United States Environmental Protection Agency New England

Funding Stormwater Programs

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Executive Summary

This document is intended to assist local stormwater managers to alleviate the significant expense of construction, operation and maintenance of a municipal separate storm sewer system (MS4). The costs of stormwater programs, increased by regulatory requirements (stormwater Phase I or Phase II), flooding concerns, water quality issues (including total maximum daily loads, or TMDLs) and population growth, may be subsidized through a stormwater utility or various other methods detailed in this document.

Stormwater management can be costly, but it is a good investment. There are new stormwater management techniques, referred to as low impact development (LID), that infiltrate, evapotranspire and reuse stormwater, thereby, *preventing* polluted runoff from happening. This helps to reduce the high costs of cleaning up the water quality impairments from the polluted runoff. Additional benefits from these techniques include increased ground water recharge, flood control, and healthy aquatic ecosystems through maintenance of base flow for streams. LID techniques need to be sited and designed carefully, and used in conjunction with traditional stormwater management techniques.

This fact sheet includes information on various stormwater funding mechanisms and types of stormwater utilities; it also describes how to create a stormwater utility and provides a list of resources.

New England Case Studies

More than 800 communities or districts across the country have adopted a stormwater utility to help fund the costs of stormwater programs, including the costs of regulatory compliance, planning, maintenance, capital improvements, and repair or replacement of infrastructure. Examples of utilities from two New England cities are discussed below.

South Burlington, Vermont

http://www.sburlstormwater.com

The South Burlington Stormwater Utility is the first of its kind in Vermont. Six streams in and around South Burlington are impaired from stormwater, resulting in water pollution, erosion, flooding, and unstable streambanks. The utility was established in 2006 to help mitigate the increasingly complex issues associated with stormwater management, including failing septic systems in older developments and phosphorus runoff polluting Lake Champlain, which is the primary source of drinking water for the Burlington area.

The municipal Stormwater Services Division administers the utility, which pays for system maintenance, capital project construction, enforcement, and customer outreach and assistance.

An example of a capital project construction (a gravel wetland) that was paid for by the stormwater utility in South Burlington, Vermont.

User fees are based on the amount of impervious area on a property. The monthly fee per equivalent residential unit (ERU) was set using a scientific process. This process determined that a typical single-family home in South Burlington had 2,700 square feet of impervious surface. A single-family home is assessed a fee of $4.50 per month, whereas duplexes and triplexes are assessed fees of $2.25 and $1.50 per month, respectively. All other properties are assessed a fee depending on the amount of impervious surface. The utility funds a comprehensive program bringing in more than $1 million annually.

Cities in New England with Stormwater Utilities

- Chicopee, Massachusetts
- Lewiston, Maine
- Newton, Massachusetts
- Reading, Massachusetts
- South Burlington, Vermont

(as of December 2008)

Newton, Massachusetts

http://www.ci.newton.ma.us/dpw/engin/stormwater.htm

A Stormwater Drain Fee was established in 2006. The utility enables the city to manage and upgrade stormwater infrastructure, protect nearby natural waterbodies (e.g., Charles River and Crystal Lake), provide technical assistance with stormwater management issues, and provide educational programs for residents and schools.

User fees are based on a flat rate. Residential properties are assessed a fee of $6.25 per quarter, and all other properties are assessed a fee of $37.50 per quarter. The Board of Aldermen debated using a different fee structure but found that the program's operating costs would triple if the city had to determine the rates on the basis of individual lot sizes.

Two hydraulically connected bioretention cells paid for by the stormwater utility on Hammond Pond in Newton, Massachusetts

Stormwater Funding Mechanisms

The most common funding options for municipal stormwater programs are discussed below.

Service Fees (including stormwater utilities)

Some communities include stormwater management costs within their water or sanitary sewer system budgets, often basing fees on metered water flow. However, a property's metered water flow usually bears no relationship to the stormwater runoff it generates. For example, the stormwater runoff from the impervious area of a shopping center's buildings and parking lots is significant, but its use of metered water is relatively small.

Stormwater fees, which are typically based on property type or area, provide for regulatory compliance and operation and maintenance costs, and are charged to both tax-paying and tax-exempt properties. The average quarterly fee for a single-family home is $11, though some communities charge as little as $2 or as much as $40 per quarter to a single-family home.

Property Taxes/General Fund

Many communities fund stormwater management through property taxes paid into their general funds, but in the competition for general fund dollars, stormwater management improvements are typically considered low priority unless the municipality is reacting to a recent major storm or regulatory action. This system is also not equitable, because the basis for determining property taxes, assessed property value, is irrelevant to the cost of stormwater management for that property. Additionally, tax-exempt properties, such as governmental properties, schools, colleges, and universities, do not support any of the cost of stormwater management, even though many of them are major contributors of stormwater runoff.

Special Assessment Districts or Regional Funding Mechanisms

If a stormwater construction project benefits only a portion of a municipality, it can be funded by fees assessed only to those properties within that area, which is called a *special assessment district*. Separate stormwater utility districts can also be formed within a town or by bringing several towns together to form a district.

There might be some cases where regional or multiple-jurisdictional funding mechanisms would be useful. For example, if an impaired stream has a fairly small watershed, spanning parts of several municipalities, costs of stormwater implementation could be shared among the municipalities and the funding could be managed by an existing regional authority such as a soil and water conservation district. Funding could involve fees, as well as credits, for existing best management practices (BMPs) or retrofits. The regulatory authority could choose to issue conditions or a general permit for discharges in the watershed, especially if a watershed stormwater management plan has been prepared (with specific nonstructural and structural BMPs). Parcel owners, developers or permittees could be required to fulfill their requirements by implementing the watershed plan.

System Development Charges (SDCs)

SDCs (also known as *connection fees* or *tie-in charges*) are one-time fees commonly charged to new customers connecting to a water or sanitary sewer system. In this way, new customers *buy into* the existing infrastructure, and/or the infrastructure expansion necessary to serve them. The amount of the new customer's SDC is typically based on an estimated water demand of the new customer. Municipalities could develop stormwater SDCs tied to the area of the customer's property.

Grants and Low-Interest Loans

Stormwater management grants might be available for various types of projects on a state-by-state basis. Clean Water or Drinking Water State Revolving Fund (SRF) dollars could be used to fund development of a utility or related capital projects. State environmental programs could consider working with the legislature to set up a pool of funds for towns to help set up districts, which could then be repaid

once the fees are established. Connecticut directed its Department of Environmental Protection to use $1 million of state grant funds that the legislature provided for wastewater facility construction to be used by three communities to develop stormwater utilities as pilot programs. The Maine Department of Environmental Protection has provided a small amount of grant money, to be matched by the community, to help establish stormwater utility districts. Stormwater projects that are not required as part of a National Pollution Discharge elimination system (NPDES) permit can be funded through the Clean Water Act section 319 nonpoint source grant program administered by states.

Types of Stormwater Utilities

There are three basic methods that stormwater utilities use to calculate service fees. These are sometimes modified slightly to meet unique billing requirements. Impervious area is the most important factor influencing stormwater runoff and is therefore a major element in each method.

Equivalent Residential Unit (ERU)

The ERU method (also known as the Equivalent Service Unit (ESU) method) is used by more than 80 percent of all stormwater utilities. It bills an amount proportional to the impervious area on a parcel, regardless of the parcel's total area. It is therefore based on the effect of a typical single-family residential (SFR) home's impervious area footprint. A representative sample of SFR parcels is reviewed to determine the impervious area of a typical SFR parcel. This amount is called one *ERU*. In most cases, all SFRs up to a defined maximum total area are billed a flat rate for one ERU. In some cases, several *tiers* of SFR flat rates are established on the basis of an analysis of SFR parcels within defined total area groups. A tiered SFR flat rate approach improves the equitability of the bills sent to homeowners. The impervious areas of non-SFR parcels are usually individually measured. Each non-SFR impervious area is divided by the impervious area of a typical SFR parcel to determine the number of ERUs to be billed to the parcel.

Advantages

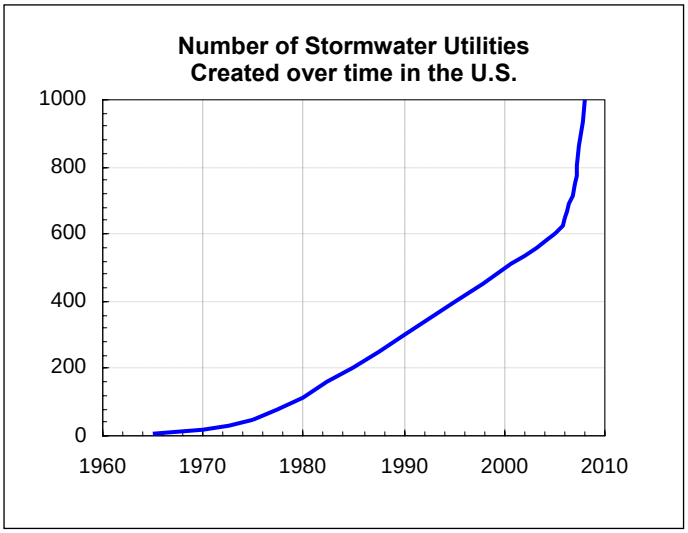
The relationship (or nexus) between impervious area and stormwater impact is relatively easy to explain to the public—you pave, you pay. The number of billable ERUs can be determined by limiting the parcel area review to impervious area only. Because pervious area analysis is not required, this approach requires the least amount of time to determine the total number of billing units.

Disadvantages

Because the potential effect of stormwater runoff from the pervious area of a parcel is not reviewed, this method is sometimes considered to be less equitable than the Intensity of Development (ID) or Equivalent Hydraulic Area (EHA) methods (discussed below) because runoff-related expenses are recovered from a smaller area base. This method could still be used to charge a fee to all parcels - pervious as well as impervious - to cover expenses, such as administration and regulatory compliance unrelated to impervious area.

What is a stormwater utility?

A stormwater utility, operating much like an electric or water utility, may collect fees related to the control and treatment of stormwater that can be used to fund a municipal stormwater management program.



Intensity of Development (ID)

This stormwater cost allocation system is based on the percentage of impervious area relative to an entire parcel's size. All parcels, including vacant/undeveloped parcels, are charged a fee. For developed parcels, fees are based on their *intensity of development*, which is defined as the percentage of impervious area of the parcel. Vacant or undeveloped parcels contribute to runoff and are assigned a lower fee. Rates are calculated for several ID categories and are billed at a sliding scale, as shown in the table below. For example, an SFR parcel, which is categorized as *moderate development*, would pay $0.16/month/1,000 square foot (ft^2) (or $1.60 for a 10,000 ft^2 lot).

Category (impervious percentage range)	Rate per month per 1,000 square feet of total served area (impervious plus pervious)
Vacant/Undeveloped (0%)	$0.08
Light development (1% to 20%)	$0.12
Moderate development (21% to 40%)	$0.16
Heavy development (41% to 70%)	$0.24
Very heavy development (71% to 100%)	$0.32

Advantages

The ID method accounts for stormwater from the pervious portion of parcels. Therefore, it can be more equitable than the ERU method. If a parcel's impervious area is increased slightly because of minor construction modification, it probably would not be bounced up into the next higher ID category. This reduces the time required for staff to maintain the billable unit master file.

Disadvantages

The ID categories are broad, and parcels are not billed in direct proportion to their relative stormwater discharges. This method can be more difficult to implement than the ERU method because parcel pervious and impervious areas need to be reviewed. It is also more complicated to explain to customers than the ERU method. This method might also discourage urban infill and inadvertently encourage sprawl.

Equivalent Hydraulic Area (EHA)

Parcels are billed on the basis of the stormwater runoff generated by their impervious and pervious areas, charging impervious area a much higher rate than the pervious area.

Advantages

The EHA method accounts for flow from the pervious portion of parcels. Therefore, it might be more equitable than the ERU method. Like the ID method, it accounts for undeveloped/vacant parcels and allows them to be billed, but it is fairer than the ID method because parcels are billed on the basis of individual measurements of pervious and impervious areas.

Disadvantages

Because pervious area analysis is required in addition to impervious area, this approach requires more time to determine the total number of billing units. It is also more complicated to explain to customers than the ERU method.

These are three basic methods that utilities can use to calculate fees, but it is becoming clear that municipalities will need to be creative to find what will work for their community. In San Mateo County in California vehicle registration fees were increased to address stormwater pollution issues associated with vehicles and transportation infrastructure.

Creating a Stormwater Utility

The following are the typical steps involved in creating a stormwater utility.

Develop a Feasibility Study

The first step is to develop a study that provides the community with enough information to decide if implementing the utility is sensible. The feasibility study will typically address preliminary revenue requirements (usually from current stormwater budgets) and assess the billing area to determine the SFR billing rate, the service fee method to use and credits to provide, the preliminary rate charge for each ERU, and the responsible party for billing.

Create a Billing System

If the municipality decides after the feasibility study to develop a stormwater utility, it will then collect user and parcel area data (such as ownership and impervious area for each parcel) and develop a system to bill property owners. The two most common stormwater billing systems are (1) adding a stormwater utility fee onto an existing water/sewer fee bill, or, (2) non-ad valorem assessments. Approximately 80 percent of stormwater utilities use the first approach because it is inexpensive and simple to add on to the existing billing system.

An example of a public meeting.

Roll Out a Public Information Program

A strong public education program is critical throughout the stormwater utility development process. Many people are unaware of the increasing cost of stormwater management and the options to fund it. A well-funded stormwater program can help reduce flooding, improve drought conditions, create better fishing and recreation, and improve water quality. An organized public information and education effort, which typically involves the following components, is essential to the success of a stormwater utility:

- **Identify key users and groups**. Two potential groups to target include (1) properties that generate a significant amount of runoff and often receive high stormwater bills (i.e., shopping malls) and (2) tax-exempt properties (i.e., schools and churches) that do not contribute property taxes into the general fund (which has traditionally been the source of stormwater management funding).
- **Establish an advisory committee.** Include a cross-section of the community including representation from universities, businesses, non-profit organizations, churches, developers, and shopping center owners.
- **Create a stormwater utility website.** The website should post appropriate progress documents and develop a *frequently asked questions* page.

- **Prepare pamphlets and presentations.** Prepare a brochure and an electronic presentation describing the need for the stormwater utility, the rate method, and the projected rates.
- **Meet with key user groups and the media.** Give presentations to civic groups and the media, and schedule one-on-one meetings with customers projected to receive the highest bills.
- **Distribute information before the initial billing.** The stormwater utility brochure should be sent to all customers before billing. Include the customer's actual projected bill, if possible.

Adopt an Ordinance

An ordinance will provide legal authority for establishing the utility. An example stormwater utility ordinance from Maine is at **http://www.maine.gov/spo/landuse/docs/publications.htm**

Provide Credits/Exemptions

Credits or exemptions built into the ordinance can be used to provide incentives for certain practices or relief from utility fees to certain types of land uses. Credits should be clearly described and can include installation of approved BMPs such as retention/detention basins, rainspout disconnections or porous pavers, and educational programs for residents, businesses and municipal employees. Municipalities that calculate the utility using impervious area could offer an exemption to undeveloped (100 percent pervious) land.

Implement the Utility

The first utility bill is the most important because many customers do not focus on the new stormwater fee until they actually receive their first bill. The municipality should notify customers of their estimated fee several months before billing begins. It should create a telephone hot line, e-mail service and website to address questions and concerns. In addition, the municipality should be prepared to address legal challenges to its stormwater fee. The municipality should be prepared to develop a process to update the billing unit data for an existing customer or to enter the data for a new customer.

Barriers to Creating a Stormwater Utility

There are typically two barriers to creating a stormwater utility: legal and political.

Legal Barriers

In EPA Region 1, all states provide legal authority to establish stormwater utilities. A summary of the current or proposed legal authority within EPA Region 1 states is presented below:

- **Connecticut**

  In 2007, the Connecticut General Assembly authorized three towns (New Haven, New London, and Norwalk) to conduct pilot studies to explore the feasibility and framework of stormwater utilities.

- **Maine**

  Stormwater utilities are authorized in the Maine Constitution, Article VIII, and Title 30-A Maine Revised Statutes Annotated §3001.

- **Massachusetts**

  MGL Chapter 83, Section 1 was amended in 2006 to include the ability to establish stormwater utilities.

- **New Hampshire**

  Manchester was given special authority to form a utility in 2007. All municipalities were given the authority to establish a stormwater utility in 2008 under amendments to RSA 149-I.

- **Rhode Island**

  Chapter 45-61of the Rhode Island Stormwater Management and Utility District Act of 2002.

- **Vermont**

  In 2003, 24 V.S.A. Section 3501(6) gave cities the ability to establish *sewage disposal charges* for treatment and disposal of stormwater. Also, 24 V.S.A. 1264 and 4407 have been amended to encourage the formation of utilities.

Political Barriers

It usually takes at least one *champion,* often the mayor or another senior local official, to create a stormwater utility, especially in the face of local political opposition. A public information program is needed to visually present the inadequacies of the community's current stormwater management program and the benefits from stormwater utilities in other communities to garner public support and offset opposition to the fee. It is important to explain the benefit of implementing a stormwater utility to the press, because opposition from local news outlets sometimes can turn public opinion against the utility, often by using inaccurate terms such as a *rain tax*. When clearly informed of the financial and environmental benefits (such as improved flood control, fishing, recreation, and enhancement of future drinking water supplies through increased recharge) of a stormwater utility, the community will be more likely to support its implementation.

Additional Resources

This fact sheet is one of a series of four prepared by EPA Region 1. The others are listed below and are available on the EPA Region 1 website. **http://www.epa.gov/region1/npdes/stormwater**

- *Managing Stormwater with Low Impact Development Practices: Addressing Barriers to LID*
- *Incorporating Low Impact Development Into Municipal Stormwater Programs*
- *Restoring Impaired Waters*: *Total Maximum Daily Loads (TMDLs) and Municipal Stormwater Programs*

Charles River Watershed Association. *Assessment of Stormwater Financing Mechanisms in New England*
http://www.crwa.org/projects/stormwater/swutility.html

Connecticut Department of Environmental Protection. *The 2004 Connecticut Stormwater Quality Manual*
http://www.ct.gov/dep/cwp/view.asp?a=2721&q=325704

Connecticut Department of Environmental Protection, Stormwater Management.
http://www.ct.gov/dep/stormwater

Green Infrastructure Approaches to Managing Wet Weather with Clean Water State Revolving Funds
http://www.epa.gov/OWM/cwfinance/cwsrf/green_if.pdf

Indiana University-Purdue University Indianapolis. *An Internet Guide to Financing Stormwater Management*
http://stormwaterfinance.urbancenter.iupui.edu

Maine Department of Environmental Protection. *Bureau of Land and Water Quality*
http://www.state.me.us/dep/blwq/docstand/stormwater/index.htm

Massachusetts Department of Environmental Protection. *Water, Wastewater and Wetlands*
http://www.mass.gov/dep/water/wastewater/stormwat.htm

National Association of Flood and Stormwater Management Agencies. *Guidance for Municipal Stormwater Funding*
http://www.nafsma.org

Natural Resources Defense Council. *Funding and Gaining Support for Stormwater Programs*
http://www.nrdc.org/water/pollution/storm/chap4.asp

New England Environmental Finance Center. *Stormwater Utility Fees: Considerations and Options*
http://efc.muskie.usm.maine.edu/docs/StormwaterUtilityFeeReport.pdf

Pioneer Valley Commission. *How to Create a Stormwater Utility*
http://www.pvpc.org/resources/landuse/storm_util.pdf

Rhode Island Department of Environmental Management. *Office of Water Resources*
http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/stwater/index.htm

University of Maryland, Environmental Finance Center.
http://www.efc.umd.edu

U.S. Environmental Protection Agency, Watershed Academy. *Catalog of Federal Funding Sources for Watershed Protection*
http://cfpub.epa.gov/fedfund

U.S. Environmental Protection Agency, Watershed Academy. *NPDES Permits in New England*
http://www.epa.gov/region1/npdes/stormwater/administration.html

U.S. Environmental Protection Agency, Watershed Academy. *NPDES Storm Water Program*
http://www.epa.gov/region1/npdes/stormwater/index.html

Vermont Agency of Natural Resources. *The Vermont Stormwater Management Manual*
http://www.anr.state.vt.us/dec/waterq/stormwater/docs/sw_manual-vol1.pdf

Vermont Agency of Natural Resources, *Water Quality Division*
http://www.anr.state.vt.us/dec/waterq/stormwater.htm

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NOTE: This document is not law or regulation; it provides recommendations and explanations that MS4s can consider in determining how to comply with requirements of the Clean Water Act and National Pollutant Discharge Elimination System permit requirements.