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Item No. 12.3 (i)
Halifax Regional Council
March 28, 2017

TO: Mayor Savage and Members of Halifax Regional Council

SUBMITTED BY: Original Signed

Carl Yates, M.A.Sc., P.Eng., General Manager, Halifax Water

DATE: March 17, 2017

SUBJECT: Halifax Water 2017/18 Business Plan

INFORMATION REPORT

ORIGIN

HRWC Board Meeting of February 2, 2017

LEGISLATIVE AUTHORITY

Halifax Regional Water Commission Act

BACKGROUND

On behalf of the Halifax Water Board, staff are pleased to present the 2017/18 Business Plan, approved by the Board on February 2, 2017. The 2017/18 fiscal year reflects the third year of the five year business plan approved by the Halifax Water Board in October, 2014. The five year plan was filed with the Nova Scotia Utility and Review Board (NSUARB) in November, 2014 in conjunction with a general rate application for water and wastewater services.

DISCUSSION

Although the five year business plan is a touchstone for the 2017/18 business plan, it is also influenced by the Integrated Resource Plan (IRP) which is a 30 year framework for the strategic direction of the utility. The IRP projected expenditures of \$2.6 billion (net present value) over a 30 year period commencing in 2013/14 for; asset renewal [\$1,385 million]; regulatory compliance [\$598 million]; and growth [\$595 million]. The 2017/18 fiscal year will see continued investment in these areas all while ensuring a high level of service for the customers of Halifax Water. The annual Capital Budget is heavily influenced by \$31 million in funding approved through the Clean Water and Wastewater Fund [CWWF] recently established by the federal government.

The 2017/18 Business Plan provides an overview of the services provided by Halifax Water (HW) and details on the operating and capital budgets to support the delivery of these services. The Business Plan projects a deficit, as indicated in the pro forma income summary below, and reflects the rates approved by the NSUARB in their 2015 Decision. The current rates became effective on April 1, 2016. Although the pro forma income summary indicates a loss for the fiscal year, the utility has accumulated an operating surplus over the last two years to defray this deficit position.

Pro Forma Income Summary			
	Actual 2015/16	Approved Budget 2016/17	Proposed Budget 2017/18
Operating Revenues	\$131,716	\$135,675	\$135,587
Operating Expenditures	\$96,243	\$102,425	\$106,241
Operating Profit	\$35,473	\$33,250	\$29,346
Non-Operating Revenues	\$3,370	\$3,291	\$2,787
Non-Operating Expenditures	\$33,961	\$36,386	\$38,882
Net Surplus (Deficit)	\$4,883	\$154	(\$6,750)
<i>Note:</i>			
<i>Consolidated numbers reported above include regulated and unregulated activities of the Urban Core, Satellite and Airport/AeroTech Systems.</i>			
<i>The proposed 17/18 budgeted loss of (\$6.75 m) is (\$2.4 m) when calculated under the NSUARB Accounting and Reporting Handbook which excludes accrual of some future employment expense liabilities.</i>			

The 2017/18 Operating Budget is prepared on an accrual basis (similar to last year) to provide broader information for decision making and to be reflective of best practice for budgeting. Accrued amounts for 2017/18 include a liability for future employee benefits (pension) as calculated under the International Financial Reporting Standards (IFRS). Accrued amounts for the comparative years are calculated under the Canadian Institute of Chartered Accountants (CICA) Handbook Section 3461. The NSUARB Accounting and Reporting Handbook for Water Utilities is currently used in determining the revenue requirements for rate making purposes. If accrued pension expenses were omitted in 2017/18, there would be a projected net loss on a NSUARB Handbook basis of \$2.4 million. There is sufficient accumulated operating surplus to offset the budgeted operating loss in 2017/18.

As outlined in the table below, operating expenses are budgeted to increase \$3.8 million or 3.7% compared to the 2016/17 Operating Budget. Depreciation expense will increase by \$1.38 million or 6.5%, as will debt servicing by \$2.3 million or 7.3% when compared to the 2016/17 Operating Budget.

Year Over Year Changes			
	Actual 2015/16	Approved Budget 2016/17	Proposed Budget 2017/18
Operating Revenues	\$131,716	\$135,675 3.0%	\$135,587 -0.1%
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Non-Operating Revenues	\$3,370	\$3,291 -2.4%	\$2,787 -15.3%
Non-Operating Expenditures	\$33,961	\$36,386 7.1%	\$38,882 6.9%
Depreciation	\$20,909	\$21,158 1.2%	\$22,538 6.5%
Debt Servicing	\$29,403	\$31,723 7.9%	\$34,040 7.3%
Debt Servicing Ratio	22.3%	23.4%	25.1%

*Amounts are stated in \$Thousands

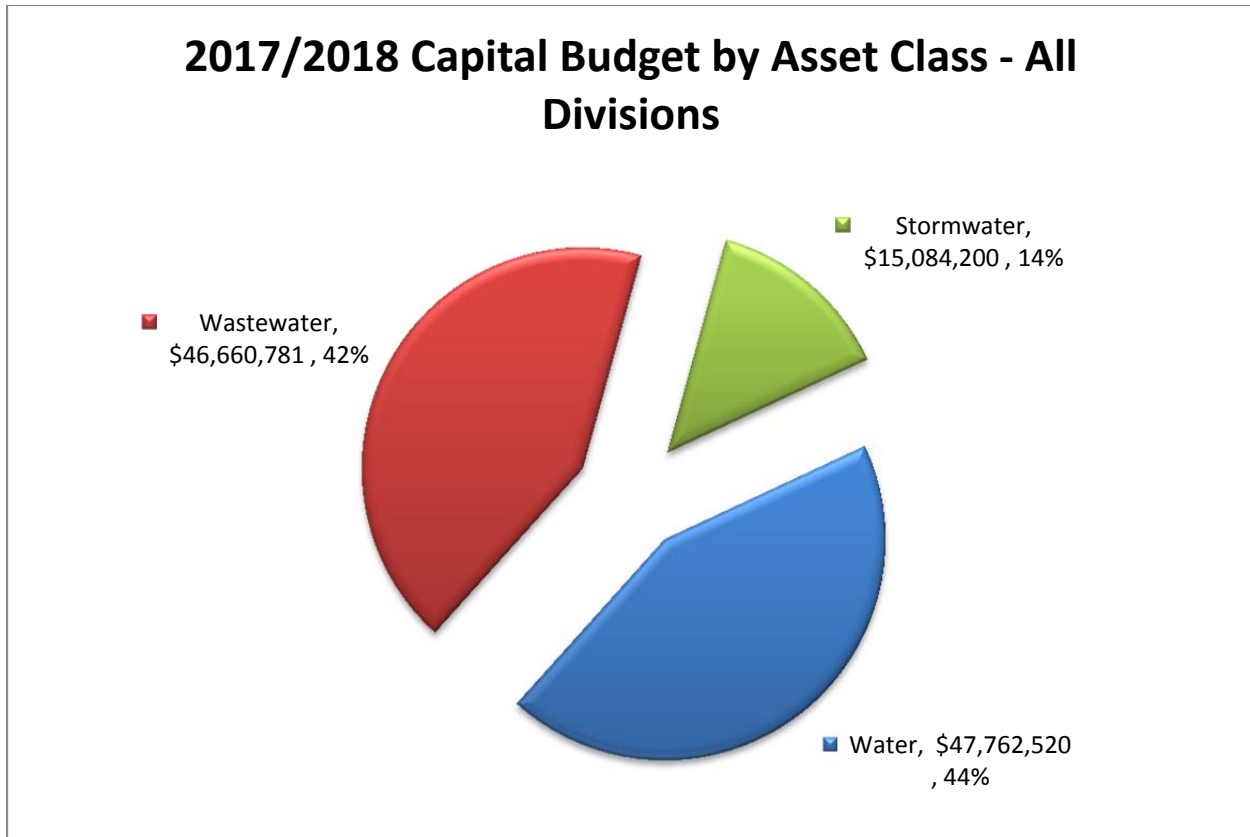
The utility faces pressure associated with asset renewal, growth, and compliance with regulatory requirements, as described in the IRP. In 2015, the utility was successful in obtaining external funding to address capital needs through the federal New Building Canada fund with formal approval received for the upgrade and expansion of the Aerotech Wastewater Treatment Facility and several water transmission main projects. In partnership with the HALIFAX Municipality, efforts were successful to secure an additional \$31 million in funding from the federal/provincial CWWF program. The CWWF funding will support five important infrastructure projects as follows:

- Northwest Arm Sewer Rehabilitation
- Peninsula Transmission Main Rehabilitation
- Lake Major Dam
- Sullivan's Pond Storm Sewer Renewal, and
- JD Kline Filter Media and Underdrain Replacement

In addition to the Halifax Water CWWF projects, the HALIFAX Municipality was also successful in securing \$12.5 million in CWWF funding for two service extension projects. The two projects [Fall River

Water Service Extension, and Herring Cove Water and Sewer Extension Phase 2B] are being implemented, under an agency assignment, by Halifax Water.

The 2017/18 Capital Budget calls for expenditures just under \$110 million as outlined in the graph below.



Although a general rate application is not envisioned for this fiscal year, a Decision from the NSUARB on stormwater rates is expected by the end of April, 2017. Rates are projected to be adjusted to align with revisions to the Cost of Service Manual approved by the NSUARB in September, 2016. An application to revise stormwater rates was filed in October, 2016 as more fully described in the attached report.

FINANCIAL IMPLICATIONS

Operational and capital Initiatives contained in the 2017/18 Business Plan are fully funded through rates approved by the Nova Scotia Utility and Review Board. Accordingly, there are no financial implications to the Halifax Regional Municipality other than a blanket guarantee for debentures issued through the Municipal Finance Corporation.

COMMUNITY ENGAGEMENT

As facilitated through Halifax Water and Nova Scotia Utility and Review Board regulatory processes in conformance with the Public Utilities Act.

ATTACHMENTS

Halifax Water 2017/18 Business Plan

A copy of this report can be obtained online at <http://www.halifax.ca/council/agendasc/cagenda.php> then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 902.490.4210, or Fax 902.490.4208.

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Report Approved by: _____
Carl D. Yates, M.A.Sc., P.Eng., General Manager, Halifax Water, 902.490.6207

2017/18 Annual Business Plan



**Approved by the Halifax Water Board
February 2, 2017**

HALIFAX WATER
2017/18 Annual Business Plan

Glossary

AMI	Advanced Meter Infrastructure
AM	Asset Management
AMP	Asset Management Plan
AMR	Automated Meter Reading
BMP	Best Management Practice
CAD	Computer Aided Drafting
CCC	Capital Cost Contribution
CHP	Combined Heat and Power
COMFIT	Community Feed-In Tariff
CRM	Customer Relationship Management
DOE	Department of Energy
E&IS	Engineering & Information Services
EMAP	Energy Management Action Plan
EMS	Environmental Management System
ERU	Equivalent Residential Unit
GIS	Geographic Information System
H2O	Help to Others (Program)
HW	Halifax Water
I&I	Inflow and Infiltration
ICI	Industrial Commercial Institutional
IFRS	International Financial Reporting Standards
IRP	Integrated Resource Plan
NSE	Nova Scotia Environment
NSERC	Natural Sciences and Engineering Research Council
NSPI	Nova Scotia Power Incorporated
NSUARB	Nova Scotia Utility and Review Board
OMM	Operational Maintenance Management
RDC	Regional Development Charge
RDII	Rain Derived Inflow and Infiltration
SCADA	Supervisory Control and Data Acquisition
SOP	Standard Operating Practices/Procedure
UV	Ultraviolet
WCB	Workers Compensation Board
WRWIP	West Region Wastewater Infrastructure Plan
WSER	Wastewater System Effluent Regulations
WWTF	Wastewater Treatment Facility

HALIFAX WATER
2017/18 Annual Business Plan

Table of Contents

1. INTRODUCTION.....	4
2. EXECUTIVE SUMMARY	4
3. SERVICE OVERVIEW	8
3.1 Water Services.....	8
3.2 Wastewater/Stormwater Services	9
3.2.1 Wastewater Services.....	10
3.2.2 Stormwater Services.....	10
3.3 Engineering and Information Services	11
3.4 Regulatory Services.....	12
3.5 Corporate Services.....	14
4. BUDGET SUMMARY	16
4.1 Capital.....	16
4.2 Operations.....	20
4.3 Cost Containment.....	25
5. STRATEGIC INITIATIVES	26
5.1 Customer Service Enhancements.....	26
5.2 Wastewater Regulatory Compliance	27
5.3 Advanced Metering Infrastructure	27
5.4 Operational Maintenance Management	29
5.5 Wet Weather Management.....	30
5.6 Biosolids Program.....	32

HALIFAX WATER
2017/18 Annual Business Plan

5.7 Odour Control.....33

5.8 Energy Management33

5.9 Source Water Quality34

5.10 Lead Service Line Replacement Program35

5.11 Safety and Security Program.....36

5.12 Stormwater Cost of Service and Rates36

5.13 Asset Management.....40

5.12 CWWF Projects.....42

APPENDICES

- A. Mission & Vision
- B. Organizational Structure
- C. 2017/18 Capital Budget
- D. 2017/18 Operations Budget

HALIFAX WATER
2017/18 Annual Business Plan

1. INTRODUCTION

Following the 2007 transfer of wastewater and stormwater assets from Halifax Municipality, Halifax Water became the first regulated and integrated water, wastewater and stormwater utility in Canada. With this expanded mandate, the utility took on a new mission to “provide world class services to our customers and our environment” and vision as fully described in Appendix A. Since 2007, Halifax Water has established a framework for sustainable infrastructure with a focus on asset renewal, regulatory compliance and growth. This strategic framework is paramount to attaining a high level of service for over 95,000 customers and remaining committed to environmental stewardship. Halifax Water delivers three distinct services through five departments; Water Services; Wastewater and Stormwater Services; Corporate Services, Engineering and Information Services; and Regulatory Services as described within this document and illustrated in Appendix B.

The 2017/18 fiscal year marks the third year in the Five Year Business Plan approved by the Halifax Water Board in October, 2014. Much was accomplished over the last two years including the development and approval of a revised Cost of Service Manual to incorporate changes to the stormwater section. The changes reflected an administrative and best practice review after implementation of a distinct stormwater charge in July, 2013.

The 2016/17 fiscal year also saw convergence of a strategic initiative for the next generation of meter technology. The NSUARB approved a \$25.4 capital expenditure for the implementation of Advanced Metering Infrastructure [AMI] which will see the replacement or upgrade of over 83,000 customer meters and establish a smart network throughout the service area. The 2017/18 fiscal year will see the advancement of this project which will position the utility for enhanced customer service and operational efficiency.

2. EXECUTIVE SUMMARY

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HALIFAX WATER
2017/18 Annual Business Plan

summary indicates a loss for the fiscal year, the utility has accumulated an operating surplus over the last two years to defray this deficit position.

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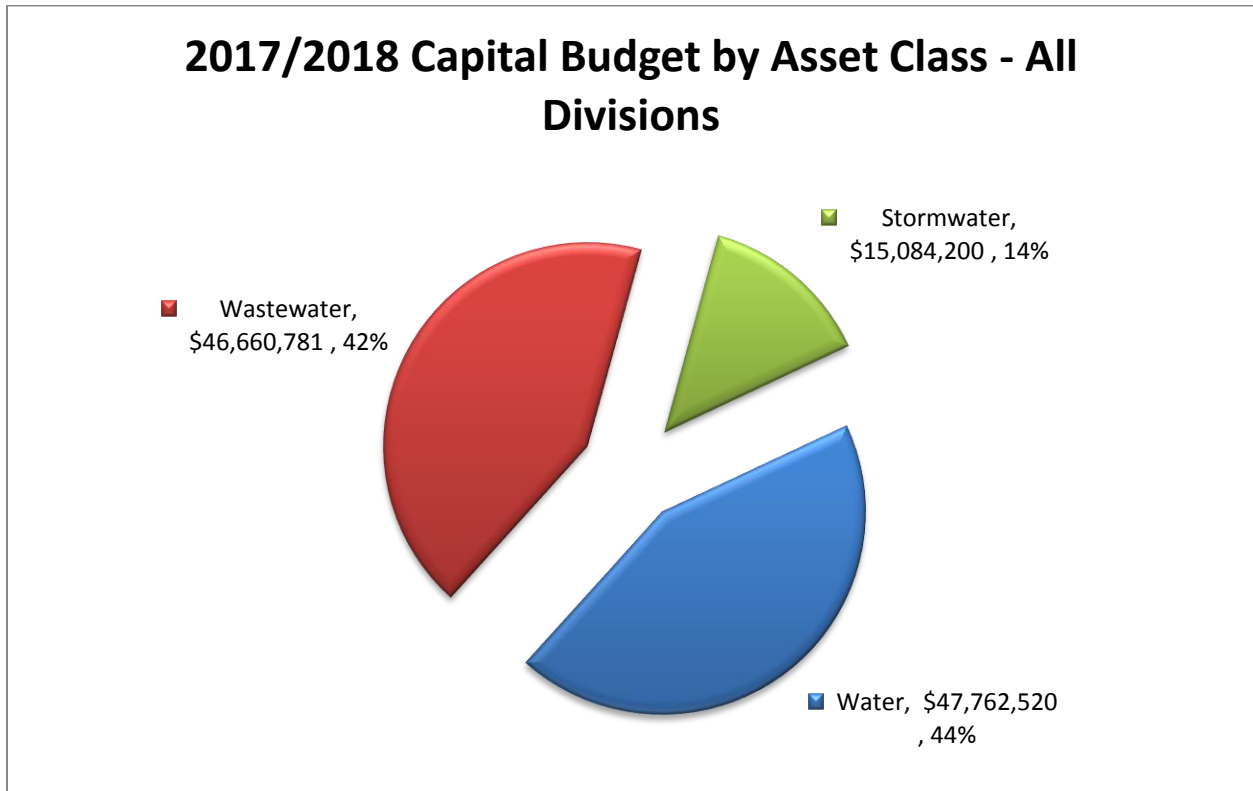
HALIFAX WATER
2017/18 Annual Business Plan

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The utility faces pressures associated with asset renewal, growth, and compliance with regulatory requirements, as described in the IRP. In recognition that these pressures require capital investment, Halifax Water has pursued external funding programs to mitigate impacts to the rate base. To that end, the utility has been successful in obtaining external funding to address capital needs through the federal New Building Canada Fund with formal approval received for the upgrade and expansion of the Aerotech Wastewater Treatment Facility and several water transmission main projects. In partnership with the Halifax Municipality, efforts have also been successful to secure \$31 million in funding from the Clean Water and Wastewater Fund [CWWF], more fully described in this document. The 2017/18 Capital Budget benefits greatly from these infrastructure programs and calls for expenditures of just under \$ 110 million as outlined in the graph below.

HALIFAX WATER
2017/18 Annual Business Plan



Although a general rate application is not planned for this fiscal year, a stormwater rate application was filed with the NSUARB last fall to reflect the Cost of Service Manual approved by the NSUARB in September, 2016. In relation to the approved Cost of Service Manual, adjustments to the stormwater rate structure are proposed for fair and equitable treatment of all customers. The rate application, amongst other things, propose to implement a tiered rate structure for residential customers and bring in a credit system for non-residential customers to promote detention of peak stormwater flow. The rate application, as more fully described in this document, is not seeking to increase revenues but to better match costs to those customers who derive the benefits of service, consistent with the Public Utilities Act. A hearing is scheduled for February 14 to 17, 2017 with an anticipated Decision from the NSUARB in April, 2017.

Other major initiatives envisioned for 2017/18 include the implementation of AMI throughout the service area, implementation of a revised lead service replacement program, consideration of a district energy system with the Cogswell Interchange redevelopment and a renewed focus on source water quality. The latter initiative will benefit from a proposed renewal of our NSERC Industrial Research Chair with Dalhousie University for a five year period commencing April 1, 2017.

3. SERVICE OVERVIEW

3.1 Water Services

The Water Services Department is responsible for operating and maintaining the municipal water system “from source to tap”. The Water Services Department also provides SCADA (Supervisory Control and Data Acquisition) and process control services for all of Halifax Water. The department is designed to both maintain and operate the water system as a holistic system, with managers assigned accountability for clearly defined parts of the system. The Water Services Department provides the following services:

- **Source Water Protection:** Managing and protecting watershed land, developing and maintaining source water plans, enforcement of Protected Water Area and other relevant source water regulations, source water community relations including working with and developing watershed advisory boards, real property maintenance of source water lands, and forestry management of watershed lands.
- **Water Quality Management:** Water quality planning, water quality monitoring, process support to treatment plants, customer inquiries and investigations, water quality support to capital projects, policy development, research and management of the Halifax Water – Natural Sciences and Engineering Research Council (NSERC) Industrial research chair at Dalhousie University.
- **Water Supply Plant Operations:** Operation and maintenance of 3 large water supply plants (Pockwock, Lake Major and Bennery Lake), 6 small systems, 6 dams, 2 emergency water supplies and 22 chlorine monitoring devices and rechlorination stations.
- **Distribution System Operations:** Operation and maintenance of the water distribution and transmission systems. The system is managed according to three geographic regions with responsibility for over 1500 km of transmission and distribution mains, 8,200 fire hydrants, 85,000 service connections, 134 pressure control/flow metering facilities, 22 pumping stations, 23,000 valves and 15 water storage facilities.
- **Technical Services:** Operation and maintenance of the SCADA system and the process communications network; implementation of the SCADA Master Plan, process control cyber security, instrumentation maintenance, electrical maintenance, maintenance of water pumping stations, and operation and development of the process data warehouse.

HALIFAX WATER
2017/18 Annual Business Plan

Further, embedded within the department, Water Services is responsible for the following major programs.

- **Water Loss Control:** Halifax Water was the first utility in North America to adopt the International Water Association (IWA) methodology for managing leakage in the distribution system. Efforts save \$650,000 per year in treatment chemical and electricity costs and have reduced water main breaks by 20%, saving \$500,000 in repair costs annually. The program has won several national awards and Halifax Water staff are in demand to share expertise with industry and other utilities.
- **NSERC-Halifax Water Industrial Research Chair in Water Quality and Treatment:** This program, carried out in partnership with Dalhousie University over the last ten years has realized significant operational savings, improved water quality and influenced Halifax Water policy. The Research Chair has produced 102 peer reviewed research papers in world recognized scientific journals over the last ten years and has allowed Halifax Water to become industry recognized leaders in areas such as lead service line replacement and biofilm control in distribution systems. Several Halifax Water employees were trained as students under the Research Chair. With the approval of the Halifax Water Board, an application is currently under review with NSERC for another five year extension of the Research Chair.
- **Supervisory Control and Data Acquisition (SCADA) Master Plan:** Subsequent to the 2007 merger, Halifax Water found itself with 6 legacy SCADA systems from the pre-existing utilities and regions and dozens of versions of control software licenses. The master plan completed in 2011 set a road map to consistent and standardized equipment and platforms for all services over a 5 year period through 6 major and 22 minor projects.
- **Lead Service Line Replacement Program:** In September 2016, the Halifax Water Board approved an initiative which will see all lead service lines replaced by 2050. This program is discussed in more detail in section 5.8 and is being developed and implemented by the Water Quality division in the Water Services Department.

3.2 Wastewater/Stormwater Services

The Wastewater and Stormwater Services Department is responsible for operating and maintaining municipal systems from “drains back to the source again”. In this regard, the Wastewater and Stormwater Services Department has a mandate to protect the environment while providing world class collection and treatment services to its customers. The department also provides corporate Fleet and Building Services. These essential services are delivered through 6 managers who are responsible for both stormwater and wastewater activities in their regions. The supervisors and the field crews carry out both wastewater and stormwater related duties. The department is also supported by an Operations Engineer position.

3.2.1 Wastewater Services

The Wastewater Services strives to provide uninterrupted delivery of the following services:

- **Wastewater Treatment Plant Operations:** Operation and maintenance of 16 wastewater treatment facilities (WWTFs) and associated infrastructure, regulatory reporting, and implementing and coordinating capital upgrades with other Halifax Water departments. As per new federal regulations; 2 plants are classified as very large, 3 are large, 2 are medium and 9 are small capacity.
- **Biosolids Processing Facility (BPF):** Liquid transport, dewatering and processing of sludge, operation and maintenance of various dewatering equipment at WWTFs, administering trucking contracts for dewatered biosolids and BPF operations contract, and processing of biosolids from on-site septic systems. This facility, located at the Aerotech Industrial Park, produces a soil amendment for beneficial use in agriculture. Staff from Treatment Plant Operations carry out these related activities.
- **Collection System Operations:** Operation, repair and maintenance of the wastewater collection and trunk sewer system. The system is managed according to three geographic regions with responsibility for over 1700 km of collection pipes, 172 Pump Stations, 21 Combined Sewer Overflow facilities and 85,000 service connections.
- **Fleet and Building Maintenance Services:** Maintenance and repair of approximately 200 vehicles ranging from smaller utility vehicles to large excavation equipment, replacement of vehicles on a life cycle costing basis, and records management. This section of the department is also responsible for maintenance and physical security of corporate buildings and any other logistical support required for efficient operation of the department.

3.2.2 Stormwater Services

The Stormwater Services is responsible for operation and maintenance of stormwater infrastructure within the public right of way or within easements. This service has undergone significant changes over the past 2 years and continues to progress to achieve a higher level of service.

- **Collection System Operations:** Operation, repair and maintenance of the stormwater collection and trunk sewer system. The system is managed by shared crews with Wastewater Services within the three geographic regions with responsibility for over 850 km of stormwater collection pipes, 28 stormwater retention facilities and over 600 km of ditches and associated cross culverts and driveway culverts.

HALIFAX WATER
2017/18 Annual Business Plan

- **Service Review:** With the creation of the Stormwater Engineer position, resources are allocated to drainage investigations, stormwater billing exemption requests, and operations support. Drainage investigations may be triggered by a customer inquiry on private property or an operational issue on an HRWC owned infrastructure. The Stormwater Engineer will review drainage issues and render a position which may involve an operational fix or a capital improvement if required. Complaints stemming from stormwater billing will be vetted through the Stormwater Engineer and a decision will be provided to the Customer. As per the direction of the NSUARB, HRWC is hiring a Dispute Resolution Officer (DRO) to independently review appeals and render an independent Decision on any decisions provided by staff.

3.3 Engineering and Information Services

The Engineering & Information Services (E&IS) Department is responsible for the provision of engineering and technical services relating to the planning, design, construction, and maintenance of water, wastewater and stormwater infrastructure and related asset information. E&IS also provide and support the hardware, software and related services for the electronic business applications required to support the utility. All E&IS staff work out of 450 Cowie Hill Road.

The E&IS Department has four core areas of responsibility and 7 specific sections delivering programs.

- ASSET MANAGEMENT
- INFRASTRUCTURE
 - Water
 - Wastewater/Stormwater
 - Wastewater Treatment Facilities
- ENERGY EFFICIENCY
- INFORMATION MANAGEMENT
 - Engineering Information
 - Information Services

The **Asset Management** section focuses on the development of the Asset Management program (including the overall strategy, inventories, condition and performance assessments), and the development and delivery of annual Asset management Plans (AMP). The section is also responsible for modelling and flow monitoring, long term infrastructure master planning (including implementation of the Integrated Resource Plan (IRP)), and the development of the 5 Year and 1 Year Capital Budget.

HALIFAX WATER
2017/18 Annual Business Plan

The **Infrastructure** sections are responsible for the design, construction and project management for water, wastewater and stormwater capital projects. These three sections also provide support for capital project prioritization, master planning and asset management relating to the core infrastructure.

The **Energy Efficiency** section is responsible for the provision of engineering services related to energy management and energy efficiency of water, wastewater and stormwater infrastructure.

The **Engineering Information** section is responsible for the corporate Geographic Information System (GIS) including the maintenance and distribution of all record information. The section is also responsible for on-going GIS development including both desktop and mobile GIS applications. This section also supports capital projects and other initiatives through Computer Aided Drafting (CAD) and map production.

The **Information Services** section provides administration of services relating to network resources (storage, servers, printers, etc.), users, access control and network security, server hardware and operating systems. All computer equipment is managed by the IS section. This includes desktops, laptops, monitors, printers and servers. The IS section is the first line of support for all IT related problems or requirements. Corporate desktop software is administered by the IS section. Provides business analysis and project management as required for IT projects.

3.4 Regulatory Services

The Regulatory Services Department has been recently restructured and completed its first year of delivering services related to environmental engineering; development approvals; safety and security; and regulatory compliance. In the spring of 2016, a Stormwater Engineer was added to the group for focused approach on managing complaints and improved response to drainage investigations.

The **Environmental Engineering Group** has been focusing on finalizing Standard Operating Practices (SOPs) to better define the daily operations and tasks of the Environmental/Pollution Prevention Officers. The SOPs will focus on cross connection investigations, illegal stormwater connections, and ditch infilling. Environmental Engineering will be evaluating software to assist in tracking investigations and appurtenances (i.e. grease traps) installed in commercial/industrial customers' facilities. The group has been actively inspecting properties associated with connections to the deep stormwater system recently constructed on Cow Bay Road and will continue to finalize the last 10%. Efforts to support the Wet Weather Management Program will continue with ongoing investigations in the Leiblin Park, Springfield Lake and Uplands Park area.

The **Development Approvals Group** continues to manage permit applications for service extensions and connections to HRWC's existing infrastructure, inclusive of the Cross Connection Control Program. The group recently developed a tracking system for permits

HALIFAX WATER
2017/18 Annual Business Plan

and subdivisions, and will be a position to provide statistics throughout the coming year. The management of existing and new Capital Cost Contribution (CCC) charges for Master Plan communities remains a major component of the division's responsibilities. The CCC for Bedford West will be refiled with the NSUARB to reflect the infrastructure updates and staff will provide support for the preliminary infrastructure review for the Port Wallace Master Plan area, led by HRM.

The Regional Development Charge (RDC) was approved three years ago and Stakeholder consultations have commenced and a work plan has been developed to prepare for the five year review. The RDC update will incorporate the results from the West Region Wastewater Infrastructure Plan, anticipated to be completed spring 2017. The Local Wastewater Infrastructure Capacity Study for the Regional Centre on behalf of Halifax Municipality was managed by the group and has been finalized. The Municipality will be rolling out the outcomes to the community and developers. The Approvals group will provide technical support as Halifax develops an implementation plan for the installation and funding of the recommended infrastructure upgrades.

The Development Approvals Group also incorporates the Land Management program which supports Capital Projects and Operations in securing easements, land purchases for infrastructure and land leases.

The **Safety and Security Group** provides support for the entire organization with respect to the safety training program, including documentation of safety training requirements to ensure employees have the appropriate training to safely conduct their daily activities and manage risk to the utility. The safety training matrix for all positions within HRWC was updated and Human Resources is utilizing it to ensure all staff have the appropriate training and it remains current.

The group has sponsored the Workers Compensation Board's (WCB) workplace assessment program. The WCB Program involved the establishment of a Team of Doers to review the survey completed by staff and develop strategies to promote safety awareness and enhance the overall safety culture of HRWC.

The Safety and Security intranet site has been upgraded and electronic fillable forms have been created for the various forms within the OHS Manual. Based on feedback from users, enhancements are currently underway and should be completed in 2017. The enhancements will make the forms more user-friendly and allow for improved tracking and reporting.

The Safety and Security division is also responsible for the development and update of the corporate Emergency Response Plan including emergency response training. Halifax Water continues to participate in Public Safety Canada's Regional Resilience Assessment Program for treatment facilities. Facilities are evaluated using the Critical Infrastructure Resilience Tool, identifying areas where security and protection of critical assets can be improved or enhanced.

HALIFAX WATER
2017/18 Annual Business Plan

The **Regulatory Compliance Group** conducts sampling of the water treatment and distribution systems for bacteria and residual chlorine, ensuring compliance with Canadian Drinking Water Guidelines and Operational permits issued by Nova Scotia Environment (NSE). Similarly, sampling is completed for wastewater effluent parameters for compliance with permits issued by NSE, consistent with new federal regulations. The group is also tasked with compiling and submitting reports associated with the sampling results to NSE. Regulatory Compliance also ensures that operating permits are renewed prior to their expiry. The group continues to support Engineering & IS, and Wastewater Operations staff on changes to regulatory permits including the Wastewater System Effluent Regulations (WSER) and assists in developing an implementation plan for required upgrades.

The **Environmental Management System (EMS)** has been expanded to include wastewater and last year saw the ISO 14001 certification bestowed upon the Herring Cove WWTF. The ISO standard has been upgraded and the focus this year will be ensuring documents for the water facilities, Pockwock, Lake Major and Bennery, are updated to reflect the latest standard. Once this is completed, it is proposed to commence the certification process for the Dartmouth WWTF in January 2018.

3.5 Corporate Services

Corporate Services consists of 6 divisions, with service to internal and external customers through Finance, Accounting, Procurement, Human Resources, Customer Service, and Metering and Billing.

The **Finance Group** is responsible for development of operating budgets, funding plans for the capital budget, rate applications and financial modeling for business plans. This group assists Engineering in the preparation of capital budgets and confirms availability of funding sources. The group is responsible for forecasting revenues and expenditures, including associated trend analysis, responsible for pension plan administration, internal control testing, and quality assurance activities around financial transactions including payroll.

The **Accounting Group** is responsible for timely and accurate financial reporting, financial accounting, financial statements, revenue and cash flow, development and implementation of accounting procedures and internal controls, fixed asset accounting, financial analyses and annual audit.

Procurement directs the planning and delivery of Procurement services to the organization ensuring compliance with corporate policies and Provincial legislation. This group develops and implements monitoring and reporting of systems, programs,

HALIFAX WATER
2017/18 Annual Business Plan

procedures for inventory and procurement to support acquisition of goods and services to enable delivery of the business plan, operating and capital budget objectives.

Human Resources is responsible for the effective delivery of all Human Resource initiatives including; effective workforce planning, organizational change and development, recruitment functions, disability management, health and wellness initiatives, labour/employee relations, compensation and benefit functions, pension administration, and employment equity.

Customer Services is responsible for customer service delivery to external and internal customers through the Customer Care Centre, and manages all customer contacts, establishes corporate customer service standards, goals and objectives, and coordinates business processes in the area of customer service with a focus on service and process improvement.

Metering and Billing is responsible for end to end functions of meter installation, maintenance, reading, sampling, testing, establishment of standards, and billing customers in a timely and accurate manner.

The most significant objectives for Corporate Services in the 2017/18 year are:

- Implementation of the Advanced Meter Infrastructure (AMI) project. This item is discussed in greater detail in section 5.2. The project was approved by the NSUARB on October 6, 2016 and the first AMI meters will be installed in 2017.
- Continued enhancement of Customer Service with improvements to the website, development of a Customer Portal in conjunction with the AMI project, and investigation of new telephony systems. With all water, wastewater, and stormwater directed to the Customer Care Centre in 2016/17, the utility is well positioned to take advantage of information received through AMI and the ongoing maintenance management system to track Operations activities. A corporate communications strategy is being developed that will facilitate website improvements and a new phone number H2O-WATR is proposed to make it easier for customers to access customer service.
- Implementing the Decision from the February 2016 Stormwater Rate Hearing, reflecting the Cost of Service model and rate design approach approved by the NSUARB in 2016. This item is discussed in detail in Section 5.8 Stormwater Cost of Service.
- Implementing changes to promote corporate productivity, safety, employee engagement and cost effectiveness. Some examples of initiatives that support this include providing support and training for managers and supervisors to manage performance and attendance, continuing civility and respect in the workplace training, introducing new health and wellness programs with a focus on mental health, and improving the work force planning and staffing/hiring processes.

HALIFAX WATER
2017/18 Annual Business Plan

- Completing a new Five Year Business Plan and updated long range financial modeling to support the next Water and Wastewater Rate Application, future update of the Integrated Resource Plan, and revised Regional Development Charge.
- Completing a consolidation of the Pension Plan text and Amendments to reflect changes to the NS Pension & Benefit Act which came into effect June 1, 2015. There will also be on-going work on governance, policies and administrative processes for the HRWC Employees' Pension Plan with a view to ensuring they reflect best practice and current standards.
- Improving communication and information available to employees on Pension and other Benefits through development of a pension plan website, and refreshing the HRWC Intranet site.

4. BUDGET SUMMARY

4.1 Capital

Halifax Water's 2012 IRP identified a 30 year capital investment plan valued at \$2.6 Billion (net present value). As part of the utility's overall mission, the capital budget program focuses on three main strategic drivers; asset renewal; regulatory compliance; and growth. The capital program helps ensure that Halifax Water continues to provide world class services in a cost effective and efficient manner with a focus on long term sustainability.

The Capital Budget includes an annual 1 year and 5 year capital plan. Capital projects are defined as newly acquired or constructed item with a value greater than \$5000 and a life expectancy beyond one year. The Capital Budget document includes four general asset categories: Water, Wastewater, Stormwater and Corporate Projects.

The detailed 1 year and 5 year Capital Budget documents are attached as Appendix C.

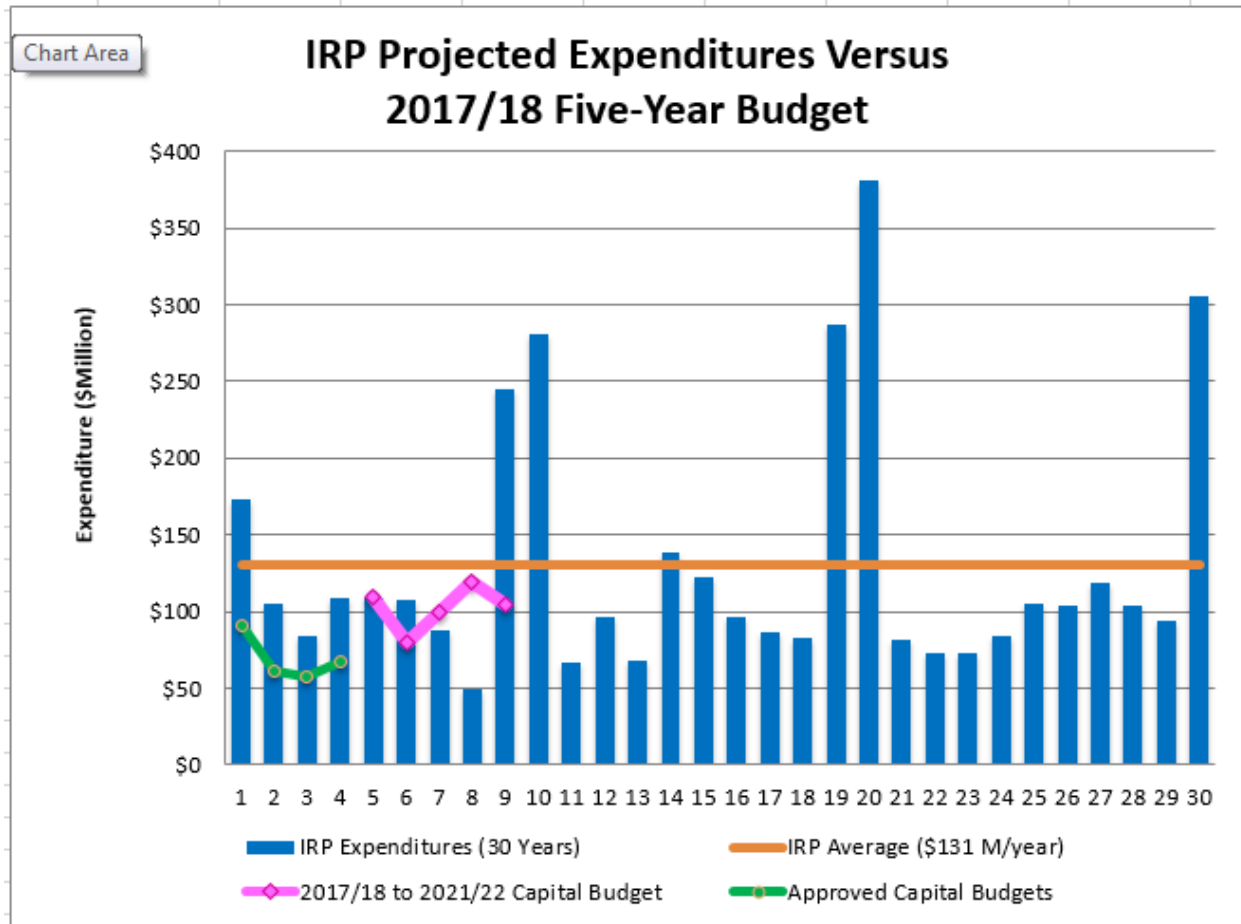
The summary totals for the four asset classes for the 1 Year and 5 Year capital budget are as follows:

Asset Class	Year 1 2017/2018	Year 1 - 5 2017/2018 - 2021/2022
Water	\$47,762,520	\$158,635,000
Wastewater	\$46,660,781	\$293,640,000
Stormwater	<u>\$15,084,200</u>	<u>\$ 61,180,000</u>
TOTAL	\$ 109,507,501	\$ 511,855,000

HALIFAX WATER
2017/18 Annual Business Plan

The capital program balances near-term needs with long-term investments across all asset classes.

The following chart shows the current proposed 5 year capital expenditure plotted against the IRP capital expenditure recommendation. The chart indicates a continued general increase in capital expenditures towards the target level.



The following provides highlights of the 2017/18 Capital Budget.

Water: Major water capital projects include:

- Distribution System Main Renewal Program in conjunction with HRM Streets program: \$1,900,000
- Bedford Connector Transmission Main renewal – with **New Building Canada** Federal/Provincial Funding: \$4,569,717
- Peninsula Low South Transmission main rehabilitation – with **Clean Water & Wastewater Fund (CWWF)** Federal/Provincial funding: \$7,505,000
- Lake Major Dam Replacement – with **CWWF** funding: \$7,089,391

HALIFAX WATER
2017/18 Annual Business Plan

- J.D. Kline Water Supply Plant Filter Media & Underdrain Replacement – with **CWWF** funding: \$4,447,060

Wastewater: Major wastewater capital projects include:

- Collection System Renewal Projects integrated with HRM Streets Program: \$1,000,000
- Sewer Lateral Replacement Program: \$1,900,000
- Northwest Arm Sewer Rehabilitation – with **CWWF** funding: \$19,493,168
- Leiblin Pump Station Elimination: \$3,495,000

Stormwater: Major Stormwater capital projects include:

- Stormwater System Renewal Projects Integrated with HRM Streets Program: \$1,060,000
- Culvert Renewals: \$2,736,000
- Sullivan’s Pond Storm Sewer Replacement – with **CWWF** funding: \$8,632,000
- Ellenvale Run Retaining Wall System Replacement Phase 1: \$1,535,000

Corporate Projects: Major Corporate Projects include:

- GIS Data Program: \$1,000,000
- Computer Network and Hardware Upgrades: \$510,000
- Computerized Maintenance Management System: \$2,000,000
- Corporate Fleet: \$1,905,000
- AMI Meter System Upgrade: \$11,685,000
- Asset Management Program: \$600,000

The Capital Budget is funded from a variety of sources including capital asset depreciation accounts, debt, reserves, capital cost contributions and external cost sharing.

Capital funding sources:

- Depreciation (funded within the rates)
- Debt
- Development charge reserves
- External cost sharing

HALIFAX WATER
2017/18 Annual Business Plan

The Debt Strategy as approved by the Halifax Water Board, and accepted by the NSUARB, provides a funding strategy that is fair, equitable and cost effective. The debt strategy sets limits for the debt service ratio (DSR) at 35% and a target debt to equity ratio of 40%/60%.

The funds for the overall Capital Budget will be generated from a combination of sources, as detailed below. The planned utilization of debt is consistent with the Debt Strategy. HRWC will manage risk around projected Regional Development Charges through reprioritization of growth projects or additional utilization of debt if required.

2017/18 Capital Budget Funding Sources

Water:	Depreciation	\$ 9,631,878
	Debt	\$24,874,122
	RDC	\$ 0
	External Funding CWWF	\$11,849,853
	External Funding New Building Canada	\$ 1,406,667
	Capital Cost Contributions	\$ 0
	Energy Rebates	\$ 0
	TOTAL	<u>\$ 47,762,520</u>

Wastewater:	Depreciation	\$14,035,907
	Debt	\$17,617,093
	RDC	\$ 610,000
	External Funding Build Canada	\$12,257,781
	Capital Cost Contributions	\$ 540,000
	DES Debt	\$ 1,600,000
	TOTAL	<u>\$ 46,660,781</u>

Stormwater:	Depreciation	\$ 1,492,323
	Capital from Operating	\$ 1,000,000
	External Funding CWWF	\$ 6,321,893
	Debt	\$ 6,269,984
	TOTAL	<u>\$15,084,200</u>

Total Capital Funding: \$ 109,507,501

HALIFAX WATER
2017/18 Annual Business Plan

4.2 Operations

The operating budget prepared for 2017/18 is based on year three of the Five Year Business Plan approved by the HRWC Board in October 2014. There will be no rate increases for water, wastewater and stormwater in 2017/18. There will be some adjustments to stormwater rates however, to reflect a NSUARB Decision expected early in 2017/18. The operating budget shows a loss of \$6.8 million on an accrual basis, and \$2.4 million on a cash basis. The cash basis reflects the requirements of the NSUARB Accounting and Reporting Handbook for Water Utilities which is used for rate making purposes. HRWC's operations have resulted in surpluses in recent fiscal years and HRWC is planning to delay increasing rates by utilizing accumulated operating surplus from previous years.

Some of the primary operating budget drivers and assumptions are:

REVENUES

Total revenues are projected to be \$600,000 lower than last year, based on the following assumptions:

- Consumption will continue to decline related to water and wastewater. Consumption is projected to decrease 3.0%. The decrease in 2016/17 was less than this; however, it was an unusually dry summer. The 2017/18 budget assumes a return to normal weather conditions.
- 700 or roughly 0.8% new customer connections are projected based on the 4 year historic average (2011-2014).
- No increases for fees for un-regulated activities such as septage tipping, treatment of effluent from airplanes, and leachate are planned in 2017/18, as rates were adjusted in 2016/17.

Alternative Revenue - Revenues from unregulated business activities are increasingly important to mitigate future revenue requirements from rates. Unregulated revenues help to pay for some expenses which would otherwise be funded by rate-regulated activities, and are also used to fund unregulated expenses. Halifax Water has had success generating alternative revenues aside from user fees on both the regulated and unregulated side of the business. On the regulated side, Halifax Water has entered into agreements for the sale of land deemed to be no longer used or useful for utility purposes. With NSUARB approval, revenue from land sales can be used as a source of funds for capital projects related to the delivery of water services in recognition that the land was originally purchased with water-rate base funds. As much of the surplus land has been sold, this will not be a significant source of funds in the future.

Notwithstanding limitations for generating revenue from the regulated side of the business, there has and will continue to be opportunities from the unregulated side. Currently,

HALIFAX WATER
2017/18 Annual Business Plan

Halifax Water generates revenue from third-party contracts for water and wastewater treatment operations.

Halifax Water also generates revenue for the lease of land for telecommunications facilities throughout the municipality, in recognition that reservoir sites are located on higher elevations that afford more direct line of site for telemetry. In conjunction with these leases, Halifax Water installs telecommunications equipment on these facilities for its own needs for the ultimate benefit of the water, wastewater, and stormwater rate base. As Halifax Water continues to expand the Supervisory Control and Data Acquisition (SCADA) system in accordance with its master plan, further opportunities for leases and hosting of Halifax Water equipment will be realized.

In recognition of Halifax Water's expertise in utility management and water-loss control, the utility offers a wide range of related services to generate revenue. These range from leak-detection services for Halifax Water customers and other municipalities to consulting services under contract to First Nations and municipalities. There is great potential to expand these services to generate additional revenue and, at the same time, provide professional development opportunities for staff.

Halifax Water also recognizes that its assets can be leveraged to bring in revenue from energy generation. This includes projects to generate electricity from wind turbines on watershed lands and distribution control chambers where water pressure is reduced. Both of these opportunities have been developed for interface with the Nova Scotia Department of Energy's Community Feed-In Tariff (COMFIT) program, which provides preferential rates to feed electricity into the Nova Scotia Power Incorporated (NSPI) distribution grid. Through efforts of Halifax Water staff, a Ministerial Directive was issued through the Department of Energy (DOE) in 2012 to approve the recovery of renewable energy within water distribution systems at "run-of-the-river" rates. To that end, Halifax Water has received two COMFIT certificates for the installation of hydrokinetic turbines in the Orchard and Lucasville control chambers. The Orchard installation went into commercial operation in October, 2014. The projected net revenues are in the current business plan. These projects are structured to ensure they are compliant with the Public Utilities Act with the recognition that regulated activities cannot subsidize the unregulated side of the business.

In partnership with Halifax municipality, Halifax Water has also studied the potential for a green thermal utility whereby energy can be extracted from the heat in sewage and delivered through a local pipe distribution system in the vicinity of treatment facilities. The planned redevelopment of the Cogswell interchange in Halifax will provide an opportunity to advance this concept since the Halifax WWTF is adjacent to the Cogswell interchange. This project is currently being pursued as a regulated activity subject to the approval of the NSUARB. In an effort to be open and transparent to stakeholders including the NSUARB, Halifax Water discloses revenue and expenses associated with unregulated business separately within the financial statements and budgets. Net gains from these activities ultimately go to the benefit of the rate base as they are closed out to accumulated operating surplus/(deficit) each fiscal year.

HALIFAX WATER
2017/18 Annual Business Plan

Unregulated revenues are projected to be \$1.75 million in 2017/18, an increase of \$150 k or 9.3% from the budget of \$1.6 million in 2016/17. In a span of six years, unregulated revenues have almost doubled.

EXPENSES

Halifax Water's Operating Budget is shown on an accrual basis for 2017/18 to provide better information for decision making and be reflective of best practice for budgeting. There is an accrued amount regarding the liability for future employee benefits (pension) as calculated under IFRS that, for rate making purposes, is not currently included in the revenue requirements. There are also differences between the treatment of debt servicing expense and calculation of depreciation.

The utility faces pressure associated with growth, asset renewal, and compliance with regulatory requirements, as described in the Integrated Resource Plan. Halifax Water has taken significant steps to reduce risks in these areas with the development of the regional development charge, an asset management framework and capital projects to upgrade wastewater treatment facilities.

The largest components of Halifax Water's consolidated operating budgets are salaries & benefits, electricity, debt servicing, depreciation, and chemical costs.

Salaries and Benefits - The budget for 2017/18 includes filling 20 full-time equivalent positions (FTEs), most of which are new positions, but also include previously approved positions that were vacant in 2016/17. Additionally, two 3-year term positions are being filled to support the AMI project.

The annual increase included in the operating budget for existing employees is 2% with an additional 0.5% to allow for the impact of step increases within salary bands, reclassification of positions, and increases in benefits.

Electricity - Budgets were established based on an assumption of electricity, fuel, oil and natural gas rate increases in each specific year. The impact of these increases is expected to be partially offset by the formal Energy Management Program.

- Electricity - 2%
- Furnace Oil - 5%
- Natural Gas - 5%

HALIFAX WATER
2017/18 Annual Business Plan

Debt Financing – Debt payments are budgeted to support the new debentures planned for the 2017/18 additions to utility plant in service. The amount and timing of the increases will be determined by the completion of the projects and the financing rates and options available. It is estimated total debt servicing will increase to \$34 million; a 7% increase from the 2016/17 budget. The capital financing strategy is designed to maintain a debt service ratio of 35% or less; and to use a mixture of infrastructure funding, development related charges (reserves), depreciation; and debt.

Depreciation - As Halifax Water's assets and future capital budgets increase so do depreciation expenses. Depreciation is an integral funding source to support rehabilitation of the existing infrastructure as well as new infrastructure and upgrades to meet future requirements related to servicing demands and changing environmental regulations. Depreciation is projected to increase to \$22.5 million in 2017/18 from \$21.2 million in the 2016/17 budget, which is an increase of 6%.

Dividend to the Halifax municipality - The water dividend agreement was renewed in September, 2014 for a 5 year term (April 1, 2015 - March, 2020). The dividend is calculated as 1.56% of the water system rate base and is projected to grow from \$4.7 million in 2016/17 to \$4.8 million in 2017/18.

Chemical Costs – Chemicals are tendered annually in January for optimal pricing. Chemical cost increases of 5% are anticipated for next year.

On a consolidated basis, operating expenses are projected to increase by \$3.9 million (4%) to \$106 million from \$102 million. Water Service expenses are projected to increase by \$2.6 million, Wastewater Service by \$1 million, and Stormwater Services by \$400,000. Many categories of expense are increasing at a rate greater than CPI, particularly depreciation which is 18% of total operating expenses and is increasing at 6.5 % as a result of increasing capital investments.

Operating revenues are projected to decrease by \$88,000, or 0.1% to \$135.6 million. Non-Operating revenues are projected to decrease by \$500,000, to \$2.7 million due to decreased investment income, as Halifax Water will have less cash available for investment. Non-operating expenses are projected to increase by \$2.5 million (7%) to \$38.8 million due to increases in debt-servicing driven by the capital program.

HALIFAX WATER
2017/18 Annual Business Plan

Pro-Forma Income Summary

Pro Forma Income Summary			
	Actual 2015/16	Approved Budget 2016/17	Proposed Budget 2017/18
Operating Revenues	\$131,716	\$135,675	\$135,587
Operating Expenditures	\$96,243	\$102,425	\$106,241
Operating Profit	\$35,473	\$33,250	\$29,346
Non-Operating Revenues	\$3,370	\$3,291	\$2,787
Non-Operating Expenditures	\$33,961	\$36,386	\$38,882
Net Surplus (Deficit)	\$4,883	\$154	(\$6,750)
<i>Note:</i>			
<i>Consolidated numbers reported above include regulated and unregulated activities of the Urban Core, Satellite and Airport/AeroTech Systems.</i>			

As of March 31, 2016, Halifax Water had an accumulated operating surplus of \$7.8 million. It is important to note that favourable operating results are projected for the 2016/17 fiscal year and would increase the surplus at March 31, 2017. Halifax Water is targeting maintaining an accumulated operating surplus of 3% of expenses (operating and non-operating) to mitigate risk. Accumulated operating surplus can also be used to fund future additions to utility plant in service. Based on the financial position of the utility at March 31, 2016 and the proposed operating budget for 2017/18 the accumulated operating surplus would be approximately 1% of total expenses; however it is likely the year-end surplus from 2016/17 will increase this.

Halifax Water has an efficient capital structure which has been reviewed and accepted by the NSUARB and was developed based on the policies of other utilities, its longer-term capital needs, consideration of fairness to present and future ratepayers. Utilization of debt is a key component of the capital financing structure. Debt impacts the operating budget and, therefore, the future rate requirements in several ways:

1. Increased debt payments need to be accommodated through rates.
2. Increased depreciation as the capital program grows needs to be accommodated through rates.

HALIFAX WATER
2017/18 Annual Business Plan

3. Operating costs of new capital needs to be accommodated through rates.
4. Capital requirements not funded by debt will increase the requirement of capital from operating funding through rates.

Different financing alternatives were considered, taking into account rate stability and affordability, Halifax Water long term financial sustainability, and intergenerational equity. The debt strategy approved for Halifax Water concludes that appropriate ratios for Halifax Water to utilize are:

1. Maximum Debt Service Ratio of 35%
2. Target Debt/Equity Ratio of 40%/60%

In essence, the two targets serve as a framework for Halifax Water's utilization of debt. Long-term debt is projected to increase from \$240.1 million at March 31, 2016, to \$271.7 million by March 31, 2018. It is estimated total debt servicing will increase from \$31.7 million in 2016/17 to \$34.0 million in 2017/18, and the debt service ratio will increase from 23.4% to 25.1%.

Halifax Water has a goal to keep rates for combined services below 2% of median household income, well below the rate affordability threshold recommended in several industry best practice studies. The cost of annual combined services for an average household is projected to be approximately 0.92% of median household income in 2017/18.

Notwithstanding the rate position with regard to best practice, Halifax Water will be completing a review of rate affordability and support to low income customers by the end of 2016/17. This information will be further refined in 2017/18 and used as information in the next general water and wastewater rate application. Although Halifax Water considers rate affordability and has a rate smoothing strategy, some households on low income may still experience affordability issues. In recognition of the financial burden on households with low income, Halifax Water introduced the Help to Others (H2O) program on April 1, 2011 to mitigate the impact of rising water bills. The H2O program provides dedicated funding for low income households to offset water bills, administered through the Salvation Army, similar to other heating fuel or electricity bill assistance programs. Funds for the program are derived from unregulated activities of the utility with annual base funding of \$35,000 and additional utility funds to match employee donations.

4.3 Cost Containment

Halifax Water reports semi-annually to the HRWC Board, and annually to the NSUARB the results of cost containment activities. The next cost containment report will be filed with the NSUARB by June 30, 2017. Halifax Water achieved cost containment savings of \$1.7 million in 2014/15, \$1.2 million in 2015/16. Some of these are on-going, and some are one

HALIFAX WATER
2017/18 Annual Business Plan

time in nature. Halifax Water continues to develop a cost containment culture. As salaries and benefits are the largest element in the operating budget, the most significant opportunity identified in 2017/18 is to improve workforce planning and the staffing process. Another area of opportunity is focusing on productivity through enhanced business processes and technology, performance management, and improving time and attendance tracking.

5. STRATEGIC INITIATIVES

5.1 Customer Service Enhancements

The 2016 Customer Service (Quality of Service) Survey indicated that Halifax Water continues to perform admirably in with most respondents offering positive ratings about the service. Many initiatives are underway that ultimately will help us continue to enhance service to customers.

Dispute Resolution – The process to escalate customer issues and resolve them is changing in 2017/18, to reflect the addition of an independent Dispute Resolution Officer. As part of its on-going commitment to best-in-class customer service, Halifax Water, with the approval of the NSUARB, has established the position of Dispute Resolution Officer, a part-time independent mediator who will investigate and adjudicate service or billing complaints from customers who wish to pursue grievances beyond Halifax Water's customer service channels.

The Dispute Resolution Officer will analyze the details and merits of customer complaints and concerns, as well as the position of Halifax Water, consult and interpret relevant regulations and standards, determine appropriate outcomes based upon an impartial examination of the issues, and provide clear and concise explanations of the decisions rendered.

Customer Care Centre – This year will see continued enhancement of customer service with improvements to the website, development of a Customer Portal in conjunction with the AMI project, and investigation of new telephony systems. With all water, wastewater, and stormwater calls directed to the Customer Care Centre in 2016/17, the utility is well positioned to take advantage of information received through AMI and the ongoing maintenance management system to track Operations activities. A corporate communications strategy is being developed that will facilitate website improvements and a new phone number H2O-WATR is proposed in 2017/18 to make it easier for customers to access customer service.

Stormwater Education - HRWC has been working on communications and education around stormwater, and will continue to work on this in 2017/18. A stormwater video was developed that explains what stormwater service is, how a customer receives it, and how they are billed. The video, along with a portal for customers to get some information about their property and stormwater service, was launched on October 31, 2016. At the

HALIFAX WATER
2017/18 Annual Business Plan

same time, HRWC also prepared six static sketches showing typical configurations of how properties receive stormwater service. Stormwater Operations and Regulatory Services staff are now leaving “door-hangers” at properties when they visit, so customers know Halifax Water personnel visited their property and what follow up may occur. Also, there has been a lot more active tweeting of photos of stormwater work when maintenance and culvert installs are being done.

The most significant initiative underway that will enhance Customer Service is the AMI project, which is discussed separately in Section 5.3

Halifax Water is also participating on the municipality’s Corporate Customer Service Steering Committee to ensure the customer service approaches are aligned where possible.

5.2 Wastewater Regulatory Compliance

Nova Scotia Environment operating approvals and the WSER set the parameters for regulatory compliance of various Halifax Water wastewater facilities. All Halifax Water facilities are currently compliant with WSER limits of discharge (i.e., 25 mg/L of BOD and 25 mg/L of Total Suspended Solids) with transitional authorizations for Halifax and Dartmouth WWTFs which have to fully compliant with WSER limits by 2040. In 2017-18, Halifax Water will also explore collaboration opportunities with Dalhousie University to conduct wastewater research to optimize treatment operations and at the same time explore leading edge solutions for upgrades of the facilities for full compliance with WSER regulations by 2040.

Regulatory compliance of wastewater collection and treatment systems is the key focus area for HW. The Wastewater Infrastructure plans that are underway within HW lay out the framework for long term sustainability and compliance with all applicable regulations. The plant optimization initiatives are an ongoing effort that attempt to keep the WWTFs in compliance until they are upgraded or replaced. Such efforts have shown good results for Wellington, Frame, Aerotech, and Beechville-Lakeside WWTFs. These optimization efforts, in 2017-18, will focus on Dartmouth, Mill Cove and Beechville-Lakeside WWTFs. The optimization activities also provide valuable input to the overall Regional Wastewater Functional Plan and capital budgets to optimize investments.

5.3 Advanced Metering Infrastructure

Halifax Water began looking at the feasibility of Advanced Metering Infrastructure (AMI) in 2012. AMI is a system whereby, in lieu of meter readers walking routes, or driving routes to read meters with radio devices , a fixed network of telemetry devices is established over the service area to read meters on a much more frequent basis (typically hourly).

HALIFAX WATER
2017/18 Annual Business Plan

On October 6, 2016, the NSUARB approved a \$25.4 million dollar multi-year project to complete the AMI project. This is a significant project that will touch all customers and will change how the utility provides service. The Decision to approve the AMI Project, also included some changes to Halifax Water's regulations to enable AMI. Also in 2016, contracts were successfully negotiated with two vendors for three AMI components [network technology, supply of meters, and installation of meters]. Itron was selected for the network technology component with Neptune Technologies selected for the supply and installation of meters. The project was formally launched in November 2016.

Up until the spring of 2017, AMI activity will consist of system design, software configuration, and development of business process to operate with the AMI system. In late spring 2016, Halifax Water will install approximately 300 AMI enabled meters in customers' homes as a pilot in the Beaverbank area. This pilot will enable refining of meter reading and billing processes prior to the larger deployment.

Beginning in the summer of 2017, Halifax Water will begin the deployment of AMI devices to all 83,000 customer premises. This will take place on an area by area basis until the fall of 2019. The AMI project is scheduled to be complete by the end of the 2019/20 fiscal year.

In addition to streamlining the meter reading process and reducing its cost, AMI promises many features that will improve the level of service Halifax Water can offer its customers. These include:

- The ability to offer monthly billing to residential and small commercial customers thus making it easier to for customers to manage cash flow and automated payments. Large institutional, commercial and industrial customers are currently billed on a monthly basis.
- Billing errors will be reduced and estimated meter readings will be eliminated.
- Halifax Water will be able to alert customers to high consumption due to things like plumbing leaks, almost as they happen, reducing billing disputes and high bill amounts.
- Customers will have the ability, through a web portal, to manage their water consumption in real time and see the effect of any conservation measures they take.

AMI will provide much more data about customer consumption and distribution system operations. This will enable earlier identification of distribution system leaks. Overall it will improve the customer focus of the organization by providing the ability to identify and rectify customer issues proactively, rather than after the fact upon the customers' receipt of a high bill. This will result in reduced costs for billing and collection, and reduce the need for the high cost activity of sending technicians to customer homes.

HALIFAX WATER
2017/18 Annual Business Plan

This upgrade to AMI will enable two-way digital communication between the utility and its customers. This technology forms the backbone of the utility of the future, which means more customer-focused and efficient service. Over time, Halifax Water will be more responsive to customer inquiries based on better data, provide enhanced leak detection services, and move to monthly billing which allows customers to manage their budgets more effectively.

The decision to install AMI technology is part of Halifax Water's broader goal of continuously improving the overall water infrastructure and customer service experience. This will allow for more effective system operations and cost savings. From an environmental standpoint, Halifax Water will reduce its environmental footprint due to reductions in vehicle travel to read meters and perform other basic services, which will be completed remotely once the meters are installed.

5.4 Operational Maintenance Management

Halifax Water is currently implementing a Computerized Maintenance Management System (CMMS) in conjunction with Halifax Municipality. The project is a core component of the Halifax Enterprise Asset Management (EAM) program and identified as the Operational Maintenance Management (OMM) system.

Presently, maintenance information is available at a specific operations facility and is primarily available in hard copy. There is limited shared access to work related activities. This increases the complexity in delivering sound metrics on Halifax Water maintenance activities. The current methods for maintenance management are often inefficient and labour intensive in the preparation and processing of individual work orders. These current practices can lead to increased reactive versus preventative maintenance and even reduce the amount of maintenance work undertaken.

As most methods are centred on the specific work area, it can be difficult to compile data on common activities across the operational areas. Although information is coded and submitted to the corporate financial system (SAP), extracting information on work activities is limited to infrastructure type (i.e. water system versus wastewater/stormwater systems), geographic region (east, west, central), or by financial codes (general ledger, some by facility). Information is not easily tracked by asset class, task type, equipment, or man hours attributed to the asset/facility.

To improve the overall efficiency, effectiveness and consistency in maintenance management and facilitate the integration of these activities with the existing corporate GIS and financial systems, Halifax Water is implementing the OMM project, in partnership with Halifax municipality.. This approach is considered industry best practice for utilities in the management of vital infrastructure and facilities.

HALIFAX WATER
2017/18 Annual Business Plan

Once implemented, the OMM will enable a shift from a reactive to a proactive and ultimately an optimized work environment. It will automate the logistical functions performed by maintenance staff and management and generally includes the following functionality:

- work order generation, prioritization and tracking by asset class or equipment component
- tracking of scheduled (preventative) and unscheduled (reactive) maintenance activities
- storing of maintenance procedures and technical documentation
- historical tracking of all work orders including material and labour costs
- In addition, the project will provide the benefit of elimination of paperwork and manual tracking activities, saving time and allowing staff to remain productive and improves decision making with maintenance planning, asset management and inventory control.

Effective April 4, 2016, the OMM Deployment 1 went live with a subset of Water Distribution and Wastewater/Stormwater Collections. The expansion of Deployment 1 continued across the three regions in 2016. In 2017/18, OMM will continue with Deployment 2 and 3.

Deployment 2, including operations locates and preventative maintenance has an April 2017 Go Live date. Deployment 3, including pumping stations, wastewater treatment and water supply plants, is scheduled to Go Live in October 2017.

5.5 Wet Weather Management

Like many municipalities and utilities across North America, Halifax Water's sanitary sewer system is subject to dramatic flow increases in response to precipitation events. The Halifax Water Wet Weather Management Program was developed to effectively manage the impacts of wet weather generated flows within the sanitary sewer system. The program was developed around the core principle of keeping extraneous flows out of the sanitary sewer system where appropriate and managing the increased loadings where it is not possible to remove the extra burden. The sources of high wet weather flow in a wastewater system are derived from infiltration and inflow (I&I). I/I contributions can be grouped into two contributing areas: Public Infrastructure (mains, manholes, laterals up to the property line, etc.) and Private Infrastructure (laterals from property line up to and including connections within buildings). There are a number of challenges when dealing with either of the primary contributing areas and specific strategies must be employed. The program employs a variety of strategies to reduce wet weather impacts such as pipe condition

HALIFAX WATER
2017/18 Annual Business Plan

assessments, cured in place pipe [CIPP] rehabilitation, sewer separation, flow monitoring, illegal connection investigations, public communications and modeling.

Halifax Water has developed a comprehensive Wet Weather Management Program (WWMP) with a mandate, "To efficiently manage the volume of wet weather generated flows entering the sanitary wastewater system." The program is the primary responsibility of Wastewater and Stormwater Services. The benefits of reducing the volumetric wet weather flow include a reduction in untreated discharges to the environment, reduction of treatment upset at WWTFs, reduction in O&M costs, and an increase in available system capacity.

In the near term, a number of pilot sewer sheds have been selected to mature the program and are ongoing. 2017/18 will see the completion of the public rehabilitation program for the pilots and the start of private side investigations. A status summary of each pilot is included below.

1. **Stuart Harris:** The Stuart Harris sewershed, constructed in the 1970's, is typical of residential sewersheds in Halifax for this generation and experiences dramatic sewer flow responses to precipitation events. Mainlining was completed in summer 2015 and manhole rehabilitation in summer 2017. Post rehabilitation flow responses will be collected in 2017/18. This sewershed will be reviewed for lateral renewal pending detailed assessment and may be a candidate for partial lateral renewal in 2017/18.
2. **Crescent Ave:** No-Corrode pipe material was commonly used in North America in the 1950's and 60's. While no longer used in new construction, legacy installations have experienced an unacceptable failure rate that leads to increased I/I. No-Corrode pipe was used for laterals in the Crescent Avenue sewershed when it was constructed. A comprehensive rehabilitation was performed over three construction seasons with manhole renewal being the final stage in 2016. Flow monitoring and cost benefit analysis will be the focus for 2017/18.
3. **Cow Bay Road Deep Storm Implementation:** The Cow Bay Road Deep Storm implementation project will provide opportunity to quantify the flow reduction that can be achieved in the sanitary system by sewer separation. Baseline flow information was collected in this sewershed prior to construction and will be compared to post project flows in 2017/18.
4. **North Preston Renewal:** Sections of the North Preston sewershed experience high I/I flows that inhibit performance of the treatment plant. A small subsection of the sewershed was identified by pipe condition assessment as requiring rehabilitation. The rehabilitation was completed by CIPP lining in summer 2016. Flow monitoring and quantification of rain-derived inflow and infiltration [RDII] reduction will be the focus for 2017/18.

HALIFAX WATER
2017/18 Annual Business Plan

5. **Leiblin Park:** Sections of the Leiblin Park sewershed include deep storm implementation. During this implementation, the sanitary system was not renewed and recent CCTV investigation has revealed that it had reached the end of its useful life. Sections of the sanitary system requiring renewal were rehabilitated by CIPP lining in summer 2016. Flow monitoring and cost benefit analysis will be the focus for 2017/18.

In 2016, the Wet Weather Management Program [WWMP] entered phase III. In phase III, pre and post project flows are being analyzed and compared in the individual sewersheds and a cost benefit analysis will be conducted on the projects with respect to wet weather flow reductions. This pilot program is intended to gather sound information on the costs of various wet weather management techniques and the possible impact they can have on the flow response to wet weather.

The framework for conducting cost benefit analysis on this type of renewal will be the focus of 2017/18, and findings from the first year's data will be assessed. This information will be critical to successful implementation of phase IV. In phase IV, information gathered from phase III will be applied to the service boundary to recommend and implement wet weather management projects in specific sewersheds. This will allow Halifax Water to implement the most cost effective strategies to manage wet weather flows.

It is well documented that approximately 50% of RDII is generated on the private side. The WWMP will review Halifax Waters current approach to private side renewal and enforcement and refine the current strategy in 2017/18.

5.6 Biosolids Program

The previous Halifax Harbour Solutions Project included a 10 year contract for Biosolids Processing and Biosolids Transportation, commencing in 2006. There were minor adjustments to the contract durations because of project delays and temporary shutdown of the Halifax WWTF in relation to the flooding incident in January, 2009. The current Biosolids Transportation Agreement is due to expire in December 2017 and the Biosolids Processing Agreement is due to expire in March 2019. Considering these timelines, HW will be engaging in a process during 2017/18 to either renegotiate these contracts for duration extension or request the industry to provide proposals.

5.7 Odour Control

Most wastewater collection systems suffer from odour issues during extended dry weather and low flows in the systems. The summer of 2015-16 was particularly challenging for HW operations because of the record dry periods and high temperatures which lead to excessive odour generation in the systems. With the potential of such occurrences being more frequent in the future in relation to climate change predictions, it is prudent to enhance Halifax Water knowledge and adopt best practices to address the issues as they emerge. Halifax Water has identified several areas of the collection system network with chronic odour issues that need to be studied and solutions developed to enhance customer service. The focus areas for 2017-18 have been identified in relation to the Mill Cove WWTF, Dartmouth WWTF, Inglis Street area of Halifax and Hines Road area of Eastern Passage.

5.8 Energy Management

Through its Energy Management Program, Halifax Water is committed to creating and ensuring an ongoing focus on sustainability and energy efficiency throughout all operating areas. This program, is carried out in relation to Halifax Water’s Energy Management Policy through the Energy Management Steering Committee. The annual Energy Management Action Plan (EMAP), defines the goals, objectives, accountabilities, and structure for activities related to energy efficiency, energy recovery, greenhouse gas (GHG) reductions, sustainability and environmentally responsible energy use.

For 2017/18 and beyond, initiatives have been identified in the following areas:

Infrastructure / Operational Improvements

Capital projects that will result in improved energy efficiency, energy recovery, GHG reductions and operational cost savings have been identified throughout Halifax Water’s infrastructure. Projects being implemented or considered include:

<i>Ventilation Air Heat Recovery</i>	<i>UV Disinfection Upgrades</i>
<i>HVAC System Re-Commissioning</i>	<i>Pumping System Upgrades</i>
<i>Variable Frequency Drive Motor Controls</i>	<i>Lighting Upgrades</i>
<i>HVAC & Building Envelope Upgrades</i>	<i>Pump/Meter Chamber Upgrades</i>

New construction capital projects (e.g. wastewater treatment facilities, pumping stations, etc.) are also reviewed at the conceptual and detailed design stages to ensure best-in-class energy efficiency and the lowest life cycle costs throughout the life of the asset.

HALIFAX WATER
2017/18 Annual Business Plan

Renewable Energy Generation

Renewable energy generation is also a priority, utilizing Halifax Water’s extensive assets to recover thermal or electrical energy, where appropriate. Projects being implemented or considered include:

<i>Mill Cove Biogas CHP System (COMFIT)</i>	<i>Cogswell District Energy System (DES)</i>
<i>Energy Recovery Turbines (COMFIT)</i>	

To date, two renewable energy projects have been completed: the Pockwock Community Wind Farm, located near Pockwock Lake and the Orchard In-Line Energy Recovery Turbine, located in Bedford. These projects are operating above expectations, and will continue to generate revenue for the utility for decades to come.

5.9 Source Water Quality

Based on research conducted by Dr. Graham Gagnon at Dalhousie University, Halifax Water is now dealing with a new source water challenge related to lake recovery.

From the 1970’s onward, governments in the Canada and the United States have taken broad efforts to reduce air pollution broadly and specific efforts to reduce the effects of acid rain. Legislation to reduce sulfur oxide emissions and reduce pollution from coal burning has dramatically reduced air pollution. This has resulted in a measurable reduction in sulfate deposition into lakes in Atlantic Canada and elsewhere and a resultant rise in pH.

This is a positive development from an environmental perspective, however, it brings with it challenges from a drinking water treatment perspective. The rise in pH results in greater levels of natural organic matter (NOM) in source waters. NOM is a significant treatment challenge in treatment plants and we have observed that with increasing NOM levels come increased chemical costs and shorter filter run times. Increased pH levels also lead to increased levels of biotic activity in the water sources. Increased biotic activity promote greater occurrence of things like algae and taste and odour causing compounds such as geosmin.

These two effects of lake recovery have direct impacts on Halifax Water. Increased NOM increases treatment cost and may exert demands on treatment plants which ae beyond what was contemplated when they were designed. Increased biotic activity requires treatments approaches that were not contemplated when the facilities were designed.

Source water management and, specifically, lake recovery, will be a focus area for research in 2017-18 and for several years beyond. The NSERC research chair with Dalhousie University will be a primary tool in addressing this issue. Halifax Water needs to quantify the degree to which source water will change in coming years and further, what changes in

HALIFAX WATER
2017/18 Annual Business Plan

treatment techniques and infrastructure might be required to effectively and efficiently treat source water.

5.10 Lead Service Line Replacement Program

Since the 1970's, Halifax Water has been proactively dealing with lead service lines. Halifax Water has always met its regulatory requirements related to lead in drinking water and further adopted several utility best practices such as free customer sampling, corrosion control treatment and working with interested customers to replace lead service lines. Despite that effort, Halifax Water still encounter residences with high levels of lead in drinking water drawn from within their home. As a result of this, Halifax Water requested Dalhousie University to direct research resources to the question of the occurrence of lead in our system. As a result of this research and Halifax Water experience, Halifax Water determined that to protect customers from the lead in drinking water, it is necessary for lead services to be removed in their entirety.

Lead service line ownership and responsibility is shared between the water utility and the customer, with the customer owning the portion on private property. Customers face many barriers to replace the portion on private property, with cost being the major impediment and utilities are restricted from working on private property assets. As a result, approximately only 10% of utility customers have replaced their lead service line when the utility has replaced the public portion as part of a capital project. The inability to address customer barriers to private service line replacement has prevented utilities like Halifax Water from doing more to replace lead service lines.

In the United States, the EPA asked the National Drinking Water Advisory Council (NDWAC) to make recommendation for a new regulatory framework for lead. The NDWAC report recommended a fundamental change in the way lead is managed with the most noteworthy recommendations being a commitment to removing all lead service lines by 2050. The recommendations also encouraged utilities to work with customers to ensure that lead service lines on private property are replaced. Subsequently, in April of 2016, the American Water Works Association (AWWA) endorsed the NDWAC recommendations signaling that the drinking water industry agrees that utilities must commit to removing lead service lines.

The NDWAC recommendations and the subsequent endorsement by AWWA confirmed for Halifax Water what we had determined in 2012, that the only compete solution to lead in drinking water is complete removal of lead service lines. Halifax Water staff prepared a business plan for lead service line management based on the NDWAC recommendations to complete the removal of all lead service lines by 2050.

As a result of its efforts since the 1970's, Halifax Water has replaced all but 2500 lead services within the public right of way. Replacing all of these services by 2050 is a moderate challenge for Halifax Water but in order to do so safely, it will be necessary to

HALIFAX WATER
2017/18 Annual Business Plan

convince customers to replace the private property portion at the same time. There are many barriers to customers having the desire or ability to replace LSL's and significant program effort will be directed towards working with those customers to improve their understanding of LSL issues and facilitate replacement.

Another significant aspect of this program will be working with the approximately 10,000 customers whose public portions of the LSL have been replaced but for whom the private LSL is still remaining. In order to do this, a cost effective reliable inventory of private LSL's will need to be developed.

Enabling all this will be the need to develop new business processes for dealing with LSLs and communicating information to customers about lead and lead programs.

5.11 Safety and Security Program

As the WCB workplace assessment program enters the second half of its implementation, the safety group will continue to support the initiatives from the Team of Doers to enhance the safety culture and awareness within the organization. The goal is to develop a list of action items to implement.

The safety group has established a protocol for the frequency of filed visit audits by various levels of management with the intent of implementing the scheduled audits this coming year.

With the development of Standard Operating Procedures and associated Safe Work Practices (SWPs), to gain awareness across the organization, staff will develop a communication strategy utilizing scheduled safety talks.

Public Safety Canada has updated the assessments at our Water Treatment Facilities (WTF) at Pockwock Lake, Lake Major, Bennery Lake, and Wastewater Treatment Facilities (WWTF) at Mill Cove, and Halifax. Plans are being developed this year to improve the security ratings at each facility.

5.12 Stormwater Cost of Service and Rates

Halifax Water is taking several steps to improve delivery of stormwater service and communication with its customers as a result of observations made since implementation of the separate stormwater charges in 2013, feedback from the exemption review process, a review of best practice and community engagement.

An application was filed on October 30, 2015 to amend the Stormwater section of the Cost of Service (COS) Manual, and a public hearing was held on February 15 – 17, 2016. The NSUARB approved a revised Cost of Service Model for Stormwater in the Decision from hearing M07147, and an updated COS Manual in September 2016.

HALIFAX WATER
2017/18 Annual Business Plan

On October 31, 2016, Halifax Water made a submission to the Nova Scotia Utility and Review Board (NSUARB) to adjust stormwater rates to reflect the revised Cost of Service Manual for Stormwater. A summary of the Application is provided below.

The proposed Rate Application includes changes to reflect items approved or identified for consideration during the Stormwater Cost of Service Hearing M07147. The proposed rates and a table showing a comparison to the current rates are shown below.

Proposed Rates for Residential Customers:

	Tier Parameters (Impervious area in square metres)		Proposed		Number of Customers affected
			Old Rate	New Annual Charge	
Tier 1	Less than	50m ²	\$33.39	\$0.00	2,326
Tier 2	50	200m ²	\$33.39	\$14.00	44,710
Tier 3	210	400m ²	\$33.39	\$27.00	31,041
Tier 4	410	800m ²	\$33.39	\$54.00	7,768
Tier 5	810	Or more	\$33.39	\$81.00	2,123

Note: Residential Customers are currently charged \$33.39. Under this proposal, the majority of residential customers (78,077) will see a decrease in their Site Related Flow Charge from Halifax Water.

Proposed Rate for Non-Residential Customers

The proposed rate for Non-Residential Customers is \$0.135 per m² of impervious area, compared to the \$0.149 per m² Non-Residential Customers are currently charged.

Proposed Right of Way Charge to Halifax Regional Municipality

The Right of Way Charge decreases slightly from \$3,881,408 to \$3,831,364. This is based on the proportion of impervious area in the street right of way to the total billable impervious area.

**HALIFAX WATER
2017/18 Annual Business Plan**

Stormwater Charges		Proposed Charges	Current Charges
Stormwater			
	Right-of-Way Charge	\$3,835,012	\$3,881,408
	Site Related Flow		
	Residential Customers		
	Base Charge ¹	\$27.00	\$33.39
	Industrial, Commercial and Institutional Customers (ICI)		
	Charge per m2 of impervious area	\$0.135	\$0.149
Footnote:			
1	<i>The projected base charge is based on the standard median parcel size, whereas the current charge is based on the average parcel size for residential customers.</i>		
	<i>The base rate in the 2017 Rate Application varies depending on parcel size of the residential customer and whether it is higher or lower than the standard median. The proposed base rate ranges from \$14 - \$81 for each tier in the rate structure.</i>		

Key changes reflected in the Application:

- A. The definition of stormwater service is aligned with industry practice elsewhere in North America to recognize that most of the properties within the Boundary receive one or more of the following services from HRWC:
- Stormwater from the property enters any part of an HRWC’s stormwater system.
 - The property is accessed directly by a driveway which crosses over an HRWC culvert.

This enhances equity, understandability and will provide administrative simplicity.

- B. The Site Generated Flow Charge is renamed Site Related Flow Charge. The definition for “Site Related Flow Charge” is a charge for the services and benefits the customer is receiving including access to a property over an HRWC owned culvert, and management of stormwater from a property that enters any part of an HRWC stormwater system.

HALIFAX WATER
2017/18 Annual Business Plan

- C. The municipality continues to be billed for the impervious area in the street right of way consistent with the approved Cost of Service methodology.
- D. Properties with less than 50 square meters of impervious area will become exempt (unless they have a driveway culvert).
- E. Most properties (2,411) that were previously exempted because they did not meet the stated stormwater service criteria will continue to be exempted, and 190 properties will not. Properties that are large, undeveloped and with no or little man-made impervious area and do not meet either of the two stated stormwater service criteria continue to be exempt until such time as their condition changes such that the criteria for service are met.
- F. Non-residential customers will not be billed for any portion of impervious area on their property which is outside the service boundary.
- G. The “Adjustment of Bills” section 11 of the HRWC Regulations is amended to permit adjustment of bills if, upon review from the Notice of Objection process, it is determined the billing determinant of chargeable impervious area is inaccurate or yields an inequitable result. For example, if a natural rock outcropping, water surface of a watercourse, man-made pond or swimming pool, or temporary or infrequent impervious surface is found. Two examples of temporary or infrequent impervious surfaces are plastic sheeting and frozen ground.
- H. Some complex properties such as pits, quarries and refineries which were previously exempted because they had “stormwater management facilities” on the property, are now included in billable impervious area. These properties will be treated like any other property, meaning that each will be considered to be exempt or not based upon the specific circumstances on or near the property. The NSUARB approved the concept of treating all properties the same, with exemptions based on the specific circumstances, including when part of a non-residential property is outside of the service boundary.
- I. Non-Residential Properties shall pay a Site Related Flow Charge based on a rate per 10 m² of Chargeable Impervious Area on the Property. If a part of a property is located outside HRWC’s Stormwater Service Boundary, that part of the property located outside the Boundary is exempt from the charge. As Non-Residential Customers are billed on the basis of actual impervious area and the properties in question are often large, this mechanism will enhance equity.
- J. Residential Properties shall pay a Site Related Flow Charge in a tiered rate structure based on impervious area. This would mean both Residential and Non-Residential properties with less impervious area would pay less than properties with more impervious area. The current residential charge based on the average impervious area would be eliminated. The tiered rate structure is based upon an Equivalent Residential Unit, or “ERU”. The full charge is required to be paid, even if a part of the

HALIFAX WATER
2017/18 Annual Business Plan

property is located outside the Commission's Stormwater Service Boundary. As residential properties are generally smaller, and are not charged on the basis of the actual impervious area, billing on the basis of an average or a tier based upon "Equivalent Residential Units" provides sufficient equity in a cost effective manner.

- K. Customers will be billed in increments of 10 m² rather than billing based on 1 m² of impervious area. This aligns with industry best practice, reduces the impact of any small measurement errors, and removes the illusion of precision associated with billing in a 1m² increment. Impervious area would be rounded to the nearest 10 m² increment.
- L. L.A credit system is introduced for non-residential properties with stormwater Best Management Practices (BMPs) like detention ponds that help manage peak flows. The revenue requirements include the cost of the credit system, which is estimated at \$100,000 annually, as initially it is not expected that uptake will be significant. The NSUARB agreed with the concept that if all customers benefit from an action, then all customers should pay for that benefit (therefore the cost of implementing a credit program is included in the revenue requirements). Credits are proposed only for non-residential properties, which is a common practice among utilities. The NSUARB agreed with this approach given that the magnitude of the residential stormwater charge does not appear to warrant implementing a specific, residential credit system, but the details of the credit system will be decided as part of the current hearing.
- M. HRWC proposes to adjust the billing determinant for non-residential customers if the stormwater from the property does not reach an HRWC system, and they are only receiving the benefit of a culvert at the end of their driveway. This was part of the discussion at the Cost of Service Hearing, but has not yet been decided.
- N. Phase-in of depreciation on contributed assets in four phases with \$426,390 (25%) added to revenue requirements in 2017/18 and the remainder phased in over future rate adjustments.

The public hearing will be held the week of February 13, 2017 (commencing on the 14th) and a Decision will be received early in the 2017/18 fiscal year. The proposed revenue requirement for Stormwater Service in 2017/18 is \$10.65 M, which is 3% higher than the revenue requirement upon which the current Stormwater Rates are based. The proposed rates are designed to fully recover the revenue requirement, but not to generate a surplus.

5.13 Asset Management

Continuing implementation of the Asset Management Roadmap and core asset management projects will be a focus of 2017/18 Asset Management (AM) Program. The team continues to improve system information and knowledge and to look for ways to simplify how information is presented back to the users.

HALIFAX WATER
2017/18 Annual Business Plan

2016/17 saw the development of Halifax Water's first annual Asset Management Plan (AMP). Several projects and programs (e.g. the cross culvert inventory and condition assessment, the pumping station condition assessment, and the new contracts for sewer and manhole inspections) have provided valuable information in support of the AMP. Where detailed condition assessments had not been undertaken, the team used the best available corporate information to support the development of the AMP.

The AMP laid out the state of infrastructure for the fifteen identified asset classes and outlined where additional data collection, process enhancement, and sharing of internal information are needed. Recommendations will drive activities into 2017/18 including the update of the annual AMP. Coordination with other corporate initiatives will be needed (e.g. capital program, maintenance activities, engineering information management, wet weather management, financial forecasting).

The West Region Wastewater Infrastructure Plan (WRWIP) is expected to wrap up early in fiscal 2017/18. This project includes several foundational documents (e.g. the long term planning framework, the cost estimation framework, and the sewer systems evaluation guidelines) that will inform future planning decisions and capital work. Further activities related to field verification and intrusive testing of key projects (identified within the next 10 year horizon) are proposed to be undertaken later in 17/18.

Other master planning activities in 2017/18 will include commencement of the East and Central Wastewater Infrastructure Plan. This project is expected to carry over into 2018/19 for completion. The team will continue to work with Halifax municipality staff to streamline processes linked to long term infrastructure planning between the two organizations. The corporate modeling strategy is expected to conclude by the end of 2016/17 and, staff can proceed with model build out and calibration during 2017/18. The corporate flow monitoring program will also be expanded to bring the next round of monitors and analysis on line.

Key AM initiatives for 2017/18 include:

- Improve communications and availability of AM information and how information is shared with users
- Update the annual AMP
- Develop an enhanced prioritization methodology
- Complete the desktop condition assessment methods for pressurized pipes
- Expand corporate flow monitoring program
- Streamline the sewer inspection program
- Commence the East and Central Wastewater Infrastructure Plan
- Start the hydraulic model buildout and calibration, and implement the modelling strategy

5.12 CWWF Projects

The 2016 Federal Budget announced the details of the federal government's overall plan to invest more than \$120 billion in infrastructure over 10 years. The plan will be implemented in two phases:

- Phase 1 of the Government's long-term infrastructure plan is currently being rolled out within a two year time horizon, with an immediate focus on maintenance and rehabilitation. The priority areas for spending are:
 - Modernize and rehabilitate public transit,
 - Water and wastewater systems
 - Affordable housing
 - Protect infrastructure systems from the effects of climate change.
- Phase 2 will occur in years 3 to 10 of the Government's long-term infrastructure plan. In this phase, the goals will be broader and more ambitious: a more modern, cleaner economy; a more inclusive society; and an economy better positioned to capitalize on the potential of global trade.

Federal funds available for Nova Scotia municipalities during Phase 1 include:

- \$86 million over 2 years for water and wastewater in the Clean Water & Wastewater Fund (CWWF). Eligible projects include rehabilitation and optimization of water, storm water and wastewater infrastructure, and upgrades to meet regulatory requirements. Projects are cost-shared 50% by the Federal government, 25% by the Provincial government and 25% by the respective municipality/utility under this fund and must be completed by March 31, 2018.

The Halifax Water Board approved a prioritized list of projects eligible for Phase 1 of the CWWF. These projects and several HRM projects were subsequently endorsed by HRM Council. The prioritized list of projects, were submitted on June 27, 2016 to the CWWF program for cost sharing consideration.

On August 16, 2016, Prime Minister Justin Trudeau, and the Honorable Stephen McNeil, Premier of Nova Scotia, announced that they had reached a bilateral agreement for funding CWWF projects. All seven of the CWWF projects submitted by HRM were approved for cost sharing. Under this agreement, the Government of Canada has made its funding retroactive to April 1, 2016, so projects can proceed without delay to ensure a productive construction season.

HALIFAX WATER
2017/18 Annual Business Plan

The following details the project specific approvals:

Halifax Water Projects:

1. **Northwest Arm Sewer Rehabilitation:** The 4.5km Northwest Arm trunk sewer is over a century old. It is 1200 mm in diameter and a large part of the line is constructed of clay blocks mortared together. With 450 m being rehabilitated in 2009, the remaining 4.05 kms of this line needs to be structurally renewed to extend its service life, prevent leakage and overflows into Northwest Arm and bring it into line with modern environmental standards.
2. **Peninsula Transmission Main Rehabilitation:** This project involves the rehabilitation of a critical water transmission main in Halifax to extend the serviceable life. There has been significant development activity in peninsular Halifax in recent years, with more planned. Increased water supply is needed for future development and increased densities. The innovative use of a structural liner using trenchless technologies as a core methodology will rehabilitate one of the original pipes that have served the city for over 150 years, and minimize the impact on businesses and residents along the streets.
3. **Lake Major Dam:** A dam is required to impound water within Lake Major to provide water supply to the greater Dartmouth area. A new dam is required to replace the existing gravity timber and earthen structure which has reached the end of its service life.
4. **Sullivan's Pond Storm Sewer Renewal – Phase 1:** The existing storm sewer between Sullivan's Pond and Halifax Harbour has reached the end of its service life. A new 580 metre line is being designed, with the construction completed in two phases of approximately 290 m each. Phase one from Sullivan's Pond to Irishtown Road is the limits of the current approved phase.
5. **JD Kline Filter Media and Underdrain Replacement:** The J.D. Kline Water Supply Plant supplies treated water to the communities of Halifax, Bedford and Sackville, and provides the only specific barrier to prevent pathogens from entering the drinking water supply. This project involves the replacement of the existing filter media and underdrains in all eight filters, the majority of which are beyond their recommended life span.

HALIFAX WATER
2017/18 Annual Business Plan

HRM Projects:

6. **Fall River Water Servicing:** This is a new construction project that would install approximately 3.5 km of central water services from Windsor Junction Road to Fall River Centre via Fall River Road. As this falls outside the current service boundary, HRM must facilitate a planning process to determine project scope and would be responsible for the construction costs of the water system.

7. **Herring Cove Servicing – Phase 2B:** This is the final phase of a new construction project that is providing central water and sewer service to the community of Herring Cove. In 1999 HRM Council agreed to extend water service to the area due to the co-location of a Harbour Solutions sewage treatment plant. By 2008, the first three phases were completed; however Phase 2B has never been initiated due to the fact that escalating construction prices exceeded the original budget and insufficient funds were available to complete it. This project is located inside the service boundary with HRM being responsible for the construction costs of the water system.

The specific CWWF funding is presented in the following table.

Halifax Water's Project Title	Category	Total Ask	Total Approved	Federal/ Provincial
Northwest Arm Sewer	Wastewater	\$17,153,000	\$16,343,708	\$12,257,781
Sullivan's Pond	Wastewater	\$9,890,000	\$8,429,190	\$6,321,925
Peninsula Transmission Mains	Drinking Water	\$7,200,000	\$7,508,594	\$5,631,446
Lake Major Dam	Drinking Water	\$5,900,000	\$4,517,716	\$3,388,287
JD Kline Filter Media	Drinking Water	\$5,600,000	\$4,200,160	\$3,150,120
TOTAL AMOUNTS:		\$45,743,000	\$40,999,368	\$30,749,559

**HALIFAX WATER
2017/18 Annual Business Plan**

HRM's Project Title	Category	Total Ask	Total Approved	Federal/Provincial
Fall River Water	Drinking Water	\$7,600,000	\$7,925,739	\$5,944,305
Herring Cove Servicing	Wastewater	\$12,750,000	*\$4,561,952	\$3,421,464
TOTAL AMOUNTS:		\$20,350,000	\$12,487,691	\$9,365,769

** The Total Approved for this project is calculated with an assumed 25% contribution from HRM relative to the reduced Federal/Provincial amount.*

The JD Kline Filter Media project approved total eligible cost was only 75% of the original estimate as 25% of the project cost was funded within the 2016/17 Halifax Water Capital Budget and thus ineligible. The balance of the Halifax Water projects were slightly under the original submission cost estimate due to some inclusion of ineligible costs and current year approval of design phase funding.

The Federal/Provincial cost sharing on the HRM Herring Cove project was limited to \$3,421,464, well below the submitted request. The information to date indicates that this was the last project on the list and the approved amount was the balance of program funds remaining.

Design work, through external consultants, is in progress on all Halifax Water CWWF projects. The projects are proposed for public tender in the December 2016 to March 2017 time frame, with construction planned for 2017, and final completion by March 31, 2018 (consistent with the phase 1 CWWF requirements).

The two HRM CWWF projects are administered by HRM staff. However, consistent with historical HRM water and sewer service extension projects, HRM Council has formally given Halifax Water "Agent" authority to manage the design and construction of these projects on behalf of HRM and design is in progress.



Appendix A

Mission, Vision & Values





Our Mission:

*“To provide world class services
for our customers and our environment”*

Our Vision:

- *We will provide our customers with high quality water, wastewater, and stormwater services.*
- *Through adoption of best practices, we will place the highest value on public health, customer service, fiscal responsibility, workplace safety and security, asset management, regulatory compliance, and stewardship of the environment.*
- *We will fully engage employees through teamwork, innovation, and professional development.*

Our Values:

Halifax Water promotes a culture that:

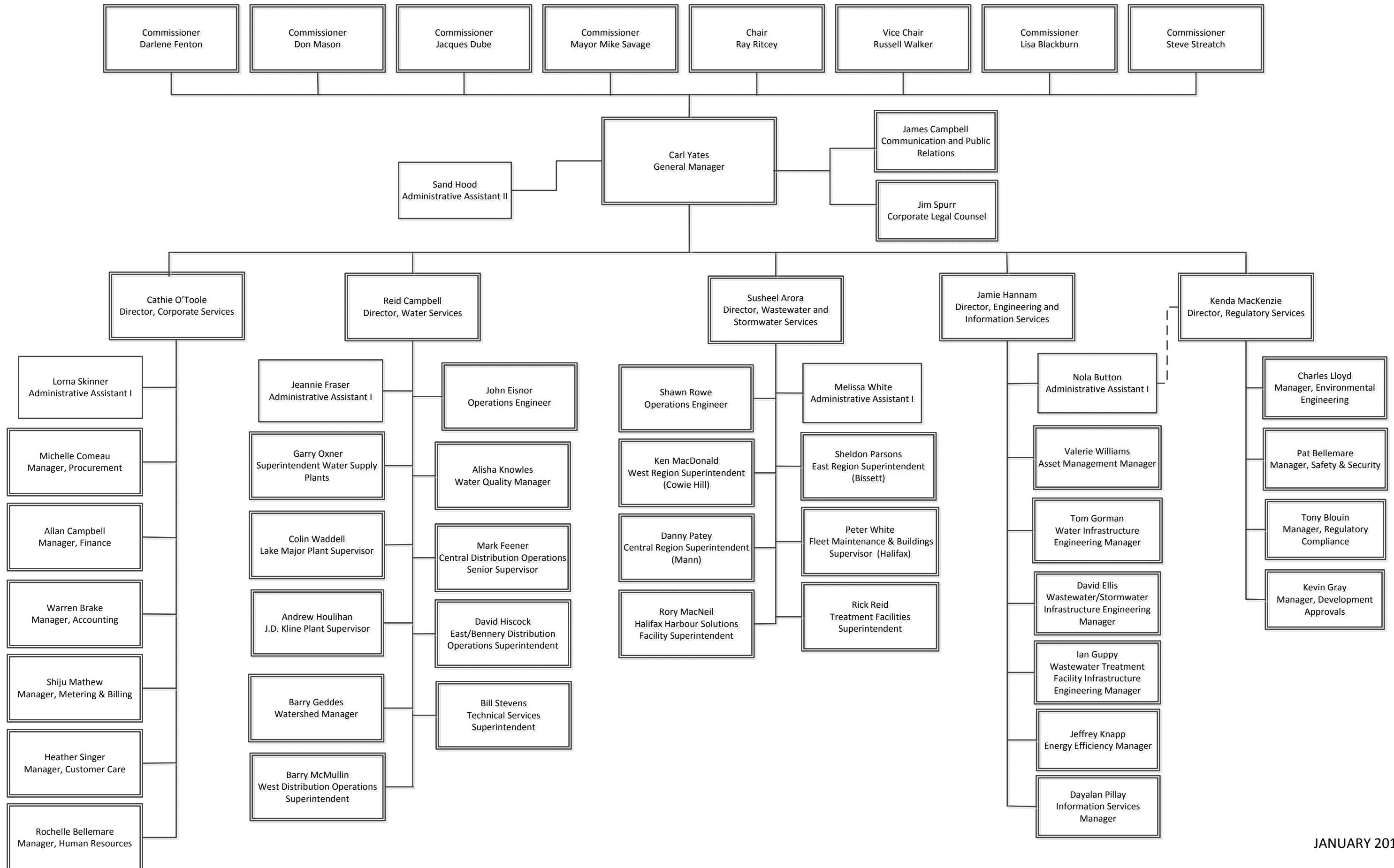
- *Engages employees, partners and stakeholders in achieving success;*
- *Encourages openness and transparency;*
- *Demonstrates individual and corporate accountability for results;*
- *Fosters innovation and progressive thinking;*
- *Respects diverse ideas, opinions and people;*
- *Is committed to service excellence; and*
- *Nurtures leadership at all levels.*



Appendix B

Organizational Structure

HALIFAX WATER ORGANIZATIONAL STRUCTURE





Appendix C

2017/18 Capital Budget

HALIFAX WATER
Capital Budget 2017/18
Summary

Asset Category	Project Costs
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<i>Water - Land -- T O T A L</i>	\$760,000
<i>Water - Transmission -- T O T A L</i>	\$13,150,717
<i>Water - Distribution -- T O T A L</i>	\$2,890,000
<i>Water - Structures -- T O T A L</i>	\$10,029,391
<i>Water - Treatment Facilities -- T O T A L</i>	\$10,405,060
<i>Water - Energy -- T O T A L</i>	\$656,352
<i>Water - Security -- T O T A L</i>	\$150,000
<i>Water - Equipment -- T O T A L</i>	\$50,000
<i>Water - Corporate Projects - T O T A L</i>	\$9,671,000
TOTAL - Water	\$47,762,520

<i>Wastewater - Trunk Sewers -- T O T A L</i>	\$19,843,168
<i>Wastewater - Collection System -- T O T A L</i>	\$9,144,000
<i>Wastewater - Forcemains -- T O T A L</i>	\$260,000
<i>Wastewater Structures -- T O T A L</i>	\$2,440,000
<i>Wastewater - Treatment Facility -- T O T A L</i>	\$2,528,000
<i>Wastewater - Energy -- T O T A L</i>	\$2,455,813
<i>Wastewater - Security -- T O T A L</i>	\$200,000
<i>Wastewater - Equipment -- T O T A L</i>	\$95,000
<i>Wastewater - Corporate Projects -- T O T A L</i>	\$9,694,800
TOTAL - Wastewater	\$46,660,781

HALIFAX WATER

Capital Budget 2017/18

Summary

Asset Category	Project Costs
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<i>Stormwater - Pipes -- T O T A L</i>	\$9,942,000
<i>Stormwater - Culverts -- T O T A L</i>	\$2,736,000
<i>Stormwater - Structures -- T O T A L</i>	\$1,535,000
<i>Stormwater - Corporate Projects -- T O T A L</i>	\$871,200
TOTAL - Stormwater	\$15,084,200

GRANDTOTAL	\$109,507,501
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HALIFAX WATER

Capital Budget 2017/18

Water

Project Number	Project Name	Project Cost
<u>Water - Land</u>		
3.36	Bennery Lake Watershed Land Purchase	\$210,000
3.383	Bennery Lake Watershed Land Purchase	\$330,000
3.384	Tomahawk Lake Watershed Land Purchase	\$220,000
<i>Water - Land -- T O T A L</i>		\$760,000
<u>Water - Transmission</u>		
3.293	Peninsula Low North Transmission Main Replacement (Windsor at Young)	\$435,000
3.006	Bedford Connector 750mm Replacement - Phase 3	\$4,569,717
3.234	Windsor Junction Transmission Main Oversizing	\$330,000
3.011	Peninsula Low South Transmission Main Rehabilitation	\$7,505,000
3.045	Bedford West Capital Cost Contribution - Various Phases	\$11,000
3.343	Northgate Oversizing	\$135,000
3.232	MacIntosh Estates Phase 1 Oversizing	\$115,000
3.373	Regional Development Charge Studies	\$50,000
<i>Water - Transmission -- T O T A L</i>		\$13,150,717
<u>Water - Distribution</u>		
3.022	Water Distribution - Main Renewal Program	\$1,900,000
3.067	Valve Renewals	\$125,000
3.068	Hydrant Renewals	\$75,000
3.069	Service Line Renewals	\$100,000
3.390	Lead Service Line Replacement Program	\$400,000
3.294	Automated Flushing Program	\$20,000
3.346	Bulk Fill Stations - Site Work Improvements	\$110,000
3.296	Water Sampling Station Relocation Program	\$30,000
3.375	Re-Chlorination Stations - Sampson and Stokil Reservoirs	\$30,000
	Distribution System Chlorine Residual Analyzer Upgrade Program	\$100,000
<i>Water - Distribution -- T O T A L</i>		\$2,890,000

HALIFAX WATER

Capital Budget 2017/18

Water

Project Number	Project Name	Project Cost
<u>Water - Structures</u>		
3.387	Geizer 158 Reservoir Floor Replacement	\$2,750,000
3.173	Lake Major Dam Replacement	\$7,089,391
3.342	Crestview Booster Station PRV Conversion	\$57,000
3.357	Silverside Booster Station - Control Panel Replacement	\$50,000
3.358	Blue Mountain Meter Replacement	\$20,000
3.381	Geizer 158 Reservoir Drainage Improvements	\$53,000
3.382	Pratt & Whitney PRV Communications Upgrade	\$10,000
<i>Water - Structures -- T O T A L</i>		\$10,029,391
<u>Water - Treatment Facilities</u>		
3.211	Chlorine Analyzer Replacement Program	\$23,000
3.276	Inline Zeta Potential Meters for Water Plants	\$100,000
3.377	450 Cowie - New DR7000 for Lab	\$14,000
3.376	Chlorine Analyzer Relocation - Geizer 158 Reservoir	\$33,000
J D Kline Water Supply Plant:		
3.157	Filter Media and Underdrain Replacement Program	\$4,447,060
3.353	Effluent Valve Actuator Replacement Program	\$50,000
3.352	New Mixers in Pre-Mix Chamber	\$277,000
3.319	Lime Feed and Delivery System Replacement	\$300,000
3.361	Turbidity Meters	\$50,000
3.236	Ampgard III to Vacuum Contactor Conversion	\$40,000
3.363	Chlorine Storage Room - System Modifications	\$70,000
3.351	Westinghouse Electrical Panels Replacement	\$5,000
3.368	pH Meter Replacements	\$10,000
3.369	Raw Water Pumping Station Ladder Extension and Fall Protection Equipment	\$9,000
3.370	VTS Alarm System Upgrade	\$7,000

HALIFAX WATER

Capital Budget 2017/18

Water

Project Number	Project Name	Project Cost
3.372	Bench-top Turbidimeter	\$6,000
3.386	Slide Gate Actuators to Lagoons	\$44,000
3.280	Roof Replacement	\$220,000
Lake Major Water Supply Plant:		
3.159	MCC Contactors Replacement	\$34,000
3.162	Butterfly valve replacement program	\$100,000
3.207	Treatment Train Isolation	\$222,000
3.195	Filter Media Replacement	\$200,000
3.161	Lime Feed and Delivery System Replacement	\$380,000
3.278	Clarifier Upgrades	\$285,000
3.160	PLC Upgrade	\$420,000
3.320	New Raw Water Low Lift Pump	\$500,000
3.304	Dry Polymer Feed System Replacement	\$380,000
3.300	Dedicated Service Water Pumping Station	\$285,000
3.325	Basin Mixing Enhancements	\$800,000
3.193	Carbon Dioxide Feed System	\$215,000
3.366	Bench Top Turbidimeter	\$6,000
3.315	Blower Vent	\$35,000
Bennery Lake Water Supply Plant:		
3.272	Low Lift VFD Pump Replacement Program	\$110,000
3.347	Plant MCC Replacement	\$530,000
3.348	Post Filter Chemical Addition Optimization	\$62,000
3.274	Power Monitoring	\$20,000
3.359	Culvert Replacement	\$20,000
3.349	New Magnetic Flow Meters	\$29,000
3.350	New Chlorine Analyzer	\$14,000
3.378	Sludge Pumps and Valves Replacement	\$53,000
Water - Treatment Facilities -- T O T A L		\$10,405,060

HALIFAX WATER

Capital Budget 2017/18

Water

Project Number	Project Name	Project Cost
<u>Water - Energy</u>		
3.107	Chamber HVAC Retro-Commissioning Program	\$100,000
3.367	Lake Major WSP - HVAC Upgrades	\$556,352
<i>Water - Energy -- T O T A L</i>		\$656,352
<u>Water - Security</u>		
4.009	Security Upgrade Program	\$150,000
<i>Water - Security -- T O T A L</i>		\$150,000
<u>Water - Equipment</u>		
3.101	Miscellaneous Equipment Replacement	\$50,000
<i>Water - Equipment -- T O T A L</i>		\$50,000
<i>Water - Corporate Projects - T O T A L</i>		\$9,671,000
<i>GRAND TOTAL - WATER</i>		\$47,762,520

HALIFAX WATER

Capital Budget 2017/18

Wastewater

Project Number	Project Name	Project Cost
<u>Wastewater - Trunk Sewers</u>		
2.067	Northwest Arm Sewer Rehabilitation	\$19,493,168
2.467	Kearney Lake Road Wastewater Sewer Upgrades	\$350,000
<i>Wastewater - Trunk Sewers -- T O T A L</i>		\$19,843,168
<u>Wastewater - Collection System</u>		
2.052	Integrated Wastewater Projects - Program	\$1,000,000
2.460	Leiblin Pumping Station Gravity Sewer	\$3,495,000
2.437	Hines Road Rider Sewer Extension	\$50,000
2.462	Wastewater Conveyance System Upgrade - Dingle PS to Roach's PS via William's Lake PS	\$145,000
2.547	Balsam/Monroe Subdivision Sewer Upgrade	\$165,000
2.357	Manhole Renewals	\$29,000
2.358	Lateral Replacements (non-tree roots)	\$1,300,000
2.563	Lateral Replacements (tree roots)	\$600,000
2.223	Wet Weather Management Program	\$100,000
2.523	Sewer Condition Assessment	\$300,000
2.043	Corporate Flow Monitoring Program	\$1,000,000
2.558	East and Central Region Infrastructure Plan	\$600,000
2.559	West Region Infrastructure Plan - Ph.2	\$250,000
2.074	Bedford West Collection System CCC	\$60,000
2.548	Regional Development Charge Studies	\$50,000
<i>Wastewater - Collection System -- T O T A L</i>		\$9,144,000
<u>Wastewater - Forcemains</u>		
2.543	Kearney Lake Road Forcemain Extension	\$260,000
<i>Wastewater - Forcemains -- T O T A L</i>		\$260,000

HALIFAX WATER

Capital Budget 2017/18

Wastewater

Project Number	Project Name	Project Cost
<u>Wastewater - Structures</u>		
2.42	Emergency Pumping Station Pump replacements	\$250,000
2.442	Wastewater Pumping Station Component Replacement Program - West Region	\$200,000
2.443	Wastewater Pumping Station Component Replacement Program - East Region	\$200,000
2.444	Wastewater Pumping Station Component Replacement Program - Central Region	\$200,000
2.512	Hines Road Sewer - Odour Management	\$100,000
2.466	Weybridge Lane Pumping Station CCC	\$540,000
2.005	Autoport Pleasant Street Pumping Station Replacement	\$750,000
2.366	Shipyards Road Pumping Station Upgrade	\$175,000
2.561	Outfall Location Inventory	\$25,000
<i>Wastewater Structures -- T O T A L</i>		\$2,440,000
<u>Wastewater - Treatment Facility</u>		
2.056	Plant Optimization Audit Program	\$125,000
2.522	Emergency Wastewater Treatment Facility equipment replacements	\$400,000
2.564	HSP Plants - Carbon replacement	\$400,000
Halifax Wastewater Treatment Facility:		
2.535	Screenings Compactor Replacement	\$200,000
2.532	Duct Work Replacement	\$150,000
Dartmouth Wastewater Treatment Facility:		
2.502	Duct Work Replacement	\$150,000
2.565	Odour Control Study	\$50,000
Herring Cove Wastewater Treatment Facility:		
2.539	Densadeg Inlet Penstocks Actuator Installation	\$50,000
2.55	Window Installation for Natural Light	\$20,000
2.566	Overhead Door	\$20,000
Mill Cove Wastewater Treatment Facility:		
2.531	Admin Building HVAC Renewal Preliminary Engineering	\$25,000
2.546	Odour Control Upgrade	\$530,000
2.567	Process Upgrade Options	\$50,000
Eastern Passage Wastewater Treatment Facility:		

HALIFAX WATER

Capital Budget 2017/18

Wastewater

Project Number	Project Name	Project Cost
2.551	Control Building HVAC Upgrade	\$8,000
	Biosolids Processing Facility:	
2.126	Asset Renewal Program	\$250,000
2.568	Biosolids Management Plan	\$100,000
Wastewater - Treatment Facility -- T O T A L		\$2,528,000
	<u>Wastewater - Energy</u>	
2.491	Pump Station HVAC Retro-Commissioning Program	\$100,000
2.554	Wastewater Pumping Station Performance Testing	\$250,000
	Dartmouth Wastewater Treatment Facility:	
2.235	Ventilation Air Heat Recovery	\$250,000
2.553	MCC Ventilation Upgrades	\$100,000
	Halifax Wastewater Treatment Facility:	
2.555	Effluent Heat Recovery	\$25,000
2.552	MCC Ventilation Upgrades	\$130,813
	Cogswell Area District Energy System	\$1,600,000
Wastewater - Energy -- T O T A L		\$2,455,813
	<u>Wastewater - Security</u>	
4.008	Security Upgrade Program	\$200,000
Wastewater - Security -- T O T A L		\$200,000
	<u>Wastewater - Equipment</u>	
2.161	I&I Reduction (SIR) Program Flow Meters and Related Equipment	\$25,000
2.451	Miscellaneous Equipment Replacement	\$70,000
Wastewater - Equipment -- T O T A L		\$95,000
Wastewater - Corporate Projects -- T O T A L		\$9,694,800
GRAND TOTAL - WASTEWATER		\$46,660,781

HALIFAX WATER

Capital Budget 2017/18

Stormwater

Project Number	Project Name	Project Cost
<u>Stormwater - Pipes</u>		
1.038	Integrated Stormwater Projects - Program	\$1,060,000
1.043	Sullivan's Pond Storm Sewer System Replacement - Phase 1	\$8,632,000
1.156	Storm Sewer Condition Assessment	\$150,000
1.102	Manhole Renewals	\$24,000
1.103	Catchbasin Renewals	\$36,000
1.135	Lateral Replacements	\$15,000
1.019	Drainage Remediation Program Surveys/Studies	\$25,000
<i>Stormwater - Pipes -- T O T A L</i>		\$9,942,000
<u>Stormwater - Culverts/Ditches</u>		
1.104	Driveway Culvert Replacements	\$700,000
Street Specific Culvert Replacements:		
1.146	John Cross Drive (near #40)	\$200,000
1.147	Cole Harbour Road (near #1560)	\$210,000
1.148	Montague Road (near #1044)	\$155,000
1.15	Fletcher Drive (near #52)	\$270,000
1.151	Softwind Lane (near #31)	\$105,000
1.152	Yankeetown Road (near #16)	\$205,000
1.153	Terradore Lane (near #7)	\$96,000
1.154	Waverley Road (near #4132)	\$115,000
1.136	Blue Hill Road (near #77)	\$130,000
1.01	Kipawa Crescent (near #14)	\$220,000
1.012	Lucasville Road (near #1419)	\$170,000
1.023	Cobequid Road (near #510)	\$160,000
<i>Stormwater - Culverts/Ditches -- T O T A L</i>		\$2,736,000
<u>Stormwater - Structures</u>		
1.133	Ellenvale Run Retaining Wall System - Replacement	\$1,535,000
<i>Stormwater - Structures -- T O T A L</i>		\$1,535,000
<i>Stormwater - Corporate Projects -- T O T A L</i>		\$871,200
<i>GRAND TOTAL - STORMWATER</i>		\$15,084,200

HALIFAX WATER

Capital Budget 2017/18

Corporate Projects

Project Number	Project Name	Project Cost
<u>Corporate - Information Technology</u>		
4.011	Desktop Computer Replacement Program	\$290,000
4.012	Network Infrastructure Upgrades	\$220,000
4.013	Document Management Program	\$100,000
4.070	Computerized Maintenance Management System Phase 2	\$2,000,000
4.024	Sharepoint Implementation	\$100,000
4.043	AMI Meter System Upgrades (50 Water / 50 Wastewater)	\$11,685,000
4.014	IT Disaster Recovery Site	\$300,000
4.048	SAP Rate Structure Support	\$220,000
4.074	Asset Registry Build	\$600,000
<i>Corporate - Information Technology -- T O T A L</i>		\$15,515,000
<u>Corporate - GIS</u>		
4.040	GIS Data Program	\$1,000,000
4.038	GIS Hardware/Software Program	\$100,000
4.039	GIS Application Support Program	\$250,000
<i>Corporate - GIS -- T O T A L</i>		\$1,350,000
<u>Corporate - Asset Management</u>		
4.079	Climate Change Assessment and Policy	\$150,000
4.020	Asset Management Program Development	\$150,000
4.052	Long Term Planning Coordination Strategy (50 Water / 50 Wastewater)	\$75,000
4.049	Expand Prioritization Methodology	\$125,000
4.054	Assess AM Software and Tools	\$100,000
<i>Corporate - Asset Management -- T O T A L</i>		\$600,000
<u>Corporate - Facility</u>		
4.076	Heating / Ventilation Upgrades in New Phase 450 Cowie Hill Building	\$100,000
4.078	450 Cowie Renovation	\$75,000
<i>Corporate - Facility -- T O T A L</i>		\$175,000

HALIFAX WATER

Capital Budget 2017/18

Corporate Projects

Project Number	Project Name	Project Cost
<u>Corporate - SCADA & Other Equipment</u>		
3.38	Total Station Survey Prisms	\$32,000
4.004	SCADA Control System Enhancements (50 Water / 50 Wastewater)	\$200,000
4.080	Large and New Customer Meters (50 Water / 50 Wastewater)	\$460,000
<i>Corporate - SCADA & Other Equipment -- T O T A L</i>		\$692,000
<u>Corporate - Fleet</u>		
4.006	Fleet Upgrade Program Stormwater	\$280,000
4.006	Fleet Upgrade Program Wastewater	\$1,120,000
4.007	Fleet Upgrade Program Water	\$505,000
<i>Corporate - Fleet -- T O T A L</i>		\$1,905,000
<i>GRAND TOTAL - Corporate Projects</i>		\$20,237,000

ALLOCATION BREAKDOWN:

Water - Corporate Projects - T O T A L	\$9,671,000
Wastewater - Corporate Projects -- T O T A L	\$9,694,800
Stormwater - Corporate Projects -- T O T A L	\$871,200

GRAND TOTAL - Corporate Projects **\$20,237,000**

Note: All corporate projects are allocated as follows:

50% Water

40% Wastewater

10% Stormwater

(unless otherwise noted)

HALIFAX WATER

Capital Budget 2017/18

Summary of Routine Capital Expenditures included within Capital Budget

Project Number	Project Name	Project Cost
3.067	Valves Renewals	\$125,000
3.068	Hydrants Renewals	\$75,000
3.069	Service Lines Renewals	\$100,000
3.390	Lead Service Line Replacement Program	\$400,000
3.101	Miscellaneous Equipment Replacement	\$50,000
3.385	Leak Detection Equipment	\$27,000
4.007	Fleet Upgrade Program Water	\$505,000
2.357	Manhole Renewals WW	\$29,000
2.358	Lateral Replacements WW (non-tree roots)	\$1,300,000
2.563	Lateral Replacements WW (tree roots)	\$600,000
2.161	I&I Reduction (SIR) Program Flow Meters and Related Equipment	\$25,000
2.451	Miscellaneous Equipment Replacement	\$70,000
4.006	Fleet Upgrade Program Wastewater	\$1,120,000
1.102	Manhole Renewals SW	\$24,000
1.103	Catchbasin Renewals SW	\$36,000
1.135	Lateral Replacements SW	\$15,000
4.006	Fleet Upgrade Program Stormwater	\$280,000
4.011	Desktop Computer Replacement Program	\$290,000
4.012	Network Infrastructure Upgrades	\$220,000
GRAND TOTAL - Routine Capital Projects		\$5,291,000



Appendix D

2017/18 Operations Budget



HALIFAX WATER
CONSOLIDATED SUMMARY OF ESTIMATED REVENUES & EXPENDITURES
PROPOSED OPERATING BUDGET
APRIL 1, 2017 to MARCH 31, 2018
(in thousands)

DESCRIPTION	ACTUAL APR 1/15 MAR 31/16	APPROVED BUDGET * APR 1/16 MAR 31/17	PROPOSED BUDGET APR 1/17 MAR 31/18
OPERATING REVENUES	\$131,716	\$135,675	\$135,587
OPERATING EXPENDITURES	<u>\$96,243</u>	<u>\$102,425</u>	<u>\$106,241</u>
OPERATING PROFIT	<u>\$35,473</u>	<u>\$33,250</u>	<u>\$29,346</u>
FINANCIAL REVENUES (NON-OPERATING)			
INVESTMENT INCOME	\$883	\$810	\$346
PNS FUNDING HHSP DEBT	\$2,000	\$2,000	\$2,000
MISCELLANEOUS	<u>\$487</u>	<u>\$481</u>	<u>\$441</u>
	<u>\$3,370</u>	<u>\$3,291</u>	<u>\$2,787</u>
FINANCIAL EXPENDITURES (NON-OPERATING)			
LONG TERM DEBT INTEREST	\$8,889	\$8,872	\$9,532
LONG TERM DEBT PRINCIPAL	\$20,328	\$22,652	\$24,291
AMORTIZATION DEBT DISCOUNT	\$186	\$199	\$217
DIVIDEND/GRANT IN LIEU OF TAXES	\$4,528	\$4,663	\$4,827
MISCELLANEOUS	<u>\$29</u>	<u>\$0</u>	<u>\$15</u>
	<u>\$33,961</u>	<u>\$36,386</u>	<u>\$38,882</u>
 NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES	 <u>\$4,883</u>	 <u>\$154</u>	 <u>(\$6,750)</u>
Adjustments:			
Pension accrual	<u>(\$267)</u>	<u>\$3,086</u>	<u>\$4,358</u>
Net Profit (Loss) on a Cash Basis	<u>\$4,616</u>	<u>\$3,241</u>	<u>(\$2,392)</u>

* 2016/17 Operating Budget approved by the Board of Directors, January 28, 2016.

HALIFAX WATER
ESTIMATED REVENUES AND EXPENDITURES - WATER OPERATIONS
PROPOSED OPERATING BUDGET
APRIL 1, 2017 to MARCH 31, 2018
(in thousands)

DESCRIPTION	ACTUAL APR 1/15 MAR 31/16	APPROVED BUDGET * APR 1/16 MAR 31/17	PROPOSED BUDGET APR 1/17 MAR 31/18
REVENUES			
METERED SALES	\$43,193	\$46,465	\$46,600
FIRE PROTECTION	\$8,032	\$7,074	\$7,074
PRIVATE FIRE PROTECTION SERVICES	\$679	\$840	\$857
BULK WATER STATIONS	\$265	\$326	\$314
CUSTOMER LATE PAY./COLLECTION FEES	\$198	\$203	\$212
MISCELLANEOUS	\$181	\$153	\$149
	<u>\$52,548</u>	<u>\$55,061</u>	<u>\$55,207</u>
EXPENDITURES			
WATER SUPPLY & TREATMENT	\$7,543	\$7,983	\$8,565
TRANSMISSION & DISTRIBUTION	\$8,405	\$8,710	\$8,969
SMALL SYSTEMS (incl. Contract Systems)	\$1,080	\$883	\$1,073
TECHNICAL SERVICES (SCADA)	\$689	\$846	\$873
ENGINEERING & INFORMATION SERVICES	\$3,528	\$3,848	\$3,515
REGULATORY SERVICES	\$505	\$515	\$1,034
CUSTOMER SERVICE	\$2,268	\$2,251	\$2,357
ADMINISTRATION & PENSION	\$4,919	\$5,416	\$5,836
DEPRECIATION	\$8,411	\$8,561	\$9,218
	<u>\$37,348</u>	<u>\$39,013</u>	<u>\$41,441</u>
OPERATING PROFIT	<u>\$15,200</u>	<u>\$16,048</u>	<u>\$13,766</u>
FINANCIAL REVENUES (NON-OPERATING)			
INVESTMENT INCOME	\$442	\$365	\$156
MISCELLANEOUS	\$434	\$408	\$428
	<u>\$876</u>	<u>\$773</u>	<u>\$583</u>
FINANCIAL EXPENDITURES (NON-OPERATING)			
LONG TERM DEBT INTEREST	\$2,531	\$2,486	\$2,685
LONG TERM DEBT PRINCIPAL	\$7,766	\$8,576	\$9,014
AMORTIZATION DEBT DISCOUNT	\$90	\$100	\$98
DIVIDEND/GRANT IN LIEU OF TAXES	\$4,528	\$4,663	\$4,827
MISCELLANEOUS	\$29	\$0	\$15
	<u>\$14,945</u>	<u>\$15,825</u>	<u>\$16,639</u>
NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES	<u>\$1,130</u>	<u>\$996</u>	<u>(\$2,291)</u>

* 2016/17 Operating Budget approved by the Board of Directors, January 28, 2016.

HALIFAX WATER
ESTIMATED REVENUES AND EXPENDITURES - WASTEWATER OPERATIONS
PROPOSED OPERATING BUDGET
APRIL 1, 2017 to MARCH 31, 2018
(in thousands)

DESCRIPTION	ACTUAL APR 1/15 MAR 31/16	APPROVED BUDGET * APR 1/16 MAR 31/17	PROPOSED BUDGET APR 1/17 MAR 31/18
REVENUES			
METERED SALES	\$66,601	\$68,052	\$67,756
WASTEWATER OVERSTRENGTH AGREEMENTS	\$135	\$0	\$0
LEACHATE	\$331	\$389	\$389
CONTRACT REVENUE	\$93	\$86	\$86
SEPTAGE TIPPING FEES	\$648	\$650	\$775
DEWATERING FACILITY/ SLUDGE LAGOON	\$210	\$210	\$210
AIRLINE EFFLUENT	\$51	\$86	\$86
CUSTOMER LATE PAY./COLLECTION FEES	\$238	\$257	\$240
MISCELLANEOUS	\$121	\$133	\$129
	<u>\$68,428</u>	<u>\$69,862</u>	<u>\$69,670</u>
EXPENDITURES			
WASTEWATER COLLECTION	\$9,537	\$9,446	\$9,653
WASTEWATER TREATMENT PLANTS	\$17,421	\$19,425	\$19,251
SMALL SYSTEMS	\$1,059	\$1,251	\$1,276
DEWATERING FACILITY/ SLUDGE MGMT	\$414	\$556	\$380
BIOSOLIDS TREATMENT	\$102	\$101	\$101
LEACHATE CONTRACT	\$290	\$341	\$341
TECHNICAL SERVICES (SCADA)	\$1,041	\$1,215	\$1,306
ENGINEERING & INFORMATION SERVICES	\$3,010	\$3,629	\$3,431
REGULATORY SERVICES	\$1,134	\$1,254	\$1,434
CUSTOMER SERVICE	\$1,877	\$1,864	\$2,064
ADMINISTRATION & PENSION	\$4,095	\$4,485	\$4,833
DEPRECIATION	\$11,975	\$11,983	\$12,465
	<u>\$51,954</u>	<u>\$55,551</u>	<u>\$56,534</u>
OPERATING PROFIT	<u>\$16,474</u>	<u>\$14,311</u>	<u>\$13,136</u>
FINANCIAL REVENUES (NON-OPERATING)			
INVESTMENT INCOME	\$441	\$365	\$156
PNS FUNDING HHSP DEBT	\$2,000	\$2,000	\$2,000
MISCELLANEOUS	\$54	\$72	\$14
	<u>\$2,494</u>	<u>\$2,437</u>	<u>\$2,169</u>
FINANCIAL EXPENDITURES (NON-OPERATING)			
LONG TERM DEBT INTEREST	\$5,786	\$5,817	\$6,022
LONG TERM DEBT PRINCIPAL	\$11,462	\$12,978	\$13,699
AMORTIZATION DEBT DISCOUNT	\$89	\$89	\$107
MISCELLANEOUS	\$0	\$0	\$0
	<u>\$17,337</u>	<u>\$18,884</u>	<u>\$19,828</u>
NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES	<u>\$1,632</u>	<u>(\$2,136)</u>	<u>(\$4,523)</u>

* 2016/17 Operating Budget approved by the Board of Directors, January 28, 2016.

HALIFAX WATER
ESTIMATED REVENUES AND EXPENDITURES - STORMWATER OPERATIONS
PROPOSED OPERATING BUDGET
APRIL 1, 2017 to MARCH 31, 2018
(in thousands)

DESCRIPTION	ACTUAL APR 1/15 MAR 31/16	APPROVED BUDGET * APR 1/16 MAR 31/17	PROPOSED BUDGET APR 1/17 MAR 31/18
REVENUES			
STORMWATER SITE RELATED SERVICE	\$6,713	\$6,708	\$6,700
STORMWATER RIGHT-OF-WAY SERVICE	\$3,881	\$3,881	\$3,881
CUSTOMER LATE PAY./COLLECTION FEES	\$63	\$70	\$39
MISCELLANEOUS	\$82	\$93	\$89
	<u>\$10,740</u>	<u>\$10,753</u>	<u>\$10,710</u>
EXPENDITURES			
STORMWATER COLLECTION	\$4,202	\$4,761	\$4,589
TECHNICAL SERVICES (SCADA)	\$34	\$28	\$31
ENGINEERING & INFORMATION SERVICES	\$480	\$590	\$558
REGULATORY SERVICES	\$729	\$835	\$1,242
CUSTOMER SERVICE	\$305	\$303	\$205
ADMINISTRATION & PENSION	\$666	\$729	\$786
DEPRECIATION	\$523	\$614	\$855
	<u>\$6,941</u>	<u>\$7,862</u>	<u>\$8,266</u>
OPERATING PROFIT	<u>\$3,799</u>	<u>\$2,891</u>	<u>\$2,444</u>
FINANCIAL REVENUES (NON-OPERATING)			
INVESTMENT INCOME	\$0	\$81	\$35
MISCELLANEOUS	\$0	\$0	
	<u>\$0</u>	<u>\$81</u>	<u>\$35</u>
FINANCIAL EXPENDITURES (NON-OPERATING)			
LONG TERM DEBT INTEREST	\$571	\$569	\$825,070
LONG TERM DEBT PRINCIPAL	\$1,100	\$1,098	\$1,577,259
AMORTIZATION DEBT DISCOUNT	\$8	\$11	\$11,938
MISCELLANEOUS	\$0	\$0	\$0
	<u>\$1,679</u>	<u>\$1,678</u>	<u>\$2,414</u>
NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES	<u>\$2,120</u>	<u>\$1,294</u>	<u>\$64</u>

* 2016/17 Operating Budget approved by the Board of Directors, January 28, 2016.

HALIFAX WATER
ESTIMATED REVENUES & EXPENDITURES, SEGREGATED BY REGULATED AND UNREGULATED ACTIVITIES
PROPOSED OPERATING BUDGET
APRIL 1, 2017 to MARCH 31, 2018
(In thousands)

DESCRIPTION	ACTUAL APR 1/15 MAR 31/16	APPROVED BUDGET * APR 1/16 MAR 31/17	PROPOSED BUDGET APR 1/17 MAR 31/18
REGULATED ACTIVITIES			
REVENUES			
METERED SALES	\$116,507	\$121,225	\$121,056
FIRE PROTECTION	\$8,032	\$7,074	\$7,074
PRIVATE FIRE PROTECTION	\$679	\$840	\$857
STORMWATER RIGHT-OF-WAY SERVICE	\$3,881	\$3,881	\$3,881
OTHER OPERATING REVENUE	\$1,262	\$1,213	\$1,151
	<u>\$130,361</u>	<u>\$134,234</u>	<u>\$134,020</u>
EXPENDITURES			
WATER SUPPLY & TREATMENT	\$7,543	\$7,976	\$8,559
TRANSMISSION & DISTRIBUTION	\$8,405	\$8,710	\$8,969
WASTEWATER & STORMWATER COLLECTION	\$13,723	\$14,195	\$14,229
WASTEWATER TREATMENT PLANTS	\$17,421	\$19,425	\$19,251
SMALL SYSTEMS	\$2,129	\$2,116	\$2,324
SCADA, CONTROL & PUMPING	\$1,765	\$2,087	\$2,209
ENGINEERING & INFORMATION SERVICES	\$7,018	\$8,058	\$7,495
REGULATORY SERVICES	\$2,369	\$2,605	\$3,710
CUSTOMER SERVICE	\$4,415	\$4,382	\$4,591
ADMINISTRATION & PENSION	\$9,660	\$10,549	\$11,363
DEPRECIATION	\$20,903	\$21,158	\$22,530
	<u>\$95,350</u>	<u>\$101,263</u>	<u>\$105,239</u>
OPERATING PROFIT	<u>\$35,011</u>	<u>\$32,971</u>	<u>\$28,782</u>
FINANCIAL REVENUES (NON-OPERATING)			
INVESTMENT INCOME	\$883	\$810	\$346
MISCELLANEOUS	\$2,055	\$2,066	\$1,948
	<u>\$2,938</u>	<u>\$2,876</u>	<u>\$2,293</u>
FINANCIAL EXPENDITURES (NON-OPERATING)			
LONG TERM DEBT INTEREST	\$8,889	\$8,858	\$9,474
LONG TERM DEBT PRINCIPAL	\$20,328	\$22,632	\$24,212
AMORTIZATION DEBT DISCOUNT	\$186	\$199	\$217
DIVIDEND/GRANT IN LIEU OF TAXES	\$4,528	\$4,663	\$4,827
MISCELLANEOUS	\$158	\$0	\$0
	<u>\$34,089</u>	<u>\$36,353</u>	<u>\$38,730</u>
NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES - REGULATED ACTIVITIES	<u>\$3,859</u>	<u>(\$506)</u>	<u>(\$7,655)</u>
UNREGULATED ACTIVITIES			
REVENUES			
AEROTECH SEPTAGE TIPPING FEES	\$648	\$650	\$775
LEACHATE	\$331	\$389	\$389
CONTRACT REVENUE	\$93	\$86	\$86
DEWATERING FACILITY/ SLUDGE LAGOON	\$210	\$210	\$210
AIRLINE EFFLUENT	\$51	\$86	\$86
ENERGY PROJECTS	\$198	\$184	\$184
MISCELLANEOUS	\$21	\$22	\$22
	<u>\$1,553</u>	<u>\$1,625</u>	<u>\$1,750</u>
EXPENDITURES			
- DIRECT			
WATER SUPPLY & TREATMENT	\$10	\$18	\$25
WASTEWATER TREATMENT	\$822	\$998	\$821
ENERGY PROJECTS	\$13	\$0	\$0
SPONSORSHIPS & DONATIONS	\$55	\$56	\$66
DEPRECIATION	\$6	\$0	\$0
	<u>\$906</u>	<u>\$1,072</u>	<u>\$912</u>
- INDIRECT (ADMINISTRATION)			
	\$0	\$91	\$91
	<u>\$906</u>	<u>\$1,163</u>	<u>\$1,003</u>
OPERATING PROFIT	<u>\$647</u>	<u>\$463</u>	<u>\$748</u>
FINANCIAL REVENUES (NON-OPERATING)			
MISCELLANEOUS	\$248	\$231	\$310
	<u>\$248</u>	<u>\$231</u>	<u>\$310</u>
FINANCIAL EXPENDITURES (NON-OPERATING)			
LONG TERM DEBT INTEREST	\$0	\$14	\$58
LONG TERM DEBT PRINCIPAL	\$0	\$19	\$79
AMORTIZATION DEBT DISCOUNT	\$0	\$0	\$0
MISCELLANEOUS	(\$128)	\$0	\$15
	<u>(\$128)</u>	<u>\$33</u>	<u>\$152</u>
NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES - UNREGULATED ACTIVITIES	<u>\$1,024</u>	<u>\$661</u>	<u>\$905</u>
NET PROFIT (LOSS) AVAILABLE FOR CAPITAL EXPENDITURES - COMBINED ACTIVITIES	<u>\$4,883</u>	<u>\$154</u>	<u>(\$6,750)</u>

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