

# STORMWATER UTILITIES

## TYPICAL STEPS IN CALCULATING A POTENTIAL FEE



**FLOOD  
DEFENSE  
NEW JERSEY**

## Introduction

Currently, more than 1,700 existing stormwater utilities across 40 states and the District of Columbia serve localities ranging in populations from as low as 88 to 3 million people. Local officials considering the creation of a stormwater utility often ask, “what might a fee be in my community?” However, there is no one answer, since many factors and choices determine the fee. In fact, stormwater utilities serving communities of the same size and type often have drastically different fee levels. Nevertheless, there is a common process that communities go through to arrive at a fee level, which is outlined below. The example listed, which does not represent an actual locality, is provided strictly for the purpose of illustration.

### 1. Basic principles in establishing a stormwater user fee

A user fee needs to demonstrate a reasonable alignment between the following:

- The cost of providing the service equals the amount recovered from customers for those services;
- The charge assessed to a property is proportionate to the service demand that property places on the stormwater system; and
- Rates should be fair and equitable across all classes of properties, and should not be arbitrary.

### 2. Four key components involved in establishing a stormwater user fee

a. Revenue requirement: How much money does the municipality need annually?

- The annual revenue requirement typically includes operations and maintenance (O&M) costs, capital financing costs associated with infrastructure management, any reserves, and transfer costs.

b. Fee basis: What is the most common basis for establishing a stormwater user fee?

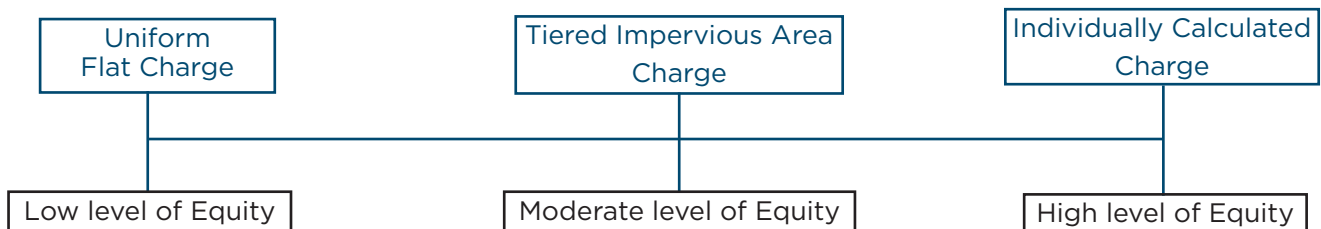
- The most common basis for setting a fee is the impervious area square footage (sf). Impervious area is typically defined as any hard surface that restricts infiltration (e.g., driveways, roofs, and parking lots) and may cause stormwater runoff (or similar). Therefore, the use of impervious area as a basis for assessing a stormwater charge is an industry accepted approach.

c. Base billing unit and rate: How can a base stormwater billing unit and rate be reflected?

- The two common approaches to present a base billing unit and rate are as follows:
  1. Rate per 100 sf or 500 sf of impervious area **[Example: \$0.50 per 500 sf]**
  2. Rate per equivalent residential unit (ERU) **[Example: \$2.00 per month per ERU]**

d. Stormwater rate structure: What methods are used in setting a rate structure?

- There are some common approaches to establishing a stormwater rate structure.
  1. Individually calculated charge: Fee is calculated for each property based on property's specific impervious area.
  2. Tiered stormwater charge: A set of tier blocks of impervious area square footage and a corresponding charge is defined for each tier. A property's charge will depend on which tier that property's impervious area falls into.
  3. Uniform (flat) stormwater charge: All properties are charged the same flat charge regardless of differences in impervious area among the properties.



### 3. Key factors in impervious area determination and rate structure design

Key factors in deciding which approach to use for determining impervious area for residential and non-residential properties are:

- What data sources are readily available to assess impervious area?
- How reliable and recent are the data sources?
- What is the level of effort needed to process the data and to supplement it to resolve exceptions that arise due to local circumstances?
- How well will the rate structure balance equity and simplicity?
- How would a given rate structure affect a community's ability to process bills (e.g., software, hardware, technical support, etc.) and what would it cost?
- Is the rate structure flexible enough to incorporate future changes?

A due diligence evaluation is needed to address all of the above factors and establish an impervious area determination approach and a rate structure that is viable for a specific municipality.

## Example: Basic steps in the determination of a stormwater fee

The example listed below is fictional in nature. It is provided simply to illustrate the basic steps in the fee calculation process. For any locality, the size of the fee will be influenced by several factors, including a set of decisions that the locality or utility will make based on local circumstances.

### Step 1: Determine annual revenue requirements

Each locality faces a choice in determining how much of the cost of stormwater-related services will be covered by the fee. This decision directly impacts the size of the fee. If only existing stormwater costs are covered (e.g., street sweeping, catch basin repairs, or reconstruction of aging stormwater pipe), the fee will be lower. If the fee is designed to pay for both existing and additional costs (i.e., higher service level) to address pressing issues such as chronic flooding, algae blooms, or projects within a combined sewer overflow (CSO) Long Term Control Plan, the fee will be higher.

Expense Type	Amount (Fiscal Year)
O&M Expense	\$ 200,000
Capital Projects (cash financing)	\$ 60,000
Capital Projects (existing debt)	\$ 20,000
Other Costs	\$ 20,000
<b>Total Revenue Requirement</b>	<b>\$ 300,000</b>

### Step 2: Determine impervious area square footage (sf)

The stormwater utility charge is a user fee that is based on the extent of impervious coverage (i.e., hardened surfaces on a property, such as driveways and sidewalks) which generates stormwater runoff. A key step in the calculation is to determine the existing amount of impervious coverage in the locality among different classes of property (e.g., residential versus non-residential).

Class	# Parcels	Impervious Area (sf)
Residential	4,000	8,000,000
Non-residential	500	5,000,000
Muni-owned	10	60,000
Total	4,510	13,060,000

### Step 3: Determine base system-wide stormwater billing unit

Since each locality has properties of different sizes, with varying levels of impervious coverage, a standard billing unit must be calculated to ensure the charge is equitable. Two methods are listed in the example below: equivalent residential unit (ERU) and impervious area (IA). ERU is the most prevalent, used by approximately 80% of the stormwater utilities across the country.

To determine the base ERU, the total impervious area for residential properties (e.g., 8,000,000 square feet) is divided by the number of residential parcels (e.g., 4,000). The resulting ERU of 2,000 square feet represents the median residential impervious area. As outlined later in this example, the ERU enables the locality to equitably assign fees to properties with different levels of impervious coverage.

Base Billing Unit Approach	Unit	Value (sf)
IF Equivalent Residential Unit (ERU) is the Billing Unit (a)	1 ERU	2,000
IF Impervious Area (IA) Square Feet is the Billing Unit	1 IA Unit	500
(a) One ERU reflects the Median Residential Impervious Area square footage		

### Step 4: Determine total system-wide billing units and system-wide base rate

To determine the total number of billing units, the total impervious coverage throughout the locality (e.g., 13,060,000 square feet) is divided by the square footage of the ERU (e.g., 2,000 square feet).

Base Billing Approach	State Wide Billing Units
IF ERU Approach is used (# of ERUs) (a)	6,530
IF 500 sf IA units Approach is used (# of IA Units) (b)	26,120
(a) 6,530 ERUS = IA of 13,060,000 sf / 2,000 sf (One ERU value)	
(b) 26,120 IA Units = IA of 13,060,000 sf / 500 sf (one IA Unit)	

### Step 5: Determine system-wide base rate (Part 1)

To determine the monthly base rate, the annual revenue requirement noted at the start of this analysis is divided by the total billing units in the locality and by 12 months. In the ERU example below, the monthly rate is \$3.83.

Base Billing Unit Approach	Annual Revenue Requirements	System-wide Billing Units	System-wide Monthly Rate
IF ERU Approach is used <b>(#of ERUs) (a)</b>	\$ 300,000	6,530	\$ 3.83
If 500 sf IA unite Approach is used <b>(# of Billing Units) (b)</b>	\$ 300,000	26,120	\$ 0.96
(a) $\$3.83 = \$300,000 / 12 / 6,530$ units			
(b) $\$0.96 = \$300,000 / 12 / 26,120$ units			

### Step 6: Determine system-wide base rate (Part 2)

In the example below, a property with 1,800 square feet of impervious coverage is charged for one ERU (i.e., \$3.83/month). The non-residential property, which has 6,000 square feet of impervious coverage, is charged three times the residential rate, or \$11.49/month. *Note: if the community decides that the resulting fee is not politically acceptable, it can be scaled back by lowering planned stormwater expenses.*

Residential Parcel	IF impervious Area (sf)	System-wide Billing Units	Property's Monthly Charge	Property's Annual Charge
IF ERU Approach is used <b>(# of ERUs) (a)</b>	1,800	One ERU	\$ 3.83	\$ 45.96
IF 500 sf IA units Approach is used <b>(# of Billing Units) (b)</b>	1,800	3.60	\$ 3.46	\$ 41.47
(a) Each residential parcel is assigned One ERU and hence monthly charge is \$3.83				
(b) Property specific IA of 1,800 sf / 500 sf = 3.60 IA units; 3.60 IA units x \$0.96 = \$3.46				

Non-Residential Parcel	IF impervious Area (sf)	System-wide Billing Units	Property's Monthly Charge	Property's Annual Charge
IF ERU Approach is used <b>(# of ERUs) (a)</b>	6,000	3.00	\$ 11.49	\$ 137.88
IF 500 sf IA units Approach is used <b>(# of Billing Units) (b)</b>	6,000	12.00	\$ 11.52	\$ 138.24
(a) $6,000 / 2,000 \times \$3.83 = \$11.49$				
(b) $6,000 / 500 \times \$0.96 = \$11.52$				

## Summary

This exercise was meant to illustrate the typical steps involved in calculating a stormwater utility user fee for a given locality. One size does not fit all. Each locality will have unique circumstances and will make discrete policy decisions that will directly impact their fee level. A high level summary of the basic steps that a locality would undertake may be reviewed at this link:

<https://www.njfuture.org/wp-content/uploads/2019/04/Stormwater-Utilities-Fact-Sheet.pdf>

Most communities that decide to seriously explore the concept ultimately hire a consultant to perform a feasibility study that considers different alternatives and provides guidance on key topics such as public outreach, data collection, fee credits for stormwater mitigation projects, and billing options.

*For more information, contact **Brianne Callahan, Policy and Resource Center Coordinator, New Jersey Future: [bcallahan@njfuture.org](mailto:bcallahan@njfuture.org) or 609-393-0008 x120. Also see New Jersey Future's stormwater utility website: <https://stormwaterutilities.njfuture.org>***