TORONTO

STAFF REPORT
ACTION REQUIRED

Funding Options for Paying for Toronto Water's Stormwater Management Capital Program

Date:	October 29, 2015
To:	Budget Committee
From:	General Manager, Toronto Water Deputy City Manager & Chief Financial Officer
Wards:	All
Reference Number:	P:\2015\Cluster B\TW\BC15027

SUMMARY

This report is in response to a direction from City Council to report back on an appropriate cost recovery model to fund the costs of Toronto's Stormwater Management Capital Program, which is currently funded entirely from the water rate.

Toronto Water's Capital Program has a number of emerging pressures, and stormwater management is an area City Council has identified as a growing concern and priority. Stormwater management initiatives include Basement Flooding Protection Program projects that reduce the risk of flooding during extreme storm events, and water quality and stream restoration projects to improve the City's environment and protect vulnerable City sewer infrastructure.

This report recommends that funding for Toronto Water's growing Capital Program related to stormwater management move from a water rate funded program to a dedicated stormwater charge funded program. A stormwater charge imposed upon property owners which is predicated on the amount of stormwater runoff from a property is a fair funding approach supported by the majority of stakeholders consulted to date. The establishment of a separate stormwater charge also brings more transparency to the actual costs of providing and maintaining a stormwater management system within the City. A corresponding benefit to the establishment of a stormwater charge would be the reduction in cost to the consumer for the consumption of water and treatment of wastewater as a result of the removal of stormwater management costs from the water rate. There would, however, be a corresponding increase through the proposed stormwater charge.

Given the complexities associated with the establishment and implementation of a stormwater charge, it is recommended that staff report back in the spring of 2017 with a detailed implementation plan for Council's consideration. If approved, implementation would likely start in 2018.

RECOMMENDATIONS

The General Manager, Toronto Water, and the Deputy City Manager & Chief Financial Officer recommend that:

1. City Council authorize the General Manager, Toronto Water, and Deputy City Manager & Chief Financial Officer to develop and formulate a stormwater management funding model premised on the establishment of a dedicated stormwater charge; thereby, removing stormwater management costs from the water rate.

2. City Council direct the General Manager, Toronto Water and the Deputy City Manager & Chief Financial Officer to report back to Executive Committee in the spring of 2017 on a stormwater charge implementation plan which shall include:

    a. A separate stormwater charge component being included in the water bill in conjunction with a reduced volumetric charge component;

    b. The stormwater charge being based on the following criteria:

        i. A flat rate for residential properties (including detached and semi-detached homes, duplexes, triplexes, townhouses and row houses);

        ii. A flat rate for condominiums, multi-family residential, and industrial, commercial and institutional properties;

        iii. For a property one hectare (1 ha) or greater, a specific charge based on the amount of runoff they contribute to the City's stormwater management system;

        iv. An incentive program for properties one hectare (1 ha) or greater that manage a portion or all their stormwater runoff onsite;

    c. The costs associated with the implementation and ongoing administration of a stormwater charge;

    d. A detailed rate schedule, timelines, and all business and policy considerations associated with the implementation of a stormwater charge; and

e. A program that provides for the mitigation of any substantial increases in water bills that may result from the implementation of a stormwater charge,

with the intent that the new water rate structure be implemented January 1, 2018 at the earliest.

Implementation Points

The establishment and implementation of a stormwater charge will take a number of years due to its complexity. To develop a detailed implementation plan for a separate stormwater charge, it will be necessary for staff to:

- Conduct detailed geographic analysis, the results of which will be used to calculate stormwater charges for all billable user groups;
- Create a database of stormwater charges, which will be linked to the City's water utility billing database upon implementation of the charge;
- Determine the costs associated with implementing and maintaining a stormwater charge;
- Develop incentives and communication programs; and
- Conduct further stakeholder consultation.

Financial Impact

There are no direct financial impacts associated with the adoption of this report. The development of a detailed implementation plan has been estimated to cost $300,000 and can be accommodated within Toronto Water's existing Capital Budget envelope. Costs associated with the implementation and maintenance of a stormwater charge will be reported back in the spring of 2017.

Toronto Water's Operating and Capital budgets are currently funded on a "pay-as-you-go" basis through a combined water and wastewater rate without any reliance on debenture financing or the property tax base.

The Deputy City Manager & Chief Financial Officer has reviewed this report and agrees with the financial impact information.

DECISION HISTORY

At its meeting on October 30, 2012, Toronto City Council considered a report titled, "Toronto Water Capital Program Funding Pressures and Financing Options". This report presented the results of initial stakeholder consultation intended to allow Toronto Water to frame the challenges facing its Capital Program and gather initial feedback on various funding options. That report can be viewed at:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.EX23.3

At the July 16, 2013 Toronto City Council meeting, in response to a Member Motion concerning a deferral of over $1 billion in water capital projects due to declining consumption and an increase in extreme weather events, City Council adopted a Member Motion that:

1. Directed the General Manager, Toronto Water, in consultation with the Deputy City Manager & Chief Financial Officer, to report to the October 30, 2013 meeting of the Executive Committee with financing options for increased investment in Toronto Water Infrastructure, particularly for Wet Weather Flow Master Plan and Basement Flooding projects, as previously directed by Council; and,

2. Requested the General Manager, Toronto Water to undertake any necessary additional consultations with stakeholders and the public on the proposed options in preparation of the report requested in Part 1 above.

That motion can be viewed at:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.MM37.45

At its meeting on November 13, 14, 15 and 18, 2013, Toronto City Council directed the General Manager, Toronto Water and the Deputy City Manager & Chief Financial Officer to identify the most appropriate way to generate additional revenue for Toronto Water to fund its substantial infrastructure requirements through the use of one or more of the following options:

- Water rate increases greater than the rate of inflation once the "9% for 9 years" increases end in 2014; and/or
- A separate stormwater management charge on the water bill; and/or
- Debenture financing for large scale, long service period projects, with all debt service costs to be paid from water rate increases.

That Council decision can be viewed at:
http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2013.EX35.11

At its meeting on March 10 and 11, 2015, Toronto City Council approved a water rate increase of 8%, effective March 13, 2015. In order to provide the necessary revenue stream for the recommended 2015-2024 Capital Plan in accordance with its project delivery schedule, staff recommended and City Council approved an 8% rate increase in 2016, followed by two years of 5% increases in 2017 and 2018 and inflationary increase of 3% in the remaining years of the ten year plan. That Council decision can be viewed at: http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2015.EX3.1

ISSUE BACKGROUND

Through the 2014 Capital Budget and the 2015-2023 Capital Plan approval process, Toronto Water identified an additional $765 million of funding pressures across the 10-year plan and $1.8 billion beyond the 10-year plan, predominantly for stormwater management projects.

City Council approved an 8% water rate increase in 2015 which, due to its implementation date of March 13, 2015, effectively translated into a 6.5% increase. For future planning purposes, City Council amended the 2015-2024 Toronto Water Capital Plan to reflect water rate increases of 8% in 2016 and 5% in 2017 and 2018 to allow for an additional $1 billion of projects that align with City Council priorities. This funding will allow for the acceleration and expansion of the City's Wet Weather Flow Master Plan to manage stormwater and help reduce the risk of future basement flooding, as well as improve the City's environment and protect vulnerable sewer infrastructure from the impacts of severe storms.

Stormwater Management Program

The fastest growing portion of Toronto Water's Capital Budget is related to stormwater management. In 1987, the International Joint Commission identified the Toronto Harbour as an "Area of Concern", largely due to poor water quality conditions in the Don River and the Inner Harbour. Additionally, the Great Lakes Water Quality Agreement commits Canada and the United States to actions that restore and maintain the chemical, physical and biological integrity of the Great Lakes Basin ecosystem. Despite the international nature of the agreement, most of the onus for remediation falls to municipalities.

Overflows from both storm sewers and combined sewers (sewers that contain both sanitary and stormwater flows) are the main sources of pollution in Toronto's watercourses and Lake Ontario.

In response to being identified as an "Area of Concern", the City of Toronto developed a multi-year Remedial Action Plan (RAP). A cornerstone for the RAP is the City's Wet Weather Flow Master Plan (WWFMP), approved by City Council in 2003. The WWFMP is a 25-year plan to improve water quality and aquatic habitats in Toronto's watercourses and along the waterfront.

In 2005, City Council adopted the 10-year Toronto Water Capital Plan and funding strategy, including 9% annual rate increases over nine years, from 2006 to 2014, to address wet weather flow priorities and the state of good repair backlog.

The 2015-2024 Toronto Water Capital Plan was adjusted to align with Council priorities related to stormwater management. For example, funding was added to align with the “Expansion of the Basement Flooding Protection Program’s Priority Study Areas” report submitted to Budget Committee on November 6, 2013. The expansion of the Basement Flooding Protection Program will allow staff to systematically expand and prioritize studies across Toronto.

Additionally, Wet Weather Flow projects that were added or accelerated in the 10-year plan include components of the Don River & Central Waterfront CSO project, construction of Waterfront Landforms at Ashbridges Bay, construction of Etobicoke Waterfront Stormwater Control, and protection of additional trunk sewer crossings exposed during the July 8, 2013 storm, including Mimico Creek, Humber Creek and Yellow Creek. Funding was also increased for the Toronto & Region Conservation Authority's (TRCA) watercourse erosion control projects. These projects will help improve water quality in Toronto's watercourses and Lake Ontario, and will help protect vulnerable infrastructure.

COMMENTS

Consultation on a broad list of financing options for stormwater management dates back to 2012. At that time, input was sought from stakeholders and the public on funding pressures facing Toronto Water's Capital Program and developing options to address the pressures. Efforts were made to reach out to all stakeholders, including the business community, environmental non-governmental organizations (ENGOs), and residential groups.

As a result, in 2013, City Council narrowed the list of financing options for further consideration and consultation, which included future water rate increases (beyond the 9% increases ending in 2014), debenture financing, and the concept of a stormwater charge, from which all funds recovered would go towards defraying the cost of the City's stormwater management program.

Financing Options

This staff report examines three financing options as requested by City Council:

- Water rate increases greater than the rate of inflation; and/or
- Debenture financing for large scale, long service period projects, with all debt service costs to be paid from water rate increases; and/or
- A separate stormwater management charge on the water utility bill.

Water Rate Increases

The City Council-approved 2015 Water and Wastewater Rates and Service Fees staff report recommended two years of 8% increases (2015-2016), followed by two years of 5% increases (2017-2018). The advantage of using water rate increases greater than the rate of inflation for the purposes of generating revenue for the capital program is that it is administratively very simple. The disadvantage of water rate increases for the purpose of funding stormwater management projects is that they are not as equitable or transparent as a stormwater charge, nor do they incentivize large properties to manage their stormwater onsite, as explained in the "Stormwater Charge" section, below. Water rates are appropriate for funding water and wastewater programs, while a separate stormwater

charge is more appropriate for the purposes of funding stormwater management programs because these costs are not related to water consumption.

Debenture Financing
Debenture financing is a financing strategy that can raise capital funds quickly, which are then repaid over time with interest. For practical reasons, debenture financing would typically span from 10 years to 30 years, and the cost would be recovered through an annual debt charge added to water consumption rates.

Since 2006, Toronto Water has been operating on a "pay-as-you-go" basis with funding derived from water rate revenue.

An advantage of debenture financing is that larger infrastructure expansion and upgrade projects can be financed through debentures over the useful life of the asset, and the associated costs can be assigned proportionately to future residents that benefit from those projects. However, if debenture financing becomes embedded as an annual source of financing, it will, over the long-run, add costs for interest on capital, and the debt charges will add to the overall total cost of the infrastructure.

As such, debenture financing is a financing tool appropriate for discreet long term assets to be employed in limited circumstances in accordance with the needs of the Capital Plan and capital reserve funds availability. Due to the existing Capital Plan and projected sufficient reserve balances over the next several years, debenture financing is not recommended at this point, but is an option to be considered in the future as needed.

Stormwater Charge

A stormwater charge is determined based on the demands a customer imposes on the stormwater system. Generally, the more hard surfaces (i.e., impervious area) a property has, the more stormwater runoff (rain and melted snow) it contributes and therefore the more it should be charged.

There are several advantages to implementing a stormwater charge. The first and most important reason is to increase equity through the lens of the "user pay" principle. Within the existing water rate structure, the more water a user consumes, the more she or he will pay. This revenue is used to pay for the infrastructure necessary to provide the services associated with that water use, namely, water treatment and supply, and wastewater collection and treatment. Currently, this same revenue is also being used to pay for infrastructure related to stormwater management, even though there is no direct relationship between the amount of drinking water consumed and the amount of runoff generated by a property. A stormwater charge that can better account for the amount of runoff from a property is more equitable than using revenue from consumption-based billing to pay for capital works associated with stormwater management. Moreover, because funding for stormwater management would no longer need to come from the sale of water, volumetric water rates would *decrease*. This idea is illustrated in more detail in the "Potential Stormwater Charge Elements and Anticipated Impacts" section of this report.

The second advantage of a stormwater charge is that it is more transparent. Any revenue generated from a stormwater charge would go towards stormwater management, which would increase transparency, and ensure there would be dedicated funding for stormwater management capital projects.

Third, there has been support for the implementation of a stormwater charge during stakeholder consultation. There is wide recognition of the need to pay for Toronto Water's growing capital needs. Most stakeholders were generally supportive of the concept of a stormwater charge as long as it was implemented fairly and transparently. These sentiments will be discussed in more detail in the section of this report entitled "Stakeholder Input".

Fourth, stormwater charges are increasingly common in North America, having been successfully implemented in hundreds of municipalities. These stormwater charges have influenced the proposed charge for Toronto.

Finally, the incentive program that would be introduced as part of the implementation of a stormwater charge would motivate owners or managers of large properties to develop their own stormwater management solutions onsite, thereby reducing the pressure on the City’s stormwater management infrastructure and increasing the number of stormwater management best practices on private property across Toronto.

There are also some disadvantages to implementing a stormwater charge, the biggest of which is its associated administrative costs related to calculating the rates for different properties, as well as developing, implementing and maintaining the necessary policies, programs and business rules. Additionally, communicating the concept of a stormwater charge to the public is more difficult than the concept of increasing consumption charges.

Staff recommend the development of an implementation plan for a stormwater charge based on the assertion that its advantages outweigh its disadvantages, and it is therefore an appropriate mechanism for Toronto Water to fund its stormwater management infrastructure requirements.

Experiences of Other Jurisdictions

More than 1,400 municipalities in the United States have implemented stormwater charges, and quite a few examples exist in Canada as well. City staff conducted research into the practices of a number of jurisdictions, the results of which are summarized in Appendix A.

Common elements of stormwater charges in other municipalities include the following:

- Residential properties are usually charged flat rates, which are sometimes tiered (e.g., different rates for small, medium and large houses);

- Most municipalities offer credit or incentive programs for properties that manage stormwater on site, but not necessarily for all users (e.g., only non-residential properties);
- Although some municipalities have had a stormwater charge in place for decades, most implemented theirs in 2001 or later; and
- Most municipalities administer their stormwater charge through the water utility bill.

Mississauga
In May 2015, after three and a half years of study and development, the City of Mississauga's Council adopted a full plan for a stormwater charge to be implemented on January 1, 2016.

Single-family residential homes in Mississauga will be charged one of five flat rates, depending on the home's "roofprint area". Multi-family residential and non-residential properties will be charged according to the number of "stormwater billing units" on each property, where each billing unit (267 m^2) is equal to the average impervious area found on a single detached residential property in Mississauga.

Multi-residential and non-residential property owners or tenants will be provided the opportunity to receive a reduction to their stormwater charges through a stormwater credit in recognition of the stormwater management practices or measures that have been implemented and maintained on their property. The maximum stormwater credit for each property is 50%.

Mississauga will also introduce a stormwater charge subsidy that will help offset the cost of stormwater charges assessed to eligible places of religious worship and veterans' organization properties.

The implementation of Mississauga's stormwater charge has required a project manager, a project coordinator, a business analyst, and several staff to handle communications, information technology requirements and quality assurance/control of geographic analysis.

Potential Stormwater Charge Elements and Anticipated Impacts

Preliminary analysis was conducted for the purposes of illustrating what a stormwater charge might look like in Toronto, the calculations for which are detailed in Appendix B.

The earliest a stormwater charge could be introduced is 2018, and would follow an 8% water rate increase in 2016 and a 5% increase in 2017. Table 1 provides a year-by-year breakdown of this potential scenario.

Table 1 – High-level implementation timeline of a potential stormwater charge.

2016	2017	2018	2019 and on
8% increases for Blocks 1 and 2	5% increases for Blocks 1 and 2	Stormwater charge + 12% decreases for Blocks 1 and 2	Stormwater charge + Nominal increases for Blocks 1 and 2

The stormwater charge would not be added on top of the existing water rate, but instead be extracted from the consumption-based billing, and charged as a separate item. The total water charge including the new stormwater charge will be designed so that the total revenue would be in line with the anticipated increase for that year. For example, if the stormwater charge was implemented in 2018, water consumption rates would decrease relative to 2017 in order to account for the revenue from the stormwater charge, as illustrated in Figure 1. In future years, increases to the stormwater charge, if any, would be based on the needs of the Stormwater Capital Program.

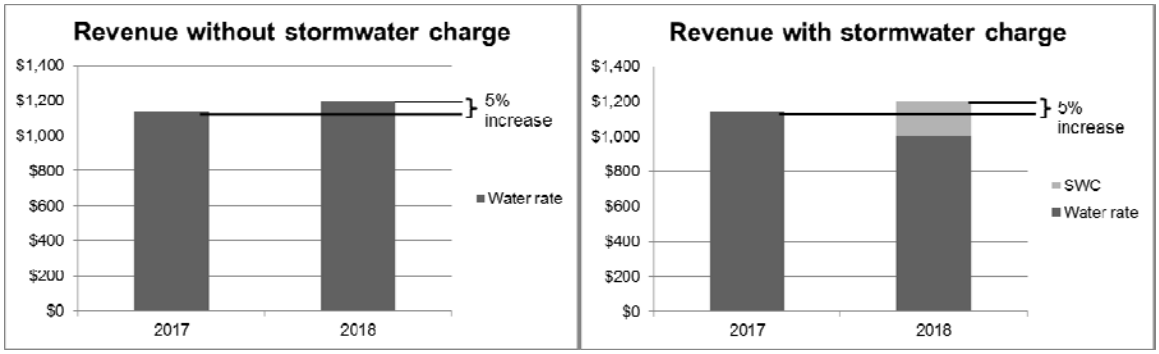

Figure 1 – Anticipated revenue ($ millions) for Toronto Water in 2018 with (left box) and without (right box) the introduction of a stormwater charge (SWC).

The hypothetical stormwater charge that was used for the purposes of illustrating what a stormwater charge might look like in Toronto included three property categories: (i) residential, (ii) condos, multi-family residential, industrial, commercial and institutional, and (iii) large properties, and resulted in the following illustrative example rates for 2018:

- Residential properties (which include detached and semi-detached homes, duplexes, triplexes, townhouses and row houses) would be charged an annual flat rate of $184 per property;
- Condos, multi-family residential, industrial, commercial and institutional properties would be charged an annual flat rate of $989 per property; and
- Large properties greater than one hectare in gross area would be charged $0.78/$m^2$ of impervious area.

It is important to note that these are not the final rates being proposed, which cannot be finalized until more detailed geographic data have been collected and analyzed. The above figures are for illustration purposes only. Their exact calculations would be included as part of the implementation plan for the stormwater charge.

Anticipated Impacts
The impacts of the potential stormwater charge as illustrated in Appendix B can be summarized as follows:

- The financial impact on the average residential property would be in line with the anticipated increase in 2018;
- In general, properties with high water consumption are likely to experience an overall decrease to their water bill, while those with low water consumption are likely to break even or experience an increase.

Incentives

It is anticipated that incentives will be offered to large properties (i.e., those one hectare [1 ha] or greater) for managing stormwater onsite. Large properties will be most impacted by the stormwater charge and, given that large properties comprise 39% of the analyzed area, have a substantial potential impact on stormwater management practices within Toronto. At this time, properties that would receive a flat rate stormwater charge are not anticipated to be offered incentives due to the large administrative burden that such a program would entail.

While the details associated with any related incentives program would need to be developed and reported back on, it is expected that an applicant would have to demonstrate management of stormwater quantity and quality. Given that there are fixed costs associated with the City's stormwater management system, the incentive program would not result in a credit or rebate of 100% of the stormwater charge even if all stormwater was managed onsite.

Stakeholder Input

An initial consultation process was undertaken in the summer of 2012 and a second in 2013 to inform and engage the public and stakeholder groups on future options for paying for water, wastewater and stormwater infrastructure and services.

The outcomes of the consultations in 2012 were outlined in the staff report "Toronto Water Capital Program Funding Pressures and Financing Options", adopted by City Council on October 30, 2012. A copy of the report can be viewed at:
http://www.toronto.ca/legdocs/mmis/2012/ex/bgrd/backgroundfile-50536.pdf

The outcomes of the consultations in 2013 were outlined in the staff report "Future Options and Public Attitudes for Paying for Water, Wastewater and Stormwater Infrastructure and Services", adopted by City Council at its meeting on November 13, 14, 15 and 18, 2013. A copy of the report can be viewed at:
http://www.toronto.ca/legdocs/mmis/2013/ex/bgrd/backgroundfile-62753.pdf

As per the November 2013 Council directive, Toronto Water, Corporate Finance and Strategic Communications staff conducted additional stakeholder input sessions, this time with potential financial impact information of the proposed stormwater charge.

Stakeholder Consultation
Invitations were sent to more than 40 stakeholder groups and associations based on participation during the 2012 and 2013 consultations on the same subject, representing commercial, industrial, institutional, multi-family residential and environmental interests. Two stakeholder meetings took place in 2014 on November 6 and December 9. Invited organizations were also encouraged to submit written feedback.

Staff received ten written submissions from seven organizations.

A recurring theme in the six written submissions received from environmental groups was the need to consider the proposed stormwater charge in the context of a stormwater management program that emphasizes at-source solutions (e.g., low impact development), and which demonstrates measurable improvement in water quality. These submissions noted the importance of incentives for all properties, and one suggested water rates should not impose undue burden on low income families. Another organization suggested the need to properly allocate the costs associated with stormwater runoff from roads.

A school board had concerns with its ability to pay for such a charge within existing budgets, and proposed a cap on increases to total water bills along with a request for the City to help the board solicit funding from the Ministry of Education. Preliminary analysis conducted by City staff indicate that although the impact on individual schools may vary significantly, the overall cost to the school board (i.e., volumetric water rate plus stormwater charge) in the first year of implementation is likely to be in line with the water bill that would have resulted from the water rate increase expected for that year.

One association representing commercial interests voiced strong opposition to the proposed stormwater charge due to the impact it might have on some commercial properties.

Finally, an industry group commended the City for proposing a stormwater charge separate from the cost of purchased water. They subscribed to the simplicity of using flat rates for most properties, and suggested that the most reasonable method for determining the stormwater charge for properties greater than one hectare is to determine volumetric discharge from the property.

General Public Focus Groups
Ipsos Reid, a market research and public polling firm, was commissioned to conduct focus group consultations with members of the public to discuss Toronto's proposed stormwater charge on November 13 and 17, 2014. Two focus groups were conducted on each date and a total of 35 participants took part in the research.

The research found broad acceptance of the need to generate funds in order to manage stormwater. Opinions on implementing a stormwater charge varied, but largely ranged from neutral to positive.

Residents who have been most affected by floods were most likely to be supportive of a stormwater charge. For others, support stemmed from the perception of increased transparency and was contingent on communicating how the revenue will be spent (e.g., by providing specific examples of projects that will be funded).

For those who did not support the implementation of a stormwater charge, the reasons included mistrust of government; lack of control that came with a fixed charged (often contrasted with the control one has over her or his own consumption) and concern over the cost of administering the program.
Focus group participants generally felt that the addition of a complementary incentive program for householders who proactively take measures to minimize their runoff contribution would increase the equity of such a charge.

The focus groups' participants cited inserts with water bills and media as important resources residents turn to for information related to water issues. Nonetheless, the research highlighted that communicating the introduction of a stormwater charge could be challenging. The challenges include defining what stormwater is, explaining how stormwater management is unrelated to water consumption, and providing enough detail on the charge and how it was derived without confusing the issue.

Next Steps – Requirements for Developing an Implementation Plan

Additional analysis is required to refine the details of establishing and implementing a stormwater charge, the bulk of which is related to more accurately calculating stormwater charges for all users through detailed geographic analysis, and assessing and developing associated administrative processes.

Calculate Stormwater Charges

Additional geographic analysis is necessary to determine average impervious areas for various property types, and to calculate specific charges for large properties. Several methods for conducting this analysis have been explored, including the use of automated processes, where possible.

It will be necessary for staff to collect more information about potential methods for conducting detailed geographic analysis, after which a request for proposals will likely need to be developed in order to hire consultants to conduct the analysis.

Assessment and Development of Policies and Programs

An inventory and database of individual property characteristics for all billable properties will be developed in order implement the proposed stormwater charge and incentive program (where applicable). This database will interface with City's water billing system, which will allow the stormwater charge to be added as a separate line item on Toronto Water & Solid Waste Management Utility bills.

Stormwater charges will follow the annual budget and water rate-setting cycle and reflect the needs of the Toronto Water's stormwater Capital Plan.

It will be necessary to conduct a detailed assessment of all resources, time, policies and business procedures necessary to implement:

- The necessary by-law amendments;
- An incentives program, as described on page 10;
- A full communications program, including but not limited to notices in water bills, extensive information made available online, community outreach and training for 311 and Revenue Services staff; and
- Any other programs required for the implementation of a stormwater charge.

Finally, staff will continue to engage in stakeholder consultation in the effort to solicit feedback on key components of the project, such as the incentives program.

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SIGNATURES

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Roberto Rossini Deputy City Manager & Chief Financial Officer	Lou Di Gironimo General Manager, Toronto Water

ATTACHMENTS

Appendix A – Summary of Stormwater Charges in North American Municipalities

Appendix B – Calculation of an Illustrative Stormwater Charge Model for the City of Toronto

Appendix A – Summary of Stormwater Charges in North American Municipalities

City	Start date	Charge base (2015)	Credit program	Billing	Other notes
Baltimore, MD	July 2013	Residential units are placed into one of three tiers based on property size. A medium residential property pays $15.00/qtr ($60.00/yr). Non-residential properties are charged $15/ERU/qtr with a minimum of 1 ERU.[1] Special fees for religious buildings ($3/ERU/qtr)	Many opportunities to reduce fees (including volunteering in community activities) to a maximum credit of 45% unless users can demonstrate they are reducing stormwater by more than their own impervious surface	Quarterly utility bill	State and municipally owned buildings are exempt Other exemptions for very particular situations (e.g., ground underneath a solar panel as long as it has a vegetative cover or gravel bed) Stormwater fee is capped at 20% of property tax for non-residential buildings
Calgary, AB	January 2004	Flat drainage charge of $10.96/30 days ($133.35/yr) for all customers	None	Monthly utility bill	
Edmonton, AB	January 2003	Unique method, which takes into account lot size in m^2 (A), development intensity (I), runoff coefficient (C) and a base rate of $\$0.0353/m^2$/mo, such that the actual rate = A*I*C	The development intensity factor may be reduced if the lot is undeveloped or the property drains into the North Saskatchewan River	Monthly utility bill	Property owners previously paid this expense through property taxes

[1] "Equivalent runoff units" are commonly used to calculate stormwater charges, and are typically defined as the amount of impervious area on an average single-family residential property.

City	Start date	Charge base (2015)	Credit program	Billing	Other notes
Halifax, NS	July 2013	Two separate charges: (1) Site specific charge: all residential units are billed $33.39/yr based on an average IA which was measured to be 224 m^2. Commercial customers billed on actual measurement of IA at $\$0.149/m^2$ (2) Common benefit charge: properties within a predetermined stormwater boundary pay $41/yr	None	Utility bill with varying frequency	
Kitchener, ON	January 2011	Single-family unit (SFU) method, which is similar to the equivalent runoff unit (ERU) method. The rate schedule has 16 codes, tiered for residential (ten tiers) and non-residential (six tiers) properties. A medium single-family detached residential (SFR) property pays $10.48/mo ($125.76/yr)	Developed in conjunction with Waterloo, a maximum credit of 45% is available, made up of three components: flood prevention (25%), pollution reduction (15%) and educational programming (5%)	Monthly water utility bill	
London, ON	January 2013	Based on a property's total area Land areas 0.4 ha or less: $14.49/mo ($173.88/yr) Residential land area 0.4 or less without a storm drain within 90m: $10.87/mo ($130.44/yr) Land area above 0.4 ha: $120.57/ha/mo ($1446.84/yr)	None	Monthly water utility bill	The Stormwater Charges are being phased in over a three year period (2013-2015) for Residential, Institutional and Commercial customers until all customers are paying the same amount based on the area of their property

City	Start date	Charge base (2015)	Credit program	Billing	Other notes
Markham, ON	January 2015	Flat fee for all residential units at $47/yr Fee for non-residential units is under development and set to begin in 2016	None	Annual tax bill for residents	
Mississauga, ON	January 2016	SFU method, similar to Kitchener, resulting in a five tier rate structure for residential properties, and a charge of $100/SFU/yr on non-residential properties. A medium SFR property will pay $100/yr	Multi-residential and non-residential properties can receive a maximum credit of 50% made up of four components: peak flow reduction (up to 40%), water quality treatment (up to 10%), runoff volume reduction volume (up to 15%) and pollution prevention (up to 5%)	Regional monthly water utility bill	Places of worship and veteran's organization properties will be provided with subsidies to offset their stormwater rate charges
Philadelphia, PA	2002 for residential, 2010 for non-residential	Modified ERU method: residential properties receive a uniform monthly charge of $14.15/mo ($169.80/yr) based on the residential mean gross area (GA) and impervious area (IA). Non-residential and condominium properties are charged based on property-specific measurements of GA and IA	Extensive but somewhat complex. Available to non-residential and condominium customers for implementation and maintenance of functional stormwater management practices. The "impervious area stormwater credit" requires customers to manage the first inch (25 mm) of runoff from impervious areas on a property	Monthly water utility bill	A charge adjustment appeals process and cap program to mitigate the annual fiscal year increase for non-residential properties are also available

City	Start date	Charge base (2015)	Credit program	Billing	Other notes
Portland, OR	1977	SFR and duplexes are charged $26.59/mo ($319.08/yr) and 3- and 4-plexes are charged $11.08/mo ($132.96/yr). Residential properties with five units or more are charged $11.08/mo/1000 sq ft of IA Non-residential users are charged $10.97/mo/1000 sq ft of IA ($138.60/yr/1000 sq ft of IA). Residential rates are assessed using a statistically significant sample set of random residential properties. Other properties are assessed using aerial photography (updated annually) and GIS Fees are split into "on-site" (private properties; 35%) and "off-site" (public ROWs; 65%) components	The Clean River Rewards Program offers up to a 35% discount (the amount attributed to runoff from private properties). For residential properties, it is based on water balance. For other properties, it is an equal weighting between water quality, flow rate and balance. The credit program is quite complex	Monthly water utility bill	Undeveloped properties without IA, gravel, public streets, public ROWs and schoolyard playgrounds are not billed
Regina, SK	January 2008	Tiered rate based on property area. Lots up to 1000 m^2 (most residential lots) are charged $0.48/day ($175.20/yr)	None	Monthly water utility bill	

City	Start date	Charge base (2015)	Credit program	Billing	Other notes
Richmond Hill, ON	October 2013	Residential and farm properties are charged $52.38/yr, and industrial, commercial, multi-residential and condos are charged $152.20/yr	None	Quarterly charge on water bills. Property owners that do not receive a water bill are issued an annual stormwater management rate bill	Education facilities and places of worship are exempt
Saskatoon, SK	January 2012	ERU method, where 1 ERU = 265.3 m^2 and each ERU is charged $4.40/mo/ERU. Single-family residences are charged for one ERU ($52.80/yr), whereas commercial and industrial properties are charged for the number of ERUs that divide into the estimated IA on their property	None	Monthly utility bill	To lessen the impact of the rate structure on property owners with higher ERU numbers, the storm water utility will be phased in over seven years, 2012-2018
Washington, D.C.	October 2011	The Clean Rivers Impervious Area Charge (IAC) uses a modified ERU method in which residential customers are categorized into one of six tiers, from 100-600 sq ft (0.6 ERU) to 11,100 sq ft or more (13.5 ERU) One ERU is charged $20.30/mo ($243.60/yr) Residents are also charged a stormwater fee by the District Department of the Environment at $2.67/mo ($32.04/yr)	Customers who manage stormwater on their property through the use of approved best management practices may be eligible for up to 4% off the Clean Rivers IAC Customers are also eligible to receive up to a 55% discount on the stormwater fee	Monthly water utility bill	

City	Start date	Charge base (2015)	Credit program	Billing	Other notes
Waterloo, ON	January 2011	Small, medium and large rates within the following user groups: residential, multi-residential, institutional and industrial/commercial (which also has a "largest" category) A medium residential home is charged $6.74/mo ($80.88/yr)	Developed in conjunction with Kitchener, a maximum credit of 45% is available, made up of three components: flood prevention (25%), pollution reduction (15%) and educational programming (5%)	Monthly water utility bill	

Appendix B – Calculation of an Illustrative Stormwater Charge Model for the City of Toronto

The following stormwater charge rates and impact analyses are based on preliminary geographic analysis and funding needs as outlined in the Toronto Water 2015-2024 Capital Plan related to stormwater management. While these data provide a good foundation on which to build preliminary stormwater charge estimates and impacts, they are for illustrative purposes only. Table B1 illustrates the capital figures used for analysis in this report. In order to avoid varying increases, stormwater management figures were smoothed out over the 10-year Capital Plan.

Table B1 – Stormwater management capital figures used for calculating potential stormwater charge ($000s).

	2015	2016	2017	2018
From 2015-2014 Capital Plan				
Basement Flooding Protection Program (without subsidy program)	$61,043	$77,333	$123,594	$161,569
Wet Weather Flow (WWF) Management projects	$63,761	$65,813	$45,381	$78,647
Total	**$124,804**	**$143,146**	**$168,975**	**$240,216**
Totals if smoothed out over the 10-year period	**$124,804**	**$144,523**	**$167,358**	**$193,801**

Methods

Seven 1.44 km^2 areas across the City of Toronto were analyzed in the effort to calculate average impervious areas for various property types, as shown in Figure B1. Impervious area averages were used to calculate the total amount of impervious area for each property type as a proportion of the total area being analyzed across the city (i.e., all billable properties). This proportion of impervious area was used to determine the proportion of runoff each property contributes to the stormwater management system, and therefore represents the proportion of the projected stormwater management cost to be paid by users within that group. This proportion of the revenue is divided by the number of properties within that group to establish a flat rate for each group.

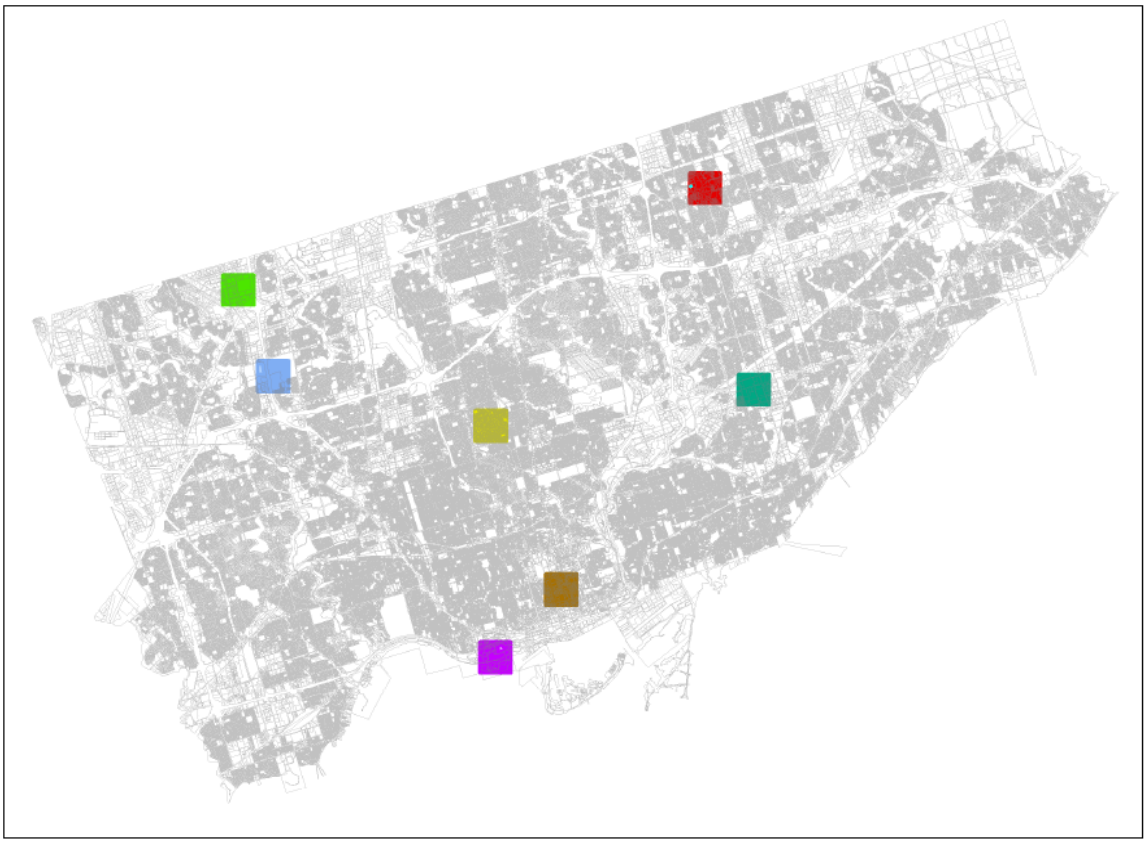

Figure B1 – Areas used for preliminary analysis of a potential stormwater charge.

Summary of Results

Table B2 provides a summary of the results from the preliminary analysis. The following is a breakdown of each column in the table:

3. Property Class – each billable property analyzed is categorized into one of the following property classes, based on the Municipal Property Assessment Corporation (MPAC) classification:
    a. Residential properties include detached and semi-detached homes, duplexes, triplexes, townhouses and row houses
    b. Condos/multi-family residential/industrial, commercial and institutional (ICI): all properties not included in the "residential properties" category
    c. Large properties above one hectare in size, regardless of property class type, are assigned a specific charge based on their actual impervious area
4. Number of Properties – number of billable properties within each property class
5. % of Total Area – the proportion of the total area being analyzed for each property class
6. Average Impervious Area – proportion of impervious area an average property has within a property class
7. Runoff contribution to stormwater system – the proportion of the total impervious area for each property class
8. 2018 Stormwater Cost by Property Class based on Impervious Area – the proportion of the stormwater capital budget to be paid by each property class as calculated by the runoff contribution (Column 5) multiplied by the total stormwater capital budget for 2018 (approximately $194 M)
9. 2018 Estimated Annual Cost per Property – calculated by dividing the stormwater cost for each property class (Column 6) by the number of properties within that class (Column 2)

Table B2 – Summary of potential stormwater charges for various property classes.

1	2	3	4	5	6	7
Property Class	**Number of Properties**	**% of Total Billable Area**	**Average Impervious Area**	**Runoff Contribution to Stormwater System**	**2018 SW Cost by Property Class based on Imp. Area**	**2018 Estimated Annual Cost per Property**
Residential	435,972	48%	52%	41%	$ 80,091,980	$ 184
Condos, Multi-Family Residential, Industrial, Commercial and Institutional	32,347	13%	74%	16%	$ 31,997,007	$ 989
Large Properties >1 ha Total Area	4,892	39%	65%	42%	$ 81,911,013	$0.78 per m2 of impervious area
Total	473,211				$ 194,000,000	

Properties without Water Service
The hypothetical stormwater charge illustrated here is designed to be added to existing water bills. Public spaces (e.g., roads and parks) are excluded from the analysis, and their cost is shared amongst billable properties.

Properties that do not have water service (e.g., parking lots) are to be added to the billing system and charged only for stormwater management.

Analysis of Estimated Impacts
This section is intended to offer estimates of the potential impacts to various users based on the illustrative stormwater charges as calculated above.

Residential
Table B3 shows the impact of the proposed stormwater charge on residential properties, using an average consumption of 300 m^3 per property. An average residential property in 2018 would be charged:

- $1,141 for its water use with no stormwater charge (5% more than in 2017); or
- $957 for its water use plus a $184 flat rate stormwater charge for a total of $1,141 (5% more than in 2017).

Table B3 – Potential change to the total water bill of an average residential property in 2017, with and without a stormwater charge.

	Average consumption (m^3)	**2017**	**2018 no SWC**	**2018 with SWC**
Consumption Rate Change		*8%*	*5%*	*-12%*
Stormwater Charge				$184
Consumption Charge	300	$1,087	$1,141	$957
Total				$1,141
		Impact vs 2017	5%	5%

Because there is a strong correlation between the area of a building on a residential property and the property's total impervious area, it may be desirable to assign flat rate "tiers" to the residential user group based on the property's building outline. For example, three tiers could be defined based on the building outline, representing the smallest 10%, the largest 10% and the medium 80% of the residential properties. In this scenario, a small house might be charged 70% of the flat rate ($129 per year), a

medium house charged the full flat rate ($180 per year), and a large house charged 130% of the flat rate ($239 per year).

Condos, Multi-Family Residential, Industrial, Commercial and Institutional
Table B4 shows the impact of the illustrative stormwater charge on non-residential and multi-family residential properties for a variety of consumption levels, including Block 2 customers (i.e., industrial users that receive a discount for using large volumes of water in their industrial processes through the City's Industrial Water Rate Program) in the last two examples. The charge for multi-family residential properties would apply to the entire building, not each individual unit.

In general, the impact of the stormwater charge is inversely proportional to water consumption. That is, the potential increase to a user's total water bill (consumption charge plus stormwater charge) is greatest for those users with the lowest amounts water consumption. For example, as shown in Table B4, a user within this group that consumes 900 m^3 of water in 2017 would be charged:

- $3,423 for its water use with no stormwater charge (5% more than in 2017); or
- $2,872 for its water use plus a $989 flat rate stormwater charge for a total of $3,861 (18% more than in 2017).

Conversely, a user within this group that consumes 32,000 m^3 of water in 2017 would be charged:

- $121,719 for its water use with no stormwater charge (5% more than in 2016); or
- $102,102 for its water use plus a $989 flat rate stormwater charge for a total of $101,618 (11% *less* than in 2017).

Staff are aware that the impact of the stormwater charge might be too great for some low water consumers within this group. A reasonable solution will need to be determined as part of the detailed implementation plan.

Table B4 – Potential change to the total water bill of condos, multi-family residential, industrial, commercial and institutional properties in 2018, with and without a stormwater charge. Various water consumption levels are illustrated.

	Average consumption (m^3)	2017	2018 no SWC	2018 with SWC
Consumption Rate Change		*8%*	*5%*	*-12%*
Stormwater Charge				$989
Consumption Charge	900	$3,260	$3,423	$2,872
Total				$3,861
		Impact vs 2017	5%	18%
Stormwater Charge				$989
Consumption Charge	2,200	$7,970	$8,368	$7,020
Total				$8,009
		Impact vs 2017	5%	0%
Stormwater Charge				$989
Consumption Charge	14,000	$50,716	$53,252	$44,670
Total				$45,659
		Impact vs 2017	5%	-10%
Stormwater Charge				$989
Consumption Charge	32,000	$115,923	$121,719	$102,102
Total				$103,092
		Impact vs 2017	5%	-11%
Stormwater Charge	Block 2			$989
Consumption Charge	9,000	$29,343	$30,810	$25,845
Total				$26,834
		Impact vs 2017	5%	-9%
Stormwater Charge	Block 2			$989
Consumption Charge	100,000	$260,099	$273,104	$229,092
Total				$230,081
		Impact vs 2017	5%	-12%

Large Properties with Specific Charges
Within the analysis of the illustrative stormwater charge, properties that are greater than one hectare in gross area would be charged $0.78/m^2 of impervious area. Two examples are offered to demonstrate the potential impacts on these properties.

The example shown in Table B5 is a 30 hectare property that is almost completely impervious (295,864 m^2 of impervious area) with relatively low water consumption. In 2017, this property would be charged:

- $772,157 for its water use with no stormwater charge (5% more than in 2017), or
- $647,712 for its water use plus a $231,988 stormwater charge for a total of $879,700 (20% more than in 2017).

Table B5 – Potential specific stormwater charge for a large commercial property with relatively low water consumption.

	Consumption (m^3)	2017	2018 no SWC	2018 with SWC
SW charge				$231,988
Consumption Charge	203,000	$735,388	$772,157	$647,712
Total				$879,700
		Impact vs 2017	5%	20%

The example show in Table B6 is a 7.6 hectare property which is again almost completely impervious (73,542 m^2 of impervious area), but which has high water consumption. In 2018, this property would be charged:

- $3,738,716 for its water use with no stormwater charge (5% more than in 2017), or
- $3,136,210 for its water use plus a $57,664 stormwater charge for a total of $3,193,874 (10% *less* than in 2017).

Table B6 – Specific stormwater charge for a large industrial property with high water consumption.

	Consumption (m^3)	2017	2018 no SWC	2018 with SWC
SW charge				$57,664
Consumption Charge	1,402,503	$3,560,682	$3,738,716	$3,136,210
Total				$3,193,874
		Impact vs 2017	5%	-10%

Properties within this group would include many manufacturers within Toronto. Because the stormwater charge would decrease the rate for water consumption, it may make Toronto more attractive to manufacturers that use high volumes of water.