

Stormwater Funding Review

Funding Option Evaluation

City of Hamilton

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Prepared for:

City of Hamilton

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Executive Summary

Like many municipalities across Canada, the City of Hamilton (the “City”) is reviewing its stormwater funding model, which is mainly supported by its water/wastewater utility with contributions from the general tax levy (property tax). The City wishes to investigate a range of funding options that would provide a sustainable and equitable source of funding.

This report summarises municipal stormwater funding options available to the City of Hamilton, describes which options are used by other, similar, municipalities, provides an evaluation of the various options and makes a recommendation for the City to move forward. The evaluation is based on the following Guiding Principles that were endorsed by the City of Hamilton’s General Issues Committee on November 30, 2022:

- Fair and Equitable;
- Climate Resilient and Environmentally Sustainable;
- Affordable and Financially Sustainable;
- Justifiable; and
- Simple to Understand and Manage.

Based on our evaluation of stormwater funding models, we recommend that the City consider an imperviousness-based stormwater user fee with a financial incentive program. Due to the range of residential types in Hamilton determined during our parcel analysis, we recommended that the City consider a ‘Single Family Unit Stormwater Rate’ where different residential types pay different amounts based on their average footprint. This results in residential types with a smaller ‘footprint’ (e.g., duplex or condo) paying less than a single-family detached home. Industrial, commercial, institutional and the largest residential (e.g., high-rises) properties would pay based on their actual impervious area which would be measured using aerial photography. This type of funding model follows the ‘user-pay’ principle which forms the basis for the City’s water and wastewater rate structure. It encourages development to limit the amount of impervious surface area, resulting in reduced runoff. This will be particularly beneficial in combined sewer areas and also encourages low impact development and the use of green infrastructure.

The following table provides a summary of the qualitative stormwater funding option evaluation. A red ‘X’ indicates that the funding model does not support the specific Guiding Principle, a yellow hatched circle indicates that the funding model somewhat supports the Guiding Principle, and a green checkmark indicates that the funding model supports the Guiding Principle well.

Within the body of the report, one can also find the quantitative assessment of stormwater funding options, including the parcel and rate analysis.

Table 1: Comparison of Stormwater Funding Options

Stormwater Funding Model	Used By	Stormwater Rate Based On	Fair & Equitable	Climate Resilient	Environmentally Sustainable	Affordable	Financially Sustainable	Justifiable	Simple to Understand & Manage
General Tax Levy	Brantford	Assessed value	✗	✗	✗	⦿	✗	✗	✓
Dedicated Tax Levy (Markham)	Markham	Assessed value	✗	✗	✗	⦿	⦿	✗	✓
Water/Wastewater Rate (Hamilton, Toronto)	Hamilton Toronto	Water consumption	✗	⦿	✗	⦿	⦿	✗	✓
Stormwater Rate – Tiered Flat Fee	Ottawa Vaughan London	Property type, size	✗	⦿	⦿	⦿	✓	⦿	⦿
Stormwater Rate – Equivalent Residential Unit	Guelph	Impervious area (but all residential types pay the same)	⦿	✓	✓	⦿	✓	✓	⦿
Stormwater Rate – Single Family Unit	Barrie	Impervious area (but all single family dwellings pay the same)	✓	✓	✓	⦿	✓	✓	⦿
Stormwater Rate – Tiered Single Family Unit	Mississauga Kitchener	Impervious area	✓	✓	✓	⦿	✓	✓	✗

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1. Introduction

Like many municipalities across Canada, the City of Hamilton (the “City”) is reviewing its current stormwater funding model, which is mainly supported by its water/wastewater rate with contributions from the general tax levy (property tax). As per the Canadian Infrastructure Benchmarking Initiative (nationalbenchmarking.com), the City’s water and wastewater rates are currently lower than the national average but annual increases of 10% are projected over the next decade.

The City wishes to investigate a range of funding options that provide a sustainable and equitable source of funding. This study was a recommendation in the City’s Flooding and Drainage Improvement Framework (PW22071-Appendix C.pdf).

This report summarises municipal stormwater funding options available to the City of Hamilton, describes which options are used by other, similar, municipalities and provides an overall evaluation of the various options. The evaluation is based on the following Guiding Principles that were endorsed by the City of Hamilton’s General Issues Committee on November 30th:

- Fair and Equitable;
- Climate Resilient and Environmentally Sustainable;
- Affordable and Financially Sustainable;
- Justifiable; and
- Simple to Understand and Manage.

2. Funding Options

2.1 Overview of Funding Mechanisms

To support current and future stormwater management needs, there are five general mechanisms for funding the major components of municipal stormwater management programs in North America, including:

1. Taxes, which are mandatory levies authorized through legislation, collected by a public body, and not related to any specific benefit or government service (i.e., these are for general services to support the public good);
2. Fees and special charges, which are payments made to offset the cost of a specific service and payable by those people who benefit from the service (includes stormwater rates);
3. Special levies that have specific designations and limitations for usage;
4. Other means such as public-private partnerships, federal or provincial economic stimulus grants for infrastructure investment, debentures, and long-term debt-financing strategies; and
5. A combination of the above.

Property taxes are the primary source of funding for stormwater management programs in Canada, although stormwater rates are becoming increasingly used. Details of the most common stormwater management funding mechanisms are presented below and described in more detail in the following sections.

1. Property Tax - general tax fund and dedicated levy;
2. Development Related Charges and Fees;
3. Grants;
4. Stormwater Rate; and
5. Water/Wastewater Rate.

Most Ontario municipalities, including the City of Hamilton, manage and fund municipal drains separately, through provisions of the Drainage Act. The proposed new stormwater funding model will not impact how the City manages and funds municipal drains.

2.2 Property Tax

2.2.1 General Tax Fund

Local property taxes are typically the most common revenue source to support municipal stormwater management programs in Canada and is one of the funding sources for the City of Hamilton's stormwater management program. Revenue derived from the municipality's general tax levy goes into a general fund which covers the operating and capital expenditures of most municipal services. Property tax is determined based on the property value assessment multiplied by the applicable tax rate which depends on the classification of the property.

Property tax rates are established on an annual basis by Canadian municipalities to meet their projected funding needs and in consideration of the total current value assessment of all taxable properties within their jurisdiction. Several municipalities have a capping adjustment program that limits tax payments for selected property types (e.g., Commercial, Industrial and Multi-Residential Properties).

Tax-exempt properties generally do not contribute tax funds to the municipality's stormwater management stormwater management program. Tax-exempt properties include governmental parcels (e.g., municipal, regional, provincial, and federal buildings) as well as institutional parcels (e.g., schools, hospitals, and churches) and other charitable organizations that are registered with the Canada Revenue Agency and therefore exempt from taxation under the Income Tax Act.

Some municipalities charge a core service fee or tax-like payment to tax-exempt properties. For example, the federal government administers the Payments in Lieu of Taxes program which distributes funds on behalf of eligible tax-exempt institutions to property taxing authorities to compensate for valuable services such as stormwater management, police protection, fire protection, waste disposal and roads. If the City were to move to a stormwater charge for tax exempt federal properties, then the City would need to review how it distributes Payments in Lieu of Taxes payments.

If a municipality funds their stormwater management program through the General Tax Levy, then any desired increases in stormwater expenditures would require increasing taxes or decreasing spending in other areas that are funded through property taxes (e.g., parks, police, roads etc.).

Example Municipality: Many municipalities including the City of Brantford

2.2.2 Dedicated Tax Levy

A dedicated levy can be administered specifically to raise revenue for stormwater services, such that a fixed property tax rate is applied and itemized on the property owner's annual tax bill. A by-law would be required to dedicate these funds specifically to stormwater management. As with the general tax fund, money to support the stormwater management program comes from the City's overall tax rate and is not dedicated until the annual budget is set each year. Tax exempt properties would not contribute to a dedicated tax levy.

Example Municipality: City of Markham for non-residential properties

2.2.3 Advantages and Disadvantages

Funding a municipal stormwater management program through property taxes offers several advantages, including:

- Property-tax-based revenues are already accepted as the primary existing source of revenue for municipalities;
- Can be used to fund all stormwater management program activities; and
- The billing system already exists and is well established.

Funding a municipal stormwater management program through property taxes presents several disadvantages, including:

- Property taxes are based on a property's assessed value, which does not typically correlate with its runoff contribution, so the fairness and equity of this revenue source is low;
- Unpredictable. Except in the case of a dedicated tax levy, funding is not dedicated to stormwater and can be diverted to other municipal services;
- There is no incentive for property owners to reduce stormwater runoff and pollutant discharge which could potentially reduce City costs in the operation and renewal of the stormwater system;
- Tax-exempt properties, even those that are major producers of stormwater runoff, contribute very little (i.e., through payments in lieu of taxes) or nothing to support the stormwater management program; and
- Council and residents are sensitive to tax increases and the ability to increase funding is constrained.

2.3 Development Related Charges and Fees

2.3.1 Development Cost Charges

Municipalities are authorized to pass by-laws for the recovery of costs incurred to provide services to support growth. Development charges are a one-time cost that can only be utilized to fund eligible growth-related capital costs, and only for the services for which they were collected. The City of Hamilton uses development charges to fund capital costs related to growth but cannot use development charges for other aspects of its stormwater management program.

2.3.2 Cash-in-lieu Charges

In areas where there is the potential for re-development/infill, and on-site stormwater management facilities are required but deemed infeasible (e.g., insufficient land for sedimentation basin) contributions to off-site stormwater management facilities can be allocated in the form of a cash-in-lieu policy. Like development charges, the rates are based on the area of development (or number of dwelling units) and area-specific rates can be determined for different geographic locations within the community. Unlike development charges however, revenue derived from cash-in-lieu charges can be applied to both capital and O&M costs of stormwater management facilities. Cash in lieu charges are not typically the only source of stormwater funding but are used to complement other sources of funding.

2.3.3 Advantages and Disadvantages

Funding a municipal stormwater management program through development related charges offers several advantages, including:

- Accepted by the development community;
- Charges are based on contributing area, which is more equitable than property value; and
- This funding system exists and is well established within Hamilton.

Funding a municipal stormwater management program through development related charges offers several disadvantages, including:

- Charges are limited by the amount of developable land within the municipality and funds can only be used to support growth related projects;
- Directly dependent on growth and growth rates; and

- Development charges are limited to the capital costs associated with future development and cannot be used for O&M or most infrastructure renewal costs (except in the case of cash-in-lieu charges).

Example Municipality: City of Hamilton for some growth-related stormwater management (similar to most municipalities)

2.4 Grants

Funding opportunities for stormwater management projects are possible through grants to municipalities from a variety of governmental sources. Grant programs are often very competitive, based on project merits, and in many cases require matching funds. Grants also tend to be time-limited and not a reliable or predictable ongoing funding source. To be successful, the municipality must be proactive to take advantage of grant programs when available. Communities with an identified revenue stream will be in a better position to compete for and use the grant funds as they become available. Grant funding options include:

- Earmarked money from provincial/federal capital budgets including direct grants or gas tax revenues allocated to municipalities;
- Federal infrastructure funding programs;
- The federal government, through the Federation of Canadian Municipalities, has established grant funding under the Green Municipal Fund that could be used to support municipal governments and their partners in developing communities that are more environmentally, socially and economically sustainable (note: eligible projects may include feasibility studies, field tests, sustainable community plans, and capital projects that demonstrate leadership in sustainable development and serve as examples for other communities); and
- Research grants, typically in conjunction with a local university or other partners.

Grants are a useful mechanism for paying for some stormwater projects, particularly capital projects. City of Hamilton has received some grant funding in the past, including over \$12 million from the federal government in 2019 to increase the City's resilience to climate change. However, since grants are generally unpredictable, grant funding is best suited for specific stormwater upgrade projects rather than for ongoing capital renewal.

Example Municipality: City of Hamilton for specific projects

2.5 Stormwater Rate

A stormwater rate is a financing mechanism that allocates costs to individual properties based upon a “user pay” formula, in a similar fashion as a water/wastewater rate. This is known as a stormwater utility in the U.S.

The principal advantage associated with a stormwater rate (except for the flat fee option) is that all parcels can be assessed a user fee that reflects their relative stormwater contribution to the municipal stormwater management system, including tax-exempt properties (e.g., places of worship, provincial and federal agencies, and other tax-exempt buildings and entities). The concept of charging a ‘usage-based fee’ to tax exempt properties is applied by water and sewer utilities.

Applying a user pay approach to water is simple, it is based on the amount of water one consumes, which is commonly measured continually through a meter. Applying a user pay approach to stormwater is slightly more challenging because you cannot continually measure the amount and quality of stormwater runoff from a property. However, you can approximate the amount of stormwater runoff by measuring or estimating the amount of impervious surface within a property. This will be discussed in more detail further on.

It is important to note that there is a large range of stormwater rates across Canadian municipalities. Some of them are very simple and are not proportional to the amount of stormwater runoff from a property (i.e., Calgary’s flat fee option), some of them are fairly simple and are loosely related to the amount of stormwater runoff from a property (i.e., London’s tiered flat fee option), whereas others are based on actual or estimated imperviousness and are therefore more proportional to the amount stormwater runoff from a property (i.e., Mississauga and Kitchener’s impervious based rate). In other words, some stormwater rates closely resemble a “user-pay” approach, whereas other stormwater rates do not really apply “user-pay” principles. Stormwater rates that apply a “user-pay” approach (i.e., impervious based rate) are considered more equitable but some municipalities prefer a simpler approach (i.e., flat fee option).

The fee for a stormwater rate is typically applied on a monthly, bimonthly, or occasionally annual basis. The revenue generated through a stormwater rate can be used for any stormwater management program related costs.

The basic calculation for a stormwater rate is simply the municipal stormwater management program expense divided by the number of billing units within the municipality. How one allocates the number of billing units to each property depends on the type of stormwater rate selected (e.g., allocate billing units based on land use, property size or impervious area). The following types of stormwater rates (and hence

billing unit methods) have been used throughout North America and are listed in increasing order of equity.

1. Flat Fee (e.g., Markham residential properties, Calgary).
2. Variable Rate Based on Land use, Property Size and/or Value:
 - a) Tiered Flat Fee (e.g., Ottawa, London, Vaughan);
 - b) Runoff Coefficient (e.g., Newmarket); and
 - c) Intensity of Development Factor (e.g., Edmonton).
3. Variable Rate Based on Impervious Area:
 - a) Equivalent Residential Unit – all residential properties pay the same fee, but non-residential properties pay based on impervious area (e.g., Guelph);
 - b) Single Family Unit – different residential types pay different fees based on average footprint and non-residential properties pay based on impervious area (e.g., Barrie's pending new fee);
 - c) Tiered Single Family Unit – in addition to the Single Family Unit funding model, single family detached homes pay different rates based on their size (e.g., Kitchener and Mississauga);
 - d) Variable rate with geographical considerations (e.g., Ottawa which has different rates for rural and urban properties); and
 - e) Impervious area measured for every property (e.g., Victoria).

These types of rates listed above are described further in the remainder of Section 2.5.

2.5.1 Flat Fee

Under a flat fee funding model, the charge does not vary according to property usage (e.g., a charge of \$5 per month per water meter account).

Example: City of Calgary

2.5.2 Variable Rate – Based on Land Use/Property Size and/or Value

Industrial, commercial, institutional, and large multi-residential properties tend to have greater impacts on a municipal stormwater system than residential properties for two reasons:

1. They generally have more imperviousness resulting in higher peak flows and volumes of stormwater runoff; and

2. They generally include uses (such as surface parking) that create runoff with poor water quality.

Larger properties of a given land use also tend to have greater impacts on a municipal stormwater system for two reasons:

1. They generally require a greater length of network (e.g., fronting storm sewer or ditch to service the property); and
2. They generally have greater total imperviousness than other land uses of the same size.

Therefore, some municipalities, such as the cities of Edmonton, Vaughan, London, and Newmarket have decided that land use and/or property size is an appropriate approximation of a property's impact on the stormwater system and should form the basis to determine a stormwater rate for each property.

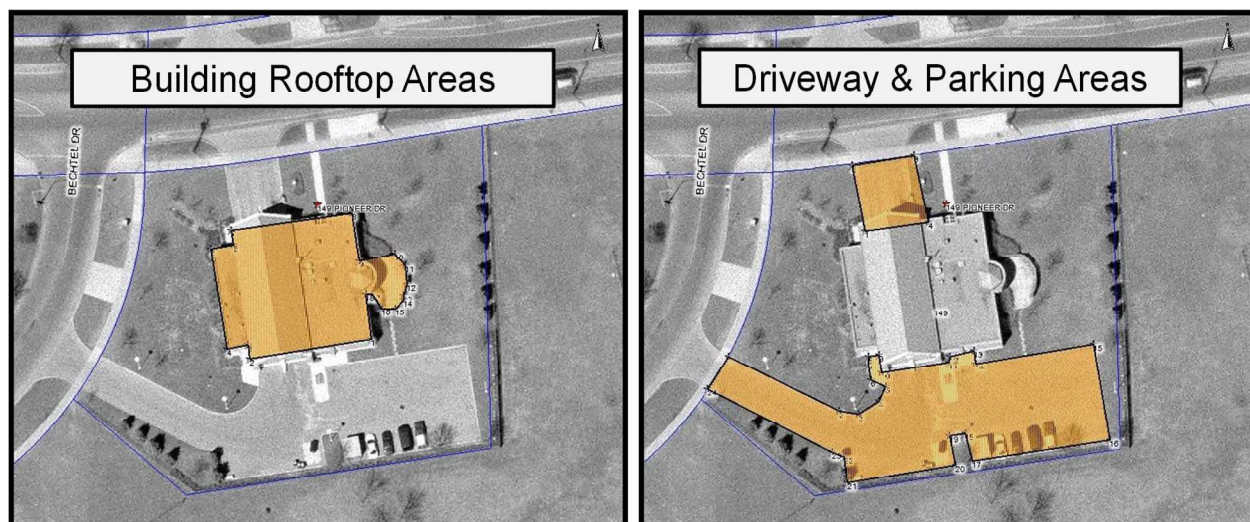
Three examples of a variable stormwater rate based on land use and property size that have been seen in Canada are:

1. **Tiered Flat Fee:** this extends the Flat Fee by offering different ratepayer categories (e.g., \$5 per month per residential property, and \$1,000 per year per commercial/industrial property). **Example:** City of London. The City of Vaughan has additional tiers that also consider property size and type of development (\$51 for low-density residential, \$33 for medium density residential, \$46 for non-residential properties less than an acre, \$1,187 for non-residential properties 1 to 10 acres etc.).
2. **Runoff Coefficient:** the charge varies by property size and an assumed stormwater runoff potential by property type. An example of this approach is the Town of Newmarket where they charge \$0.017 per m² for natural areas, \$0.082 per m² for residential/institutional properties and \$0.163 per m² for commercial, industrial, and mixed-use buildings.
3. **Intensity of Development Factor:** like the Runoff Coefficient billing method however adjustment factors are applied to account for the property's development status (e.g., a factor of 0.0 for undeveloped properties, 1.0 for fully developed properties, and a factor between 0.0 and 1.0 for properties considered to be underdeveloped within their underlying zoning category). **Example:** City of Edmonton

2.5.3 Variable Rate – based on imperviousness

A variable rate based on impervious area accounts for the contribution of stormwater runoff from each property to the local drainage system (e.g., ditches, sewers, and channels) and water quality control facilities. The area of impervious ground cover (e.g., rooftops, driveways, and parking lots) is typically used as the basis for the stormwater rate because impervious area is a common indicator of stormwater flow and pollution discharge potential. **Figure 1** illustrates the impervious area for a non-residential property, highlighting the building footprint in the left panel and the driveway and parking areas in the right panel. The sum of these areas within the lot boundary represents the total impervious area for this property.

Figure 1: Example of Impervious Areas



Canadian cities with variable stormwater rates based on impervious area include Kitchener, Waterloo, Saskatoon, Mississauga, Guelph, and Victoria. A stormwater rate based on impervious area offers a more equitable funding mechanism than other funding sources, because fees assessed to each parcel of land are based on runoff contribution to the municipal stormwater management system rather than property value or size.

There will be certain properties with characteristics such that increased imperviousness does not correlate to increased runoff. Examples include developments that disconnect their impervious areas from the storm sewer/drainage system (e.g., by discharging onto pervious surface areas or into porous media). Likewise, developments that incorporate source controls or private stormwater management facilities prior to discharge to the municipal collection system should be charged less than developments that do not

adopt best management practices. These two examples reflect the characteristics that will allow an effective credit policy to be developed to reflect the differences between developed properties and highlight the ability of users to reduce fees by implementing initiatives that reduce their stormwater impact.

The use of impervious area as the basis for setting a stormwater rate is supported by standard manuals of practice. These manuals confirm the use of impervious area as a technically sound, fair, and equitable basis for allocating stormwater management program costs, and include the Water Environment Federation's *User-Fee-Funded Stormwater Utilities*. There are about one dozen municipalities in Canada with stormwater rates based on impervious area, and over 700 stormwater user fees across the U.S. based on measured impervious area.

The average impervious area per residential property is typically designated as the base 'billing unit' for the user fee structure. The impervious area of non-residential properties is then calculated as a factor of this base 'billing unit'. For example, if a commercial parcel has four times the impervious area of an average residential property, then the commercial parcel is charged '4 billing units' or four times the rate of a residential property.

There are many ways to develop a stormwater rate based on impervious area. Outlined below are five methods that are listed in increasing order of accuracy, complexity, and equity:

a) Equivalent Residential Unit:

All residential properties are charged the same fee based on an average impervious area and non-residential properties are charged based on actual measured impervious area. The residential fee is determined by a statistical sampling of measured impervious area for all types of residential dwelling units to determine the average Equivalent Residential Unit size (i.e., square metres of impervious area for the average residential dwelling). The average Equivalent Residential Unit size then becomes the base billing unit. Each residential property (regardless of density) is assigned one stormwater billing unit and charged the same fee. Given the wide variability in impervious area statistics for non-residential properties, the impervious area for each non-residential property is measured. The charge for non-residential properties is determined by dividing the measured impervious area by the average Equivalent Residential Unit size. **Example:** City of Guelph

b) Single Family Unit:

Residential properties are charged based on averages of different residential types and non-residential properties are charged based on actual measured impervious area. A statistical sampling of measured

impervious area for single-family detached homes is performed to determine the average Single Family Unit size (i.e., square metres of impervious area for the average single-family detached home). The average Single Family Unit size becomes the base billing unit with one stormwater billing unit assigned to each single-family detached home. Fractional billing units are assigned to other residential property types based on statistical sampling of their measured impervious area. Multi-family residential properties such as apartments, condominiums, and townhouses have a smaller footprint than single-family detached homes and would therefore be charged less than single-family detached homes. Given the wide variability in impervious area statistics for non-residential properties, the impervious area for each non-residential property is measured. The charge for non-residential properties is determined by dividing the measured impervious area by the average Single Family Unit size. One concern with this approach is that all condos pay the same based on the average condo footprint. Given that high rises have a very small footprint per dwelling unit, the City may want to consider treating high rises similar to non-residential properties, where the parcel is measured and assessed individually. This is feasible as the City has less than 1,000 parcels that could be considered as 'high-rise'. **Example:** City of Windsor's pending new stormwater rate

c) Tiered Single Family Unit:

The Tiered Single Family Unit billing unit method extends the Single Family Unit method by accounting for the variability in impervious area among single-family detached homes. Single family detached homes are charged different rates depending on which "tier" they fall into (e.g., small, medium, and large). **Example:** Cities of Kitchener and Mississauga

d) Geography Base:

the Equivalent Residential Unit and Single Family Unit billing unit methods can be extended to include separate rate structure calculations that vary by geographical boundaries. Some municipalities choose to have a lower rate in rural areas where there is a perceived lower level of service, even when this perception isn't accurate. **Example:** City of Ottawa

e) Impervious Area Measurement (Complete Coverage):

the most accurate of all billing unit methods is to measure the impervious area of all properties within a given jurisdiction. Closest example is the *City of Victoria* which uses building footprint for residential and measured imperviousness for non-residential properties. The City of Victoria has approximately 34,000 parcels.

As noted above, the methods listed are in increasing order of accuracy with respect to allocating charges among property types based on relative contribution of stormwater runoff and pollutant loading. However, with increasing accuracy the cost to develop and manage the stormwater rate also increases.

2.5.4 Advantages and Disadvantages

Funding a municipal stormwater management program through a stormwater rate offers several advantages, including:

- Dedicated funding source;
- Fair and equitable fee that is based on runoff contribution rather than property value (this will vary based on the type of stormwater rate selected);
- Costs for municipal stormwater management services are distributed to all privately and publicly owned developed properties within the municipality (i.e., includes tax exempt properties);
- With a credit program, provides an incentive for property owners to reduce stormwater runoff and pollutant discharge. Reducing the rate of stormwater runoff is particularly important in the City's combined sewer areas;
- A stable funding source for all stormwater management program activities to allow for long-range planning, large-scale capital improvements, and leverage for debentures;
- A mechanism to ensure privately owned stormwater management infrastructure is properly maintained; and
- Can take a variety of forms to tailor to a municipality's desire for simplicity or accuracy.

Funding a municipal stormwater management program through a stormwater rate presents several disadvantages, including:

- Additional implementation costs (e.g., rate study, database management, billing, and customer service). These costs would depend on the type of rate structure selected and the City's Geographic Information and billing systems;
- The need to update the billing system as properties redevelop; and
- Pushback from members of the public who do not want to see a "new fee".

Implementation costs for database management are typically less for municipalities like Hamilton that have a high-quality, established Geographic Information Systems and a soon to be newly established billing system.

We are aware of 20 to 30 municipalities across Canada that have either implemented or are in the process of implementing a stormwater rate (e.g., user fee).

2.6 Water/Wastewater Rate Surcharge

Historically, the earliest type of user fee for a public works utility was potable water, a consumption-based service. Not surprisingly, the earliest form of a user fee for a disposal-based service was wastewater. Many Ontario municipalities fund all or a portion of their wastewater programs through a rate surcharge added on the water utility bill. However, some municipalities, including the City of Hamilton, also fund all or a portion of their stormwater programs through a rate surcharge added on the water utility bill. **Example:** City of Hamilton.

2.6.1 Advantages and Disadvantages

Tracking revenue transfers can be complicated for municipalities that use a water rate surcharge to offset stormwater program costs. In addition, the fairness and equity of allocating stormwater costs based on water consumption might be challenged as it bears little relation to the amount of stormwater runoff generated from a property. Furthermore, since the wastewater charge and any related surcharges are based on water metering, there may be properties such as parking lots that would not contribute to stormwater management costs through a water rate even though they may generate significant stormwater runoff and pollutants. In addition, the City of Hamilton has thousands of properties not connected to the municipal water or wastewater system and would therefore not be contributing to stormwater management through their water/wastewater rate.

2.7 Comparison of Funding Options

The main funding options explored in this memo were evaluated using the following Guiding Principles that were endorsed by the City of Hamilton's General Issues Committee on November 30, 2022:

- **Fair and Equitable:**

- Customer contributions are proportional to their impact on the system and the cost to run the system (i.e., user-pay).
- User fees are non-discriminatory amongst customers and sectors.

■ **Climate Resilient and Environmentally Sustainable:**

- Encourages customers to become more resilient to climate change through adoption of on-site controls to reduce runoff, while providing the City with funding needed to increase system level stormwater resiliency and protect natural resources and waterbodies from the impacts of stormwater and the harmful pollutants it carries.

■ **Affordable and Financial Sustainable:**

- Provides sustainable, predictable, and dedicated funding.
- Uses full cost pricing to meet entire stormwater revenue needs at the City's desired level of service.
- Allows for regular fee reviews to keep pace with changes in the cost-of-service delivery or desired service levels.
- Allows the City to address infrastructure deficiencies and unfunded liabilities.
- Considers the financial impact on various customer sectors and is comparable with other municipalities.

■ **Justifiable:**

- Residents and businesses understand how much they contribute to stormwater management and for what the money is being used.
- Customers have been consulted and involved in the decision-making process, particularly those that will be most affected.
- Consistent with best practices and applicable laws to guarantee that the funding structure is justifiable and transparent if challenged.

■ **Simple to Understand and Manage:**

- Readily understood by staff, Council, and customers.
- Efficiently maintained by City's staff.

The following table provides a summary of the stormwater funding option evaluation. A red 'X' indicates that the funding model does not support the specific Guiding Principle, a yellow hatched circle indicates that the funding model somewhat supports the Guiding Principle, and a green checkmark indicates that the funding model supports the Guiding Principle well. It is clear from the table that the stormwater funding models that best align with the Council approved Guiding Principles are the three impervious based stormwater rates (Equivalent Residential Unit, Single Family Unit and Tiered Single Family Unit). It was then decided to proceed with the quantitative assessment (property and rate analysis) to better evaluate those three funding models. The results of the quantitative assessment are provided in the following sections of the report.

Table 2: Comparison of Stormwater Funding Options

Stormwater Funding Model	Used By	Stormwater Rate Based On	Fair & Equitable	Climate Resilient	Environmentally Sustainable	Affordable	Financially Sustainable	Justifiable	Simple to Understand & Manage
General Tax Levy	Brantford	Assessed value	✗	✗	✗	⦿	✗	✗	✓
Dedicated Tax Levy (Markham)	Markham	Assessed value	✗	✗	✗	⦿	⦿	✗	✓
Water/Wastewater Rate (Hamilton, Toronto)	Hamilton Toronto	Water consumption	✗	⦿	✗	⦿	⦿	✗	✓
Stormwater Rate – Tiered Flat Fee	Ottawa Vaughan London	Property type, size	✗	⦿	⦿	⦿	✓	⦿	⦿
Stormwater Rate – Equivalent Residential Unit	Guelph	Impervious area (but all residential types pay the same)	⦿	✓	✓	⦿	✓	✓	⦿
Stormwater Rate – Single Family Unit	Barrie	Impervious area (but all single family dwellings pay the same)	✓	✓	✓	⦿	✓	✓	⦿
Stormwater Rate – Tiered Single Family Unit	Mississauga Kitchener	Impervious area	✓	✓	✓	⦿	✓	✓	✗

3. Parcel Analysis

3.1 Quantity of Property Types

The number of properties by property type in the City of Hamilton was determined using Municipal Property Assessment Corporation land use codes and is summarized in the following table.

Table 3: Number of Parcels by Property Type

Land Use	Number of Parcels	Total Estimated Impervious Area (Sq. meters)	Number of Dwelling Units	% of Total Parcels	% of Total Dwelling Units
Residential					
Residential SFD (in Urban Boundary)	113,597	33,110,498.42	113,597	69%	53%
Residential SFD (outside Urban Boundary)	9,309	5,551,322.19	9,309	6%	4%
Residential Semi Detached	6,838	1,167,538.69	6,838	4%	3%
Residential Duplex	2,210	503,381.46	4,420	1%	2%
Residential Triplex	801	202,466.34	2,403	0%	1%
Residential Fourplex	272	87,603.62	1088	0%	1%
Residential Fiveplex	87	34,109.69	435	0%	0%
Residential Sixplex	134	58,864.88	804	0%	0%
Residential Link Home	1239	276,441.33	1239	1%	1%
Residential Townhouse (Freehold)	11722	1,645,414.39	11722	7%	5%
Residential MultiFamily - Building	683	1,562,650.15	33162	0%	16%
Residential MultiFamily - Towns	143	685,413.15	5266	0%	2%
Residential Condo - Standard - Building	149	619,420.25	10288	0%	5%
Residential Condo - Standard - Detached	31	118,921.13	408	0%	0%
Residential Condo - Standard - Towns	402	1,968,400.72	12350	0%	6%
Residential Totals	147,617	47,592,446	213,329	89%	100%
Other					
Nonresidential (and Nonresidential Condo)	7,719	48,100,000	-	5%	
Mixed Use (and Mixed Use Condo)	4,244	8,500,000	2,875	3%	
Miscellaneous	738	800,000	3,470	0%	
Undeveloped	5,058	-	-	3%	
Other Totals	17,759	57,400,000	6,345	11%	
GRAND TOTAL	165,376	104,992,446	219,674	100%	

Important observations from the property analysis include:

- 89 percent of the parcels are residential. Therefore, a financial model that required individual assessment of all/most residential properties would be labour intensive.
- Only 11 percent of the parcels are not residential. Therefore, a financial model that required individual assessment of all/most non-residential properties would not be too labour intensive or costly to develop and maintain.

- 75 percent of the parcels are single family dwellings. Therefore, a financial model that required individual assessment of all/most single-family dwellings would be labour intensive and costly to develop and maintain.
- There is a large range of residential property types. 57 percent of the dwelling units are single family dwellings, but 43 percent represent other residential types. Therefore, a financial model that treated all residential properties the same would not be equitable.

The photos below show examples of the different residential types that can be found in the City of Hamilton, including a detached home outside the urban boundary.

Photo 1: Small Detached Home



Photo 3: Large Detached Home



Photo 2: Medium Detached Home

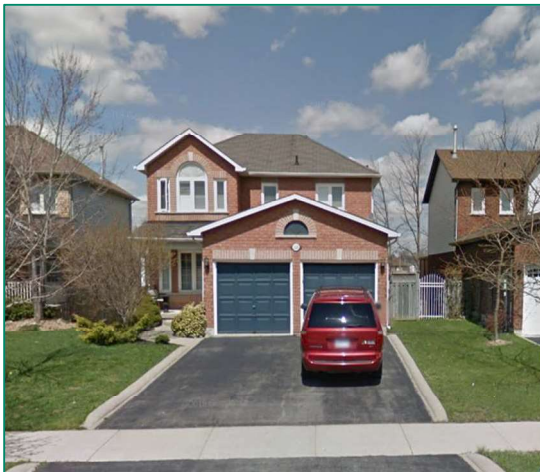


Photo 4: Detached Home Outside UB



Photo 5: Semi Detached



Photo 8: Plex

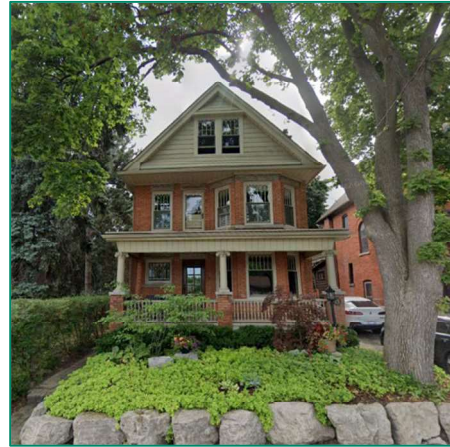


Photo 6: Link



Photo 9: Multifamily



Photo 7: Townhome

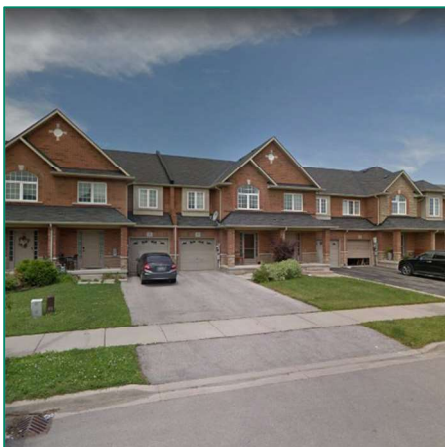


Photo 10: Condo



3.2 Average Impervious Area by Residential Property Types

The next step in the quantitative assessment is to determine the average impervious area by residential property type by sampling a statistically significant number of properties. The table below shows the number of properties sampled.

Table 4: Number of Residential Properties Sampled

Residential Land Uses	# of Parcels	% of Total Parcels	# of Dwelling Units	% of Total Dwelling Units	# of Units/ Parcels Sampled
Residential SFD (in Urban Boundary)	113,597	77.0%	113,597	53.2%	349/349
Residential SFD (outside Urban Boundary)	9,309	6.3%	9,309	4.4%	315/315
Residential Semi Detached	6,838	4.6%	6,838	3.2%	302/302
Residential Duplex	2,210	1.5%	4,420	2.1%	448/224
Residential Triplex	801	0.5%	2,403	1.1%	258/86
Residential Fourplex	272	0.2%	1088	0.5%	148/37
Residential Fiveplex	87	0.1%	435	0.2%	85/17
Residential Sixplex	134	0.1%	804	0.4%	156/26
Residential Link Home	1239	0.8%	1239	0.6%	133/133
Residential Townhouse (Freehold)	11722	7.9%	11722	5.5%	312/312
Residential MultiFamily - Building	683	0.5%	33162	15.5%	4092/79
Residential MultiFamily - Towns	143	0.1%	5266	2.5%	747/24
Residential Condo - Standard - Building	149	0.1%	10288	4.8%	1760/24
Residential Condo - Standard - Detached	31	0.0%	408	0.2%	
Residential Condo - Standard - Towns	402	0.3%	12350	5.8%	1736/48
	147,617	100%	213,329	100%	10841/1976

The average impervious area by residential property type is shown in the following table. Impervious area is considered as anything that does not permit the natural infiltration of rainwater into the ground. It includes rooftops, asphalt (e.g., driveways), compacted gravel (e.g., gravel that is regularly driven on by motor vehicles), concrete (e.g., walkways) and pavers (unless they are designed for infiltration).

The table also shows the ratio of average impervious area by property type compared to the most common residential type - the average single-family detached dwelling within the urban boundary. If we assign the single-family detached dwelling within the urban boundary one single family unit (which will equate to one billing unit), then the other property types are assigned a single family unit value based on their relative impervious area.

Table 5: Average Impervious Area by Residential Property Type

HAMILTON Land Use Analysis				
Land Use	Number of Parcels	Number of Dwelling Units	EST. Impervious Area Per Unit (Sq. meters)	SFU Values
Residential SFD (in Urban Boundary)	113,597	113,597	291.00	1.00
Residential SFD (outside Urban Boundary)	9,309	9,309	596.00	2.05
Residential Link Home	1,239	1,239	223.00	0.77
Residential Semi Detached	6,838	6,838	171.00	0.59
Residential Townhouse (Freehold)	11,722	11,722	140.00	0.48
Residential Condo	582	23,046	117.00	0.40
Residential Duplex	2,210	4,420	114.00	0.39
Residential Triplex	801	2,403	84.00	0.29
Residential Fourplex	272	1,088	81.00	0.28
Residential Fiveplex	87	435	78.00	0.27
Residential Sixplex	134	804	73.00	0.25
Residential MultiFamily	826	38,428	58.00	0.20
Residential Totals	147,617	213,329		

Important observations from the residential impervious area sampling are listed below.

- The average rural single-family detached dwelling has twice the impervious area as the average urban single family detached dwelling.
- There is a large range in impervious area per dwelling unit so a funding model where all dwelling units paid the same would not be equitable.
- Certain types of dwelling units have similar impervious area per unit (e.g., triplex, fourplex and fiveplex) and could be “grouped” to limit the number of residential categories and simplify the funding model.

Due to the range of residential property types and the differences in impervious area, it was determined that an Equivalent Residential Unit funding model where each dwelling unit pays the same, would not be equitable. Therefore, the analysis continued with the Single Family Unit (where all single family detached homes pay the same but multi-residential units pay less based on their average footprint) and the tiered Single Family Unit (where single family detached homes are put into different tiers based on their size). To limit administrative efforts, Single Family Unit based funding models will often group similar residential categories into the same ‘class’. Based on the impervious area sampling, we worked with City staff to identify four proposed residential classes for the City of Hamilton. These classes, which are shown by colour code in the following table, can be described as follows:

- All single family detached homes, linked homes and detached condos pay one billing unit per dwelling unit;
- All semi-detached, townhouses, multi-family homes in towns, condos in towns and duplexes pay 0.5 billing units per dwelling unit;

- All multi-plexes pay 0.3 billing units per dwelling unit; and
- All high-rises (i.e., multifamily and condo buildings) and mixed-use properties (e.g., condos over a commercial unit) are assessed individually. There are not many of them but individual assessment would lead to a more equitable assessment of these dense forms of development.

Table 6: Proposed Residential Classes for a Single Family Unit Based Model

Parcel Type	Number of Parcels	Dwelling Units (d.u.)	Est'd Impervious Area (m ²)		Calculated SFU Factor	Assigned SFU Factor
			Total	Avg/d.u.		
Residential SFD (in Urban Boundary)	113,597	113,597	33,110,498	291.47	1.00	1.00
Residential SFD (outside Urban Boundary)	9,309	9,309	5,551,322	596.34	2.05	1.00
Residential Link Home	1,239	1,239	276,441	223.12	0.77	1.00
Residential Condo - Standard - Detached	31	408	118,921	291.47	1.00	1.00
Residential Semi Detached	6,838	6,838	1,167,538	170.74	0.59	0.50
Residential Townhouse (Freehold)	11,722	11,722	1,645,414	140.37	0.48	0.50
Residential MultiFamily - Towns	143	5,266	685,413	130.16	0.45	0.50
Residential Condo - Standard - Towns	402	12,350	1,968,400	159.38	0.55	0.50
Residential Duplex	2,210	4,420	503,381	113.89	0.39	0.50
Residential Triplex	801	2,403	202,466	84.26	0.29	0.30
Residential Fourplex	272	1,088	87,603	80.52	0.28	0.30
Residential Fiveplex	87	435	34,109	78.41	0.27	0.30
Residential Sixplex	134	804	58,864	73.21	0.25	0.30
Residential MultiFamily - Building	683	33162	1,562,650	47.12		assessed individually
Residential Condo - Standard - Building	149	10288	619,420	60.21		assessed individually
Residential Subtotal	147,617	213,329	47,592,440			45%
Industrial/Comm/Institutional	7,719	n/a	48,100,000	n/a	n/a	n/a
Miscellaneous	738	3,470	800,000			
Mixed Use (and Mixed Use Condos)	4,244	2,875	8,500,000			
Non-Residential Subtotal	12,701		57,400,000			55%
Undeveloped	5,058		0			0%
Total	165,376		104,992,440			100%

We reviewed the range of impervious area amongst single family detached homes and compared it with other municipalities; the results of which are shown in the following table. More specifically we looked at the:

- 10th percentile: the size below which 10% of the City's smallest single family detached homes lie;
- 50th percentile: also known as the average or the mean; and
- 90th percentile: the size above which 10% of the City's largest single family detached home lie.

Table 7: Impervious Area of Single Family Detached Homes Across Ontario (m²)

Parcel Type	Ajax	Barrie	Guelph	Thunder Bay	Waterloo	Brantford	Sault Ste Marie	Kitchener	Stratford	Markham	Hamilton	Mississauga	Ottawa
Smallest 10%	143	160	175	161	164	163	194	168	181	188	160	184	118
Average	229	236	250	303	266	259	328	259	283	294	312	267	249
Largest 10%	317	314	328	469	353	365	505	344	399	448	478	364	373
90/10 ratio:	2.2	2.0	1.9	2.9	2.2	2.2	2.6	2.0	2.2	2.4	3.0	2.0	3.2

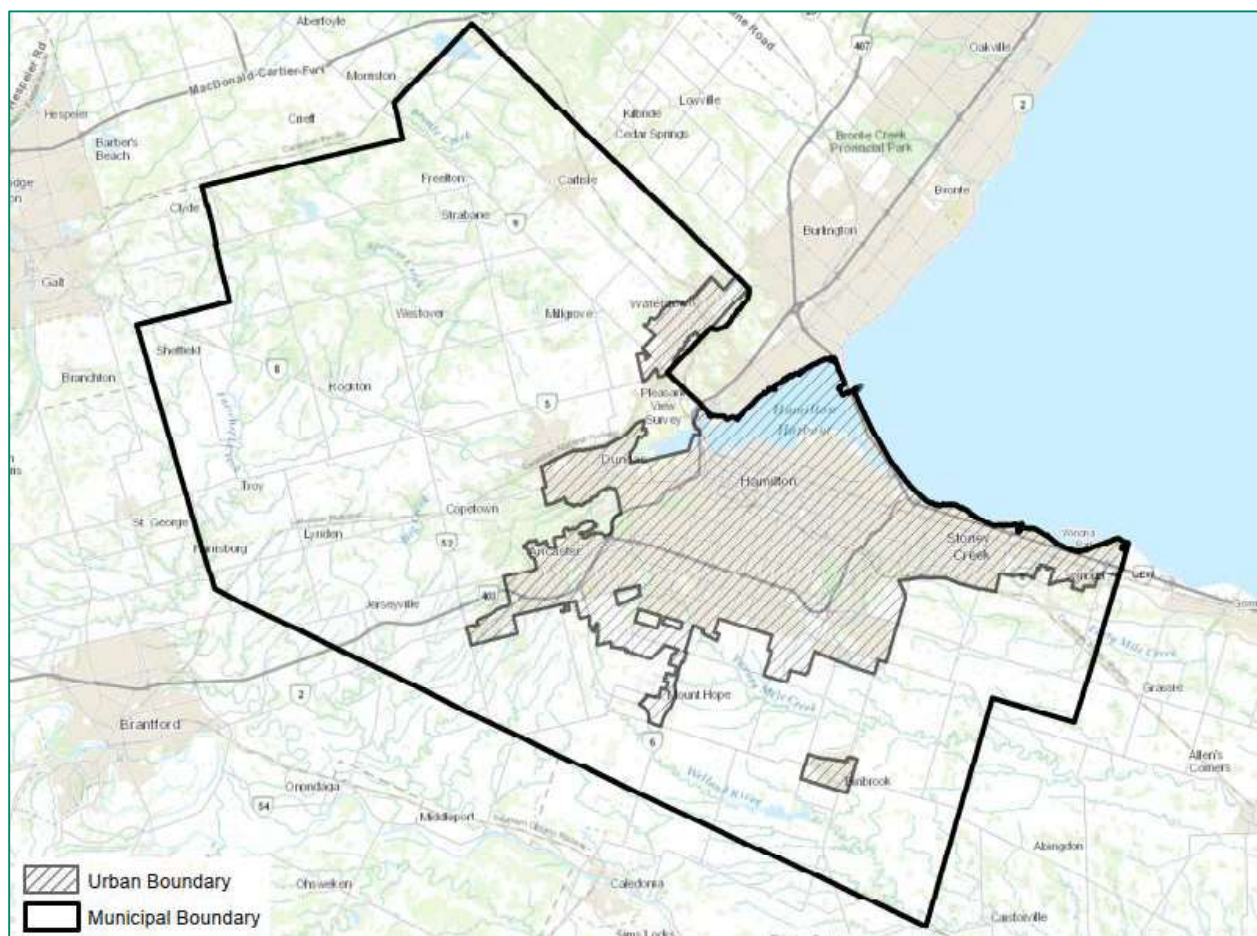
We found that in the City of Hamilton the 90th percentile was three times larger than the 10th percentile. This means that the largest ten percent of the homes are at least three times larger than the smallest ten percent of the homes. This spread between the largest and smallest homes is the second largest amongst Ontario municipalities measured. Only Ottawa had a larger spread. We also found that the average Hamilton single family detached home is the second largest amongst Ontario municipalities measured. Only Sault Sainte Marie had a larger average single family detached home.

Using the City's aerial photography, we estimated the amount of impervious area amongst non-residential properties. We found that 55 percent of the City's total impervious area was within non-residential properties.

3.3 Rural vs Urban Analysis

As can be seen in the following figure, the City of Hamilton has a large rural component.

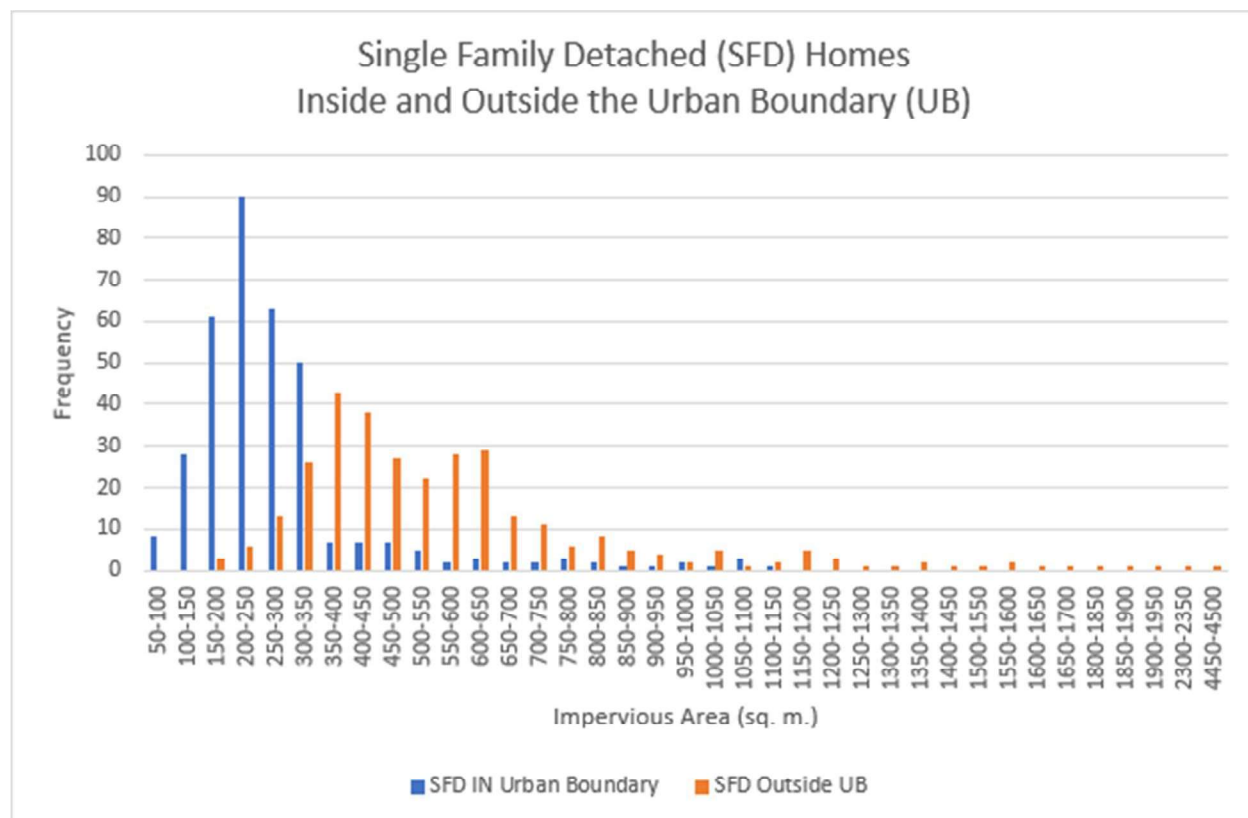
Figure 2: City of Hamilton's Rural and Urban Areas



As most of the current stormwater funding comes from water/wastewater revenues, rural properties that do not have a water and/or sewer connection will only contribute a small amount through their property taxes. If the City were to move towards an impervious based stormwater charge, then rural properties would contribute to stormwater funding through this new charge. To assess the equity of applying a stormwater charge to rural properties, we determined the average impervious area of rural residential properties (i.e., how much runoff do they generate) and the City's current stormwater expenditures in rural areas (i.e., how much direct benefit do they receive from the City's stormwater program).

We found that the average single-family detached dwelling outside the urban boundary had twice as much impervious area (596 sq. m.) as the average single-family detached dwelling within the urban boundary (291 sq. m.). The distribution of sizes of homes that were measured is shown on the following figure.

Figure 3: Distribution of Single Family Detached Homes Inside and Outside the Urban Boundary



We estimated that the average rural home contributes \$16 per year towards stormwater management through property taxes. We also estimated that all properties outside the urban boundary combined contribute nearly \$401,000 towards stormwater management

through property taxes. In 2022, we estimated that the City spent over \$2.6 million on drainage projects within rural areas. We therefore concluded that rural properties have been paying less than their fair share towards the City's stormwater management program. We also concluded that if the City were to implement an impervious based stormwater rate where rural single family detached homes paid the same as urban single family detached homes, then rural properties may still be under-contributing, but it would be more equitable than the current stormwater funding system.

4. Stormwater Funding Requirements

The City currently funds its stormwater management activities through the following sources:

- Contributions to the Conservation Authorities and some rural road related drainage is paid for through the general levy (property taxes); and
- The remaining funding needs come from the City's water/wastewater utilities' revenues.

The following table outlines the water/wastewater utility revenue needs for 2021-2025. It shows that currently approximately ten percent of the water/wastewater utility revenue goes towards stormwater but this will need to increase. It also shows that the average property will need to contribute over \$100 per year towards stormwater management through its water/wastewater utility bill. This is in addition to the contribution through property taxes.

Table 8: Water/Wastewater Utility Revenue Needs for 2021-2025

	Storm Operating (Rate Budget) \$000	Combined W / WW / Storm \$000	% for Storm Program	Annual Avg Bill	Stormwater Contribution
2021 Approved Budget	\$ 25,311	\$ 245,555	10.3%	\$ 785	\$ 81
2022 Approved Budget	\$ 24,759	\$ 257,851	9.6%	\$ 824	\$ 79
2023 Approved Budget	\$ 28,281	\$ 272,447	10.4%	\$ 877	\$ 91
2024 Forecasted Budget	\$ 33,844	\$ 298,647	11.3%	\$ 965	\$ 109
2025 Forecasted Budget	\$ 36,643	\$ 328,154	11.2%	\$ 1,062	\$ 119

The following table outlines the updated stormwater budget by funding source for 2023-2025. The stormwater budget is forecasted to increase from \$43 million to \$54 million over three years.

Table 9: Future Stormwater Budgets

	Storm Operating (Rate)	Conservation Authorities (Tax Levy)	Roads Maintenance (Tax Levy)	Credit / Incentive Programs (New)	Administration (New)	Total Stormwater Program
\$000						
2023 Approved Budget	\$ 30,284	\$ 9,108	\$ 3,880	n/a	n/a	\$ 43,272
2024 Forecasted Budget	\$ 35,928	\$ 9,288	\$ 3,927	n/a	n/a	\$ 49,143
2025 Forecasted Budget	\$ 38,810	\$ 9,472	\$ 3,986	\$ 1,574	\$ 200	\$ 54,043

5. Rate Analysis

To further our assessment of what a Single Family Unit and tiered Single Family Unit stormwater funding model would look like for the City of Hamilton, we estimated what the resulting average rate would be for different property types. The first step is to determine the rate for one billing unit which is calculated by dividing the required revenue by the number of billing units.

Using the impervious area calculations presented in the previous section we determined the total of billing units. One billing unit is equivalent to the average impervious area of a typical single-family detached dwelling. For the City of Hamilton, we used 291 square metres as one billing unit as this is the average impervious area of a single-family detached dwelling within the urban boundary. This resulted in 343,000 billing units. We reduced this number by 8% percent to account for possible future credits and non-payments.

The required revenue is the cost of stormwater management activities (e.g., capital investment, maintenance, studies etc.) plus the cost of administering the stormwater rate. As Council directed staff to determine the feasibility of implementing a stormwater funding model in 2025, we used the total 2025 stormwater budget requirements of \$54 million.

As the required revenue is \$54 million and the estimated number of billing units is 343,000 (minus 8%), the resulting rate per billing unit is \$14.20 per month or \$170 per year. The rates for different property types are provided in the following table.

Table 10: Estimated Rates for a Single Family Unit Based Model

Stormwater Budget	\$54 million	# Dwelling Units per charge
Program Cost	\$54,040,000	
Base Rate (\$/SFU/mo)	\$14.20	
Representative Property	Annual Charge	
Residential SFD (in Urban Boundary)	\$170	1
Residential SFD (outside Urban Boundary)	\$170	1
Residential link home	\$170	1
Residential condo - standard - detached	\$170	1
Residential semi detached	\$85	1
Residential townhouse (freehold)	\$85	1
Residential multifamily - towns (average)	\$3,138	18.4
Residential condo - standard - towns	\$85	1
Residential duplex	\$170	2
Residential triplex	\$153	3
Residential fourplex	\$204	4
Residential fiveplex	\$256	5
Residential sixplex	\$307	6
ICI (average)	\$3,643	n/a
Miscellaneous (average)	\$634	n/a
Undeveloped	\$0	n/a
Mixed use & mixed use condos (average)	\$1,171	n/a
Residential multi-family buiding (average)	\$1,338	7.8
Residential condo - standard - building (average)	\$35	1

The rates consider the number of dwelling units within a property. For instance, a duplex is 0.5 billing units per dwelling unit x 2 dwelling units = 1 billing unit. Likewise, a triplex is 0.3 billing units per dwelling unit x 3 dwelling units = 0.9 billing units. The presented rate for apartments is an average only as the actual rate will depend on the number of dwelling units within a building. The presented rate for non-residential properties is also an average as the actual rate will be determined for each parcel individually.

If the City were to consider a tiered Single Family Unit model where the single family detached homes are broken into tiers based on their size, then the resulting rates are shown in the following table.

Table 11: Estimated Rates for a Tiered Single Family Unit Based Model

Tiered Single Family Unit Based Model	\$54 million Annual Budget
Small Single Family Detached (10th percentile)	\$85 (lowest 10%)
Medium Single Family Detached (average)	\$170 (middle 80%)
Large Single Family Detached (90th percentile)	\$255 (upper 10%)

A Single Family Unit model is fairly easy to administer because a residential property's rate is determined based on its Municipal Property Assessment Corporation code. Since 89% (or 147,000) of the parcels are residential, the rate for the large majority of the properties can be determined "automatically". Moving to a tiered Single Family Unit requires assessing and categorizing the single family detached homes which make up 83% of the parcels. Despite the extra administrative effort some municipalities, such as the City of Mississauga, implemented a tiered Single Family Unit stormwater funding model.

The stormwater charge for the average single family detached for several municipalities in Ontario are shown in the following figure. The estimated charge of \$170 for the City of Hamilton is close to Ottawa and Waterloo's rates.

Figure 4: Stormwater Charge for the Average Single Family Detached Home



6. Implementation Considerations

6.1 Public Communication

A communications plan should be prepared for any proposed stormwater funding model change. The plan should confirm the project's communication objectives and clearly distinguish between areas where the City would simply like to inform or educate stakeholders/the public versus areas where they are seeking feedback and engagement. The different forms of public communication are outlined below.

- **Information/education** – what changes are happening, why it is important and how it will affect you/the public. It is important to communicate the importance of stormwater management and the issues that the City is facing.
- **Consultation** – asking for feedback on items that have not yet been decided upon. The feedback will be used to develop the program and make decisions. This is often used in the development of a credit program. It is important to be clear on what the project team is seeking feedback. The City does not want to appear disingenuous in the consultation process by asking for feedback on matters that have already been decided.
- **Engagement** – describes how the public can get involved and encourages them to do so (e.g., support the rate, implement best practices that will give them credits etc.).

Typical stormwater management funding communication methods include:

- City website with stormwater management funding review updates, Frequently Asked Questions, education videos, proposed fees by property type/address, etc.;
- On-line survey;
- Updates via social media;
- Letters to property owners (all or those who will be most affected); and
- Utility and/or tax bill inserts.

Identifying property owners who would experience the biggest impact with the proposed funding model change will help target communication efforts. Webpage content would be hosted on Engage Hamilton and notices for public engagement opportunities would typically be distributed through traditional and social media. Educational material should be graphical in nature and non-technical so that it can be clearly understood by all stakeholders.

Communication material such as Frequently Asked Questions and videos should provide information on “What is stormwater management”, “Why is it important”, “Why is the City considering a new stormwater funding model, and the benefits it would provide”, and “How can citizens get involved”.

It is important to note that if the City were to move to a stormwater rate based on imperviousness, then there would be many properties that would likely benefit financially, such as small drycleaners, food processing facilities and breweries. These types of properties typically consume a lot of water and therefore contribute significantly towards stormwater under the City’s existing stormwater funding model. In contrast, properties such as parking lots, typically do not currently contribute significantly to stormwater management despite the amount of stormwater runoff they generate. If their stormwater management contributions were changed based on impervious area, then they should be notified in advance so that they could budget accordingly.

In May, AECOM with City staff conducted two meetings: one with Environment Hamilton and one with the Hamilton Industrial Environmental Association. Both presentations were well received, and Environment Hamilton was particularly supportive of the concept of an impervious based stormwater funding model. Some of the Hamilton Industrial Environmental Association members posed questions on whether and how properties that treat stormwater on-site and then discharge it directly to the harbour/Lake Ontario, would be charged for municipal stormwater management.

6.2 Timeline & Resources Required

Once the City implements its proposed new tax and utility billing systems, a new stormwater funding model could be implemented within a year. The exact timeline and resources required will depend on the funding model selected. Typical tasks, timelines and resources required are outlined in the following table.

Table 12: Typical Tasks for Implementing a New Stormwater Funding Model

#	Task	Timeline	Typical Task Owner	Other Resources
1	Management & Council approval	approximately 3 months	Finance	Engineering/ Water
2	Develop and implement a public communication plan	2 to 6 months	Communications	
3	Confirm desired stormwater revenues	1 to 2 months	Finance	Engineering/ Water

#	Task	Timeline	Typical Task Owner	Other Resources
4	Complete parcel analysis and determine number of billing units	1 to 3 months	Finance	Geomatics, consultant
5	Develop a credit/rebate program (if desired)	2 to 4 months	Engineering/ Water	Finance
6	Develop policies, procedures, and forms (e.g., appeals review process, updating billing units following redevelopment etc.)	3 to 5 months	Finance	Engineering/ Water, consultant
7	Prepare a new by-law	9 to 12 months	Legal	
8	Develop a master billing file	1 to 3 months	Finance	Consultant
9	Configuration of billing system	1 to 3 months	Finance	IT, billing system provider
10	Billing testing	2 months	Finance	IT, billing system provider
11	Printing bills & mail-out	1 month	Finance	

Many of the tasks above can be done in parallel and some can be done in advance of the City implementing its new billing systems (e.g., Tasks 1 to 7). Municipalities that have implemented a new stormwater fee report that 1 to 2 additional resources can be required in the first year or two to assist with implementation and customer queries. However, once the rate is up and running, these same municipalities report that minimal resources are typically required to keep the stormwater rate going.

Tasks that are required on an ongoing basis (i.e., after implementation) are outlined below.

Table 13: Typical Tasks for Maintaining a New Stormwater Funding Model

#	Task	Effort	Typical Task Owner	Other Resources
1	Customer support	Busiest in first 2 billing cycles	Customer Service (initial screening, answer easy queries)	Finance, Engineering/ Water (answer more challenging Q's)
2	Review appeals	Busiest in first 2 billing cycles	Finance	Engineering/ Water
3	Review credit applications	Busiest in first year, most applications will be from existing developments.	Engineering/ Water	

#	Task	Effort	Typical Task Owner	Other Resources
4	Update billing (new development, changes in ownership etc.)	Ongoing	Finance	Planning
5	Update rates (budget increases)	Annual update	Finance	Engineering/ Water
6	Printing bills & mail-out	Ideally combined with water & wastewater	Finance	

The Kitchener implementation study recommended automating the credit system process as much as possible. Kitchener estimated its administrative costs as 1.3% of the total stormwater utility budget. Similar administrative costs have been reported by stormwater utilities in the U.S. for the first year of implementation with decreasing costs in subsequent years.

6.3 Financial Incentives

Financial incentives typically include credits and rebates. Credits are an ongoing reduction in a property's stormwater charge whereas a rebate is a one-time contribution towards the implementation of a stormwater measure.

A stormwater user fee credit program provides financial incentives by offering a reduction to landowners who implement and maintain measures, practices, or activities that help reduce the load on the City's stormwater management services. That is, property owners who reduce the amount of stormwater runoff or who improve the quality of the stormwater runoff that discharges from their property into the municipal stormwater management system and/or surrounding waterbodies may qualify for a credit and receive a reduction in their fee. Credits could be given for measures that provide flooding and erosion protection, water quality treatment, and other environmental enhancements or non-structural best practices.

Credits are typically provided on an ongoing basis for as long as the landowner has the measure, practice or activity implemented and can demonstrate that it is being maintained. Whereas rebates are a one-time payment or discount on the capital cost of implementing stormwater controls such as rain barrels, rain gardens or disconnected downspouts. This "one-time" charge reduction can help to encourage the implementation of a measure, practice, or activity. It can also be easier to administer, but since there is no follow-up, there is no mechanism to ensure that the measure, practice, or activity is still active and working as designed.

Credit programs have been very popular with Canadian municipalities that have implemented stormwater user fees and continue to be requested by stakeholders and members of the public, even if many property owners don't apply for them. There are many benefits to the implementation of a stormwater credit program, including:

- Provides incentive to landowners to reduce stormwater runoff and pollutant discharge from their properties. Reducing the rate of stormwater runoff is particularly important in the City's combined sewer areas.
- Helps the City establish an inventory of on-site measures and allows the City to confirm that they are being maintained and continue to provide the stormwater benefits for which they were designed.
- Provides an opportunity to landowners to reduce their stormwater fee.
- May reduce the City's operation/maintenance and capital costs by managing stormwater before it is discharged into the municipal stormwater management system.
- May reduce the impact of stormwater runoff on the environment through a "treatment train" approach that includes widespread management of stormwater runoff at its source.
- Increases stormwater awareness through the credit application process as well as broader outreach through new public education programs and other credit eligible activities.
- Increases landowner acceptance of a proposed stormwater rate, by offering a means by which they can reduce the rate.
- Reinforces the link between cost of service and fairness/equity of the charge allocation (i.e., if the philosophy of the rate is "the more you contribute; the more you pay" then the opposite case underlies the philosophy for a credit program "the less you contribute, the less you pay").

A property's stormwater fee consists of a base charge along with any associated adjustments (e.g., grant or credit). Once a property's base charge has been calculated a credit could then be applied to reduce that fee. Credits are typically requested through an application process and if approved, would result in a reduced rate for individual property owners that have installed, operate, and maintain eligible stormwater facilities or practices on their property. In some jurisdictions, credits can be awarded for reducing the amount of imperviousness on a property if a rate adjustment policy does not already account for this.

The initial credit application process typically includes supporting documentation such as:

- An engineering design report for any constructed facilities such as a detention pond; and
- Certified letter stating that the property owners will operate and maintain the facilities as prescribed and granting property access to City staff for inspection.

Credit applications are often renewed on a regular basis (e.g., every one to five years) sometimes with requirements to provide documentation of maintenance (e.g., cleaning of an oil-grit separator). Offering credits does reduce a utility's revenue but most Canadian municipalities that offer credit programs have found it results in a revenue reduction of less than 5%. This resulting reduction in revenue should be considered when estimating revenue requirements and determining stormwater rates for each property to ensure that the program still has the total revenue required.

A maximum credit allowance for any individual property is assigned based on the expected reduction in municipality-wide capital and operating costs. Efforts to reduce the amount and improve the quality of stormwater runoff from properties will result in some cost savings in the operation, maintenance, and renewal of the municipal stormwater management system. However, the City typically has some fixed costs that must be funded by the utility. For example, if property owners reduced imperviousness on their sites and peak flows were reduced by 50% then the Town would likely be able to replace an existing drainage pipe with a smaller pipe when it gets to the end of its useful service life. Reducing the size of a pipe may reduce construction costs by 10 to 25%, but there will still be a cost for replacing the pipe, regardless of its size.

Even if some properties can eliminate all stormwater discharges from their site, their site will likely be accessed by roadways that include drainage and stormwater management functions. Therefore, it is important that properties still contribute to these base (fixed) costs of operating, maintaining, and renewing the municipal stormwater management system even if they can reduce the amount and improve the quality of stormwater runoff from their site. To account for this, other municipalities in North America who have implemented stormwater utilities typically provide credits for up to a maximum of 40 to 50% of the total stormwater rate, although it varies widely from 25 to 75%. The Cities of Kitchener and Waterloo determined a maximum credit of 45% reflected the proportion of each City's stormwater program costs that could potentially be influenced by stormwater measures or activities on individual properties. The City of Mississauga identified a maximum allowable credit of 50%. The following table summarizes Mississauga's credit program for multi-residential and non-residential properties.

Table 14: City of Mississauga's Credit Program for Multi-residential and Non-residential Properties

Factor	Maximum Credit Amount (to a total not exceeding 50%)	Description
Peak Flow Reduction	40%	Percent reduction of the 100-year post-development flow to pre-development conditions of the site.
Water Quality Treatment	10%	Consistent with Provincial criteria for enhanced treatment.
Runoff Volume Reduction	15%	Percent capture of first 15 mm of rainfall during a single rainfall event.
Pollution Prevention	5%	Develop and implement a pollution prevention plan.

It is more cost-effective, from an administrative standpoint, to only offer credits to non-residential properties as they typically represent a small number of large properties whose stormwater management facilities tend to have a larger impact on runoff contribution and pollutant loading to the City's stormwater system. As the typical residential stormwater user fee across Canada ranges from \$75 to \$200 per year, a 10 to 50% credit does not offer significant savings or incentive to a homeowner to implement measures that reduce their impact on the municipal stormwater management system. The administrative cost to offer a credit program to residential properties can sometimes outweigh the savings realised by the property owner. Despite that, some municipalities have elected to offer a residential credit program because residential landowners have strongly asked for it and offering credits can therefore lead to greater acceptance of the stormwater user fee. To reduce the administrative costs for offering credits to residential properties, municipalities such as the City of Waterloo have developed an on-line credit application system for residential properties with random site visits to check for compliance.

Even though many stakeholders ask for a credit program, when a new stormwater fee is being proposed, Ontario municipalities have found that less than 10% of eligible properties apply for credits. Greater credit uptake has been found in municipalities, such as the City of Waterloo where they have an on-line application process, and a third-party non-profit organization supports the implementation of measures that qualify for the credit program.

Once a property's credit is approved, a property owner should be required to renew its credit application on a regular basis (e.g., every 1 to 5 years) to ensure that the measure is still in place and being regularly maintained.

We recommend that the City of Hamilton considers a stormwater credit/rebate program in conjunction with a possible stormwater rate. Due to the number of residential properties in the City of Hamilton and the relatively low stormwater fee that a residential property would pay (<\$200 per year), we recommend that the City focus on a credit program for its non-residential properties. The City could then work with organizations such as Green Ventures to offer rebates or subsidies for programs that reduce the quantity and improve the quality of stormwater runoff from residential properties.

As the City is focusing on reducing the amount of stormwater runoff in combined areas and improving stormwater quality in separated areas, the City may want to offer different types of credits depending on whether the property is in a combined or separated sewer area. The City would be able to leverage its experience and success from its wastewater abatement program if it were to implement a stormwater credit program. We recommend that the City consult with stakeholders (e.g., property owners) over the next 6 to 12 months to develop an effective financial incentive program.

7. Recommendations and Next Steps

Based on our evaluation of stormwater funding models using the Guiding Principles that were endorsed by the City of Hamilton's General Issues Committee, we recommend that the City consider a 'Single Family Unit' stormwater rate with a financial incentive program. We recommend that the City consult with stakeholders (e.g., property owners) over the next 6 to 12 months to develop an effective financial incentive program.

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