2014 Drainage Cost of Service Study Findings and Recommendations

Table of Contents

1.0 Introduction:

This report provides Administration's findings and recommendations for the 2014 Drainage Cost of Service Study. The proposed approach will set the stage for increasing equity among customers while enabling the delivery of the capital investments outlined in the 2015-2024 Water Infrastructure Investment Plan and the operating expenditures that are necessary for drainage to continue to deliver high quality services to Calgarians, while meeting regulatory requirements and providing the infrastructure necessary for a growing city.

2.0 Context:

It is a best management practice to conduct cost of service studies every 5 to 10 years. Cost of service is a methodical process by which the costs of providing a service are assigned to customer classes in proportion to the benefit derived by that customer class. In addition to ensuring the equitable allocation of costs, these studies are an analytical tool to support financial management, and provide validation and documentation for ratemaking decisions.

The Drainage Cost of Service Study consisted of two phases. Phase 1 focused on defining the level of service required to meet the growing demands and the corresponding revenue required to fund the planned operating, capital expenditures, and financial targets over the next four years. This work was approved by Council on 2014 May 05.

Phase 2 of the study reviewed the proportional allocation to drainage customers and analyzed options for new customer classes to share system costs equitably. This included reviewing the options for implementing new customer classes. This attached report outlines the guiding principles, the investigation, and the recommendations of the Drainage Cost of Service Study.

The City of Calgary owns and operates a drainage system that serves to manage surface water runoff from developed property in the city. Program funding comes from two primary sources: an ongoing drainage service charge is applied equally to all wastewater accounts, and growth is funded through stormwater acreage assessments.

At the 2014 May 05 Strategic Session of Council, Council adopted Report C2014-0324 (2015-2018 Indicative Drainage Charge) and directed Administration to prepare the 2015-2018 Action Plan based on following indicative drainage charges:

Table 1: 2015-2018 Indicative Drainage Charge:

	2015	2016	2017	2018
Monthly Drainage Charge	$10.96	$13.05	$15.54	$18.51

Revenue from the drainage service charge is generally used for operations, maintenance, riparian work, the Community Drainage Improvements program, and water quality projects.

Unlike water and wastewater systems, drainage systems manage runoff from developed property that is often not directly connected to the public drainage system. Service received is not typically measurable through direct methods such as water meters. Instead, drainage rates are often based on contribution of runoff, as estimated by the amount of runoff-producing area on a parcel. There is currently a single customer class for drainage services, where the same flat rate is charged to all customers. The Drainage Cost of Service Study included scoping a drainage funding approach that will achieve a more equitable allocation of the costs to provide drainage services.

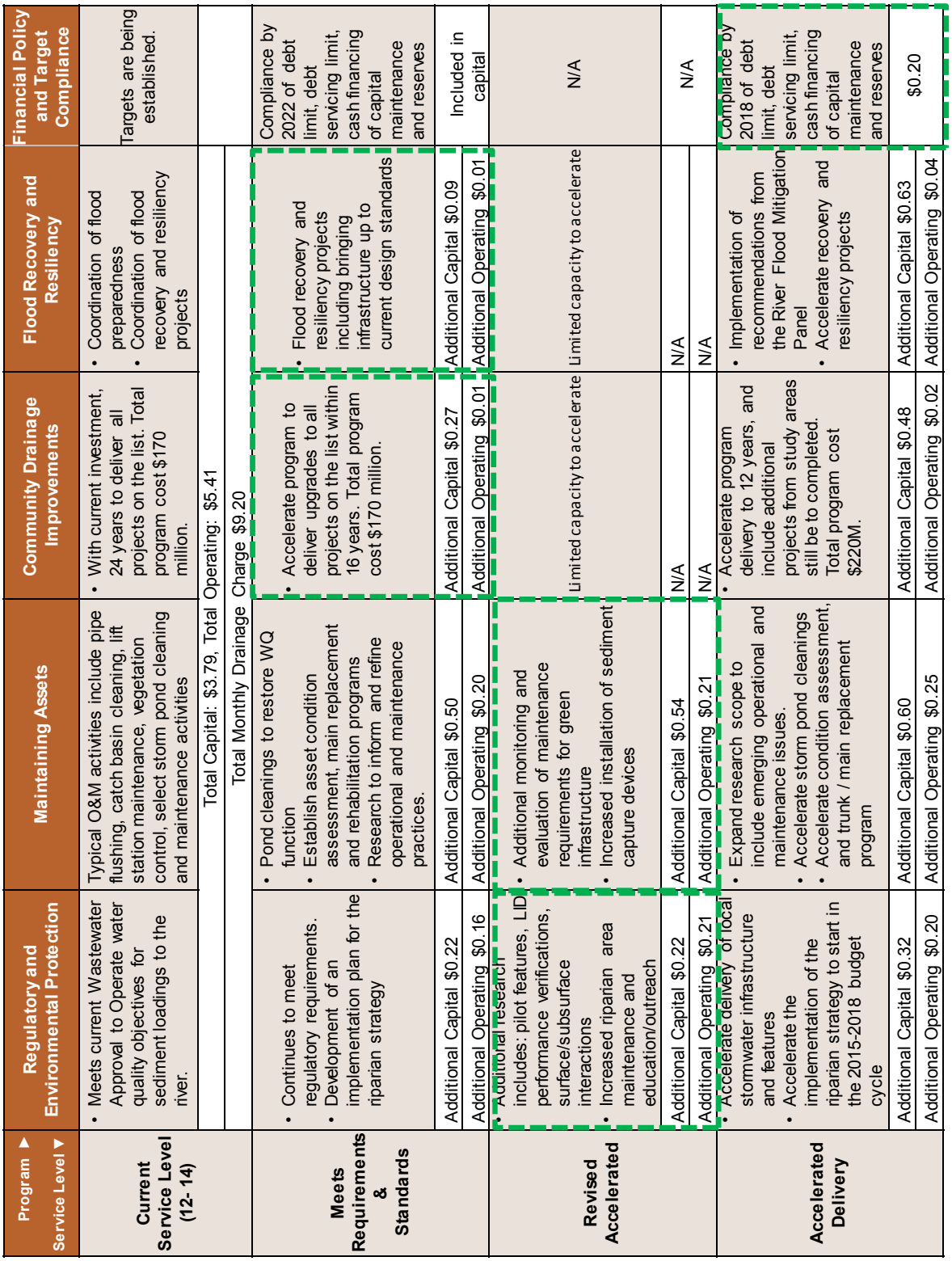
3.0 Drainage Level of Service

To address the increased pressures facing the drainage line of service, Administration reviewed five program areas for drainage: regulatory and environmental protection, maintaining assets, community drainage improvements, flood recovery and resiliency and financial policy and target compliance. The results of the review and the estimated capital and operating impacts were summarized into a service level matrix (Figure 1) which defined each program element under each of the following three service levels:

1. Current service level based on the capital and operating budgets from 2012-2014
2. Meets Requirements and Standards based on achieving current environmental objectives, long term targets and anticipated future regulation, and current best practices and design standards
3. Accelerated delivery based on accelerating specific programs

The level of service matrix was approved by Council on 2014 May 05.

Figure 1: Drainage Level of Service



Program ▶ Service Level ▼	Regulatory and Environmental Protection	Maintaining Assets	Community Drainage Improvements	Flood Recovery and Resiliency	Financial Policy and Target Compliance
Current Service Level (12-14)	• Meets current Wastewater Approval to Operate water quality objectives for sediment loadings to the river.	Typical O&M activities include pipe flushing, catch basin cleaning, lift station maintenance, vegetation control, select storm pond cleaning and maintenance activities	• With current investment, 24 years to deliver all projects on the list. Total program cost $170 million.	• Coordination of flood preparedness • Coordination of flood recovery and resiliency projects	Targets are being established.
		Total Capital: $3.79, Total Operating: $5.41			
		Total Monthly Drainage Charge $9.20			
Meets Requirements & Standards	• Continues to meet regulatory requirements. • Development of an implementation plan for the riparian strategy	• Pond cleanings to restore WQ function • Establish asset condition assessment, main replacement and rehabilitation programs • Research to inform and refine operational and maintenance practices.	• Accelerate program to deliver upgrades to all projects on the list within 16 years. Total program cost $170 million.	• Flood recovery and resiliency projects including bringing infrastructure up to current design standards	Compliance by 2022 of debt limit, debt servicing limit, cash financing of capital maintenance and reserves
	Additional Capital $0.22	Additional Capital $0.50	Additional Capital $0.27	Additional Capital $0.09	Included in capital
	Additional Operating $0.16	Additional Operating $0.20	Additional Operating $0.01	Additional Operating $0.01	
Revised Accelerated	• Additional research includes: pilot features, LID performance verifications, surface/subsurface interactions • Increased riparian area maintenance and education/outreach	• Additional monitoring and evaluation of maintenance requirements for green infrastructure • Increased installation of sediment capture devices	Limited capacity to accelerate	Limited capacity to accelerate	N/A
	Additional Capital $0.22	Additional Capital $0.54	N/A	N/A	N/A
	Additional Operating $0.21	Additional Operating $0.21	N/A	N/A	
Accelerated Delivery	• Accelerate delivery of local stormwater infrastructure and features • Accelerate the implementation of the riparian strategy to start in the 2015-2018 budget cycle	• Expand research scope to include emerging operational and maintenance issues. • Accelerate storm pond cleanings • Accelerate condition assessment, and trunk / main replacement program	• Accelerate program delivery to 12 years, and include additional projects from study areas still be to completed. Total program cost $220M.	• Implementation of recommendations from the River Flood Mitigation Panel • Accelerate recovery and resiliency projects	Compliance by 2018 of debt limit, debt servicing limit, cash financing of capital maintenance and reserves
	Additional Capital $0.32	Additional Capital $0.60	Additional Capital $0.48	Additional Capital $0.63	$0.20
	Additional Operating $0.20	Additional Operating $0.25	Additional Operating $0.02	Additional Operating $0.04	

4.0 Guiding Principles for Utility Rates

It is important to Utility customers, and The City of Calgary, that the user rates be founded on a sound set of principles. The guiding principles of the Drainage Cost of Service Study can be organized into three interdependent categories, including:

1. Financial Sustainability;
2. Fairness and Equity to Customers; and
3. Water Resource Management.

4.1 Financial Sustainability

The Drainage Cost of Service Study must deliver sufficient and predictable revenue in order to meet current and future regulatory requirements, and provide reliable services desired by customers. The Utility needs to receive sufficient and predictable revenue to recover its full costs. The Drainage Cost of Service Study must offer rate stability and predictability to the Utility and the Utility's customers; and the study will set rate structures that provide flexibility to adapt to changing supply and demand patterns.

4.2 Fairness and Equity to Customers

The Drainage Cost of Service Study must deliver a solution that is equitable to all customers. The Drainage Cost of Service Study will base rates on the philosophy that a customer's rates should reflect the cost of providing the service to the customer; and will determine a solution where each customer class pays their fair share based on the customer class usage pattern and service benefits offered. The Drainage Cost of Service Study will also produce rate structures that are transparent and easy to understand.

4.3 Water Resource Management

The Drainage Cost of Service Study will establish a rate that allows The City to continue to meet current and future regulatory requirements, while encouraging customers to adopt behaviours focused on water conservation, and protecting the watershed and river water quality.

5.0 Investigation: Alternatives and Analysis

The ultimate goal of the cost of service analysis is to transition towards an equitable rate structure where customers contribute for their share of the system costs in proportion to their use of the system. The City must be able to bill customers accurately for their system use through the City's utility billing system.

5.1 Rate Structure Alternatives

The rate structure is the basis (or set of bases) by which the drainage revenue requirement is allocated to customers. Rate structures were reviewed based on their fairness, legality, ability to administer, and feasibility.

Fairness: A rate approach is considered fair if it charges a customer in a way that is proportional to the service that the customer receives from the drainage programs.

Legal: A rate approach is considered legal if it could be constructed in a way that would likely withstand a legal challenge.

Administer: A rate approach is considered easy to administer if The City could set up and bill customers without a burdensome level of complexity.

Feasible: A rate approach is considered feasible if the data is available to develop the fee structure.

There are a number of options used or considered in the industry. A total of eight rate structures were considered. Since some of the rate structures were similar, Table 2 shows the three main rate structures reviewed.

Table 2: Drainage Rate Structures Reviewed

Rate Structure Basis/Feature	Fair	Legal	Administer	Feasible
Impervious Surface Area	✓	✓	✓	✓
Geographic Location	✓	✓		✓
Multiple Customer Classes		✓	✓	✓

5.1.1 Impervious surface area:
The most common basis for charging drainage fees is impervious surface area. The term refers to hard surface area that prevents or slows water permeation into the ground. Impervious surface area is most widely accepted as an appropriate measure of a property's contribution of runoff, providing a clear relationship to service received from a drainage program. Impervious area billing links a customer's system use to the amount of runoff generated from their parcel.

An impervious area methodology is fair as customers with proportionally more impervious surface area will pay for a higher use of the system. It is legal if structured appropriately. To administer a rate structure based on impervious surface area, data quantifying the applicable area by parcel is required and can be challenging to determine. To minimize administrative and data collection costs, drainage utilities typically develop a uniform rate for single family residential customers based on an estimated average amount of impervious surface area per developed residential parcel. The charge basis for all other customer types is generally actual measured impervious surface area by parcel. The charge itself is feasible to calculate. Best practice is to calculate charges as a dollar amount per unit of impervious surface area, or an equivalent unit of service, especially when the fee structure is implemented as a uniform charge for residential customers. For example, one unit may equate to 300 square meters of average residential impervious surface area per parcel, and the fee may be a fixed amount per unit charged to each residential account.

5.1.2 Geographic location:
A drainage utility may use location as a basis for charging as well. Location can be defined either as the watershed or basin in which a parcel is or its proximity to receiving waters or flood plains. Both bases describe areas that may differ in required levels of service in terms of capital construction and ongoing maintenance costs. By separating these costs by location served, charges can correspondingly be set in relation to level of service. Almost all activities performed by a drainage program are applicable for location-specific user fees given the fact that service provided can be directly linked to location and therefore the amount paid. As examples, properties in flood plains could pay a proportionately higher share of flood control costs, developments on hillsides could pay for causing additional runoff impacting those downstream, and waterfront properties could bear more of the costs of water quality improvements. It is important to note that if specific locations are less-developed than others or simply require costly activities, the resulting user fee could be economically impractical to charge property-owners. Although a rate structure based on geographic location would be fair, legal and feasible to calculate, it would be difficult to administer.

5.1.3 Multiple customer classes:

As an alternative, multiple customer classes could be created. Similar to the Water and Wastewater lines of service, a separate residential and non-residential customer class would allow for segregated billing and increased equity. Billing with segregated customer classes is administratively possible to setup and feasible; however, a simple non-residential class would not differentiate the proportional system use between a large mall or car lot and a smaller business with no associated parking lot. This leaves the fairness and equity of such an approach in question and thus is not considered to be an acceptable solution.

6.0 Recommendation

Administration recommends that The City pursue a drainage fee structure that is based on impervious surface area, with single family residential customers defined as one equivalent service unit (ESU).

An impervious-based rate structure defines a direct linkage between a parcel's contribution to runoff impacting the system infrastructure and the fee that parcel pays. The fee basis creates a standard of charging that quantifies how different amounts of impervious surface area cause proportionately different impacts on the environment in terms of flooding, water quality, and habitat degradation. By recognizing that relationship, the fee structure basis proportionately charges different customers their share of the system's cost burden and provides an equitable, defensible means of cost recovery for a drainage utility.

When sharing system costs based on impervious area, there is an opportunity to apply demand management principles and encourage conservation based behaviours through a credit system. If a credit system were to be considered, applicable drainage runoff systems must be analyzed to ensure they (1) effectively reduce drainage runoff and (2) are designed to handle a greater amount of drainage than would be required as a condition of development approval.

The fee structure may also consider having a uniform fixed charge that is applied to all customers for the operation and maintenance costs related to shared drainage infrastructure. This could apply to the drainage infrastructure used to collect stormwater from major roads, and/or flood resiliency projects that benefit all customers. The development of new customer classes and the detailed fee structure will be evaluated further prior to implementation.

7.0 Implementation Considerations

The City of Calgary faces information technology and geographic information system (GIS) challenges to immediately implement a drainage fee structure that is based on impervious surface area. The GIS data The City current utilizes needs to be linked to billing data to accurately determine and charge customers for an equitable portion of system costs. Therefore, additional implementation alternatives were explored.

Option 1: Temporarily continue with the existing rate structure while scoping the requirements to integrate the customer billing system with GIS data on impervious surface area. Once the work required to integrate the databases is scoped and implemented, The City could convert to a structure based upon impervious surface area. This process may take several years and may be ready for implementation in the 2019-2022 budget cycle.

This alternative allows time for analysis of the impacts of making a large system change and time to undertake stakeholder engagement of any upcoming drainage rate increases. By moving from the current state directly to the desired future state, customers would only experience one rate structure implementation instead of an interim and eventual final rate

structure. This direct approach would save communication costs as well as other implementation costs.

The existing inequity between single family residential and non-single family residential will continue while the new approach is scoped and implemented.

Option 2: Establish an interim rate structure based on multiple customer classes while the GIS and customer billing systems are integrated. An interim rate structure would provide more equitable rates until the customer billing system and the GIS database can be combined.

The interim rate structure allows for increasing equity during transition. This alternative provides an imperfect transitional rate structure, but prepares non-single family customers to pay higher rates than the single family residential customers.

A disadvantage is that there will be implementation costs, stakeholder engagement, billing system changes and internal processes that need to be updated as part of the interim rate structure; as well, a similar set of costs would be associated with the final rate structure implementation. Depending upon the materiality of these costs, it may not be fiscally prudent to incur these costs twice in a short period of time. Further, an interim rate would not be indicative of the final rate structure. Some customers could pay more with the interim rate than the rate based on impervious area which would create rate uncertainty.

8.0 Implementation Recommendation

Administration recommends pursuing implementation option 1 – to continue with the existing rate structure while scoping the requirements to integrate the customer billing system with GIS data on impervious surface area.

This approach allows time for analysis of the impacts of making a large system changes and consider integration options. It allows time to identify which customers will be impacted and develop a targeted engagement and conservation program. This direct approach is also the cost effective option. Without an interim step, duplicative implementation, integration and communication costs are saved.