	-	-	-	-	-	-
Plant Interior Person Door Replacement	40,000	20,000	20,000	-	-	-	-	-	-	-	-
Service Water Pipe Replacement	50,000	25,000	25,000	-	-	-	-	-	-	-	-
IT Asset Replacement Program	1,031,000	-	141,000	225,000	115,000	60,000	120,000	50,000	320,000	-	-
Arva Reservoir Expansion	35,000,000	-	-	-	-	-	5,000,000	30,000,000	-	-	-
Flocc Gear Drives	75,000	75,000	-	-	-	-	-	-	-	-	-
2023 Annual Maintenance Allowance	125,000	125,000	-	-	-	-	-	-	-	-	-
Distressed Pipe Replacement Program	3,600,000	400,000	350,000	350,000	350,000	350,000	400,000	350,000	350,000	350,000	350,000
Arva Reservoir Structural Repairs	2,050,000	50,000	2,000,000	-	-	-	-	-	-	-	-
WTP Modification/Renovation	5,000,000	500,000	1,500,000	3,000,000	-	-	-	-	-	-	-
Clarifier Upgrades	230,000	115,000	115,000	-	-	-	-	-	-	-	-
Oneida Transmission Pipeline	25,000,000	25,000,000	-	-	-	-	-	-	-	-	-
WTP Storage Reservoir & UV	37,000,000	500,000	3,000,000	33,500,000	-	-	-	-	-	-	-
Roof Drain Replacement	100,000	25,000	25,000	25,000	25,000	-	-	-	-	-	-
Chamber Flood Prevention/Rehab	375,000	75,000	75,000	75,000	75,000	75,000	-	-	-	-	-
Sub-basement Drain Study	25,000	25,000	-	-	-	-	-	-	-	-	-
Monitoring Station Controls Upgrades	275,000	275,000	-	-	-	-	-	-	-	-	-
Asset Condition Field Assessment	366,000	110,000	121,000	135,000	-	-	-	-	-	-	-
Electric Vehicle Charging Stations	60,000	10,000	50,000	-	-	-	-	-	-	-	-
De-chlorination at Remote Stations	125,000	125,000	-	-	-	-	-	-	-	-	-
Asset Management (Planned & Placeholders)											
Annual Maintenance (projected) - ALL	1,125,000	-	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000
Asset Management Plan Update - ALL	300,000	-	-	-	150,000	-	-	-	-	150,000	-
Financial Plan Update - ALL	100,000	-	-	-	50,000	-	-	-	-	50,000	-
Master Water Plan Update - ALL	300,000	-	150,000	-	-	-	-	150,000	-	-	-
Climate Change Risk Assessment - ALL	50,000	-	50,000	-	-	-	-	-	-	-	-

Table A-1 (continued)
Lake Huron Primary Water Supply System
Water Capital Budget Forecast (Uninflated $)

Description	Total	Forecast									
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Optimization Opportunities - Short-Term - Raw Water Handling	10,000	-	2,000	2,000	2,000	2,000	2,000	-	-	-	-
Optimization Opportunities - Short-Term - Pre-Treatment	230,000	-	46,000	46,000	46,000	46,000	46,000	-	-	-	-
Optimization Opportunities - Short-Term - Filtration, Disinfection, and High Lift Pumping	180,000	-	36,000	36,000	36,000	36,000	36,000	-	-	-	-
Optimization Opportunities - Short-Term - Digital Technology	180,000	-	36,000	36,000	36,000	36,000	36,000	-	-	-	-
Optimization Opportunities - Long-Term - Pre-Treatment	1,116,000	-	-	-	-	-	-	279,000	279,000	279,000	279,000
Optimization Opportunities - Long-Term - Filtration, Disinfection, and High Lift Pumping	8,740,000	-	-	-	-	-	-	2,185,000	2,185,000	2,185,000	2,185,000
Optimization Opportunities - Long-Term - Primary - Reservoirs and Pumping Stations	3,468,000	-	-	-	-	-	-	867,000	867,000	867,000	867,000
Mid-Life Intervention & Lifecycle Replacment - Raw Water Handling	142,000	-	33,000	5,000	5,000	5,000	5,000	25,000	11,000	17,000	36,000
Mid-Life Intervention & Lifecycle Replacment - Pre-Treatment	1,371,000	-	30,000	127,000	39,000	116,000	691,000	190,000	39,000	64,000	75,000
Mid-Life Intervention & Lifecycle Replacment - Filtration, Disinfection, and High Lift Pumping	3,324,000	-	184,000	225,000	78,000	47,000	626,000	1,105,000	49,000	592,000	418,000
Mid-Life Intervention & Lifecycle Replacment - Residuals Management	359,000	-	-	231,000	-	1,000	-	3,000	120,000	4,000	-
Mid-Life Intervention & Lifecycle Replacment - General Site, Building Services, Fleet, and Security	2,947,000	-	161,000	287,000	83,000	140,000	305,000	833,000	832,000	110,000	196,000
Mid-Life Intervention & Lifecycle Replacment - Primary Power	306,000	-	6,000	79,000	-	10,000	24,000	12,000	94,000	78,000	3,000
Mid-Life Intervention & Lifecycle Replacment - Digital Technology	2,512,000	-	128,000	1,253,000	109,000	151,000	137,000	100,000	209,000	210,000	215,000
Mid-Life Intervention & Lifecycle Replacment - Primary - Reservoirs and Pumping Stations	2,102,000	-	391,000	860,000	29,000	74,000	103,000	328,000	42,000	211,000	64,000
Mid-Life Intervention & Lifecycle Replacment - Primary - Pipes and Chambers	138,000	-	14,000	14,000	26,000	14,000	14,000	14,000	14,000	14,000	14,000
Mid-Life Intervention & Lifecycle Replacment - Secondary - Reservoirs and Pumping Stations	841,000	-	27,000	16,000	3,000	3,000	125,000	42,000	299,000	245,000	81,000
Total Capital Expenditures	**146,837,500**	**28,443,000**	**10,156,000**	**44,718,500**	**1,482,000**	**1,291,000**	**7,795,000**	**36,658,000**	**5,835,000**	**5,551,000**	**4,908,000**

Table A-2
Lake Huron Primary Water Supply System
Water Capital Budget Forecast (Inflated $)

Description	Total	Forecast									
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Capital Expenditures											
Description											
Huron Safety Railing Replacement	104,000	104,000	-	-	-	-	-	-	-	-	-
Huron Low Lift Pump Rebuild	396,000	130,000	133,000	133,000	-	-	-	-	-	-	-
Concrete Crack Injection	105,000	52,000	53,000	-	-	-	-	-	-	-	-
Security Upgrades	583,000	263,000	106,000	106,000	108,000	-	-	-	-	-	-
Hydraulic/Transient Model Update & Transient Monitoring	104,000	104,000	-	-	-	-	-	-	-	-	-
Flocculator Walking Beam Rehab	208,000	208,000	-	-	-	-	-	-	-	-	-
McGillivray Pumps & Valves Refurbishment	4,077,000	-	-	4,077,000	-	-	-	-	-	-	-
PAC Feed/Transfer Pump System Replacement	1,269,000	166,000	1,103,000	-	-	-	-	-	-	-	-
Plant Interior Person Door Replacement	42,000	21,000	21,000	-	-	-	-	-	-	-	-
Service Water Pipe Replacement	53,000	26,000	27,000	-	-	-	-	-	-	-	-
IT Asset Replacement Program	1,146,000	-	150,000	239,000	124,000	66,000	135,000	57,000	375,000	-	-
Arva Reservoir Expansion	40,092,000	-	-	-	-	-	5,631,000	34,461,000	-	-	-
Flocc Gear Drives	78,000	78,000	-	-	-	-	-	-	-	-	-
2023 Annual Maintenance Allowance	125,000	125,000	-	-	-	-	-	-	-	-	-
Distressed Pipe Replacement Program	4,030,000	416,000	371,000	371,000	379,000	386,000	450,000	402,000	410,000	418,000	427,000
Arva Reservoir Structural Repairs	2,174,000	52,000	2,122,000	-	-	-	-	-	-	-	-
WTP Modification/Renovation	5,295,000	520,000	1,591,000	3,184,000	-	-	-	-	-	-	-
Clarifier Upgrades	242,000	120,000	122,000	-	-	-	-	-	-	-	-
Oneida Transmission Pipeline	26,000,000	26,000,000	-	-	-	-	-	-	-	-	-
WTP Storage Reservoir & UV	39,253,000	520,000	3,183,000	35,550,000	-	-	-	-	-	-	-
Roof Drain Replacement	107,000	26,000	27,000	27,000	27,000	-	-	-	-	-	-
Chamber Flood Prevention/Rehab	402,000	78,000	80,000	80,000	81,000	83,000	-	-	-	-	-
Sub-basement Drain Study	26,000	26,000	-	-	-	-	-	-	-	-	-
Monitoring Station Controls Upgrades	286,000	286,000	-	-	-	-	-	-	-	-	-
Asset Condition Field Assessment	385,000	114,000	128,000	143,000	-	-	-	-	-	-	-
Electric Vehicle Charging Stations	63,000	10,000	53,000	-	-	-	-	-	-	-	-
De-chlorination at Remote Stations	130,000	130,000	-	-	-	-	-	-	-	-	-
Asset Management (Planned & Placeholders)											
Annual Maintenance (projected) - ALL	1,000,000	-	-	125,000	125,000	125,000	125,000	125,000	125,000	125,000	125,000
Asset Management Plan Update - ALL	415,000	-	-	-	182,000	-	-	-	-	233,000	-
Financial Plan Update - ALL	139,000	-	-	-	61,000	-	-	-	-	78,000	-
Master Water Plan Update - ALL	376,000	-	165,000	-	-	-	-	211,000	-	-	-
Climate Change Risk Assessment - ALL	55,000	-	55,000	-	-	-	-	-	-	-	-
Optimization Opportunities - Short-Term - Raw Water Handling	12,000	-	2,000	2,000	2,000	3,000	3,000	-	-	-	-
Optimization Opportunities - Short-Term - Pre-Treatment	281,000	-	51,000	53,000	56,000	59,000	62,000	-	-	-	-

Table A-2 (continued)
Lake Huron Primary Water Supply System
Water Capital Budget Forecast (Inflated $)

Description	Total	Forecast									
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Optimization Opportunities - Short-Term - Filtration, Disinfection, and High Lift Pumping	220,000	-	40,000	42,000	44,000	46,000	48,000	-	-	-	-
Optimization Opportunities - Short-Term - Digital Technology	220,000	-	40,000	42,000	44,000	46,000	48,000	-	-	-	-
Optimization Opportunities - Long-Term - Pre-Treatment	1,692,000	-	-	-	-	-	-	393,000	412,000	433,000	454,000
Optimization Opportunities - Long-Term - Filtration, Disinfection, and High Lift Pumping	13,252,000	-	-	-	-	-	-	3,075,000	3,228,000	3,390,000	3,559,000
Optimization Opportunities - Long-Term - Primary - Reservoirs and Pumping Stations	5,258,000	-	-	-	-	-	-	1,220,000	1,281,000	1,345,000	1,412,000
Mid-Life Intervention & Lifecycle Replacment - Raw Water Handling	197,000	-	36,000	6,000	6,000	6,000	7,000	35,000	16,000	26,000	59,000
Mid-Life Intervention & Lifecycle Replacment - Pre-Treatment	1,847,000	-	33,000	147,000	47,000	148,000	926,000	267,000	58,000	99,000	122,000
Mid-Life Intervention & Lifecycle Replacment - Filtration, Disinfection, and High Lift Pumping	4,683,000	-	203,000	260,000	95,000	60,000	839,000	1,555,000	72,000	918,000	681,000
Mid-Life Intervention & Lifecycle Replacment - Residuals Management	455,000	-	-	267,000	-	1,000	-	4,000	177,000	6,000	-
Mid-Life Intervention & Lifecycle Replacment - General Site, Building Services, Fleet, and Security	4,090,000	-	178,000	332,000	101,000	179,000	409,000	1,172,000	1,229,000	171,000	319,000
Mid-Life Intervention & Lifecycle Replacment - Primary Power	425,000	-	7,000	91,000	-	13,000	32,000	17,000	139,000	121,000	5,000
Mid-Life Intervention & Lifecycle Replacment - Digital Technology	3,227,000	-	141,000	1,451,000	132,000	193,000	184,000	141,000	309,000	326,000	350,000
Mid-Life Intervention & Lifecycle Replacment - Primary - Reservoirs and Pumping Stations	2,649,000	-	431,000	996,000	35,000	94,000	138,000	462,000	62,000	327,000	104,000
Mid-Life Intervention & Lifecycle Replacment - Primary - Pipes and Chambers	186,000	-	15,000	16,000	32,000	18,000	19,000	20,000	21,000	22,000	23,000
Mid-Life Intervention & Lifecycle Replacment - Secondary - Reservoirs and Pumping Stations	1,238,000	-	30,000	19,000	4,000	4,000	168,000	59,000	442,000	380,000	132,000
Total Capital Expenditures	**168,692,000**	**29,575,000**	**10,697,000**	**47,759,000**	**1,685,000**	**1,530,000**	**9,224,000**	**43,676,000**	**8,356,000**	**8,418,000**	**7,772,000**
Capital Financing											
Provincial/Federal Grants	-										
Other Contributions	26,000,000	26,000,000									
Debt Requirements	10,000,000	-	-	10,000,000	-	-	-	-	-	-	-
Operating Contributions	-										
Asset Replacement Reserve Fund	56,226,800	1,819,150	5,584,050	8,709,550	1,493,100	1,465,400	3,545,750	9,195,050	8,224,750	8,418,000	7,772,000
Water Emergency Reserve Fund	-	-	-	-	-	-	-	-	-	-	-
Water Capital Reserve	76,465,200	1,755,850	5,112,950	29,049,450	191,900	64,600	5,678,250	34,480,950	131,250	-	-
Total Capital Financing	**168,692,000**	**29,575,000**	**10,697,000**	**47,759,000**	**1,685,000**	**1,530,000**	**9,224,000**	**43,676,000**	**8,356,000**	**8,418,000**	**7,772,000**

Table A-3
Lake Huron Primary Water Supply System
Schedule of Debt Repayments

Debenture Year	Principal (Inflated)	Forecast									
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
2023	-		-	-	-	-	-	-	-	-	-
2024	-			-	-	-	-	-	-	-	-
2025	10,000,000				1,358,680	1,358,680	1,358,680	1,358,680	1,358,680	1,358,680	1,358,680
2026	-					-	-	-	-	-	-
2027	-						-	-	-	-	-
2028	-							-	-	-	-
2029	-								-	-	-
2030	-									-	-
2031	-										-
2032	-										
Total Annual Debt	**10,000,000**	**-**	**-**	**-**	**1,358,680**	**1,358,680**	**1,358,680**	**1,358,680**	**1,358,680**	**1,358,680**	**1,358,680**

Table A-4
Lake Huron Primary Water Supply System
New Capital Reserve/Reserve Fund Continuity

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	16,207,815	23,001,924	23,543,274	808,104	7,298,203	16,990,893	24,858,537	4,927,879	12,289,258	22,376,982
Transfer from Operating	7,880,000	4,968,573	6,290,743	6,469,430	9,262,410	12,821,859	14,406,762	7,134,689	9,435,967	11,145,527
Transfer to Capital	1,755,850	5,112,950	29,049,450	191,900	64,600	5,678,250	34,480,950	131,250	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-
Closing Balance	**22,331,965**	**22,857,547**	**784,567**	**7,085,634**	**16,496,013**	**24,134,502**	**4,784,349**	**11,931,318**	**21,725,225**	**33,522,509**
Interest	669,959	685,726	23,537	212,569	494,880	724,035	143,530	357,940	651,757	1,005,675

Table A-5
Lake Huron Primary Water Supply System
Asset Replacement Reserve Fund Continuity

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	5,335,353	4,766,069	4,466,926	998,439	5,540,235	8,466,601	7,643,476	976,879	3,864,693	5,610,094
Transfer from Operating	1,111,049	5,154,802	5,211,982	5,873,530	4,145,166	2,500,000	2,500,000	11,000,000	10,000,000	9,661,906
Transfer to Capital	1,819,150	5,584,050	8,709,550	1,493,100	1,465,400	3,545,750	9,195,050	8,224,750	8,418,000	7,772,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-
Closing Balance	**4,627,252**	**4,336,821**	**969,358**	**5,378,869**	**8,220,001**	**7,420,851**	**948,426**	**3,752,129**	**5,446,693**	**7,500,000**
Interest	138,818	130,105	29,081	161,366	246,600	222,626	28,453	112,564	163,401	225,000

Table A-6
Lake Huron Primary Water Supply System
Water Emergency Reserve Fund Continuity

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Opening Balance	4,806,000	5,104,680	5,257,820	5,415,555	5,578,022	5,745,362	5,917,723	6,095,255	6,278,113	6,466,456
Transfer from Operating	150,000	-	-	-	-	-	-	-	-	-
Transfer to Capital	-			-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-
Closing Balance	**4,956,000**	**5,104,680**	**5,257,820**	**5,415,555**	**5,578,022**	**5,745,362**	**5,917,723**	**6,095,255**	**6,278,113**	**6,466,456**
Interest	148,680	153,140	157,735	162,467	167,341	172,361	177,532	182,858	188,343	193,994
	-	-	-	-	-	-	-	-	-	-

Table A-7
Lake Huron Primary Water Supply System
Water Operating Budget Forecast

Description	Forecast									
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Expenditures										
Operating Costs										
HUR001 HURON WATER SUPPLY										
Management & Admnistrative										
Personnel										
SALARY-PERM-MGMT & ADMIN	521,468	531,900	542,500	553,400	564,500	575,800	587,300	599,100	611,100	623,400
SALARY-PERM-LOCAL 101	360,206	366,900	290,453	297,353	304,353	311,500	318,800	326,300	334,000	341,900
SALARY-TEMP-LOCAL 101	19,512	19,900	20,300	20,700	21,100	21,500	21,900	22,300	22,700	23,100
OVERTIME-LOCAL 101	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
OVERTIME-TEMP-LOCAL 101	-	-	-	-	-	-	-	-	-	-
OVERTIME-MGMT & ADMIN	-	-	-	-	-	-	-	-	-	-
FRINGE-PERM-MGMT & ADMIN	137,042	139,800	142,600	145,400	148,400	151,500	154,600	157,800	161,100	164,400
FRINGE-PERM-LOCAL 101	109,397	113,000	89,810	91,910	94,110	96,400	98,700	101,100	103,500	106,000
FRINGE-TEMP-LOCAL 101	1,848	1,900	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
WORKERS COMP-LOCAL 101	-	-	-	-	-	-	-	-	-	-
WAGES BILLED	-	-	-	-	-	-	-	-	-	-
EXPENSE RECOVERY - CAPITAL	(108,537)	(108,500)	-	-	-	-	-	-	-	-
Support and Overhead Costs						-	-	-	-	-
ADMINISTRATIVE SERVICE	328,174	333,100	338,100	343,200	348,300	353,500	358,800	364,100	369,500	375,000
Payments in Lieu of Taxes						-	-	-	-	-
REALTY TAXES	340,000	350,200	360,700	371,500	382,600	394,000	405,800	417,900	430,400	443,300
Insurance						-	-	-	-	-
INSURANCE BROKER FEE	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000	8,000
INSURANCE PREMIUMS	710,000	766,800	828,100	894,300	965,800	1,043,000	1,126,400	1,216,500	1,313,800	1,418,800
Financial/Office Expense						-	-	-	-	-
EDUCATION/TUITION REIMB	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500	2,500
TRAVEL & CONVENTIONS	15,000	15,200	15,400	15,600	15,800	16,000	16,200	16,400	16,600	16,800
TRAINING AND DEVELOPMENT	-	-	-	-	-	-	-	-	-	-
SUBSCRIPTION & MEMBERSHIP	35,000	35,500	36,000	36,500	37,000	37,500	38,000	38,500	39,000	39,500
SAFETY APPAREL	500	500	500	500	500	500	500	500	500	500
CAR ALLOWANCES	5,000	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900
PARKING EXPENSES	250	300	300	300	300	300	300	300	300	300

Table A-7 (continued)
Lake Huron Primary Water Supply System
Water Operating Budget Forecast

Description	Forecast									
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Expenditures										
Operating Costs										
PROF FEES - ACCOUNTING/AUDIT	8,000	8,100	8,200	8,300	8,400	8,500	8,600	8,700	8,800	8,900
MTCE-OTHER (POMA)	125,000	126,900	128,800	130,700	132,700	134,700	136,800	138,900	141,000	143,200
TELEPHONE-SERVICE CHARGE	12,500	12,700	12,900	13,100	13,300	13,500	13,700	13,900	14,100	14,300
OFFICE SPACE RENTAL	92,000	93,400	94,800	96,200	97,600	99,000	100,400	101,900	103,400	104,900
CATERING - INTERNAL	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
OFFICE & STATIONERY SUPPLIES	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
OPERATING SUPPLIES	-	-	-	-	-	-	-	-	-	-
INTERNAL RENTAL-(vehicles)	12,250	12,400	12,600	12,800	13,000	13,200	13,400	13,600	13,800	14,000
REPLACE OFFICE FURN & EQUIP	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
FUEL REBATE	-	-	-	-	-	-	-	-	-	-
INTEREST/BANK CHG CUR	25,000	25,400	25,800	26,200	26,600	27,000	27,400	27,800	28,200	28,600
						-	-	-	-	-
Information Technology										
Maintenance & Fees						-	-	-	-	-
MTCE-COMPUTER & IMS	175,000	177,600	180,300	183,000	185,700	188,400	191,200	194,000	196,900	199,800
COMPUTER SERVICES	38,500	39,100	39,700	40,300	40,900	41,500	42,100	42,700	43,300	43,900
COMPUTER - ADDITIONAL EQUIP (Instrumentation)	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000	75,000
COMPUTER-EXISTING EQUIPMENT	41,000	41,600	42,200	42,800	43,400	44,000	44,600	45,200	45,800	46,400
						-	-	-	-	-
Research & Optimization						-	-	-	-	-
PROF FEES-OTHER (Research/Optimization)	75,000	76,100	77,200	78,400	79,600	80,800	82,000	83,300	84,600	85,900
						-	-	-	-	-
Purchased Services						-	-	-	-	-
PROF FEES-LEGAL	25,000	25,400	25,800	26,200	26,600	27,000	27,400	27,800	28,200	28,600
PROF FEES-CONSULTANT	60,000	60,900	61,800	62,700	63,600	64,500	65,400	66,300	67,300	68,300
PROF FEES-SECURITY	295,000	299,400	303,900	308,500	313,100	317,800	322,500	327,300	332,200	337,200
LOCATE COSTS	30,000	30,500	31,000	31,500	32,000	32,500	33,000	33,500	34,000	34,500
PRINTING	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
OTHER PURCHASED SERVICES	10,000	10,200	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800
OTHER ADMIN. EXPENSES	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000

Table A-7 (continued)
Lake Huron Primary Water Supply System
Water Operating Budget Forecast

Description	Forecast									
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Expenditures										
Operating Costs										
Total Service Contract Costs						-	-	-	-	-
PURCHASE OF WATER-CHEMICAL (SL 5030)	762,581	774,000	785,600	797,400	809,400	821,600	834,000	846,600	859,300	872,200
PURCHASE OF WATER-GENERAL (SL 5020)	7,665,119	7,952,709	8,256,824	8,573,628	9,203,684	9,141,470	9,492,200	9,856,400	10,234,600	10,627,300
PURCHASE OF WATER-QUALITY (SL 5040)	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000
ENERGY-ELECTRICITY	3,000,000	3,090,000	3,182,700	3,278,200	3,376,500	3,477,700	3,582,000	3,689,400	3,800,000	3,913,900
Sub Total Operating	**15,153,310**	**15,654,509**	**16,178,987**	**16,724,991**	**17,593,547**	**17,779,670**	**18,389,300**	**19,023,700**	**19,683,900**	**20,371,100**
Capital-Related										
Existing Debt (Principal)	1,113,205	957,696	968,922	44,000	45,066	-	-	-	-	-
Existing Debt (Interest)	52,439	28,534	6,963	1,496	233	-	-	-	-	-
New Debt (Principal)	-	-	-	758,680	804,200	852,452	903,600	957,815	1,015,284	1,076,201
New Debt (Interest)	-	-	-	600,000	554,479	506,227	455,080	400,864	343,395	282,478
Transfer to Asset Replacement (Lifecycle) Reserve Fund	1,111,049	5,154,802	5,211,982	5,873,530	4,145,166	2,500,000	2,500,000	11,000,000	10,000,000	9,661,906
Transfer to Emergency Reserve Fund	150,000	-	-	-	-					
Transfer to Capital Reserve Fund	7,880,000	4,968,573	6,290,743	6,469,430	9,262,410	12,821,859	14,406,762	7,134,689	9,435,967	11,145,527
Sub Total Capital Related	**10,306,694**	**11,109,605**	**12,478,610**	**13,747,135**	**14,811,555**	**16,680,538**	**18,265,441**	**19,493,369**	**20,794,647**	**22,166,113**
Total Expenditures	**25,460,003**	**26,764,114**	**28,657,597**	**30,472,126**	**32,405,102**	**34,460,209**	**36,654,741**	**38,517,069**	**40,478,547**	**42,537,213**
Revenues										
Other Revenues										
MISCELLANEOUS REVENUE	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
Oneida Buy-in Charge	962,262	-	-	-	-	-	-	-	-	-
OTHER SHORT-TERM INTEREST	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Total Operating Revenue	**987,262**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**	**25,000**
Water Billing Recovery - Total	**24,472,741**	**26,739,114**	**28,632,597**	**30,447,126**	**32,380,102**	**34,435,209**	**36,629,741**	**38,492,069**	**40,453,547**	**42,512,213**

Table A-8
Lake Huron Primary Water Supply System
Water Rate Forecast

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Total Water Billing Recovery	24,472,741	26,739,114	28,632,597	30,447,126	32,380,102	34,435,209	36,629,741	38,492,069	40,453,547	42,512,213
Total Volume (m^3)	47,114,500	49,026,612	49,995,804	50,635,501	51,283,025	51,938,475	52,613,820	53,165,841	53,723,170	54,287,081
Constant Rate	**0.5194**	**0.5454**	**0.5727**	**0.6013**	**0.6314**	**0.6630**	**0.6962**	**0.7240**	**0.7530**	**0.7831**
Annual Percentage Change	**1.5%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**5.0%**	**4.0%**	**4.0%**	**4.0%**