



Funding Source Assessment: Overview and Guidance

1 BACKGROUND

The General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4) in Massachusetts requires municipalities in the Charles River watershed to create a Phosphorus Control Plan (PCP) to meet pollutant reduction requirements of the Permit. A similar requirement applies to communities in which there are lakes or ponds subject to a phosphorus Total Maximum Daily Load (TMDL). One element of the PCP is a Funding Source Assessment (FSA) “to describe known and anticipated funding mechanisms...that will be used to fund PCP implementation.” This document has been developed to assist communities in meeting this FSA requirement and provides a general overview of typical funding sources and potential suitability for sustaining the level of investment required to meet Permit terms and targeted pollutant reductions. It also provides reference to various tools for evaluation of potential program costs for which funding is required.

2 POTENTIAL FUNDING MECHANISMS

The majority of communities in Massachusetts currently fund stormwater management programs through the General Fund. In this manner, projects are funded when appropriations are presented annually, and funds are approved on the basis of a Town Meeting vote. There are a variety of methods available to communities, however, some of which may provide a more sustainable or consistent revenue upon which to plan for implementation of future program elements. Table 1 provides a summary of common funding mechanisms.

Table 1 Summary of Common Stormwater Funding Mechanisms		
Funding Type	Description	Notes
Taxes	Most general purpose local governmental functions are primarily funded through taxes. The purpose is to defray the expenses of general government, as distinguished from the expense of a specific function or services. It is not necessary that a tax have a demonstrable association with any particular purpose or function.	<i>Positives:</i> It is a sustainable revenue source and a familiar process. <i>Drawbacks:</i> Tax exempt properties do not contribute to solutions for a challenge to which they contribute; funding priorities are subject to change; potentially

Table 1
Summary of Common Stormwater Funding Mechanisms

		inequitable distribution of service burden.
Bonds and Grants	Bonds involve borrowing money and accruing debt. While they may be useful for major capital projects, they are not a stable source, and are subject to annual vote. Grants are competitive and criteria specific, which may limit their availability or applicability to need.	<i>Positives:</i> Good option for larger scale, intermittent individual projects of known scope and cost. <i>Drawbacks:</i> Not easily adaptable to programmatic and operations budgeting; no guarantee of funding through competitive processes.
Special Assessment	A special assessment must confer some direct benefit to the property assessed, as the assumption for the assessment is the premise that it improves the value of the property. An assessment may be based on property value or other factors such as street frontage.	<i>Positives:</i> Not particularly well suited to this need. <i>Drawbacks:</i> Assessments typically have a specific purpose and therefore may have some limitation in terms of how the dollars are applied within a program; convincing the public of the “value” of stormwater management is a difficult task.
Service Fee/Utility	These fees provide the funds to provide services and facilities, or basically to recover the costs of provision of services. The utility must adopt a service charge rate methodology that equitably assigns appropriate fees or charges.	<i>Positives:</i> Provides a stable revenue stream upon which short and long term planning and investments can be based; includes all property owners, not just taxed properties; is not as subject to changes in political priorities or competition with other local priorities. <i>Drawbacks:</i> Implementation requires political will and popular support that may take time to develop so initial investment is required for



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		public outreach and education; implementation may require administrative changes and updates to billing systems, etc.

The MS4 Permit does not include a condition requiring the development and institution of a stormwater utility or other specific funding mechanism. However, the FSA component of the PCP requires communities to investigate possible funding mechanisms, such as a utility or enterprise-funded program, that can be sustained over time and anticipated to meet the funding obligations of the permit as detailed in the PCP. Results of the analysis are intended to provide the framework for “next steps” to ensure a funding plan is successfully implemented. This document focuses on stormwater utilities as the other standard mechanisms are generally better understood, but also typically more restricted in their potential uses.

A stormwater utility is an enterprise fund through which customers are charged a service fee that recovers the cost of providing stormwater management services and maintaining stormwater infrastructure, as well as regulatory compliance. For a successful program, the fee for service would be equitably assigned. This funding mechanism is dedicated to stormwater, just like a water or sewer enterprise fund is dedicated to those services.

In Massachusetts, there are two companion pieces of legislation that allow municipalities to set up stormwater utilities: MGL Chapter 83, Section 16 and MGL Ch 40 Section 1A. MGL Ch 83 Section 16 allows municipalities to set up a stormwater management utility and to charge utility fees for managing stormwater. MGL Ch 40 Section 1A provides a definition of a district for the purpose of water pollution abatement, water, sewer, and/or other purposes. Since Massachusetts passed this enabling legislation, approximately 22 communities have adopted utility or fee-based systems to support program administration and capital programs. Attachment B provides some additional detail.

The benefit of stormwater utilities as a funding option is that they provide dedicated revenue solely for the stormwater program; consolidate/coordinate responsibilities; and allow for development of a more comprehensive and predictable program.

3 GETTING STARTED

PCP development includes an evaluation of the structural and non-structural Best Management Practices (BMP) necessary to achieve target reductions. This exercise also provides a basis for understanding the magnitude of future program costs that will likely exceed investments historically dedicated to stormwater management in a community. If



continued reliance on the General Fund is considered inadequate, other options must be explored.

There are multiple options for the level of funding and the type of fee structure adopted by a utility. Municipalities will need to evaluate three key program elements:

- anticipated stormwater management program revenue needs,
- stormwater utility billing approaches, and
- the legal mechanisms for adopting a stormwater utility. A proposed process is outlined below.

4 STORMWATER MANAGEMENT PROGRAM COST ANALYSIS

An efficient first step in the evaluation is to prepare a stormwater management gap analysis. That analysis should encompass regulatory elements as well as physical infrastructure operations and maintenance and program management. The gap analysis should also include a program cost estimate for budgeting purposes.

A planning-level stormwater management program cost analysis should start with existing data from a municipality's Capital Improvements Plan and operating budgets. The analysis should capture stormwater program cost for the proportion of Town staff labor costs (Town Personnel Services) dedicated to stormwater management responsibilities.

In addition to historical information about past program costs, there are a variety of tools and resources available to supplement program cost estimating. A 2016 technical memorandum from WaterVision, LLC to USEPA Region 1 summarizes an evaluation of costs associated with permit required activities. The evaluation included development of cost estimating worksheets for small, medium and large communities, all of which can be found at <https://www.epa.gov/npdes-permits/stormwater-tools-new-england#ms4cei>. Note that the evaluation and the spreadsheets are specific to MS4 related activities only. Municipalities may choose to develop a stormwater utility to cover all or portions of stormwater management within the community, including flood mitigation, operations and maintenance or other infrastructure management tasks associated with the stormwater management system. If the utility is to comprehensively cover these costs, historical cost data can be an appropriate reference point.

For many communities stormwater management is a very decentralized function, with multiple departments sharing responsibility for operations, maintenance, inspection, enforcement, etc. In order to capture all of the costs currently embedded in stormwater management, it is critical to fully inventory the manner in which your community deals with various tasks, and account for that effort in the overall cost estimate. The September 30, 2011 Final Report entitled *Sustainable Stormwater Funding Evaluation for the Upper Charles River Communities of Bellingham, Franklin, and Milford, MA* funded by EPA Region 1 provides a good program cost framework starting point.



4.1 STORMWATER UTILITY IMPLEMENTATION

As noted, a stormwater utility may be utilized to collect fees to cover system operation and maintenance, budgeting, and master planning. The use of the funds generated would be defined within a local bylaw or ordinance establishing the utility. Public stormwater utilities may cover a broad array of stormwater management services, including the following:

- Improvement and maintenance to sewers, drains, stormwater Best Management Practices (BMPs), and treatment facilities
- Management of runoff
- Updating systems that do not comply with state or federal regulations
- Street sweeping and catch basin cleaning
- Monitoring and inspecting stormwater control devices
- Labor costs related to stormwater management or utility billing and administration

There are additional administrative costs associated with implementing and maintaining a stormwater utility. For example, there may be costs for creating a new bill and updating these bills, (utility billing and management support). In addition, while a municipality would be able to attach a lien on the property for unpaid stormwater bills, the stormwater utility must account for a small proportion of customers that may not pay utility bills on time or at all (bad debt).

The cost to implement and maintain a stormwater utility may range from \$25,000 to \$50,000 annually, based on recent implementation experience in Massachusetts. The stormwater utility implementation costs should also account for credits, which would reduce the amount of revenue available. The municipality may choose to issue credits for structural stormwater best management practices that improve water quality or reduce stormwater flows into the MS4 (such as infiltration basins or rain gardens as opposed to rain barrels). Consideration of how the utility can encourage behaviors or projects identified in the PCP will also influence revenue expectations.

General information is provided below regarding getting started with a stormwater utility. There are additional resources developed by non-governmental organizations and others which can provide detailed guidance for this undertaking. Some of these resources are listed in Attachment C.



5 TOWN-WIDE GIS ANALYSIS

To evaluate potential fee structures, the municipality can perform a preliminary analysis of the potential customer base for a stormwater utility using publicly available data. Data can be sourced from the Massachusetts Office of Geographic Information System (MassGIS) which includes layers for land use, parcels, building footprints, and impervious area. The most recently available aerial imagery is also valuable information.

The MassGIS impervious layer may significantly under-capture impervious area due to new development, surface-confusion of impervious area projections, shadowing from the angle of photography, and inaccurate alignment of parcel lines. As a preliminary analysis, however, this is useful information. If the municipality chooses to advance the concept of a utility to implementation, additional data refinement will be required.

6 FEE STRUCTURES

There are multiple ways to structure fees for a stormwater utility, four of which are presented below. These fee structures include one that is analogous to the funding mechanism common to most communities (i.e. taxes) as well as the three most frequently used fee structures within the United States, according to data from the Western Kentucky University Stormwater Utility Survey.¹ Each fee structure offers a different perspective on applying stormwater utility costs equitably.

- **Assessed Property Value** - the most closely analogous distribution of fees to the most common stormwater management funding source, the general fund, which receives tax revenue proportional to assessed property values.
- **Flat fee** – all developed parcels are billed equally as a proportion of the municipality’s anticipated revenue needs.
- **Fee per stormwater equivalent residential unit (ERU) or standard billing unit (SBU)** – a charge based on the average amount of impervious area on a residential property or based on every 1,000 square feet of impervious area on a parcel. Impervious area is highly correlated with stormwater runoff and pollution potential and is therefore typically used for billing.
- **Tiered or Two Level** – a separate rate structures with fee classifications based on land use type. This is a hybrid approach that communities use to set different rates for residential and non-residential parcels. Rates are typically developed to increase the proportion of fees paid by commercial, institutional, industrial, and “all other” non-residential landowners.

¹ Based on data from the Western Kentucky University Storm Water Utility Survey (2019)
https://digitalcommons.wku.edu/cgi/viewcontent.cgi?article=1000&context=seas_faculty_pubs



GIS analysis can be employed to complete a preliminary evaluation of the costs to property owners under each of the fee structures.

6.1 OPTION 1: ASSESSED PROPERTY VALUE

Property owners receive an annual tax bill which funds local government programs. This tax bill is relative to the assessed value of the property and the Town's budget. Under this stormwater utility rate structure stormwater utility fees would be assessed based on a proportion of the assessed value of a property, analogous to the real estate tax billing. Fees would be based on property value and overall revenue needs for the stormwater management program. In theory, the stormwater utility fee would offset a portion of the municipality's annual budget, thereby decreasing the tax burden charged through real estate taxes. In practice this may not prove to be equal to the stormwater utility fee, therefore taxpayers may not experience a corresponding reduction in the tax bill, however there will be some offset which will need to be determined. Under this fee structure, properties that are tax exempt, such as religious or charitable organizations, would not be charged a stormwater utility fee.

While this distribution of program costs is similar to funding through the general fund, it is less equitable than other fee structures described below, which are based on the amount of impervious area on each parcel. Impervious area is the predominant factor in determining stormwater runoff and is therefore typically used in developing stormwater utility fee structures.² Property value does not necessarily correlate well with impervious surfaces and therefore the corresponding amount of stormwater runoff generated on the parcel.

6.2 OPTION 2: FLAT FEE

The simplest rate structure is a flat rate fee for all developed properties. Under this fee structure, rates would be set as a proportion of the total estimated revenue needs. This option accounts for all developed properties to be assessed an equal stormwater fee, regardless of their size or use.

² EPA Region 1 Factsheet (2009) - Funding Stormwater Programs
<https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/FundingStormwater.pdf>



6.3 OPTION 3: EQUIVALENT RESIDENTIAL UNIT (ERU) OR STANDARD BILLING UNIT (SBU)

6.3.1 Option 3A: Equivalent Residential Unit (ERU)

The most typical rate structure for stormwater utilities in the United States³ is based on an equivalent residential unit (ERU), or a fixed fee that is scaled based on the amount of impervious area on a parcel, regardless of land use. The ERU is based on the average amount of impervious area on a residential property. Therefore, each property is billed according to the ERUs based on the proportion of impervious area to the ERU value.

6.3.2 Option 3B: Standard Billing Unit (SBU) fee structure

Given technological improvements to GIS, some communities are choosing to use a variation of the ERU, called a standard billing unit (SBU). The SBU is smaller than the ERU. Under the SBU fee structure, the Town has a more granular billing unit size, and therefore there is a larger range of fees compared to the ERU structure. Non-residential parcels with larger billing areas would pay most of the fees, and therefore the average residential property owner would pay less under this fee structure compared to the ERU fee structure.

6.4 OPTION 4: TWO LEVEL OR TIERED FEE STRUCTURE WITH CUSTOMERS CATEGORIZED BY LAND USE TYPE (RESIDENTIAL AND NON-RESIDENTIAL)

Under this fee structure, a billing unit or stormwater billing unit (SBU) would be developed based on the distribution of total impervious area for residential parcels Conclusion and

7 ADDITIONAL CONSIDERATIONS

Figure 1 summarizes the funding mechanisms and fee structures for a stormwater utility as described in this memorandum. Pros and cons of each fee structure with regards to equity and implementation complexity are briefly described in this figure and next steps are described below.

³ Western Kentucky University Stormwater Utility Survey (2018)
<https://www.wku.edu/seas/undergradprogramdescription/swusurvey2018.pdf>

Fee Structure	General Fund	1) Assessed Property Value	2) Flat	3A) ERU	3B) SBU	4) Tiered
Equity	Property taxes are based on assessed property value	Fees are based on assessed property value	Fees are equal for all property owners	Most equitable based on water quality impacts but has a higher minimum fee	Most equitable based on water quality impacts	Shifts a higher proportion of fees to non-residential property owners
Implementation Complexity	No change	Refinement of tax-exempt properties needed	Simplest of utility fee structures	Refinement of impervious area needed	Precise refinement of impervious area needed	Refinement of impervious area needed
Next Steps	Confirm adequacy and sustainability of funding source	Public Education & Outreach				
		Town Bylaw and Policies				
		Billing System Development and GIS Updates				

Figure 1: Summary of stormwater management program

Public Education and Outreach

Establishing a new fee for stormwater management is typically controversial and significant investment in a public education and outreach campaign is recommended. This campaign should seek to share information and ensure a transparent process through utility development and implementation.

Local Bylaw

The implementation of a stormwater utility would typically require an amendment to a municipality’s bylaws, ordinances, and/or supporting regulations. The municipality will need to create a stormwater enterprise account and then pass a stormwater utility bylaw/ordinance to establish the authority to assess a fee for stormwater. Once the enterprise fund has been created, the stormwater utility bylaw will need to be sponsored by a body, such as the Board of Selectmen, and passed by a majority vote at Town Meeting or comparable appropriate action. Additional information on the legal basis for a stormwater utility is included in Attachment B.

Billing System Development and GIS Updates

Prior to sending the first stormwater utility bill, the municipality must develop a billing file and integrate this into the existing billing system. Typically, the billing file is generated from GIS.

8 NEXT STEPS

The purpose of the FSA is to ensure that your community understands the costs and program elements of a successful MS4 program, and can ensure a sustainable funding



source or strategy that will allow the program to be implemented successfully. Based on steps described above, an FSA will:

- Develop MS4 program (and/or overall stormwater management program) cost estimates using both historical experience and level of effort established through PCP development tasks;
- Identify a funding mechanism suitable to provide adequate financing to implement the program; and,
- Identify a path towards establishing that mechanism.



Attachment A: Stormwater Utilities in Massachusetts Communities and Legal Mechanisms for Adopting a Stormwater Utility

There is precedent for funding stormwater management programs through a utility under a variety of billing structures. Approximately twenty communities in Massachusetts have an implemented stormwater utility or will have a stormwater utility fee by 2020. A summary of Stormwater Utilities in Massachusetts is provided in the table below.

Select Examples of Stormwater Utility Fees in Massachusetts

Community	Fee Type	Typical Residential Monthly Fee	Year Established	Population	Annual Revenue	Revenue per Capita	Revenue per Area of Municipality (\$/mi ²)
Ashland	Flat	\$-	2019	16,593	\$-	\$-	\$-
Bellingham	Unknown	\$-	2019	17,093	\$-	\$-	\$-
Braintree	Tiered	\$2.08	2018	35,744	\$-	\$-	\$-
Chelmsford	Tiered	\$3.33	2017	33,802	\$2M	\$59.17	\$86,206
Chicopee	Property Area	\$8.33	1998	54,653	\$1M	\$18.30	\$41,841
Fall River	Flat	\$11.67	2008	91,938	\$4.66M	\$50.69	\$115,633
Gloucester	Unknown	\$4.42	2011	30,273	\$-	\$-	\$-
Longmeadow	Tiered	\$3.39	2017	15,864	\$-	\$-	\$-
Milton	Tiered	\$4.33	2016	27,003	\$705K	\$26.11	\$53,008
Millis	SBU	\$2.75	2017	10,000	\$675K	\$67.50	\$54,878
Newton	Flat	\$2.08	2006	83,829	\$575K	\$6.86	\$31,593
Northampton	Tiered	\$5.00	2014	28,592	\$1.98M	\$69.25	\$55,385
Pepperell	Flat	\$5.00	2019	12,146	\$-	\$-	\$-
Reading	SBU	\$3.33	2006	24,145	\$357K	\$14.79	\$36,061
Westfield	Property Area	\$-	2010	41,094	\$600K	\$14.60	\$12,658



Attachment B: Legal Mechanisms for Adopting a Stormwater Utility

Massachusetts General Law Chapter 83 Section 16 provides the enabling legislation for Stormwater Utilities. Chapter 83 focuses on sewers, drains and sidewalks and section 16 of Chapter 83 more specifically goes into details about sewers with a utility plan. Originally established for sanitary sewer systems, this section was revised in 2004 to include “main drains and related stormwater facilities,” thereby enabling municipalities to charge a fee for stormwater services. The following comments regarding the enabling legislation are provided for consideration in the development of a stormwater utility (i.e., bylaw, ordinance):

- The fee is to “supplement” other available funds (e.g. real estate tax-derived general funds); however, a definition of what should be considered available is not provided.
- Stipulates that charges must be either quarterly or annual, which will influence the billing options that are considered.
- Fees must be charged uniformly across residential properties and a uniform fee established for non-residential properties. The alternative option given is that a uniform fee be established for all properties.
- Current language allows for policy decisions to be made if it is fair, equitable, and uniform.
- The language states that such a fee shall be paid “by every person” indicating that all properties (including real estate tax-exempt) would be required to pay said stormwater fee. This interpretation is further substantiated by the discussion of credits as an option to reduce a fee – a credit system is not required by this legislation.



Attachment C: Stormwater Utility Implementation Guidance

The following references provide additional information for creating and implementing a stormwater utility:

<https://www.mass.gov/doc/massachusetts-stormwater-fee-summary/download>

<https://www.mapc.org/resource-library/stormwater-financing-utility-starter-kit/>

Getting Community Buy-in for Stormwater Funding: A Four Session Participatory Workshop: Facilitator Manual

https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NHEERL&dirEntryId=346132

The Potential Advantages of a Stormwater Utility for Financing Your Stormwater Management Needs

<https://www.hrg-inc.com/the-potential-advantages-of-a-stormwater-utility-for-financing-your-stormwatermanagement-needs/>