

# Lake Huron Primary Water Supply System

## Financial Plan Update

September 30, 2016



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## List of Acronyms and Abbreviations

A.M.P.	Asset Management Plan
A.W.W.A.	American Water Works Association
B.C.F.	Build Canada Fund
C.O.M.R.I.F.	Canada-Ontario Municipal Rural Infrastructure Fund
D.C.A.	Development Charges Act
E.A.P.W.S.S.	Elgin Area Primary Water Supply System
F.I.R.	Financial Information Return
km	Kilometre
I.O.	Infrastructure Ontario
L.H.P.W.S.S.	Lake Huron Primary Water Supply System
L.O.S.	Level of Service
M.I.I.I.	Municipal Infrastructure Investment Initiative
M.O.E.C.C.	Ministry of Environment and Climate Change
mm	Millimetre
O.M.B.	Ontario Municipal Board
O.Reg.	Ontario Regulation
OCWA	Ontario Clean Water Agency
O.C.I.F.	Ontario Community Infrastructure Fund
O.S.I.F.A.	Ontario Strategic Infrastructure Financing Authority
O.S.T.A.R.	Ontario Small Town and Rural Development Infrastructure Initiative
P.S.A.B.	Public Sector Accounting Board
R.F.P.	Request for Proposal
S.C.F.	Small Communities Fund
S.W.S.S.A.	Sustainable Water and Sewage Systems Act, 2002



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# 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. This study aims to provide an analysis for current capital and operating forecasts, costing for asset management/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 resultant rate analysis contained herein continues to provide fiscally responsible practices that are in-line with current and pending provincial legislation (as known at this time) at a level of increases that are reasonable.

The analysis presented herein, provides for the following:

- Capital spending program (2017-2046) is \$213.71 million (\$313.7 million inflated).
- Annual operating expenditures are assumed to increase by 3% per annum for most expenditures. Expenditures related to electricity have been increased at 4% per annum and expenditures related to quality have been held constant.
- The present rate structure consists entirely of a constant volume rate which 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. Projected volumes anticipated over the forecast have been included in the analysis.

Based on the analysis, the volume rates for water are recommended to increase by 3% annually from 2017 – 2027, 2% annually from 2028 – 2038 and 1% annually for the remainder of the forecast period (2039 – 2046). Table ES-1 summarize the recommended water rates based on the analysis provided herein over the forecast period.

Observations and recommendations included in the report pertain to the following:

- The recovery of all water costs through full cost recovery wholesale rates.
- Consideration of the Capital Plan and the associated Capital Financing Plan.
- Consideration of the base charges (constant volume rates).

- Continue to monitor and pursue opportunities for grant funding to assist in funding of capital works and minimize future rate increases.
- Consideration of the need to implement a growth-related charge/Development Charges to assist in funding capacity expansion requirements as needed.
- Continue to reduce the reliance on debt over time by strengthening the reserves and moving to a pay-as-you-go approach to funding capital works, where possible.
- Continue to strengthen the Asset Replacement Reserve when existing debt is retired over time.
- Implement a capacity buy-in charge of \$496 m<sup>3</sup>/day and that this amount be indexed annually.



**Table ES-1  
Summary of Recommended Water Rates**

Description	2014 Approved	2015 Approved	2016 Approved	2017	2018	2019	2020	2021	2022	2023	2024
Base Charge (Constant Volume Rate per m <sup>3</sup> )	\$0.4183	\$0.4392	\$0.4568	\$0.4705	\$0.4846	\$0.4991	\$0.5141	\$0.5295	\$0.5454	\$0.5618	\$0.5787
% Increase per Year		5.0%	4.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Base Charge (Constant Volume Rate per m <sup>3</sup> )	\$0.5961	\$0.6140	\$0.6324	\$0.6450	\$0.6579	\$0.6711	\$0.6845	\$0.6982	\$0.7122	\$0.7264	\$0.7409
% Increase per Year	3.0%	3.0%	3.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%

Description	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Base Charge (Constant Volume Rate per m <sup>3</sup> )	\$0.7557	\$0.7708	\$0.7862	\$0.7941	\$0.8020	\$0.8100	\$0.8181	\$0.8263	\$0.8346	\$0.8429	\$0.8513
% Increase per Year	2.0%	2.0%	2.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

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# 1. Terms of Reference

## 1.1 Deliverables

The Request for Proposal (R.F.P.), issued by the Joint Board of Management for the Lake Huron Primary Water Supply System (L.H.P.W.S.S.) required a Financial Plan Update to be developed 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. completed a Strategic Financial Plan in 2007. This plan set out strategies and actions to ensure the long term financial sustainability of the Joint Board. An analysis of financial requirements, including a presentation of a utility funding structure, rate plan, and structure for charging costs, was included. The Financial Plan is amended as necessary to meet the requirements of the Municipal Drinking Water Licencing Submission.

The Financial Plan Update requires a review of the pressures and challenges currently facing the system and the solutions implemented through the 2007 Strategic Financial Plan. It will also provide updates to all aspects of the 2007 Plan and consider tools to meet the challenges facing the Joint Board based on the financial components in place as well as the findings of the Asset Management Plans (A.M.P.) (being undertaken concurrently).

The deliverables set out in the R.F.P. include the following:

- Review of existing documentation;
- Review of current year and historical Capital Budget(s) and Current Operating Budget(s) and most recent budget for which year-end financials are available;
- Review of capital plan(s);
- Review of Policies, By-laws and Transfer Order documents of the Joint Board of Management;
- Review of related reports on the development and implementation of a Connection/Development Charge associated with growth-related capital projects;
- Confirmation of the use and appropriate level of funding in place;
- A report on the full cost of water services limited to the assets, activities and jurisdiction of the Joint Board;
- A report on the cost recovery plan for the Joint Board limited to the assets, activities and jurisdiction of the Joint Board;

- Technical and professional recommendations related to general accounting and financial principles for the system (i.e. depreciation, debentures, etc.);
- Recommendations regarding amendments to current practices, policies and by-laws and/or the development of new policies and by-laws related to the Financial Plan;
- Determine and recommend rates for full cost recovery which address operational, administrative, capital renewal/replacement (lifecycle), new capital, growth-related capital, continuous supply, debt and reserve fund(s) costs;
- Confirm that the existing framework to develop the rate is appropriate;
- Review of previous financial model and update it with current information, incorporating the findings of the ongoing Asset Management Plan; and
- Provide opinions on other tasks which the Joint Boards should consider, if necessary.

This report will provide the L.H.P.W.S.S. Joint Board with the deliverables as identified above.

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## **2. Water Board Governance and Mandate**

### **2.1 Background**

The L.H.P.W.S.S. Board of Management was created as a water board in 1998 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 transferred ownership, of the water system (including the land associated with the properties) from the Ontario Clean Water Agency.

### **2.2 Water Board**

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 under the direction of the Water Board.

### **2.3 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 July, 2017 however, there is an option within the contract to extend the contract for an additional five years, if the Water Board wishes. This contract is administered through the City of London on behalf of the Water Board. 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.

### **2.4 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 Transfer Order. The Managing Director of the Environmental & Engineering Services Department and City Engineer, through the Division Manager 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.

## **2.5 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 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.

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## 3. Financial Plan Introduction

### 3.1 Background

The L.H.P.W.S.S., is serviced via the water treatment plant located near Grand Bend, Ontario. The system also includes a 1,200 mm primary transmission main (currently twinned in sections), the intermediate reservoir and booster station located near Brinsley (North Middlesex), and the terminal reservoir located near Arva (Middlesex Centre).

The primary system imposes a rate per cubic metre to each of its member municipalities based upon the volume of water supplied. The rate presently in effect for 2016 is \$0.4568 per cubic metre. Currently, with the exception of recent grant funding, all expenses, both operating and capital, are funded through the revenue generated from the volume rate. It is noted that opportunities for grant funding continue to be pursued when available from senior levels of government.

With the legislative changes being 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 Joint Board of Management for 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 the updates to the Asset Management Plan (A.M.P.) being undertaken concurrently by CH2M Hill Canada Limited (CH2M) (in association with Watson) and forecasts the implications over the next thirty (30) year period.

### 3.2 Study Process

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

- Identify all current and future water system capital needs to assess the immediate and longer-term implications. These capital needs include legislative changes, lifecycle/asset management replacements, enhancements, efficiency initiatives and growth related works.
- Identify potential methods of cost recovery from the capital needs listing. These recovery methods may include other statutory authorities (e.g. Development

Charges, Municipal Act, etc.) as a potential offset to recovery through the water rates;

- Identify existing operating costs by component and estimate future operating costs over the next thirty 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 2017 and future years.

### **3.3 Regulatory Changes in Ontario**

Resulting from the water crisis in Walkerton, significant regulatory changes have been made in Ontario over the past decade. 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 Act was enacted in 2002, however, 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. The following sections describe these various resulting changes.

### **3.4 Sustainable Water and Sewage Systems Act**

The Sustainable Water and Sewage Systems Act (S.W.S.S.A.) was passed on December 13, 2002. The intent of the Act was to introduce the requirement for municipalities to undertake an assessment of the “full cost” of providing their water and wastewater services. It is noted that this Act has been repealed, however, to provide

broader context and understanding to other legislation discussed herein, a description of the Act is provided below.

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

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

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

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



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

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

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

### **3.5 Financial Plans Regulation**

On August 16, 2007, the M.O.E.C.C. passed O.Reg. 453/07 which requires the preparation of financial plans for water (and wastewater) systems. The M.O.E.C.C. 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 License;
- 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 Drinking Water Act, the preparation of the plan is mandatory for water and encouraged for wastewater;
- The plan is considered a living document (i.e. will be updated as annual budgets are prepared) but will need to be undertaken at a minimum every five years;
- The plans generally require the forecasting of capital, operating and reserve fund positions, providing detailed inventories, forecasting future users and volume

usage and corresponding calculation of rates. In addition, P.S.A.B. information on the system must be provided for each year of the forecast (i.e. total non-financial assets, tangible capital asset acquisitions, tangible capital asset construction, betterments, write-downs, disposals, total liabilities and net debt);

- The financial plans must be made available to the public (at no charge) upon request and be available on the Municipality's website. The availability of this information must also be advertised; and
- The financial plans are to be approved by Resolution of the Council or governing body indicating that the drinking water system is financially viable.

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

A Guideline ("Towards Financially Sustainable Drinking - Water and Wastewater Systems") has been developed to assist municipalities in understanding the Province's direction and provides 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.

### **3.6 Water Opportunities Act, 2010**

As noted earlier, since the passage of the Safe Drinking Water Act, 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 was introduced into the legislation on May 18, 2010 and received Royal Assent on November 29, 2010.

On November 29, 2010, Bill 72, the Water Opportunities Act, 2010 received Royal Assent.

The Act provides for the following elements:

- Foster innovative water, wastewater and stormwater technologies, services and practices in the private and public sectors;
- Prepare water conservation plans to achieve water conservation targets established by the regulations; and
- Prepare 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:

- May relate to the financing, operation or maintenance of a municipal service or to any other matter in respect of which 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;
- Identifying what 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 Sustainable Water and Sewage Systems Act once all regulations are put in place. It is anticipated that this will occur once the "Infrastructure for Jobs and Prosperity Act" is fully implemented.

### **3.7 Infrastructure for Jobs and Prosperity Act, 2015**

The Infrastructure for Jobs and Prosperity Act sets out requirements that apply to the broader public sector, including municipalities and also to the provincial government for its own infrastructure needs. The legislation will require the Province and broader public sector, including municipalities to consider certain principles as they make decisions respecting infrastructure. It also requires:

- that the provincial government create a long term infrastructure plan for provincially owned or partially owned assets that considers infrastructure requirements for at least ten years in the future, to table it within three years of the passage of the legislation and update it every five years;
- an inventory of infrastructure, value, age and condition as well as needed improvements or expansion are set out in the contents of the provincial plan;
- the Province to consider prioritizing assets that are included in comprehensive provincial and municipal plans and strategies;
- the government to involve architects in the design of certain assets such as bridges, highways, transit stations, museums above a certain threshold; and
- that the Province engages apprentices on certain projects.

The Act lists a number of principles for infrastructure planning that apply to municipalities. These include:

- investments should take a long term view and be mindful of economic and demographic trends;
- accounting for applicable budgets and fiscal plans;
- clearly identified priorities;
- continued provision of core health and education services;
- promoting economic competitiveness, productivity, job creation and training;
- fostering innovation;
- evidence based and transparent planning and investment;
- being mindful of planning policy statements and provincial growth plans, water sustainability plans, the Lake Simcoe Protection Plan and transportation plans adopted by Metrolinx.

Taken together, the principles for infrastructure planning and the requirement for the Province to develop a long term plan are helpful to municipal governments. These requirements codify existing practices within the provincial and municipal government sectors and provide local governments with an understanding of how investment decisions will be made. This can help municipal governments to identify and align local priorities with provincial priorities to better coordinate investments to the benefit of residents and businesses.

Long-term infrastructure plans shall be developed and tabled in accordance with the following timing requirements:

1. The first long-term infrastructure plan shall be developed and tabled or deposited no later than three years after the day this section comes into force (came into force May 1, 2016).
2. Thereafter, each subsequent long-term infrastructure plan shall be developed and tabled or deposited no later than five years after the day the previous plan was tabled or deposited.

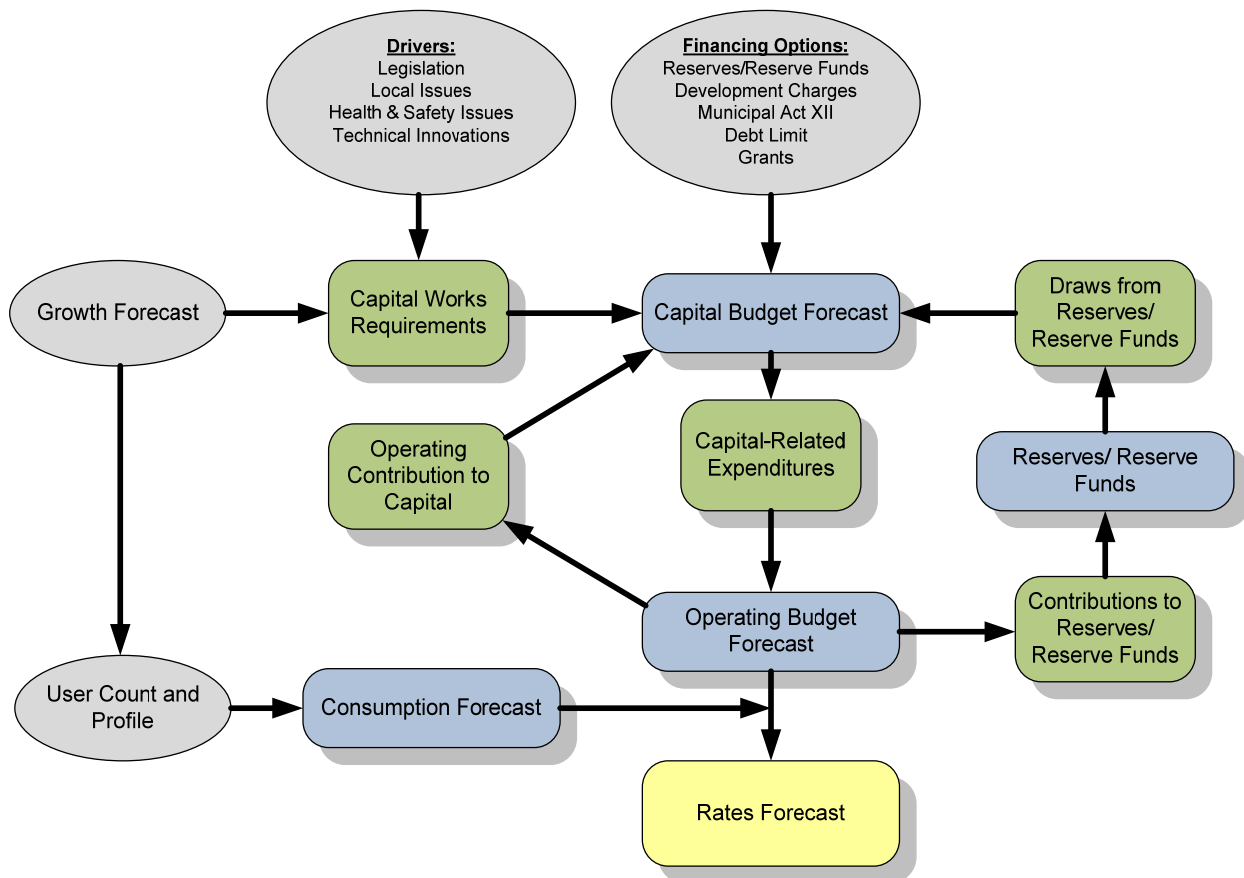
Each long-term infrastructure plan shall include the following information:

1. A description of the state, as of the date or during the period specified in the plan, of the infrastructure wholly or partly owned by the Government, including,
  - i. an inventory of the infrastructure;
  - ii. a valuation of the infrastructure;
  - iii. the age of infrastructure assets; and
  - iv. the condition of infrastructure assets.
2. A description of the Government's anticipated infrastructure requirements, including improvements to existing infrastructure assets and the acquisition of new infrastructure assets, for at least the 10 years following the development of the plan.
3. A strategy to meet the infrastructure requirements identified under paragraph 2.
4. Any other information that the Minister determines should be included in the plan.

### **3.8 The Water Rate Calculation Process**

The process for calculation of rates which will be followed in this study is designed to address "full cost" principles and reflect the guiding principles toward sustainable financial planning. Figure 3-1 below summarizes the process.

**Figure 3-1  
Water Rate Calculation Process**



As a result of employing this process, the Financial Plan contained herein, provides a sound financial plan for the Water Board. Appendix A provides the detailed calculations which follow this process.

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## 4. Asset Management Planning

### 4.1 Overview

Asset management planning is growing in popularity in Ontario's public sector. While having asset management policies, procedures and best practices within an organization yields significant internal benefits, there are also external pressures that are supporting and recommending asset management planning. These include the Infrastructure for Jobs and Prosperity Act, 2015 where a regulation is expected in early 2017 that will outline specific asset management requirements that public sector entities must implement going forward. Other pressures include the requirement to submit asset management plans with any provincial grant funding applications, the inclusion of asset management requirements within the federal gas tax agreements across Canada, and the inclusion of asset management requirements within the Development Charges Act, 1997.

In parallel with these asset management pressures, the province of Ontario initiated the Municipal Infrastructure Investment Initiative (M.I.I.I.). This initiative provides infrastructure funding programs for municipalities to apply for, and a guide entitled "Building Together: Guide for Municipal Asset Management Plans" (Building Together Guide). As outlined in the Building Together Guide, the following subcategories are required within the asset management plan:

1. Executive Summary;
2. Introduction;
3. State of Local Infrastructure;
4. Expected Levels of Service;
5. Asset Management Strategy; and
6. Financing Strategy.

The "state of local infrastructure" section provides an overview of the capital assets owned by the organization. This includes detailed information on the asset inventory, including asset attributes, accounting valuations, replacement costs, useful life, age and asset condition. This information provides the foundation for other sections of the asset management plan.

"Expected levels of service" compares the current levels of service provided by the organization to the levels of service determined to be expected in each area. This analysis combines both descriptions/comments as well as performance measures and metrics in establishing service levels.



The “asset management strategy” provides a long term operating and capital forecast for asset related costs, indicating the requirements for maintaining, rehabilitating, replacing/disposing and expanding the organization’s assets, while moving towards the specified expected levels of service identified above. The goal of the asset management strategy is to move towards a sustainable asset management position over the forecast period.

The “financing strategy” identifies a funding plan for the asset management strategy, including a review of historical results and recommendations with respect to the required amounts and types of funding annually. Also, any infrastructure funding gaps are identified and recommendations are made regarding potential approaches to reduce and mitigate the gap over the forecast period.

The following sections provide for a broad discussion on each of the sub-categories along with a summary of what was included in the Lake Huron Water Supply System – Asset Management Plan, September, 2016.

## **4.2 State of Local Infrastructure**

This section of the plan provides an opportunity to develop a greater understanding of the capital assets owned by the organization. According to the Building Together Guide, the state of local infrastructure analysis is to include:

- An asset database documenting asset types, sub-types including quantities, materials and other similar asset attributes;
- Financial accounting valuation;
- Replacement cost valuation;
- Asset age distribution analysis and asset age as a proportion of expected useful life;
- Asset condition information;
- Data Verification and Asset Condition policies; and
- Documentation of assumptions made in creating the asset inventory.

### Summary from the L.H.P.W.S.S. Asset Management Plan

The L.H.P.W.S.S. owns a sizable portfolio of assets, including treatment assets that produce sufficient quantity of clean and safe drinking water, and transmission assets that transmit clean and safe drinking water to member municipalities. The total replacement cost of all assets covered within this AMP is estimated at \$406 million (2015), 37% of which are treatment assets, and 63% of which are transmission assets.

Overall, the condition of the L.H.P.W.S.S.s assets are Good, with 55% of assets in Good to Very Good condition. Significant investment has been made in both new and renewed assets over the past 10 years, which has brought assets into a state of good repair including: new twinned Arva Line (approximately 10km of 1200mm diameter pipe); new residuals management facility; new secondary transmission system pumps stations/ reservoirs/ mains, and renewed HVAC system at the treatment plant. The condition of the treatment assets is Fair, but with current projects to renew the filters and the electrical assets, the overall condition rating will increase to Good.

### **4.3 Expected Levels of Service**

A levels of service (L.O.S.) analysis gives the organization an opportunity to document the levels of service that are currently being provided in each area and compare them to the levels of service that is expected. This can be done through a review of current practices and procedures, an examination of trends or issues, or through an analysis of performance measures and targets that staff can use to measure performance.

Expected L.O.S. can be impacted by a number of factors, including:

- Legislative requirements;
- Strategic planning goals and objectives;
- Resident expectations;
- Council or Town staff expectations; and
- Financial or resource constraints.

#### Summary from the L.H.P.W.S.S. Asset Management Plan

Strategic direction statements have been developed to guide the L.H.P.W.S.S.s investment decisions over the A.M.P. period as illustrated in Table 1-1 of the Lake Huron Primary Water Supply System – Asset Management Plan, July 2016. All investments made by the L.H.P.W.S.S. link back to these statements, and ultimately back to the vision. These statements have been largely based on L.O.S. measures and targets that have been set by the L.H.P.W.S.S. related to the availability/reliability of service, quality of service, customer service, sustainability of service, and meeting legislative requirements. Over the next 30 years, it is predicted that the existing L.O.S. will be maintained with a consistent stable trend, the only notable exception being a positive downward trend in energy use and greenhouse gas emissions because of investment in energy efficiency projects.

## 4.4 Asset Management Strategy

The asset management strategy provides the recommended course of actions required to move towards a sustainable asset funding position while delivering the expected levels of service discussed above. The course of actions, when combined together, form a long-term operating and capital forecast that includes:

- a) Non-infrastructure solutions: reduce costs and/or extend expected useful life estimates;
- b) Maintenance activities: regularly scheduled activities to maintain existing useful life levels, or repairs needed due to unplanned events;
- c) Renewal/Rehabilitation: significant repairs or maintenance planned to increase the useful life of assets;
- d) Replacement/Disposal: complete disposal and replacement of assets, when renewal or rehabilitation is no longer an option; and
- e) Expansion: given planned growth or other expansion or due to the introduction of new services.

### Summary from the L.H.P.W.S.S. Asset Management Plan

The objective of the asset management strategy is to establish a set of strategies and planned activities that, over the next 30 years, will enable the L.H.P.W.S.S. to achieve the target L.O.S. to existing member municipalities and respond to any changing service requirements from growth or enhancement.

For capital interventions, a 30-year unconstrained capital forecast has been developed and includes a Renewal Plan to maintain L.O.S., and a Growth and Enhancement Plan to enhance L.O.S., support growth and demand, address legislative changes, and increase efficiency. An unconstrained forecast does not take into consideration financial constraints.

A risk-based approach has been used to prioritize renewal needs over the first five years of the plan to develop a short-term investment plan, with detailed risk assessments being undertaken to identify and prioritize needs. During the risk assessment process, the analysis is based on a combination of reliable and complete data along with expert knowledge, relating to a range of issues being investigated. The approach used to determine the long-term renewal plan relies more heavily on a lifecycle analysis approach based on age and condition-based forecasts of expected asset interventions. The extent and reliability of data needed to drive these forecasts is

lower compared to short-term investment planning and a good understanding of asset deterioration rates is vital to ensure the accuracy of long-term projections.

The Growth and Enhancement Plan is based on the Master Plan Update (2015), Energy Audit and Pump Study (2014), and the Water Quality Facility Plan (2015).

## 4.5 Financing Strategy

The financing strategy outlines the suggested financial approach to funding the recommended asset management strategy including the use of full cost recovery principles. This section of the asset management plan includes:

- Annual expenditure forecasts broken down by:
  - Maintenance/non-infrastructure solutions;
  - Renewal/rehabilitation activities;
  - Replacement/disposal activities; and
  - Expansion activities.
- Actual expenditures in the above named categories for the last 2 to 3 years;
- A breakdown of annual funding/revenue by source;
- Identification of the funding gap, including how the impact will be managed; and
- All key assumptions documented.

### Summary from the L.H.P.W.S.S. Asset Management Plan

The objective of the financing strategy is to outline the financial approach to funding the recommended asset management strategy over the next 30 years while utilizing the existing budget structure. The long-term financing strategy forecast (including both expenditure and revenue sources) was prepared, consistent with the current departmental budget structure, so that it can be used in conjunction with the annual budget process. Various financing options, including reserve funds, debt, grants and other contributions were considered; however, there were no grant revenue or additional debt financing anticipated over the forecast period at this time.

Funding of the capital forecast is dependent upon maintaining healthy capital and replacement reserve funds in order to provide the remainder of the required lifecycle funding over the forecast period as well as to fund the growth related enhancement projects anticipated over the 30-year forecast. This will require proactively increasing amounts being transferred to these reserve funds during the annual budget process through rates. While the annual funding requirement may fluctuate, it is important to

implement a consistent, yet increasing annual investment in capital so that the excess annual funds can accrue in reserve funds.

#### **4.6 Asset Management Plan and Financial Plan Integration**

The Financial Plan process was completed in parallel with the Asset Management Plan (A.M.P.), ensuring a level of integration between the two processes. The recommended asset management strategy outlined in the A.M.P. was used as the capital forecast within the Financial Plan. In addition, the calculation of future water rates within the Financial Plan became a key input in the financing strategy within the A.M.P. The integration of these two processes ensures that future rate setting (through annual budget deliberations) makes considerations for the asset inventory, expected levels of service, asset lifecycle costs and related risks identified within the A.M.P.

For further information on the A.M.P., please refer to the “Lake Huron Primary Water Supply System – Asset Management Plan”.

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## 5. Forecasted Growth and Capital Infrastructure Needs

### 5.1 Forecast Growth and Servicing Requirements

The L.H.P.W.S.S. services eight municipalities, including Bluewater, South Huron, Lambton Shores, North Middlesex, Lucan-Biddulph, Middlesex Centre, Strathroy-Caradoc, and a portion of the City of London. Information on the historical supplied volumes was obtained from staff of the Regional Water Supply.

For future water customers to be added to the system, consideration has been given to development potential within the areas of the Huron system over the forecast period 2017-2046.

For the purposes of this Financial Plan and for all benefiting municipalities supplied by the L.H.P.W.S.S., except the City of London, it is anticipated that there will be only minor increases or decreases in the current volumes for 2017 and that these volumes will stay relatively constant through to and including 2020. Beginning in 2021 it is anticipated that volumes will grow annually by 0.25% for five years (2021-2025) and then annually by 0.50% thereafter.

For the City of London, all additional volume needs anticipated over the forecast to 2046 are anticipated to be provided through the L.H.P.W.S.S. It is anticipated that the current volumes will decrease over the forecast period to 2022 and thereafter begin to increase annually by an average of 0.95%.

For operating revenue purposes it would be undesirable to forecast too high as this could produce a potential operating deficit should the growth not materialize.

Table 5-1 provides for the actual water volumes for 2015 and prior years along with a forecast of water volumes for 2016-2046, for the L.H.P.W.S.S. The forecast volumes are consistent with that presented in the recently approved Master Water Plan, with some minor adjustments to account for more recent volumetric information.

**Table 5-1  
Lake Huron Primary Water Supply System - Water Volume Forecast**

Year	Total Annual Volume	Period	Year	Total Annual Volume	Period	Year	Total Annual Volume	Period
1997	46,984,855	Actual	2017	41,829,500	Years 1 to 5	2037	45,723,857	Years 21 to 30
1998	51,477,398		2018	41,005,028		2038	46,219,309	
1999	49,800,614		2019	40,489,081		2039	46,714,938	
2000	48,010,917		2020	39,979,372		2040	47,210,746	
2001	50,961,933		2021	39,492,362		2041	47,706,733	
2002	53,463,923		2022	39,011,482	Years 6 to 10	2042	48,202,901	
2003	52,047,346		2023	39,135,599		2043	48,699,250	
2004	51,419,376		2024	39,548,729		2044	49,195,781	
2005	51,487,912		2025	39,968,774		2045	49,692,496	
2006	50,620,964		2026	40,412,883		2046	50,189,395	
2007	52,312,759		2027	40,864,616	Years 11 to 20			
2008	48,150,312		2028	41,323,875				
2009	47,241,639		2029	41,791,022				
2010	48,858,528		2030	42,266,015				
2011	47,588,094		2031	42,748,969				
2012	47,487,824	2032	43,244,725					
2013	44,454,163	2033	43,748,774					
2014	43,228,895	2034	44,238,561					
2015	42,968,219	2035	44,733,484					
2016	42,780,000	Budget	2036	45,228,583				

## 5.2 Capital Forecast

As noted earlier, the Financial Plan is being undertaken concurrently with the Asset Management Plan (A.M.P.). The A.M.P. provides an investment plan covering the period 2014-2046 and considers both capital and operating investments. The following capital plan is based on the A.M.P.

Capital forecasts have been developed for the water system and are summarized on Table 5-2 (Note: the costs are in inflated dollars for years 2017-2046). This forecast includes the Joint Board's Capital Forecast for the short term and works identified through the A.M.P. for the longer term. These capital needs address full asset replacement projects, mid-life interventions (major repair/rehabilitation) projects, enhancements & growth related projects, efficiency projects, and various plans/documentation projects anticipated over the forecast to 2046.

It is noted that the Water Board, 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.

The A.M.P. has identified the replacement requirements for the treatment plant and transmission system over the forecast period however, it has not identified the replacement needs of the fleet of six vehicles (some of which are shared between the Lake Huron Primary Water Supply System and the Elgin Area Primary Water Supply System). The replacement of these vehicles is assumed to be dealt with through the operating budgets, when required. The capital forecast has identified one additional vehicle to be added in 2017. It is identified as an enhancement and will be cost shared between the two water boards.

As identified in the A.M.P., due to the anticipated volume needs over the forecast period, there are no significant growth or legislative drivers identified until potentially 2035 and beyond. The capital forecast does provide for the complete twinning of the primary transmission main which will provide for growth over the longer term. Currently this project is identified in the last year of the forecast period (2046) however, may require to be moved earlier in the forecast if the need arises due to unanticipated increases in volume needs (this could result from existing member municipalities and/or additional municipalities being added to the system).



The A.M.P. has categorized capital works based on the project's key driver. These drivers include:

- Enhancement;
- Growth;
- Efficiency;
- Plans/Documentation; and
- Renewal.

As identified in the A.M.P., the Growth, Efficiency and Enhancement capital works are based on the Master Plan Update (2015), Energy Audit and Pump Study (2014), and the Water Quality Facility Plan (2015). These studies provided needs to respond to changing service requirements including growth, legislative, enhanced level of service, and efficiency needs. The Plans/Documentation capital works include costs of updating studies and master plans. The renewal capital works include repairs, rehabilitation, and replacement needs.

For the years 2014 to 2016 a category has also been included to identify carryover costs from prior year project which are still underway.

Table 5-2 provides the capital forecast (2017-2046), along with actuals for 2014 & 2015 and the budget for 2016, summarized by key driver as identified in the A.M.P. The detailed list of capital projects is included in Appendix A.

**Table 5-2  
2017-2046 Water Capital Forecast Summary (Inflated \$)**

Description	Historical (2014-2015)	Approved Budget (2016)	Proposed Budget (2017)	Forecast (2018-2026)	Forecast (2027-2036)	Forecast (2037-2046)	Total Proposed Budget & Forecast (2017-2046)
Efficiency	\$0	\$200,000	\$0	\$5,570,000	\$0	\$0	\$5,570,000
Enhancement	\$0	\$200,000	\$15,000	\$1,071,000	\$13,215,000	\$12,695,000	\$26,996,000
Enhancement/Growth	\$3,351,875	\$553,750	\$0	\$0	\$0	\$97,671,000	\$97,671,000
Plans/Documentation	\$236,063	\$100,000	\$80,000	\$823,000	\$977,000	\$1,192,000	\$3,072,000
Renewal	\$17,526,729	\$2,323,787	\$1,025,000	\$37,219,000	\$83,554,000	\$58,596,000	\$180,394,000
Carryover	\$13,889,611	\$10,697,000	\$0	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$35,004,278</b>	<b>\$14,074,537</b>	<b>\$1,120,000</b>	<b>\$44,683,000</b>	<b>\$97,746,000</b>	<b>\$170,154,000</b>	<b>\$313,703,000</b>

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## 6. Capital Cost Financing Options

With ownership of the Water Board being comprised by municipalities, 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 Water Board presently has established, a discussion of all of the funding opportunities and then a final recommendation for funding the expenditures provided in Chapter 5.

### 6.1 Summary of Capital Cost Financing Alternatives

The methods of financing capital which are available to municipalities include:

- Grant Funding;
- Municipal Act;
- Development Charges Act, 1997;
- Operating Contributions;
- Reserve and Reserve Funds; and
- Long Term Debt Financing.

#### ***6.1.1 Grant Funding***

Since the early 1980's, the level of Provincial and Federal assistance toward municipal infrastructure has declined significantly. By the mid 1990's, there were very limited funds available from senior levels of government. In mid-2000, initiatives from the Provincial and Federal level were announced; providing for a new program (O.S.T.A.R.) to assist small cities, towns and rural areas in addressing infrastructure improvements. In November 2004, another program (C.O.M.R.I.F.) was introduced which also provided combined assistance from the senior governments until early 2007. Subsequently Federal and Provincial Funding have been made available under the Build Canada Fund and Stimulus Fund Programs. Under the specific requirements of these programs, the projects must be "shovel ready" and are allocated on a case by case basis.

In August 2012, the province of Ontario initiated the Municipal Infrastructure Investment Initiative (M.I.I.I.). In supporting the efforts of communities to restore and revitalize their public infrastructure, this initiative provides one-time provincial funding to improve asset management planning in small municipalities and local service boards. In addition, funding will be made available for municipal infrastructure projects under this initiative. Any municipality or local service board seeking capital funding in the future must

demonstrate how its proposed project fits within a detailed asset management plan. To assist in defining the components of an asset management plan, the Province produced a document entitled *Building Together: Guide for Municipal Asset Management Plans*. This guide documents the components, information and analysis that are required to be included in a municipality's asset management plan under this initiative.

Most recently, infrastructure funding programs have been in place by both the Federal and Ontario governments. The Ontario Community Infrastructure Fund (O.C.I.F.) has provided a source of predictable, long-term funding and supports the repair and revitalization of roads, bridges, and other critical infrastructure in small, rural and northern communities. To date, 137 critical infrastructure projects have been approved through the O.C.I.F. application-based component including projects related to water, sewer, roads and bridges. In addition, over 400 communities have received grants from the O.C.I.F. formula-based component. The 2016 Ontario budget has announced that the O.C.I.F. will triple from \$100 million to \$300 million per year by 2018-19, including \$200 million in predictable, formula-based funding and \$100 million in application-based funding.

There is also the Federal Governments Small Communities Fund (S.C.F.), part of the Building Canada Fund (B.C.F.), which allows communities with populations of less than 100,000 to build projects to support local needs. Capital infrastructure projects related to drinking water are eligible under this program.

### **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 OMB.

The previous *Municipal Act* (s.221), permitted municipalities to impose charges, by by-law, on owners or occupants of land who would or might derive benefit from the

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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 to 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 in 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
- OMB approval was not required.

While under the new Municipal Act no provisions are provided specific to the previous s.221, the intent to allow capital cost recovery through fees and charges is embraced within s.8(2) and s.391. The new Municipal Act also maintains the ability of municipalities to impose capital charges for water and sewer services on landowners not receiving an immediate benefit from the works. Under s.391(2) of the Act, "a fee or charge imposed under subsection (1) for capital costs related to water (or sewer) 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 OMB on the grounds that the charges are "unfair or unjust."

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

Under the previous Local Improvement Act:

- A variety of different types of works could be undertaken, such as watermain, storm and sanitary sewer projects, supply of electrical light or power, bridge construction, sidewalks, road widening and paving;

- Council could pass a by-law for undertaking such work on petition of a majority of benefiting taxpayers, on a 2/3 vote of Council and on sanitary grounds, based on the recommendation of the Minister of Health. The by-law was required to go to the OMB, which might hold hearings and alter the by-law, particularly if there were objections; and
- 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.

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 Development Charges Act, 1997***

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

- Replace those sections of the 1989 DCA which govern municipal development charges (Education development charges are not to be significantly altered at this time);
- Limit services which can be financed from development charges, specifically excluding parkland acquisition, administration buildings, and cultural, entertainment, tourism, solid waste management and hospital facilities;
- Ensure that the level of service used in the calculation of capital costs will not exceed the average level of service over the previous decade. Level of service is to be measured from both a quality and quantity perspective;
- Provide that uncommitted excess capacity available in existing municipal facilities and benefits to existing residents are removed from the calculation of the charge;
- Ensure that the development charge revenues collected by municipalities are spent only on those capital costs identified in the calculation of the development charge;
- Require municipalities to contribute funds (e.g. taxes, user charges or other non-development charge revenues) to the financing of certain projects primarily

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funded from development charges. The municipal contribution is 10 percent for services such as recreation, parkland development, libraries, etc.;

- Permit (but apparently not require) municipalities to grant developers credits for the direct provision of services identified in the development charge calculation and, when credits are granted, require the municipality to reimburse the developer for the costs the municipality would have incurred if the project had been financed from the development charge reserve fund;
- Set out provisions for front-end financing capital projects (limited to essential services) required to service new development; and
- Set out provisions for appeals and complaints, and transitional rules, including that municipalities will have up to 18 months from the date of proclamation of the new Act to establish new development charge by-laws, otherwise the old by-laws will expire.

The Act was further amended as of January 1, 2016 to make adjustments to certain services (transit and waste diversion), the background study requirements (i.e. asset management analysis), the public process (extended circulation period) and reserve fund reporting. None of these items change the ability for municipalities to recover capital costs for water (or wastewater).

#### ***6.1.4 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.

#### ***6.1.5 Reserves and 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 is often different than the budgeting format). There are three funds, those being 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 management 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 – generally used to fund unexpected and/or significant events that require capital expenditures.

### ***6.1.6 Long Term Debt Financing***

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

The Ministry of Municipal Affairs regulates the level of debt incurred by Ontario municipalities, through its powers established under the *Municipal Act*. Ontario Regulations 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 arm's length crown corporation, which has been set up as a tool to offer low-cost and longer-term financing to assist municipalities in renewing their infrastructure (this corporation has merged the former O.S.I.F.A. into its operations) I.O. combines the infrastructure renewal needs of municipalities into an infrastructure investment "pool." I.O. will raise investment capital to finance loans to the public sector by selling a new investment product called Infrastructure Renewal Bonds to individual and institutional investors.

I.O. provides access to infrastructure capital that would not otherwise be available to smaller borrowers. Larger borrowers receive a longer term on their loans than they could obtain in the financial markets, and can also benefit from significant savings on transaction costs such as legal costs and underwriting commissions. Under the I.O.



approach, all borrowers receive the same low interest rate. I.O. will enter into financial agreement with each Municipality subject to technical and credit reviews, for a loan up to the maximum amount of the loan request.

The first round of the former O.S.I.F.A.'s 2004-05 infrastructure renewal program was focused on municipal priorities of clean water infrastructure, sewage treatment facilities, municipal roads and bridges, public transit and waste management infrastructure. The focus of the program was expanded in 2005/2006 and subsequently. The present program provides for all water (and wastewater) capital.

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.

## **6.2 Summary of Capital Funding Policies for the L.H.P.W.S.S.**

### ***6.2.1 Grant Funding***

Over the past few years, the Water Board has been successful in receiving grants of over \$13 million as part of the Build Canada Fund (B.C.F.) to assist in financing capital infrastructure projects. The Water Board continues to pursue grant funding opportunities, where available.

### ***6.2.2 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.

### ***6.2.3 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 are used to finance the capital works.

### **6.2.4 Reserves and Reserve Funds**

The need for strong reserves are part of the Strategic 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.

Currently, there are three reserves established for various purposes, they include:

- The Capital Reserve which is to be used for funding of major capital works associated with additions and expansions to the system. It may also be used to pay debt associated with existing capital work and/or to offset the need to issue new debt by creating pay-as-you-go opportunities for smaller and medium sized capital works. Based on the current approved Board policy, contributions to this reserve come from various places including:
  - base water rate;
  - asset sale/lease revenue;
  - revenue from the Infrastructure Charges from members for system expansion; and
  - capital cost charges to new members for work that will be completed on behalf of the new member at a future time.
- The Emergency Reserve which is to be used to respond to emergencies and for stabilization of annual water rates when extreme circumstances would result in an unusually large increase in the water rates. Contributions to this reserve come from the base water rate and should be carried at a level of \$2 million.
- The Asset Replacement Reserves primary purpose is for funding lifecycle costs of the system including repairs, refurbishments, and replacements of the Water Boards assets. This reserve is intended to grow over time to a level where the assets are fully financially sustainable. Contributions to this reserve come from the base water rate and buy-in charges to new municipalities connecting to the system.

### ***6.2.5 Long Term Debt Financing***

The Water Board takes a strategic approach to incurring and managing debt to further enhance the effectiveness of the Strategic 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.

The Water Board’s policy on Debt Capacity is set at 20% of own revenue.

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## **6.3 Evaluation of Financing Alternatives**

### ***6.3.1 Grant Funding***

For the 2017 to 2046 capital forecast, there is no additional 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.

### ***6.3.2 Development Charges Act, 1997***

It is noted that the Water Board may wish to explore the ability to impose growth charges/development charges for expansions related to growth at some point in the future. As mentioned in Section 6.2.2 this would require the Water Board to undertake a Development Charge Background Study and provide the resultant charge onto the member municipalities. The member municipalities could then either include the calculated D.C. into their local development charge by-law(s) or budget for the D.C. charge as a capital growth charge to be recovered through their rates.

The need to undertake a D.C. background study will need to be monitored over the forecast to identify when the most appropriate time to impose a charge would be. Currently the twinning of the transmission main will provide additional capacity in the system, some of which is required for system performance and some of which will service growth. Currently, this project is anticipated to be fully funded from the capital reserve as the timing, location and amount of growth is unknown. As growth is identified in the future, the Water Board is encouraged to consider the implementation of a growth related charge.

### ***6.3.3 Operating Contributions***

As mentioned in Section 6.2.3. the Water Board does not currently fund capital works directly from the operating budget, instead, they make contributions to reserves from the operating budget. This practice is recommended to continue over the forecast period with increases in the amount of funds being transferred to the reserves as will be discussed in Section 6.3.4.

### ***6.3.4 Reserves and Reserve Funds***

As described in Section 6.2.4, the Water Board has established three reserves (reserve funds), the capital reserve, emergency reserve and asset replacement reserve, whose

use is for various purposes including funding of capital works, payment of existing debt obligations, and the stabilization of water rates.

The following Table 6-1 summarizes the water reserves utilized in this analysis and their respective balances at December 31, 2015 and forecasted balances at December 31, 2016:

**Table 6-1**  
**2015 Actual and 2016 Forecasted Year-end Reserve Balances**

Reserve Fund	Dec. 31 2015 (Actual)	Dec. 31, 2016 (Forecasted)
<b>Water</b>		
Capital Reserve Fund	2,137,927	5,008,579
Emergency Reserve Fund	352,247	762,247
Asset Replacement Reserve Fund	15,291,784	7,197,784

The following provides an evaluation of each reserve:

- The capital reserve 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 2016 capital budget and short term forecast. Over the 30-year forecast, the transfers to this reserve, anticipated to be funded entirely from the Base Charge (constant volume rate), 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 Base Charge may result in changes to the following assumptions:
  - No additional funding is anticipated to come from the Infrastructure Charge over the forecast as the forecast does not currently include capital costs associated with works required to meet increased water demands from existing members.
  - The funding of the full twinning of the transmission main is anticipated to be funded from the capital reserve. If a growth charge (D.C.) is imposed in the future for the growth component of this project, then the reliance on the capital reserve would be decreased accordingly.
  - 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.
  - No additional capital costs or corresponding revenue is anticipated over the forecast for works related to new members and the work that would be completed on behalf of the new member.
- The Emergency Reserve has been utilized over the past three years to address unanticipated capital works that arose during 2014 and 2015, leaving a balance

in the reserve at the end of 2016 which is not in-line with the suggested minimum balance of \$2 million (as per the reserve policy). A transfer of \$700,000 is included in the rate analysis for 2017 to bring the reserve balance back in-line with the suggested balance. This balance is then anticipated to continue to earn interest over the forecast period. The interest earnings will allow the suggested balance of the reserve to stay in-step with inflation over time. Currently there is no additional capital anticipated over the forecast to be funded from this reserve.

- 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 base charge (constant volume rate) 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 full inventory of assets was reviewed as part of the A.M.P. and the capital needs which fall in the 10 years following the 30-year forecast period were reviewed. The transfers to this reserve were established at a sustainable rate to ensure the necessary funding is in place and built into the rates for the Water Board to continue to pay for the asset replacement needs into the future.

### ***6.3.5 Long Term Debt Financing***

In keeping with the Water Board's strategic approach to incurring and managing debt to further enhance the effectiveness of the Strategic Financial Plan, the financial plan does not anticipate any additional debt required to fund capital over the forecast period (2017-2046). The current (2016) debt capacity is 7%. This amount is anticipated to increase to 8% in 2017 due to debentures anticipated to be issued for capital works approved in 2016 and prior years. The debt capacity would then decrease over the forecast period to zero by 2029. 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**  
**2016-2046 Forecast Debt Capacity**

Year:	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028 - 2046
% of debt to revenue	7%	7%	8%	8%	7%	7%	7%	6%	5%	5%	1%	1%	0%

## 6.4 Recommended Funding of the Capital Program

Of the various funding alternatives provided in this section, the following are recommended for further consideration by the Water Board for the capital expenditures (inflated) provided in Chapter 5:

**Table 6-3  
2016-2046 Recommended Capital Funding**

Description	Historical (2014-2015)	Approved Budget (2016)	Proposed Budget (2017)	Forecast (2018-2026)	Forecast (2027-2036)	Forecast (2037-2046)	Total Proposed Budget & Forecast (2017-2046)
Provincial/Federal Grants	\$13,184,048	\$0	\$0	\$0	\$0	\$0	\$0
Other Contributions	-\$84,080	\$0	\$0	\$0	\$0	\$0	\$0
Buy-in Charge Revenue	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Lifecycle Contribution from Contracted Operation	\$0	\$0	\$60,000	\$1,088,000	\$2,643,000	\$3,277,000	\$7,068,000
Growth Charges Reserve Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Non-Growth Related Debenture Requirements	\$8,665,000	\$1,461,537	\$0	\$0	\$0	\$0	\$0
Growth Related Debenture Requirements	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Operating Contributions	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Lifecycle Reserve Fund	\$9,800,216	\$12,532,000	\$1,060,000	\$36,131,000	\$80,911,000	\$55,319,000	\$173,421,000
Emergency Reserve Fund	\$847,753	\$0	\$0	\$0	\$0	\$0	\$0
Water Capital Reserve	\$2,591,342	\$81,000	\$0	\$7,464,000	\$14,192,000	\$111,558,000	\$133,214,000
<b>Total</b>	<b>\$35,004,278</b>	<b>\$14,074,537</b>	<b>\$1,120,000</b>	<b>\$44,683,000</b>	<b>\$97,746,000</b>	<b>\$170,154,000</b>	<b>\$313,703,000</b>



It is noted that no grant funding is anticipated at this time however, the Board continues to pursue funding opportunities as they are made available through the Provincial and/or Federal government. 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.

Part of the annual Contracted Operations agreement covers maintenance costs of up to \$30,000 per item (inflated annually), for mid-life interventions. Amounts in excess of \$30,000 per item are funded through the water rates. To account for the portion funded through the annual operations contract, a revenue item has been identified annually based on the capital works identified in the A.M.P. This is to ensure that the Financial Plan does not over fund the capital infrastructure costs required.

All capital “renewal” works identified through the A.M.P. over the forecast are funded through the Asset Replacement Reserve Fund. Projects related to enhancements, efficiencies, and Plans/Documentation are funded through the Capital Reserve Fund.

Appendix A provides for the full capital expenditure and funding program by year for the L.H.P.W.S.S.

The analysis provided herein assumes that the Joint Board will continue to borrow approximately \$1.46 million for water services projects approved in 2016 and prior years over a 10-year term.

No other additional debt is anticipated over the forecast period to 2046 based on the analysis provided herein. The Water Board must monitor the reserve funds and cash flow of the capital forecast and make adjustments to the list of capital projects and/or their funding sources annually. It is noted that the timing of the full twinning of the transmission main may be required sooner than anticipated if additional volumes are requested from existing and/or new municipalities, thus resulting in the need to issue some level of debt in the later years of the forecast period.

## **6.5 Future Initiatives**

### ***6.5.1 Climate Change Initiatives***

With the recent emergence of the province’s ongoing fight against climate change, the Ontario Climate Change Action Plan was introduced in June, 2016. The plan outlines actions to assist households and business in Ontario to reduce harmful greenhouse gas pollution by adopting low-carbon and no-carbon energy in their homes, facilities and

workplaces. Part of the action plan includes the Ontario's Green Button program which lets Ontarians access and share data on electricity, natural gas and water consumption in a standardized electronic format. The expansion of this tool across the province will assist homeowners and businesses manage and conserve both their energy and water use in the future.

Initiatives such as the Ontario's Green Button program and future initiatives through provincial and/or federal climate change programs may result in changes to the current volumes anticipated over the forecast for the L.H.P.W.S.S. and/or may result in new technologies required to be implemented within the system, creating additional capital costs.

As the implementation of product efficiency standards continues (which Ontario is already a leader in regulating for energy efficient appliances and products), the Action Plan will further implement product efficiency standards to reduce energy usage in the future. Updated energy efficiency standards for energy-using products and equipment found in drinking water and wastewater treatment plants are anticipated as these services are typically one-third to one-half of a municipality's total electrical use. These types of changes to standards, once implemented, would potentially reduce both costs and emissions.

As these initiatives are currently underway and those which may be identified in the future continue to be implemented, the Water Board will be required to update their Financial Plan to assess the funding necessary to implement these types of new legislative requirements. Rates may also need to be adjusted to reflect changes in the overall volume usage over time due to these types of initiatives and resulting changes in technology.

### ***6.5.2 Source Water Protection Initiatives***

The Clean Water Act, 2006 set out a framework for source protection planning on a watershed basis. Under the Act, source protection areas were established based on the watershed boundaries of the thirty-six Conservation Authorities in Ontario. As the watershed managers, the Conservation Authorities provided information that was used in the source protection planning process. They also worked with the Source Protection Committee to facilitate the development of Source Protection Plans. All of these plans have been approved by the M.O.E.C.C.

The Source Protection Plans help communities protect existing and future drinking water sources to ensure public health is protected. These plans provide guidance and

encourage policies based on the standards of the Nutrient Management Act, 2002 along with agri-environmental management practices. These are important tools for managing the risks to municipal drinking water sources. The plans identify activities that could impact drinking water sources, contain policies to reduce threats to drinking water sources, and recommend strategies to assist in managing these threats. The Conservation Authorities continue to play a role in the implementation of the plans and will assist in areas such as the delivery of policy and technical development, interpretation, resource sharing, education, and risk management.

The implementation of source water protection policies and strategies vary for each area and may have future impacts on the requirements of the Water Board. Although specific projects have not been identified in the financial plan, a budget for future efficiency, enhancements and legislative initiatives has been included which may assist the Board in addressing source water protection initiatives within the 30-year forecast period.

### ***6.5.3 Great Lakes Protection Initiatives***

The Great Lakes Protection Plan is meant to protect and restore the health of the Great Lakes and St. Lawrence River Basin through opportunities for both communities and individuals to get involved in local protection and restoration efforts.

With most Ontarians living within the watersheds of the Great Lakes/St. Lawrence River system, their resources provide more than 80% of Ontarians with drinking water, energy, food and recreation. The Great Lakes are under threat from factors such as increased levels of pollutants, urban growth, invasive species and rising levels of phosphorus. Climate change is also providing challenges to the Great Lakes from changes in the thaw and freeze cycle. Due to these and other factors, the provincial government has recently passed new legislation to ensure the protection of the Great Lakes and St. Lawrence River system.

The Great Lakes Protection Act, received royal assent on November 3, 2015. It will

- ensure monitoring and reporting programs are established and maintained;
- commit to establishing at least one target to reduce algae levels;
- allow the Minister of Natural Resources and Forestry to establish targets to prevent the loss of wetlands;
- improve consultation and engagement requirements and require consideration of traditional ecological knowledge;

- require comprehensive progress reports to be tabled in the legislature every three years;
- require that Ontario's Great Lakes Strategy be reviewed every six years;
- create more opportunities for Ontarians to become involved in the protection and restoration of the ecological health of the Great Lakes/St. Lawrence River Basin; and
- improve the capacity of the Great Lakes/St. Lawrence River Basin to be resilient to the impacts of climate change.

The Canada-Ontario Agreement (C.O.A.) on Great Lakes Water Quality and Ecosystem Health is a new plan that helps the province carry out the Great Lakes Strategy. It also helps Canada meet commitments under the Canada-U.S. Great Lakes Water Quality Agreement.

The C.O.A.'s priorities include protecting water; improving wetlands, beaches and coastal areas' protecting habitats and species; enhancing understanding and adaptation; and promoting innovation and engaging communities.

Initiatives that result from this new legislation and/or future new legislation will need to be monitored by the Water Board and any new requirements implemented as required through future updates to the Financial Plan. Although specific projects have not been identified in the financial plan, a budget for future efficiency, enhancements and legislative initiatives has been included which may assist the Board in addressing any new initiatives that may come forward over the 30-year forecast period.

## **6.7 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 includes a Base Rate, an Infrastructure Surcharge and Buy-in Charge.

- The Base Rate is a per cubic metre charge imposed for water supplied.
- The Infrastructure Surcharge 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, and contribution to the asset replacement reserve fund.

The Infrastructure Surcharge is to pay for capital works necessary to address the capital costs required to address increasing water demands of its members vs. the costs of running the utility, which are recovered through the Base Rate. 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.

When surcharge works are identified in the long term capital plan, the Infrastructure Surcharge rate would be supported by a documented process which would identify how the rate was calculated.

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.

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## 7. Overview of Expenditures and Revenues

### 7.1 Water Operating Expenditures

In this report, the forecasted water budget figures (2017-2046) are based on the 2016 Operating Budgets. The costs have been identified 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 have been reviewed with staff to establish forecast inflationary adjustments. Most of the expenditures have been assumed to increase at a rate of 3.0% annually. Operating expenditures related to electricity have been inflated by 4.0% annually and expenditures related to “quality” (purchased water quality expenditures) have been held constant over the forecast period.

The annual contributions have been provided to the asset replacement reserve fund and capital reserve fund in order to eliminate the need for future debt to finance the capital program.

The transfers to the replacement reserve are increasing over the forecast period to a level of \$7.5 (inflated) million per year. This level of investment along with the year-end balance in the final year of the forecast (2046), provides the system with a sustainable level of funding to address the asset replacement needs in the post-2046 forecast period when a number of significant replacements are coming due.

The transfers to the capital reserve are increasing over the forecast period to ensure that capital works related to efficiencies, enhancements plans/documentation and growth are funded. Note that the funding of the twinning of the transmission main is funded from the capital reserve. If the Water Board was to implement a capital charge (D.C.) or collect additional funding in the future, the transfers to the capital reserve could be reduced accordingly.

The debenture expenditures include debt charges for both existing debenture issues as well as an estimate of those anticipated as a result of prior year capital funding approvals (2016 and prior).

Further, the capital forecast provides for the replenishment of the Emergency Reserve Fund in 2017. This is to ensure that the balance in this reserve fund, by year-end 2017, is back in line with the minimum reserve balance policy of \$2 million.

## **7.2 Water 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 at the current 2016 level.

It is noted that there has been no revenue identified over the forecast from Buy-In Charges as the Water Board is uncertain at this point as to the potential new members or large increases in needs of existing members. However, if a new municipality comes forward or an existing municipality wishes to increase their volumes in excess of 10% of their average annual Base Volume averaged over the last three (3) years, the revenue would be collected and transferred to the Capital Reserve Fund.

Table 7-1 provides for the operating budget (expenditures and revenues) for the water system for the years 2016, 2017, 2026, 2036, and 2046. Detailed year-by-year information is provided in Appendix A.



**Table 7-1  
Summary of Operating Expenditure and Revenues  
(inflated \$)**

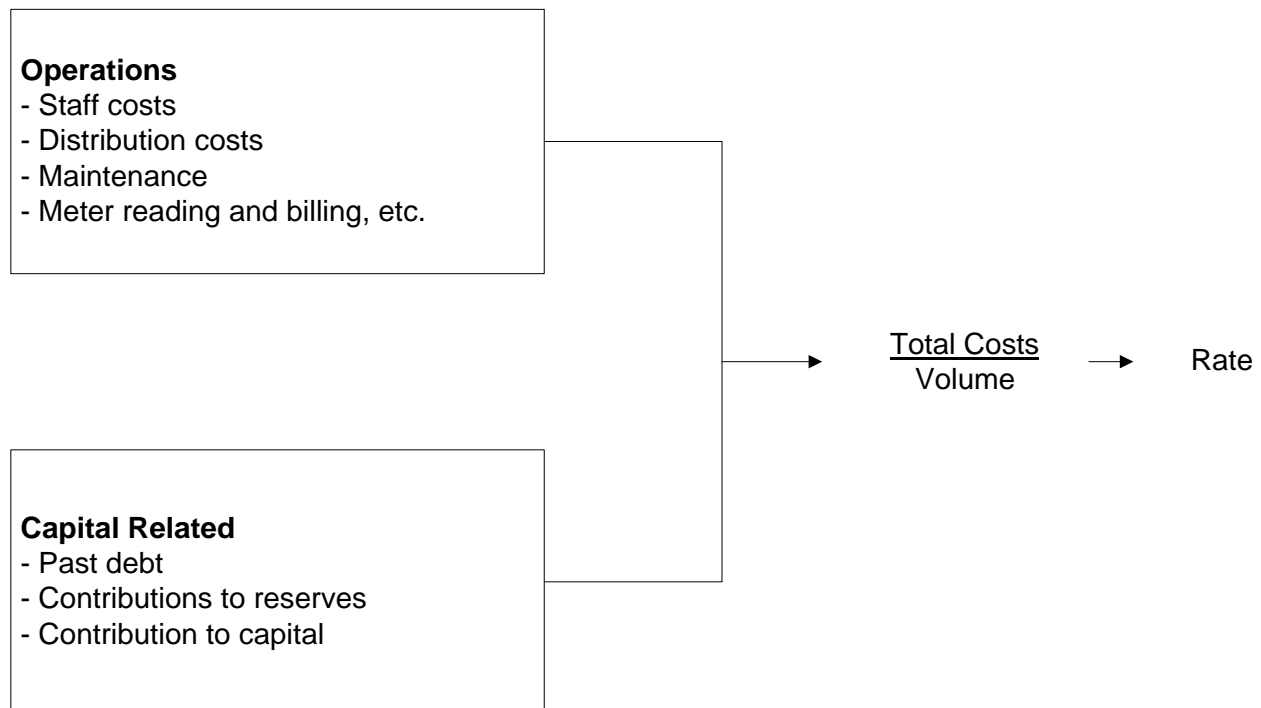
Description	Approved Budget (2016)	Proposed Budget (2017)	Forecast (2026)	Forecast (2036)	Forecast (2046)
<b>Operating Expenditures:</b>					
General	\$4,401,463	\$4,671,150	\$6,094,900	\$8,191,000	\$11,008,000
Chemical	\$0	\$0	\$0	\$0	\$0
Quality	\$130,000	\$130,000	\$130,000	\$130,000	\$130,000
Electricity	\$4,000,000	\$4,600,000	\$6,295,400	\$9,318,800	\$13,794,200
Costs for operating RMF	\$145,623	\$150,000	\$195,700	\$262,900	\$353,300
Annual IT Maintenance Allowance	\$0	\$100,000	\$130,600	\$175,500	\$236,000
Costs Savings - High Lift Pump Replacement	\$0	\$0	-\$69,200	-\$93,000	-\$124,900
Administrative Expenses	\$2,040,377	\$1,690,000	\$2,205,400	\$2,963,900	\$3,983,300
<b>Capital Related Expenditures:</b>					
Existing Debt - Growth Related	\$0	\$0	\$0	\$0	\$0
New Debt - Growth Related	\$0	\$0	\$0	\$0	\$0
Existing Debt - Non-Growth Related	\$1,340,088	\$1,328,499	\$0	\$0	\$0
New Debt - Non-Growth Related	\$0	\$40,237	\$151,776	\$0	\$0
Transfer to Capital	\$0	\$0	\$0	\$0	\$0
Transfert to Buy-in Fee Reserve Fund	\$0	\$0	\$0	\$0	\$0
Transfer to Asset Replacement (Lifecycle) Reserve Fund	\$4,235,000	\$2,552,000	\$6,000,000	\$7,500,000	\$7,500,000
Transfer to Emergency Reserve Fund	\$400,000	\$700,000	\$0	\$0	\$0
Transfer to Capital Reserve Fund	\$2,873,651	\$3,738,894	\$3,703,934	\$5,755,140	\$5,871,332
<b>Total Expenditures</b>	<b>\$19,566,202</b>	<b>\$19,700,780</b>	<b>\$24,838,510</b>	<b>\$34,204,240</b>	<b>\$42,751,232</b>
<b>Revenues:</b>					
Other Miscellaneous Revenue	\$25,000	\$20,000	\$25,000	\$25,000	\$25,000
Revenue from Base Charge (Constant Volume Rate) m <sup>3</sup>	\$19,541,202	\$19,680,780	\$24,813,510	\$34,179,240	\$42,726,232
<b>Total Revenues</b>	<b>\$19,566,202</b>	<b>\$19,700,780</b>	<b>\$24,838,510</b>	<b>\$34,204,240</b>	<b>\$42,751,232</b>

## 8. Pricing Structures

### 8.1 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, transmission 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 which will affect the expenditures over time are provided below.

#### Operations

- Inflation;
- Increased maintenance as system ages; and
- Changes to provincial legislation.

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## 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).

## **8.2 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, and 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, e.g. base charges (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 general application of the various methods are as follows:

**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.

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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. (note that this is the rate used by the Water Board and referred to as the “Base Charge”).

**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 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.

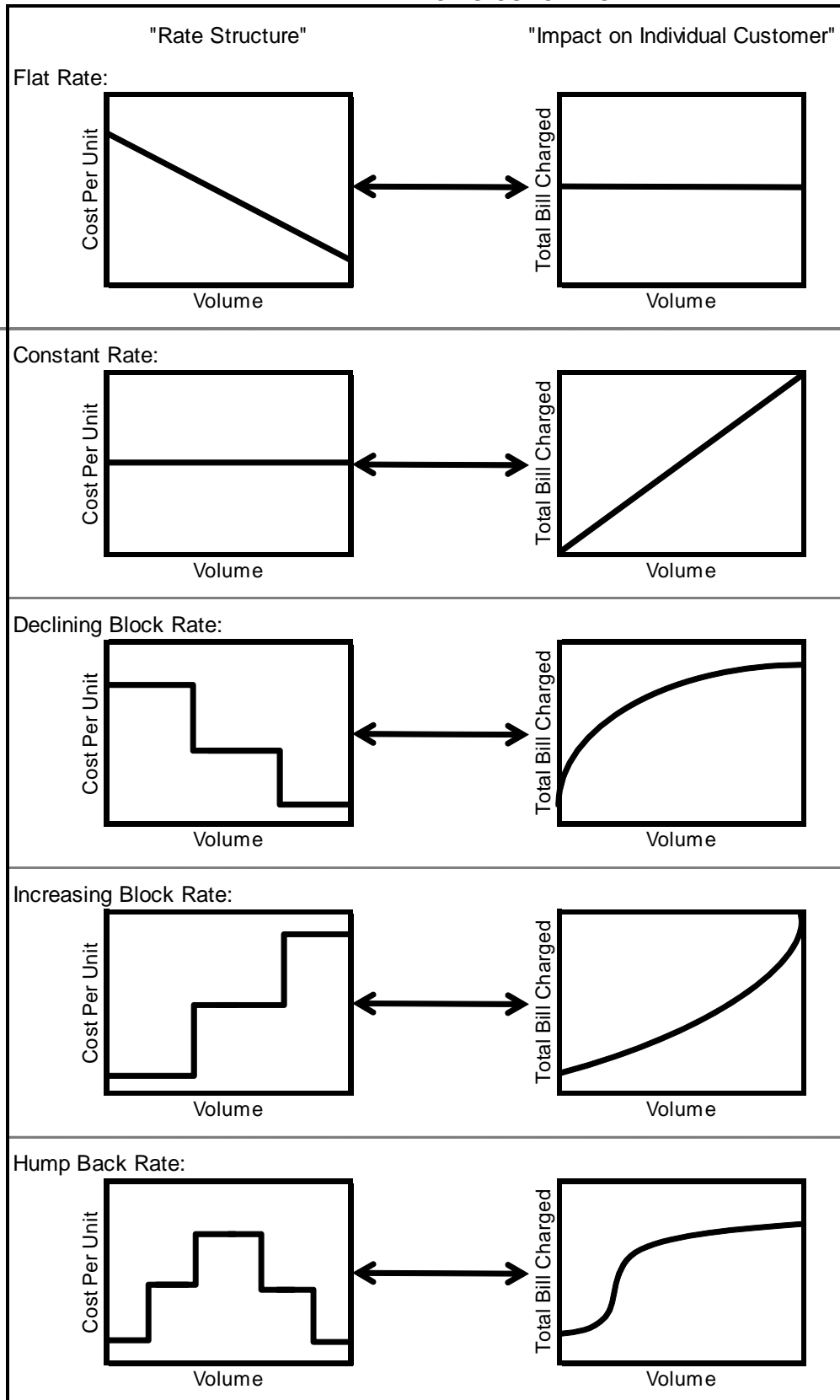
**Base Charges:** Base charges are a flat fee charged to each consumer imposed on a monthly/bimonthly/quarterly basis regardless of volume utilized, typically used to ensure

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.

Figure 8-1 provides a schematic representation of the various rate structures. 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. The schematic is summarized below for each rate structure.

Figure 8-1

WATER RATE PRICING CONCEPTS



**Figure 8-2**

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 increases
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

### 8.3 Recommended Rate Structure

The Water Board 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 8.2) 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 constant rate (i.e. the Water Board's "Base Charge") 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 (constant volume rate) be continued in the future.

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## **9. Analysis of Primary Water Rates and Policy Matters**

### **9.1 Introduction**

To summarize the analysis undertaken thus far, Chapter 5 reviewed capital-related needs as discussed in the Lake Huron Primary Water Supply System – Asset Management Report. 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 7 established the 30-year forecast of operating expenditures including an annual capital reserve contribution. Based on the discussions provided in Chapter 8, the current rate structure is recommended to continue. This chapter will provide for the calculation of the constant volume rates (base charges) over the forecast period. These calculations will be based on the net operating expenditures provided in Chapter 7, divided by the water consumption forecast and volumes provided in Section 5.1. 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 8.2 and the recommendation to continue with the present structure, the rates are calculated by taking the net recoverable amounts from Table 7-1 (the product of total expenditures less miscellaneous revenues) and completes the calculation by dividing them by the volumes resulting in the forecasted rates. The base charge (constant volume) rates are anticipated to increase by 3% annually from 2017 – 2027, 2% annually from 2028 – 2038 and 1% annually from 2039 – 2046.

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  
Summary of Recommended Water Rates**

Description	2014 Approved	2015 Approved	2016 Approved	2017	2018	2019	2020	2021	2022	2023	2024
Base Charge (Constant Volume Rate per m <sup>3</sup> )	\$0.4183	\$0.4392	\$0.4568	\$0.4705	\$0.4846	\$0.4991	\$0.5141	\$0.5295	\$0.5454	\$0.5618	\$0.5787
% Increase per Year		5.0%	4.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%

Description	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Base Charge (Constant Volume Rate per m <sup>3</sup> )	\$0.5961	\$0.6140	\$0.6324	\$0.6450	\$0.6579	\$0.6711	\$0.6845	\$0.6982	\$0.7122	\$0.7264	\$0.7409
% Increase per Year	3.0%	3.0%	3.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%

Description	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Base Charge (Constant Volume Rate per m <sup>3</sup> )	\$0.7557	\$0.7708	\$0.7862	\$0.7941	\$0.8020	\$0.8100	\$0.8181	\$0.8263	\$0.8346	\$0.8429	\$0.8513
% Increase per Year	2.0%	2.0%	2.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

### 9.3 Reserve Policies

The current reserve policies are described in Section 6.2.4 and are recommended to continue with contributions to the reserves in-line with the Financial Plan set out in Appendix A. As noted in Section 7.1 the reserves are increasing over the forecast period to levels which will allow the Water Board to fund all capital works on a pay-as-you-go basis and provide sustainable levels for future asset replacement needs post 2046.

- The transfers to the replacement reserve are increasing over the forecast period to a level of \$7.5 million per year.
- The transfers to the capital reserve are increasing over the forecast period to ensure that capital works related to efficiencies, enhancements plans/documentation and growth are funded.
- A transfer to the Emergency Reserve Fund in 2017 to ensure that the balance in this reserve fund, by year-end 2017, is back in line with the minimum reserve balance policy of \$2 million.

All reserves are interest bearing and increase over the forecast period which will assist with funding capital and keeping in-step with inflation.

### 9.4 Debt Capacity

Based on the discussion set out in Section 6.3.5 the only debt anticipated to be issued over the forecast period relates to the funding of capital works (for years prior to 2016) which received approval for debenture financing. In keeping with the Water Board's debt strategy, no additional debenture financing is anticipated over the forecast however, this will be monitored annually during the budget process. The current 2016 debt capacity is 7%. This amount is anticipated to increase to 8% in 2017 due to debentures anticipated to be issued for capital works approved in 2016 and prior years. The debt capacity would then decrease over the forecast period to zero by 2028.

Table 9-2 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 9-2**  
**2016-2046 Forecast Debt Capacity**

Year:	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028 - 2046
% of debt to revenue	7%	7%	8%	8%	7%	7%	7%	6%	5%	5%	1%	1%	0%

## 9.5 Growth Related Charge

As noted earlier, the Water Board may wish to explore the policy to impose growth charges (D.C.s) for expansion related works. As mentioned in Chapter 6, this would require the Board to undertake a D.C. background study. The Board should consider the equity of not having a growth charge in place. If there is no growth charge in place, no growth/slow growth member municipalities would in effect subsidize high growth municipalities by funding growth related works through the Base Charges. Having a growth charge in place would ensure that expenditures required due to growth in the system are being paid for by the members deriving the direct benefit.

## 9.6 Buy-in Fees

As noted in Chapter 6, the Capacity Buy-In Charge is not a “growth” charge and is not for growth related works. Revenue from this charge is a reimbursement to the Water Board for existing infrastructure provided by the Water Board for the potential benefit of the new member.

### 9.6.1 Current Buy-in Fees

The current formula for the Buy-in fee was established in June 2007 in Working Paper #4. The policy established that an approved application to join the Water Board or to accommodate the request of an existing member to increase their previous year’s annual water taking by more than 10% would be calculated as follows:

Present Value (PV) of System Capacity (AC)			
Cap used by Existing Members (EM)	Surplus Capacity financed by Existing Members (SC1)		
	<table border="1"> <tr> <td style="background-color: #d9ead3;">Additional Cap required by New Member (C<sub>add</sub>)</td> <td style="background-color: #d9ead3;">Surplus Capacity (SC2)</td> </tr> </table>	Additional Cap required by New Member (C <sub>add</sub> )	Surplus Capacity (SC2)
Additional Cap required by New Member (C <sub>add</sub> )	Surplus Capacity (SC2)		

Note that SC1 is equivalent to the value of the unutilized capacity that has been paid for by existing members.

Their purchased share ( $S_p$ ), is calculated as . . .

$$S_p = \frac{C_{add}}{SC1} \times 100\%$$

The share is purchased for its Present Value. The Present Value should be net of outstanding debt since all members would be contributing to the outstanding debt in proportion to their consumption (included in base rate).

The value of the share of surplus capacity purchased, ( $Spv$ ), is calculated as  $Sp \times$  Value of SC1 . . .

$$Spv = \left\{ \frac{SC1}{AC} \right\} \times PV \times S_p$$

Note: These calculations compensate a Water Board for the fact that the capacity of the Water Board's system to accommodate the future needs of already-connected members has been reduced.

### ***9.6.2 Alternative Buy-in Fee Options***

During the process of the Financial Plan, two options to the way in which the Buy-in fees are calculated were undertaken. Table 9-3 provides two alternative calculations to the fees.

Option1 identifies the total replacement value of the water system, broken out by treatment and transmission assets, and divides the value by the capacity for the respective assets. This results in a calculation which represents a cost per cubic metre of the existing system

Option 2: takes the total replacement value of the water system, broken out by treatment and transmission assets and then evaluates the portion of the system that has been used as of 2015 (e.g. if an asset had a 100-year life and has been in place for 40 years, the value of the system used would equal 40% of the total value of that asset), on an asset-by-asset basis. For the transmission assets, an average of 28% of the system has been used to date and for treatment 60% of the system has been used. This option takes the percentage of the value of the system that has been used and multiplies it by the cost of the system per  $m^3/day$  as calculated in Option 1.

**Table 9-3  
Alternative Buy-in Fee Calculation**

2015\$

	<b>Total</b>	<b>Treatment</b>	<b>Transmission</b>
<b>Option 1</b>			
Total Replacement Cost of System	\$412,902,751	\$140,903,173	\$271,999,578
Capacity (m <sup>3</sup> /day)		340,000	308,000
<b>Cost of System per m<sup>3</sup>/day</b>	<b>\$1,298</b>	<b>\$414</b>	<b>\$883</b>

	<b>Total</b>	<b>Treatment</b>	<b>Transmission</b>
<b>Option 2</b>			
Total Replacement Cost of System	\$412,902,751	\$140,903,173	\$271,999,578
Value of System Used to 2015	\$160,817,077	\$84,216,468	\$76,600,609
Percentage of System Used		60%	28%
<b>Prorated Cost per m<sup>3</sup>/day based on Proportion of System Used to 2015</b>	<b>\$496</b>	<b>\$248</b>	<b>\$249</b>

The preferred method of the capacity buy-in charge is Option #2. This cost reflects the aging, or using-up, of the excess capacity of the assets pending newer users joining the system. This change relates to past expenditures made by the member municipalities. Once the new municipality joins the Board, the future using-up of the asset will be partially funded by this new member. In this way, no double charging is expected to occur.

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## 10. Observations and Recommendations

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

Based upon the foregoing, the following observations and 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 summarized in Chapter 4 (detailed in Appendix A) and the associated Capital Financing Plan as set out in Chapter 6.
3. That the Joint Water Board of the L.H.P.W.S.S. consider the base charges (constant volume rates) for water as provided in Chapter 9.
4. 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.
5. That the Joint Water Board of the L.H.P.W.S.S. consider the need to implement a growth related charge/Development Charges to assist in funding capacity expansion requirements as needed.
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 moving to a pay-as-you-go approach to funding capital works, where possible.
7. That the Joint Water Board of the L.H.P.W.S.S. continue to strengthen the Asset Replacement Reserve when existing debt is retired over time;
8. That the Joint Water Board of the L.H.P.W.S.S. implement a capacity buy-in charge of \$496 m<sup>3</sup>/day and that this amount be indexed annually.

## **Appendix A – Detailed Financial Plan**







**Appendix A-1**  
**Lake Huron Primary Water Supply System**  
**Water Service**  
**Capital Budget Forecast**  
 Inflated \$

Description	Key Driver	Forecast																	
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
<b>Capital Expenditures</b>																			
High Lift Pump Replacement	Efficiency	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pressure Controls & Energy Recovery Unit Upstream of Arva Reservoir	Efficiency	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Filter Backwash Turbidimeters	Efficiency	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Control System Study	Plans/Documentation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-Treatment System Optimization Study	Efficiency	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pre-Treatment System Modifications	Efficiency	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coagulation Optimization Study	Plans/Documentation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Polymer System Study	Plans/Documentation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Future Efficiency/Enhancement/Legislative Projects	Enhancement	2,536,000	-	2,639,000	-	2,746,000	-	2,856,000	-	2,972,000	-	3,092,000	-	3,217,000	-	1,673,000	-	1,741,000	-
Review Inactivation Control Strategy and UV Upgrade	Enhancement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flow Control Strategy and Storage Study	Plans/Documentation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Closed Loop Chlorine Control system	Enhancement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Master Key System	Enhancement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Filter Air Scour Surface Wash	Enhancement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Division Vehicle	Enhancement	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Security Assessment and Audit	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Complete Twinning of Primary Transmission Main	Enhancement/Growth	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	97,671,000
Financial Plan Update	Plans/Documentation	-	65,000	-	-	-	-	71,000	-	-	-	-	79,000	-	-	-	-	87,000	-
Asset Management Plan	Plans/Documentation	-	194,000	-	-	-	-	214,000	-	-	-	-	237,000	-	-	-	-	261,000	-
Record Drawings and Documents	Plans/Documentation	6,000	-	7,000	-	7,000	-	7,000	-	7,000	-	8,000	-	8,000	-	8,000	-	9,000	-
Source Water Protection Assessment Report	Plans/Documentation	63,000	-	-	-	-	70,000	-	-	-	-	77,000	-	-	-	-	85,000	-	-
Master Plan Update	Plans/Documentation	127,000	-	-	-	-	140,000	-	-	-	-	155,000	-	-	-	-	171,000	-	-
Revenue Meter Replacements & Upgrades	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Concrete Crack Injection	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Building Repairs	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Drain Pipe Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Site Drainage Improvements	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Low Lift Pump #2 Refurbishment	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LL, HL, BW Pump Refurbishment	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Security Camera Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Instrumentation	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pipeline Air Valve Chamber Upgrades	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Arva Reservoir Structural Repairs (C3&4)	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WTP Modification/Renovation	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Filter Media Rebuild	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IT Security Upgrades	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roof Replacement - Chlorine Building High Lift Pump Station	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Low Lift Surge Valve	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clarifier Upgrades	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LL Building - Roofing	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LL/Clearwell Sluice Gate Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LL Building - Curtain Wall/ Clearstory window replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WTP Flow Meter Inspection/Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PAC Feed/Transfer Pump System Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sodium Hydroxide Metering Pump	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Distressed Pipe Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Monitoring System Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pump & No. 3 Gas Chlorinator	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
McGillivray HVAC Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
McGillivray Pumps/Valve/Electrical Upgrade	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Height pipe conveyance system	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flocculator Walking Beam Rehab	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Annual Maintenance Fund	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Annual IT Maintenance Allowance	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
All Assets - Area Municipality	Renewal	5,000	5,000	8,000	3,000	3,000	30,000	39,000	81,000	83,000	85,000	57,000	49,000	-	-	-	-	-	-
All Assets - Arva Pipeline	Renewal	147,000	163,000	174,000	255,000	260,000	266,000	265,000	276,000	187,000	182,000	176,000	170,000	158,000	168,000	173,000	179,000	188,000	210,000
All Assets - Terminal Reservoir	Renewal	66,000	92,000	93,000	111,000	113,000	43,000	17,000	50,000	34,000	34,000	43,000	44,000	8,000	56,000	72,000	83,000	127,000	259,000
All Assets - Exeter-Hensall Pipeline	Renewal	11,000	12,000	12,000	12,000	12,000	12,000	13,000	23,000	33,000	44,000	55,000	67,000	68,000	70,000	71,000	72,000	74,000	75,000
All Assets - Exeter-Hensall PS	Renewal	59,000	62,000	63,000	67,000	69,000	184,000	186,000	371,000	376,000	383,000	280,000	285,000	91,000	96,000	122,000	7,000	11,000	15,000
All Assets - Huron WTP	Renewal	5,068,000	5,220,000	11,582,000	12,256,000	12,314,000	9,185,000	10,718,000	3,696,000	3,791,000	3,955,000	3,976,000	2,760,000	3,362,000	3,983,000	4,564,000	5,376,000	7,253,000	6,926,000
All Assets - Intermediate Booster PS	Renewal	83,000	119,000	220,000	250,000	633,000	619,000	588,000	527,000	496,000	282,000	497,000	614,000	587,000	641,000	548,000	307,000	173,000	264,000
All Assets - Komoka-Mount Pipeine	Renewal	14,000	19,000	24,000	24,000	25,000	25,000	26,000	26,000	27,000	27,000	28,000	29,000	29,000	30,000	30,000	31,000	32,000	32,000
All Assets - Komoka-Mount PS	Renewal	39,000	18,000	88,000	107,000	109,000	109,000	173,000	185,000	198,000	202,000	206,000	136,000	110,000	85,000	108,000	147,000	225,000	20,000
All Assets - Strathroy-Caradoc Pipeline	Renewal	30,000	31,000	31,000	32,000	32,000	33,000	34,000	53,000	73,000	94,000	115,000	138,000	140,000	143,000	146,000	149,000	152,000	155,000
All Assets - Surge Control	Renewal	-	37,000	38,000	38,000	39,000	40,000	-	-	-	-	-	14,000	14,000	14,000	18,000	24,000	-	-

Description	Key Driver	Historical		Budget	Total	Forecast											
		2014 Actual	2015 Budget	2016		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
HLP#5 Valve Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Vehicle Security Gate Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Huron Electrical System Upgrades	Renewal	82,691	237,669	-	-	-	-	-	-	-	-	-	-	-	-	-	
Alum Tempering & Flushing System	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Low Lift Screen Repair	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plant Instrument Air Compressors	Renewal	-	60,000	-	-	-	-	-	-	-	-	-	-	-	-	-	
Huron Surge Tank Air Compressors	Renewal	124,588	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Server Room Fire Suppression	Renewal	-	-	-	30,000	30,000	-	-	-	-	-	-	-	-	-	-	
B Line Road Monitoring Station	Renewal	-	-	-	40,000	40,000	-	-	-	-	-	-	-	-	-	-	
Chemical Delivery Panel	Renewal	-	-	-	75,000	75,000	-	-	-	-	-	-	-	-	-	-	
Filter Rate Meters	Renewal	-	-	-	200,000	200,000	-	-	-	-	-	-	-	-	-	-	
LH1014 CLS CLEARWELL BAFFLE REPLACEMT	Renewal	74,252	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1203 WTP HVAC REPLACEMENT	Renewal	4,532,036	2,267,532	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1205 PUMP STATION #3 REPAIRS	Renewal	-	124,846	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1206 CLS HURON EMERGENCY PIPELINE	Renewal	139,675	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1215 PRE-TREATMENT OPTIMIZATION	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1220 CLS HURON WTP FUEL SYSTEM	Renewal	-	33,714	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1222 LOW LIFT PUMP #2 REFURBISHMENT	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1303 EASEMENT MAINTENANCE	Renewal	12,211	11,408	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1304 CLS SOURCE WATER PROTECTION	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1309 CLS FIELD CONTROL STUDY	Plans/Documentation	10,813	2,843	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1326 CLS BACKUP GENERATOR	Renewal	6,284	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1327 STRATHROY TRANSMISISON MAIN	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1344 BLKKOMOKA-MT. BRYDGES PIPELINE	Renewal	1,354	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1348 CLS PIPELINE CONDITION ASSESSMT	Renewal	447,334	32,502	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1350 ENERGY AUDIT & PUMP OPTIMIZATI	Renewal	81,365	96,671	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1358 PIPELINE & EASEMENT MARKER	Renewal	-	30,618	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1360 CLS -WTP AUTO-TAP TRANSFORMERS	Renewal	(28,460)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1361 LOW LIFT GRIT VALVE AUTOMATION	Renewal	-	45,065	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1362 CLS PA SYSTEM	Renewal	30,803	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1366 CLS WATER QUALITY MASTER PLAN	Plans/Documentation	58,709	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1367 ELECTRONIC DOCUMENT MGMT	Renewal	-	8,726	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1368 HURON AFO INSTALLATION	Renewal	5,339,149	1,863,363	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1370 CLS HURON PIPELINE FAILURE-12	Renewal	(17,376)	2,900	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1371 CHLORINE INJECTOR REBUILD	Renewal	-	43,164	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1372 CLS SETTLED WTR CONDUIT REPAIRS	Renewal	20,959	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1376 CLS MCGILLIVRAY ELECTRICAL	Renewal	14,884	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1377 CLS SCADA NETWORK COMMUNICATNS	Renewal	2,638	3,078	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1378 UPS BATTERY REPLACEMENT	Renewal	-	25,193	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1385 1996 CROP LOSS MONITORING	Renewal	-	(450,000)	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH1902 RESIDUE MANAGEMENT	Renewal	1,052,982	83,960	907,787	-	-	-	-	-	-	-	-	-	-	-	-	
LH1905 CLS TRANSMISSION PIPELINE	Renewal	(56,025)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
LH2030 CLS SITE SECURITY	Renewal	1,769	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Carryovers	Carryover	4,332,390	9,557,221	10,697,000	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Total Capital Expenditures</b>		<b>19,779,536</b>	<b>15,224,742</b>	<b>14,074,537</b>	<b>313,703,000</b>	<b>1,120,000</b>	<b>5,649,000</b>	<b>2,288,000</b>	<b>6,695,000</b>	<b>5,654,000</b>	<b>5,916,000</b>	<b>5,223,000</b>	<b>5,063,000</b>	<b>4,331,000</b>	<b>3,864,000</b>	<b>5,034,000</b>	<b>2,674,000</b>
<b>Capital Financing</b>																	
Provincial/Federal Grants		11,831,040	1,353,008	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Contributions		67,305	(151,385)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Buy-in Charge Revenue		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lifecycle Contribution from Contracted Operations (Mid-Life Interventions)		-	-	-	7,068,000	60,000	61,000	94,000	32,000	65,000	106,000	134,000	186,000	204,000	206,000	209,000	186,000
Growth Charges Reserve Fund		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-Growth Related Debenture Requirements		-	8,665,000	1,461,537	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth Related Debenture Requirements		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Contributions		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lifecycle Reserve Fund		5,855,673	3,944,543	12,532,000	173,421,000	1,060,000	1,069,000	967,000	6,451,000	4,502,000	5,810,000	5,083,000	4,705,000	3,886,000	3,658,000	2,381,000	2,488,000
Emergency Reserve Fund		171,737	676,016	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Capital Reserve		1,853,781	737,561	81,000	133,214,000	-	4,519,000	1,227,000	212,000	1,087,000	-	6,000	172,000	241,000	-	2,444,000	-
<b>Total Capital Financing</b>		<b>19,779,536</b>	<b>15,224,742</b>	<b>14,074,537</b>	<b>313,703,000</b>	<b>1,120,000</b>	<b>5,649,000</b>	<b>2,288,000</b>	<b>6,695,000</b>	<b>5,654,000</b>	<b>5,916,000</b>	<b>5,223,000</b>	<b>5,063,000</b>	<b>4,331,000</b>	<b>3,864,000</b>	<b>5,034,000</b>	<b>2,674,000</b>

Note: Annual Debt Charges related to the 2015 Debenture are identified as part of existing debt in the operating budget

Description	Key Driver	Forecast																	
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
HLP#5 Valve Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vehicle Security Gate Replacement	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Huron Electrical System Upgrades	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Alum Tempering & Flushing System	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Low Lift Screen Repair	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plant Instrument Air Compressors	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Huron Surge Tank Air Compressors	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Server Room Fire Suppression	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B Line Road Monitoring Station	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chemical Delivery Panel	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Filter Rate Meters	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1014 CLS CLEARWELL BAFFLE REPLACEMT	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1203 WTP HVAC REPLACEMENT	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1205 PUMP STATION #3 REPAIRS	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1206 CLS HURON EMERGENCY PIPELINE	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1215 PRE-TREATMENT OPTIMIZATION	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1220 CLS HURON WTP FUEL SYSTEM	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1222 LOW LIFT PUMP #2 REFURBISHMENT	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1303 EASEMENT MAINTENANCE	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1304 CLS SOURCE WATER PROTECTION	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1309 CLS FIELD CONTROL STUDY	Plans/Documentation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1326 CLS BACKUP GENERATOR	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1327 STRATHROY TRANSMISSION MAIN	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1344 BLKKOMOKA-MT. BRYDGES PIPELINE	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1348 CLS PIPELINE CONDITION ASSESSMT	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1350 ENERGY AUDIT & PUMP OPTIMIZATI	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1358 PIPELINE & EASEMENT MARKER	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1360 CLS -WTP AUTO-TAP TRANSFORMERS	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1361 LOW LIFT GRIT VALVE AUTOMATION	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1362 CLS PA SYSTEM	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1366 CLS WATER QUALITY MASTER PLAN	Plans/Documentation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1367 ELECTRONIC DOCUMENT MGMT	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1368 HURON AFO INSTALLATION	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1370 CLS HURON PIPELINE FAILURE-12	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1371 CHLORINE INJECTOR REBUILD	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1372 CLS SETTLED WTR CONDUIT REPAIRS	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1376 CLS MCGILLIVRAY ELECTRICAL	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1377 CLS SCADA NETWORK COMMUNICATNS	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1378 UPS BATTERY REPLACEMENT	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1385 1996 CROP LOSS MONITORING	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1902 RESIDUE MANAGEMENT	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH1905 CLS TRANSMISSION PIPELINE	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LH2030 CLS SITE SECURITY	Renewal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carryovers	Carryover	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Capital Expenditures</b>		<b>8,254,000</b>	<b>6,037,000</b>	<b>14,979,000</b>	<b>13,155,000</b>	<b>16,362,000</b>	<b>10,756,000</b>	<b>15,207,000</b>	<b>5,288,000</b>	<b>8,277,000</b>	<b>5,288,000</b>	<b>8,765,000</b>	<b>4,622,000</b>	<b>7,792,000</b>	<b>5,286,000</b>	<b>7,533,000</b>	<b>6,631,000</b>	<b>10,333,000</b>	<b>105,627,000</b>
<b>Capital Financing</b>																			
Provincial/Federal Grants																			
Other Contributions																			
Buy-in Charge Revenue																			
Lifecycle Contribution from Contracted Operations (Mid-Life Interventions)		185,000	158,000	257,000	365,000	383,000	343,000	343,000	214,000	95,000	81,000	107,000	197,000	252,000	348,000	443,000	541,000	582,000	631,000
Growth Charges Reserve Fund		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Non-Growth Related Debenture Requirements		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth Related Debenture Requirements		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Operating Contributions		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lifecycle Reserve Fund		5,337,000	5,620,000	12,076,000	12,790,000	13,226,000	10,203,000	11,716,000	5,074,000	5,203,000	5,207,000	5,326,000	4,109,000	4,315,000	4,938,000	5,409,000	5,834,000	7,653,000	7,325,000
Emergency Reserve Fund		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Capital Reserve		2,732,000	259,000	2,646,000	-	2,753,000	210,000	3,148,000	-	2,979,000	-	3,332,000	316,000	3,225,000	-	1,681,000	256,000	2,098,000	97,671,000
<b>Total Capital Financing</b>		<b>8,254,000</b>	<b>6,037,000</b>	<b>14,979,000</b>	<b>13,155,000</b>	<b>16,362,000</b>	<b>10,756,000</b>	<b>15,207,000</b>	<b>5,288,000</b>	<b>8,277,000</b>	<b>5,288,000</b>	<b>8,765,000</b>	<b>4,622,000</b>	<b>7,792,000</b>	<b>5,286,000</b>	<b>7,533,000</b>	<b>6,631,000</b>	<b>10,333,000</b>	<b>105,627,000</b>

Note: Annual Debt Charges related to the 2015 Debenture are identified as part of existing

Appendix A-2  
 Lake Huron Primary Water Supply System  
 Water Service  
 Schedule of Non-Growth Related Debenture Repayments  
 Inflated \$

Debenture Year	Historical		2016	Principal (Inflated)	Forecast											
	2014	2015			2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
2016*				1,461,537	40,237	190,361	185,467	180,785	175,892	171,068	166,210	161,458	156,599	151,776	146,953	
2017				-												
2018				-												
2019				-												
2020				-												
2021				-												
2022				-												
2023				-												
2024				-												
2025				-												
2026				-												
2027				-												
2028				-												
2029				-												
2030				-												
2031				-												
2032				-												
2033				-												
2034				-												
2035				-												
2036				-												
2037				-												
2038				-												
2039				-												
2040				-												
2041				-												
2042				-												
2043				-												
2044				-												
2045				-												
2046				-												
<b>Total Annual Debt Charges</b>	-	-	-	<b>1,461,537</b>	40,237	190,361	185,467	180,785	175,892	171,068	166,210	161,458	156,599	151,776	146,953	-

\* Expenditure in 2016 which will be Debenture in early 2017

Appendix A-2  
 Lake Huron Primary Water Supply System  
 Water Service  
 Schedule of Non-Growth Related Debenture Repayments  
 Inflated \$

Debenture Year	Forecast																	
	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
2016*																		
2017																		
2018																		
2019	-																	
2020	-	-																
2021	-	-	-															
2022	-	-	-	-														
2023	-	-	-	-	-													
2024	-	-	-	-	-	-												
2025	-	-	-	-	-	-	-											
2026	-	-	-	-	-	-	-	-										
2027	-	-	-	-	-	-	-	-	-									
2028	-	-	-	-	-	-	-	-	-	-								
2029		-	-	-	-	-	-	-	-	-	-							
2030			-	-	-	-	-	-	-	-	-	-						
2031				-	-	-	-	-	-	-	-	-	-					
2032					-	-	-	-	-	-	-	-	-	-				
2033						-	-	-	-	-	-	-	-	-	-			
2034							-	-	-	-	-	-	-	-	-	-		
2035								-	-	-	-	-	-	-	-	-	-	
2036									-	-	-	-	-	-	-	-	-	-
2037										-	-	-	-	-	-	-	-	-
2038											-	-	-	-	-	-	-	-
2039												-	-	-	-	-	-	-
2040													-	-	-	-	-	-
2041														-	-	-	-	-
2042															-	-	-	-
2043																-	-	-
2044																	-	-
2045																		-
2046																		
<b>Total Annual Debt Charges</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

\* Expenditure in 2016 which will be Debenture in early 2017

Appendix A-3  
 Lake Huron Primary Water Supply System  
 Water Service  
 Schedule of Growth Related Debenture Repayments  
 Inflated \$

Debenture Year	Historical		2016	Principal (Inflated)	Forecast											
	2014	2015			2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
2017				-												
2018				-												
2019				-												
2020				-												
2021				-												
2022				-												
2023				-												
2024				-												
2025				-												
2026				-												
2027				-												
2028				-												
2029				-												
2030				-												
2031				-												
2032				-												
2033				-												
2034				-												
2035				-												
2036				-												
2037				-												
2038				-												
2039				-												
2040				-												
2041				-												
2042				-												
2043				-												
2044				-												
2045				-												
2046				-												
<b>Total Annual Debt Charges</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix A-3  
 Lake Huron Primary Water Supply System  
 Water Service  
 Schedule of Growth Related Debenture Repayments  
 Inflated \$

Debenture Year	Forecast																	
	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
2017																		
2018																		
2019	-																	
2020	-	-																
2021	-	-	-															
2022	-	-	-	-														
2023	-	-	-	-	-													
2024	-	-	-	-	-	-												
2025	-	-	-	-	-	-	-											
2026	-	-	-	-	-	-	-	-										
2027	-	-	-	-	-	-	-	-	-									
2028	-	-	-	-	-	-	-	-	-	-								
2029		-								-								
2030			-							-								
2031				-						-								
2032					-					-								
2033						-				-								
2034							-			-								
2035								-		-								
2036									-	-								
2037										-								
2038											-							
2039												-						
2040													-					
2041														-				
2042															-			
2043																-		
2044																	-	
2045																		-
2046																		
<b>Total Annual Debt Charges</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Appendix A-4**  
**Lake Huron Primary Water Supply System**  
**Water Service**  
**Water Capital Reserve Funds Continuity**  
 Inflated \$

Description	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Opening Balance	839,000	2,175,318	2,137,927	5,008,579	8,887,785	8,695,140	11,319,879	14,965,208	17,952,755	20,025,699	22,617,549	25,726,758	28,303,249	32,622,349	35,091,588
Transfer from Operating	3,176,099	666,170	2,873,651	3,738,894	4,148,820	3,649,647	3,591,928	3,742,174	1,689,475	2,167,280	2,793,076	2,271,949	3,703,934	4,229,530	3,161,400
Transfer to Capital	1,853,781	737,561	81,000	-	4,519,000	1,227,000	212,000	1,087,000	-	6,000	172,000	241,000	-	2,444,000	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	2,161,318	2,103,927	4,930,579	8,747,473	8,517,605	11,117,787	14,699,807	17,620,382	19,642,231	22,186,979	25,238,625	27,757,707	32,007,183	34,407,880	38,252,987
Interest	14,000	34,000	78,000	140,312	177,535	202,092	265,401	332,373	383,469	430,569	488,133	545,542	615,166	683,708	748,115

**Appendix A-5**  
**Lake Huron Primary Water Supply System**  
**Water Service**  
**Water Emergency Reserve Funds Continuity**  
 Inflated \$

Description	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Opening Balance	588,000	625,263	352,247	762,247	1,484,937	1,515,230	1,546,140	1,577,682	1,609,866	1,642,707	1,676,219	1,710,414	1,745,306	1,780,910	1,817,241
Transfer from Operating	200,000	400,000	400,000	700,000	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	171,737	676,016	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	616,263	349,247	752,247	1,462,247	1,484,937	1,515,230	1,546,140	1,577,682	1,609,866	1,642,707	1,676,219	1,710,414	1,745,306	1,780,910	1,817,241
Interest	9,000	3,000	10,000	22,690	30,293	30,911	31,541	32,185	32,841	33,511	34,195	34,892	35,604	36,331	37,072

**Appendix A-6**  
**Lake Huron Primary Water Supply System**  
**Water Service**  
**Water Asset Replacement (Lifecycle) Reserve Fund Continuity**  
 Inflated \$

Description	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Opening Balance	13,142,000	11,990,327	15,291,784	7,197,784	8,851,837	10,478,011	12,745,499	9,519,307	8,196,180	7,545,120	7,615,194	8,068,553	10,368,714	12,946,125	16,866,139
Transfer from Operating	4,500,000	7,000,000	4,235,000	2,552,000	2,500,000	3,000,000	3,000,000	3,000,000	5,000,000	5,000,000	5,000,000	6,000,000	6,000,000	6,000,000	7,500,000
Transfer to Capital	5,855,673	3,944,543	12,532,000	1,060,000	1,069,000	967,000	6,451,000	4,502,000	5,810,000	5,083,000	4,705,000	3,886,000	3,658,000	2,381,000	2,488,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	11,786,327	15,045,784	6,994,784	8,689,784	10,282,837	12,511,011	9,294,499	8,017,307	7,386,180	7,462,120	7,910,194	10,182,553	12,710,714	16,565,125	21,878,139
Interest	204,000	246,000	203,000	162,053	195,174	234,488	224,808	178,873	158,940	153,074	158,359	186,161	235,410	301,015	395,192
Required for Renewals			12,532,000	1,060,000	1,069,000	967,000	6,451,000	4,502,000	5,810,000	5,083,000	4,705,000	3,886,000	3,658,000	2,381,000	2,488,000

**Appendix A-4**  
**Lake Huron Primary Water Supply System**  
**Water Service**  
**Water Capital Reserve Funds Continuity**  
 Inflated \$

Description	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Opening Balance	39,001,102	40,529,133	44,896,297	47,257,747	52,671,501	55,757,386	61,808,440	65,356,767	72,503,887	77,137,871	85,230,022	90,110,670	98,107,732	103,283,737	111,761,444	118,634,848	126,990,731	133,534,865
Transfer from Operating	3,457,013	3,763,623	4,076,969	4,404,767	4,744,077	5,073,991	5,412,339	5,755,140	6,102,049	6,452,720	6,442,232	6,412,618	6,367,554	6,306,393	6,228,090	6,131,799	6,011,605	5,871,332
Transfer to Capital	2,732,000	259,000	2,646,000	-	2,753,000	210,000	3,148,000	-	2,979,000	-	3,332,000	316,000	3,225,000	-	1,681,000	256,000	2,098,000	97,671,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	39,726,116	44,033,756	46,327,267	51,662,514	54,662,578	60,621,376	64,072,778	71,111,907	75,626,936	83,590,591	88,340,254	96,207,288	101,250,285	109,590,130	116,308,534	124,510,647	130,904,336	41,735,197
Interest	803,018	862,541	930,480	1,008,987	1,094,808	1,187,063	1,283,988	1,391,980	1,510,934	1,639,430	1,770,417	1,900,443	2,033,452	2,171,313	2,326,314	2,480,084	2,630,530	1,787,755

**Appendix A-5**  
**Lake Huron Primary Water Supply System**  
**Water Service**  
**Water Emergency Reserve Funds Continuity**  
 Inflated \$

Description	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Opening Balance	1,854,313	1,892,141	1,930,740	1,970,127	2,010,318	2,051,328	2,093,175	2,135,876	2,179,448	2,223,909	2,269,277	2,315,570	2,362,807	2,411,009	2,460,193	2,510,381	2,561,593	2,613,850
Transfer from Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	1,854,313	1,892,141	1,930,740	1,970,127	2,010,318	2,051,328	2,093,175	2,135,876	2,179,448	2,223,909	2,269,277	2,315,570	2,362,807	2,411,009	2,460,193	2,510,381	2,561,593	2,613,850
Interest	37,828	38,600	39,387	40,191	41,010	41,847	42,701	43,572	44,461	45,368	46,293	47,238	48,201	49,185	50,188	51,212	52,256	53,323

**Appendix A-6**  
**Lake Huron Primary Water Supply System**  
**Water Service**  
**Water Asset Replacement (Lifecycle) Reserve Fund Continuity**  
 Inflated \$

Description	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Opening Balance	22,273,331	24,912,770	27,320,166	23,254,822	18,385,263	12,975,917	10,510,055	6,465,457	9,048,097	11,553,108	14,105,180	16,589,100	20,353,106	23,985,797	27,063,239	29,727,657	32,017,095	32,515,683
Transfer from Operating	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000
Transfer to Capital	5,337,000	5,620,000	12,076,000	12,790,000	13,226,000	10,203,000	11,716,000	5,074,000	5,203,000	5,207,000	5,326,000	4,109,000	4,315,000	4,938,000	5,409,000	5,834,000	7,653,000	7,325,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Closing Balance	24,436,331	26,792,770	22,744,166	17,964,822	12,659,263	10,272,917	6,294,055	8,891,457	11,345,097	13,846,108	16,279,180	19,980,100	23,538,106	26,547,797	29,154,239	31,393,657	31,864,095	32,690,683
Interest	476,439	527,396	510,656	420,440	316,654	237,138	171,402	156,641	208,011	259,072	309,920	373,006	447,690	515,443	573,418	623,437	651,588	665,105
Required for Renewals	5,337,000	5,620,000	12,076,000	12,790,000	13,226,000	10,203,000	11,716,000	5,074,000	5,203,000	5,207,000	5,326,000	4,109,000	4,315,000	4,938,000	5,409,000	5,834,000	7,653,000	7,325,000

**Appendix A-7**  
**Lake Huron Primary Water Supply System**  
**Water Services**  
**Operating Budget Forecast**  
 Inflated \$

Description	Historical		Budget	Forecast											
	2014 Actual	2015 Budget	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
<b>Expenditures</b>															
<b>Operating Costs</b>															
Operating Expenses															
General	4,112,761	4,222,313	4,401,463	4,671,150	4,811,285	4,955,658	5,104,301	5,257,447	5,415,200	5,577,700	5,745,000	5,917,400	6,094,900	6,277,700	6,466,000
Chemical	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Quality	130,000	70,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000
Electricity	4,256,025	4,506,394	4,000,000	4,600,000	4,784,000	4,975,360	5,174,374	5,174,374	5,381,300	5,596,600	5,820,500	6,053,300	6,295,400	6,547,200	6,809,100
Costs for operating RMF	236,724	245,708	145,623	150,000	154,500	159,100	163,900	168,800	173,900	179,100	184,500	190,000	195,700	201,600	207,600
Annual IT Maintenance Allowance	-	-	-	100,000	103,000	106,100	109,300	112,600	116,000	119,500	123,100	126,800	130,600	134,500	138,500
Costs Savings - High Lift Pump Replacement	-	-	-	-	-	(56,300)	(58,000)	(59,700)	(61,500)	(63,300)	(65,200)	(67,200)	(69,200)	(71,300)	(73,400)
Administrative Expenses	1,173,766	1,796,606	2,040,377	1,690,000	1,741,000	1,792,900	1,846,700	1,902,400	1,959,500	2,018,300	2,078,800	2,141,200	2,205,400	2,271,600	2,339,700
Sub Total Operating	9,909,275	10,841,021	10,717,463	11,341,150	11,723,785	12,062,818	12,470,575	12,685,921	13,114,400	13,557,900	14,016,700	14,491,500	14,982,800	15,491,300	16,017,500
<b>Capital-Related</b>															
Existing Debt (Principal) - Growth Related	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Existing Debt (Interest) - Growth Related	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Existing Debt (Principal) - Non-Growth Related	295,347	305,694	1,105,581	1,147,672	1,167,763	1,188,100	1,208,810	1,230,009	1,251,368	1,072,252	915,820	926,034	-	-	-
Existing Debt (Interest) - Non-Growth Related	79,995	178,004	234,506	180,827	165,307	147,069	126,297	102,210	75,550	47,738	24,796	4,304	-	-	-
New Non-Growth Related Debt (Principal)	-	-	-	-	146,154	146,154	146,154	146,154	146,154	146,154	146,154	146,154	146,154	146,154	146,154
New Non-Growth Related Debt (Interest)	-	-	-	40,237	44,207	39,313	34,632	29,738	24,915	20,056	15,304	10,446	5,622	799	-
Transfer to Asset Replacement (Lifecycle) Reserve Fund	4,500,000	7,000,000	4,235,000	2,552,000	2,500,000	3,000,000	3,000,000	3,000,000	5,000,000	5,000,000	5,000,000	6,000,000	6,000,000	6,000,000	7,500,000
Transfer to Emergency Reserve Fund	200,000	400,000	400,000	700,000	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve Fund	3,176,099	666,170	2,873,651	3,738,894	4,148,820	3,649,647	3,591,928	3,742,174	1,689,475	2,167,280	2,793,076	2,271,949	3,703,934	4,229,530	3,161,400
Sub Total Capital Related	8,251,441	8,549,869	8,848,739	8,359,630	8,172,252	8,170,282	8,107,820	8,250,285	8,187,462	8,453,480	8,895,150	9,358,886	9,855,710	10,376,483	10,661,400
<b>Total Expenditures</b>	<b>18,160,716</b>	<b>19,390,890</b>	<b>19,566,202</b>	<b>19,700,780</b>	<b>19,896,037</b>	<b>20,233,100</b>	<b>20,578,395</b>	<b>20,936,206</b>	<b>21,301,862</b>	<b>22,011,380</b>	<b>22,911,850</b>	<b>23,850,386</b>	<b>24,838,510</b>	<b>25,867,783</b>	<b>26,678,900</b>
<b>Revenues</b>															
Buy-in Fee Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Miscellaneous Revenue	83,408	521,048	25,000	20,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
Contributions from Growth Charges Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contributions from Capital Reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Operating Revenue</b>	<b>83,408</b>	<b>521,048</b>	<b>25,000</b>	<b>20,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>
<b>Water Billing Recovery - Total</b>	<b>18,077,307</b>	<b>18,869,842</b>	<b>19,541,202</b>	<b>19,680,780</b>	<b>19,871,037</b>	<b>20,208,100</b>	<b>20,553,395</b>	<b>20,911,206</b>	<b>21,276,862</b>	<b>21,986,380</b>	<b>22,886,850</b>	<b>23,825,386</b>	<b>24,813,510</b>	<b>25,842,783</b>	<b>26,653,900</b>

**Appendix A-7**  
**Lake Huron Primary Water Supply System**  
**Water Services**  
**Operating Budget Forecast**  
 Inflated \$

Description	Forecast																	
	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
<b>Expenditures</b>																		
<b>Operating Costs</b>																		
Operating Expenses																		
General	6,660,000	6,859,800	7,065,600	7,277,600	7,495,900	7,720,800	7,952,400	8,191,000	8,436,700	8,689,800	8,950,500	9,219,000	9,495,600	9,780,500	10,073,900	10,376,100	10,687,400	11,008,000
Chemical	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Quality	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000
Electricity	7,081,500	7,364,800	7,659,400	7,965,800	8,284,400	8,615,800	8,960,400	9,318,800	9,691,600	10,079,300	10,482,500	10,901,800	11,337,900	11,791,400	12,263,100	12,753,600	13,263,700	13,794,200
Costs for operating RMF	213,800	220,200	226,800	233,600	240,600	247,800	255,200	262,900	270,800	278,900	287,300	295,900	304,800	313,900	323,300	333,000	343,000	353,300
Annual IT Maintenance Allowance	142,700	147,000	151,400	155,900	160,600	165,400	170,400	175,500	180,800	186,200	191,800	197,600	203,500	209,600	215,900	222,400	229,100	236,000
Costs Savings - High Lift Pump Replacement	(75,600)	(77,900)	(80,200)	(82,600)	(85,100)	(87,700)	(90,300)	(93,000)	(95,800)	(98,700)	(101,700)	(104,800)	(107,900)	(111,100)	(114,400)	(117,800)	(121,300)	(124,900)
Administrative Expenses	2,409,900	2,482,200	2,556,700	2,633,400	2,712,400	2,793,800	2,877,600	2,963,900	3,052,800	3,144,400	3,238,700	3,335,900	3,436,000	3,539,100	3,645,300	3,754,700	3,867,300	3,983,300
Sub Total Operating	16,562,300	17,126,100	17,709,700	18,313,700	18,938,800	19,585,900	20,255,700	20,949,100	21,666,900	22,409,900	23,179,100	23,975,400	24,799,900	25,653,400	26,537,100	27,452,000	28,399,200	29,379,900
<b>Capital-Related</b>																		
Existing Debt (Principal) - Growth Related	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Existing Debt (Interest) - Growth Related	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Existing Debt (Principal) - Non-Growth Related	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Existing Debt (Interest) - Non-Growth Related	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Asset Replacement (Lifecycle) Reserve Fund	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000
Transfer to Emergency Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve Fund	3,457,013	3,763,623	4,076,969	4,404,767	4,744,077	5,073,991	5,412,339	5,755,140	6,102,049	6,452,720	6,442,232	6,412,618	6,367,554	6,306,393	6,228,090	6,131,799	6,011,605	5,871,332
Sub Total Capital Related	10,957,013	11,263,623	11,576,969	11,904,767	12,244,077	12,573,991	12,912,339	13,255,140	13,602,049	13,952,720	13,942,232	13,912,618	13,867,554	13,806,393	13,728,090	13,631,799	13,511,605	13,371,332
<b>Total Expenditures</b>	<b>27,519,313</b>	<b>28,389,723</b>	<b>29,286,669</b>	<b>30,218,467</b>	<b>31,182,877</b>	<b>32,159,891</b>	<b>33,168,039</b>	<b>34,204,240</b>	<b>35,268,949</b>	<b>36,362,620</b>	<b>37,121,332</b>	<b>37,888,018</b>	<b>38,667,454</b>	<b>39,459,793</b>	<b>40,265,190</b>	<b>41,083,799</b>	<b>41,910,805</b>	<b>42,751,232</b>
<b>Revenues</b>																		
Buy-in Fee Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Miscellaneous Revenue	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000
Contributions from Growth Charges Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Contributions from Capital Reserve	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Operating Revenue</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>	<b>25,000</b>
<b>Water Billing Recovery - Total</b>	<b>27,494,313</b>	<b>28,364,723</b>	<b>29,261,669</b>	<b>30,193,467</b>	<b>31,157,877</b>	<b>32,134,891</b>	<b>33,143,039</b>	<b>34,179,240</b>	<b>35,243,949</b>	<b>36,337,620</b>	<b>37,096,332</b>	<b>37,863,018</b>	<b>38,642,454</b>	<b>39,434,793</b>	<b>40,240,190</b>	<b>41,058,799</b>	<b>41,885,805</b>	<b>42,726,232</b>

Appendix A-8  
 Lake Huron Primary Water Supply System  
 Water Services  
 Water Rate Forecast  
 Inflated \$

Description	2014	2015	2016	Existing	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Total Water Billing Recovery	18,077,307	18,869,842	19,541,202		19,680,780	19,871,037	20,208,100	20,553,395	20,911,206	21,276,862	21,986,380	22,886,850	23,825,386	24,813,510	25,842,783	26,653,900
Total Volume (m <sup>3</sup> )	43,228,895	42,968,219	42,780,000		41,829,500	41,005,028	40,489,081	39,979,372	39,492,362	39,011,482	39,135,599	39,548,729	39,968,774	40,412,883	40,864,616	41,323,875
Base Charge (Constant Volume Rate) m <sup>3</sup>	0.4183	0.4392	0.4568	0.4568	0.4705	0.4846	0.4991	0.5141	0.5295	0.5454	0.5618	0.5787	0.5961	0.6140	0.6324	0.6450
Annual Percentage Change		5.0%		4.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	2.0%

Appendix A-8  
 Lake Huron Primary Water Supply System  
 Water Services  
 Water Rate Forecast  
 Inflated \$

Description	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Total Water Billing Recovery	27,494,313	28,364,723	29,261,669	30,193,467	31,157,877	32,134,891	33,143,039	34,179,240	35,243,949	36,337,620	37,096,332	37,863,018	38,642,454	39,434,793	40,240,190	41,058,799	41,885,805	42,726,232
Total Volume (m <sup>3</sup> )	41,791,022	42,266,015	42,748,969	43,244,725	43,748,774	44,238,561	44,733,484	45,228,583	45,723,857	46,219,309	46,714,938	47,210,746	47,706,733	48,202,901	48,699,250	49,195,781	49,692,496	50,189,395
Base Charge (Constant Volume Rate) m <sup>3</sup>	0.6579	0.6711	0.6845	0.6982	0.7122	0.7264	0.7409	0.7557	0.7708	0.7862	0.7941	0.8020	0.8100	0.8181	0.8263	0.8346	0.8429	0.8513
Annual Percentage Change	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

Appendix A-9  
 Lake Huron Primary Water Supply System  
 Water Services  
 Water Rate Forecast  
 Inflated \$

<b>Debt Capacity:</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>
Total Debt	1,340,088	1,368,735	1,523,431	1,520,635	1,515,892	1,508,111	1,497,987	1,286,200	1,102,073	1,086,937	151,776	146,953	-
Total Revenue	19,541,202	19,680,780	19,871,037	20,208,100	20,553,395	20,911,206	21,276,862	21,986,380	22,886,850	23,825,386	24,813,510	25,842,783	26,653,900
% Debt to Revenue Ratio	7%	7%	8%	8%	7%	7%	7%	6%	5%	5%	1%	1%	0%

Appendix A-9  
 Lake Huron Primary Water Supply System  
 Water Services  
 Water Rate Forecast  
 Inflated \$

Debt Capacity:	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046
Total Debt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	27,494,313	28,364,723	29,261,669	30,193,467	31,157,877	32,134,891	33,143,039	34,179,240	35,243,949	36,337,620	37,096,332	37,863,018	38,642,454	39,434,793	40,240,190	41,058,799	41,885,805	42,726,232
% Debt to Revenue Ratio	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%