

# Paying for Stormwater Management in Chesapeake Bay Communities: Policy Recommendations

## Choose Clean Water Coalition – Stormwater Workgroup

June 2017

### *Introduction*

An increasing number of municipalities are working to reduce the amounts of polluted wastewater and stormwater that flow into their local waterways. In the Chesapeake Bay region, municipalities are driven to reduce stormwater pollution in large part by regulatory obligations. For example, in December 2010, the Environmental Protection Agency (EPA) established a Total Maximum Daily Load (TMDL) for the Chesapeake Bay to identify pollution reduction targets for nitrogen, phosphorus, and sediment within the region. In addition to agricultural runoff and discharges from wastewater treatment facilities, urban stormwater runoff is a major source of pollution to the Bay's waterways. Municipalities strive to reduce stormwater both to remain in regulatory compliance and to reduce flooding<sup>1</sup> and improve water quality for fishing and recreating.

As localities begin to think concretely about achieving these goals, paying for the needed infrastructure improvements can be a challenge. This paper aims to de-mystify the stormwater fee, one of the most common and potentially equitable means of funding stormwater-related improvements such as green infrastructure. We present a suite of strategic choices that local governments should make to initiate stormwater fees and accompanying programs that can help convert the stormwater management challenge into an opportunity to fund and build infrastructure, equitably apportion stormwater management costs, create jobs, and invest in improvements to local communities.

### *What is green infrastructure?*

Green infrastructure helps stop runoff pollution by capturing rainwater and either storing it for use or letting it filter back into the ground, replenishing vegetation and groundwater supplies. Examples of green infrastructure include green roofs, street trees, increased green space, rain barrels, rain gardens, permeable pavement, and other mechanisms that mimic natural hydrologic functions. Green infrastructure decreases pollutant loads to receiving waters by reducing runoff volumes and by filtering and removing pollutants directly from stormwater. What's more, these solutions have the added benefits of beautifying neighborhoods, cooling and cleansing the air, reducing asthma and heat-related

---

\* This document was produced for the Choose Clean Water Coalition's stormwater workgroup by Alisa Valderrama (NRDC), Becky Hammer (NRDC), and David Morgan (CCWC).

<sup>1</sup> In July 2016, Ellicott City, MD experienced a historic flash flood due to a record rainfall of nearly six inches in two hours. The mill town, which sits downhill from many Howard County developments and along the Patapsco River, saw unprecedented damage to local storefronts and restaurants, and two people lost their lives in the deluge. Though the amount of rainfall the region experienced was uncommon, the lack of proper stormwater infrastructure uphill, coupled with increased development, may have resulted in harsher effects downstream. See Luke Broadwater, Scott Dance, and Pamela Wood, "After Deadly Flash Flood, Concern About Development's Impact on Ellicott City," The Baltimore Sun, Aug. 13, 2016, *available at* <http://www.baltimoresun.com/news/maryland/howard/ellicott-city/bs-md-ho-ellicott-city-development-20160813-story.html>.

illnesses, lowering heating and cooling energy costs, boosting economies, and supporting American jobs.<sup>2</sup>

### ***A stormwater fee is an attractive option to fund stormwater improvements***

Improvements to local stormwater infrastructure, whether carried out directly by the municipality or by a partner entity through a public-private partnership program,<sup>3</sup> are typically financed through one of three means: municipal general funds, municipal bond sale proceeds, or stormwater fees, sometimes called “user fees.”<sup>4</sup>

#### *General funds*

A city’s “general fund” is like a city’s piggy bank. The general fund is a catchall, unrestricted pot of money comprised of local taxpayer dollars, including revenues such as property taxes, sales taxes and fees, business license fees, parking citation revenue, and miscellaneous other revenues. As a funding source, general funds may be readily accessible in any given year for stormwater management, and many cities rely on general funds for some fraction of their stormwater management funding each year.<sup>5</sup> However, relying on general funds means that in order for stormwater projects to get needed funding, cities will need to prioritize stormwater compliance over other allocations of general fund dollars year after year. This makes general funds a poor choice for funding long-life stormwater management infrastructure that requires initial capital as well as ongoing operational expenditures. For example, general fund dollars allocated in previous years to stormwater management may be redirected at the discretion of local leaders toward funding other pressing local services, such as schools or fire departments.<sup>6,7</sup>

---

<sup>2</sup> For more information about green infrastructure, see NRDC, “Rooftops to Rivers II: Green Strategies for Controlling Stormwater and Combined Sewer Overflows” (2011), available at <https://www.nrdc.org/sites/default/files/rooftopstoriversII.pdf>; NRDC, “The Green Edge: How Commercial Property Investment in Green Infrastructure Creates Value” (2013), available at <https://www.nrdc.org/sites/default/files/commercial-value-green-infrastructure-report.pdf>.

<sup>3</sup> In a public-private partnership – sometimes called a “P3” – a local government enters a partnership with a private sector firm, signing a performance-based contract to arrange the financing, delivery, and typically long-term operations and maintenance (O&M) of public infrastructure. See EPA, *Community Based Public-Private Partnerships (CBP3s)* (Apr. 2015), available at [https://www.epa.gov/sites/production/files/2015-12/documents/gi\\_cb\\_p3\\_guide\\_epa\\_r3\\_final\\_042115\\_508.pdf](https://www.epa.gov/sites/production/files/2015-12/documents/gi_cb_p3_guide_epa_r3_final_042115_508.pdf).

<sup>4</sup> Occasionally, stormwater management is funded through special assessment districts (if a project benefits only a portion of a municipality) or through state or federal grants (such as through the Clean Water State Revolving Fund). See EPA Region 1, “Funding Stormwater Programs” at 2-3 (Apr. 2009), available at <https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/FundingStormwater.pdf>.

<sup>5</sup> Black and Veatch, 2016 Stormwater Utility Survey, at 15, available at <https://pages.bv.com/rs/916-IZV-611/images/2016-Stormwater-Utility-Survey.pdf>. A total of 74 participants from 24 states completed the survey.

<sup>6</sup> EPA, “Getting to Green: Paying for Green Infrastructure – Financing Options and Resources for Local Decision-Makers,” at 3 (Dec. 2014), available at [https://www.epa.gov/sites/production/files/2015-02/documents/gi\\_financing\\_options\\_12-2014\\_4.pdf](https://www.epa.gov/sites/production/files/2015-02/documents/gi_financing_options_12-2014_4.pdf).

<sup>7</sup> John H. Minan, *Municipal Separate Storm Sewer Systems (MS4) Regulation Under the Federal Clean Water Act: The Role of Water Quality Standards?*, 42 San Diego L. Rev. 1220, 1236 (2005).

### *Bond proceeds*

Municipal bond proceeds can also play an important role in funding stormwater management, although bonds are not an easy solution for all stormwater funding needs, for reasons we describe below. Bonds are not a revenue source, but are a means for cities to borrow money. Bonds can present high transaction costs for cities and may require significant administrative preparation to issue.<sup>8</sup>

Generally speaking, there are two types of municipal bonds: revenue bonds and general obligation or “GO” bonds. A revenue bond is a municipally-issued bond that is backed (or “secured”) by a specific stream of revenue (such as a stormwater fee or other fee or tax). In contrast, a GO bond can be issued in the absence of a specified revenue source that will repay that debt. Instead of tying debt repayment to a specific source, a GO bond puts the “full faith and credit” of the municipality on the line to backstop the repayment of the debt. Cities are protective of their GO bond capacity—any single GO bond issuance impacts the city’s ability to issue debt for any other purpose, and any failure to repay puts the city’s credit rating at great risk, imperiling the city’s ability to borrow at all. In many cases, weak local credit ratings, a declining tax base, or existing debt can make GO bonds an expensive source of capital. Municipal debt (either GO or revenue bonds) can present challenges when it comes to “next-generation” stormwater management, such as green infrastructure. State and local laws govern how bond proceeds can be used. Because those rules were written long before distributed green stormwater management practices came into mainstream use, the rules governing use of bond proceeds can make it challenging to fund innovative “distributed” approaches to stormwater management that may need to be spread across many properties, including public and private land.<sup>9</sup>

For a combination of these reasons, perhaps, use of debt to finance stormwater management appears to be on the decline. A 2016 survey of municipal stormwater managers nationwide revealed that 88% of the municipalities surveyed paid for most stormwater management from cash (taxes, special financing districts, impact fees, etc.), while only 11% paid for a majority of stormwater costs through debt (bonds).<sup>10</sup>

### *Stormwater fees*

A stormwater fee is a user fee charged to property owners within the municipality’s service area to finance the cost of stormwater program implementation. Unlike other sources of revenue, stormwater fees are typically earmarked exclusively for stormwater management purposes. Stormwater fees are collected by stormwater utilities, which operate much like electric or water utilities. An estimated 1,800-2,000 stormwater utilities now exist nationwide, compared to 600-800 a decade ago.<sup>11</sup> Within the Chesapeake Bay watershed states, as of 2016, 18 stormwater utilities existed in Maryland, 28 in Virginia,

---

<sup>8</sup> EPA, “Getting to Green,” *supra* note 6, at 2.

<sup>9</sup> For a helpful discussion of overcoming the challenges of financing green infrastructure with bond proceeds, see generally Harrington, Ed, and Koehler, Cynthia, “Debt Funding for Water Conservation Programs,” *Gov’t Fin. Rev* (2016), available at <http://waternowalliance.org/wp-content/uploads/2016/12/GovtFinRevOct2016.pdf>.

<sup>10</sup> Black and Veatch, *supra* note 5, at 15. A total of 74 participants from 24 states completed the survey.

<sup>11</sup> See Water Words That Work, “Stormwater Fees Literature Review” (Aug. 2014), available at <https://mostcenter.org/sites/default/files/resources/file/Stormwater%20Fee%20Literature%20Review.pdf>; Western Kentucky University Stormwater Utility Survey 2007 at Preface (Aug. 2007), available at <https://www.wku.edu/engineering/documents/swusurveys/wku-swusurvey-2007.pdf>.

7 in Pennsylvania, 9 in West Virginia, 2 in Delaware, and one in the District of Columbia (with none in New York).<sup>12</sup>

Between general funds, bond sale proceeds, and stormwater user fees, fees are the best option to fund stormwater-related improvements. A properly calibrated fee can provide a dedicated long-term funding stream for stormwater management. A stormwater fee also creates fewer accounting and planning hurdles than debt financing and provides reliably steady funding relative to the municipal general fund. Once collected, stormwater fees are typically placed in a dedicated fund used only for the municipality's stormwater program. The fees are used to cover costs associated with constructing, maintaining, and improving stormwater systems of all kinds. User fees can even help with future debt financing by providing a revenue stream that enables revenue bonds, if debt financing is needed.

Stormwater user fees are preferable to general funds or bond sale proceeds because they provide a dedicated stream of revenue and can be designed equitably – as described below – so that property owners pay for the costs of municipal stormwater management in proportion to how much stormwater they generate.<sup>13</sup> In contrast, reliance on general funds would mean that a private property with a high assessed value but a small impervious area footprint would shoulder a disproportionate fraction of a city's stormwater management costs. Additionally, tax-exempt properties would not support any of the cost of stormwater management under a general fund approach, even though many of them are major contributors of stormwater runoff.

The remainder of this paper aims to provide recommendations for the design and implementation of strategic stormwater fees and accompanying programs that can drive cost-effective stormwater management approaches.

***It's not a rain tax!***

***Using the fee structure to help build public understanding of the stormwater problem***

While opponents of stormwater fees sometimes call them a “rain tax,” that term is a misnomer. No one is ever taxed or charged a fee because it is raining. The impervious areas on developed land generate polluted runoff during wet weather events, and local governments need to spend money to clean it up. Just as a property owner pays a water bill that covers municipal costs to provide potable water, including the costs of building out and maintaining underground infrastructure, private property owners must also contribute to the cost of managing the pollution and flood risk created by the impervious areas they own.

Initiating a new stormwater fee will require advance planning, research, and outreach. Indeed, surveys have shown that public outreach can determine the success or failure of a municipality's stormwater fee.<sup>14</sup> Unfortunately, fee opponents have occasionally succeeded in mischaracterizing stormwater fees as financial burdens while downplaying their benefits. As a result, proactive, positive messaging should

---

<sup>12</sup> See Campbell, C. Warren, Dymond, Randel L., and Dritschel, Amanda, Western Kentucky University Stormwater Utility Survey 2016 at 4 (2016), available at <https://www.wku.edu/engineering/civil/fpm/swsurvey/swsurvey-2016draft11-7-2016hq.pdf>.

<sup>13</sup> A stormwater fee that is not based on impervious area but instead on property taxes or water use would still provide a dedicated revenue stream but not necessarily apportion fees fairly among property owners.

<sup>14</sup> See Water Words That Work, “Stormwater Fees Literature Review,” *supra* note 11.

form a central component of a municipality’s strategy for adopting a stormwater fee, and not be treated as an afterthought. We urge all municipalities preparing to implement a stormwater fee to carefully consider the recommendations and resources contained in the Choose Clean Water Coalition’s comprehensive stormwater communications toolkit.<sup>15</sup>

This critical public outreach is more likely to succeed at making the case for a fee to ratepayers and community leaders when the fee is structured in a way that is rational and fair. Stormwater fee structure can be relatively straightforward. Some localities charge a flat monthly fee or peg the fee to a property’s assessed value or to another existing parcel-based charge, such as potable water consumption.<sup>16</sup> While these approaches may seem easier at the outset, they are all poor strategic choices. A better method of stormwater rate design is to base rates directly on how much stormwater each parcel generates—referred to as a “parcel-based” or “impervious area-based” fee.

A parcel-based fee is based on the “polluter pays” principle, as impervious area results in polluted runoff that causes flooding, erosion, and water quality problems that communities need to address. Linking the stormwater fee to this metric helps property owners understand the relationship between impervious area and stormwater, an important psychological element that can enhance a community’s acceptance of the fee. Evidence shows that residential property owners, in particular, generally support an imperviousness-based fee model over a property tax based on assessed property value.<sup>17</sup> A parcel-based fee is also more fair than any other fee structure and, as we describe below, is less likely to be overturned in court.

Consider the following example, which illustrates why an impervious area-based fee creates an equitable outcome. A commercial site containing a parking lot and a “big box” store creates a large amount of stormwater because it is covered nearly entirely in asphalt and other impervious surfaces. Such a site also uses very little potable water. If the property pays a stormwater fee that is pegged to potable water use on the property, it will pay far less than its fair share of what it costs to the city to manage the stormwater from that property. Likewise, if the fee is pegged to the property’s assessed value, what the site owner pays is not linked to the municipality’s stormwater program costs in a meaningful or rational way. If the property were instead charged a stormwater fee based on the amount of impervious surface on the parcel, it would bear a fair proportion of the city’s stormwater management cost burden.

---

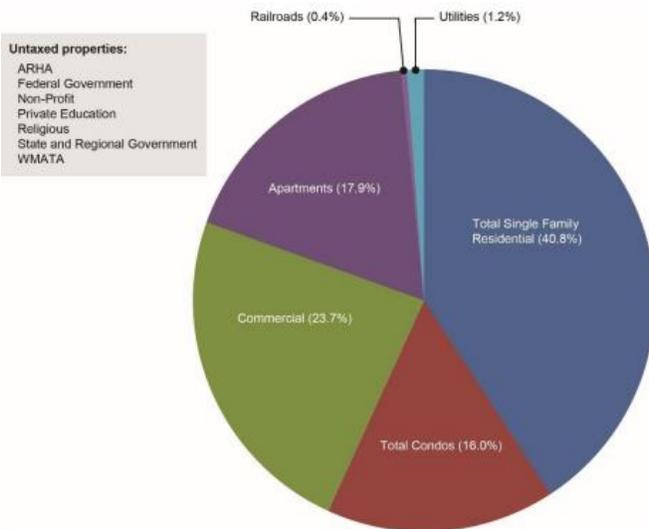
<sup>15</sup> Choose Clean Water Coalition, *Stormwater Communications: Tools to Help Your Community Understand and Support an Effective Stormwater Utility Plan*, available at <http://choosecleanwater.org/toolkit/>.

<sup>16</sup> For an overview of different fee systems, see Western Kentucky University Stormwater Utility Survey 2016, *supra* note 12, at 7-8.

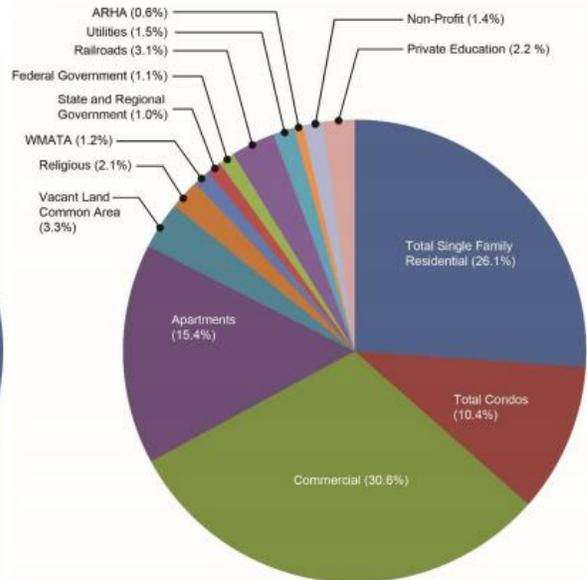
<sup>17</sup> Water Words That Work, “Stormwater Fees Literature Review,” *supra* note 11, at 12.

# Tax Rate vs. Impervious Contribution

## Tax Rate Distribution



## Impervious Area Distribution



*Example: Until 2017, the city of Alexandria, Virginia charged property owners a stormwater fee based on the property tax rate. However, as demonstrated by the side-by-side charts above, this system did not reflect the city's distribution of impervious area, which more closely correlates with the cost of stormwater management. For example, single-family homes account for only 26% of impervious area, but were contributing 40% of the total property taxes collected by the city and thereby paying far beyond their fair share for stormwater management. To correct this inequity, the city decided in 2017 to switch to an imperviousness-based fee system.<sup>18</sup>*

Basing stormwater fees directly on impervious area not only helps align fees with the burden that users place on the municipal stormwater program but, as described in the “Making a Market” section below, such a structure sends an important signal to the property owner and developer market that impervious area has a cost in terms of the burden of managing the stormwater from that site. An impervious-area based fee also lays groundwork for a city to provide incentives for properties to be designed with less runoff-producing impervious area, curbing pollution from the outset. As we describe in more detail below, an impervious area-based structure also creates the potential for innovative approaches to

<sup>18</sup> City of Alexandria, “Proposed Stormwater Management Fee: Staff Recommended Framework” at 19 (Nov. 1, 2016), available at [https://www.alexandriava.gov/uploadedFiles/tes/Stormwater/Proposed%20Stormwater%20Management%20Fee\\_11.01.2016.pdf](https://www.alexandriava.gov/uploadedFiles/tes/Stormwater/Proposed%20Stormwater%20Management%20Fee_11.01.2016.pdf); see also City of Alexandria, “Stormwater Management Fee,” <https://www.alexandriava.gov/tes/stormwater/info/default.aspx?id=93591>.

stormwater finance, such as direct subsidies or incentives for private property owners to manage their own stormwater onsite.

Stormwater fees can be allocated according to a flat fee, a tiered rate structure, or by Equivalent Residential Unit (ERU). The most widely used method of setting parcel-based user fees is the ERU system.<sup>19,20</sup> An ERU is the average impervious area of a single-family residential parcel in the jurisdiction, which can be obtained through random sampling within a given geography. The stormwater fee is charged as a flat-rate fee per ERU. Single-family residential properties are presumed to have one ERU of impervious area and charged the simple flat-rate fee, while for other types of parcels, the fee depends on the actual amount of impervious surface on the property. For the latter, the impervious area on each parcel is measured and the stormwater management fee is assessed by multiplying the number of ERUs on the parcel by the ERU fee rate. For example, if a shopping center contains 3.4 ERUs of impervious area, its fee would be determined by multiplying the per-ERU fee by 3.4. The purpose of the ERU is to create a standard unit of measure that can be applied across all properties in a city. Satellite images or other surface feature evaluation process for each parcel in a city can quickly and cost-effectively create an accurate picture of how many square feet on a given parcel are impervious.

How many square feet comprise an ERU is a locally-specific question. The answer is based on average property size and density of development. In a nationwide 2016 survey, the median ERU size was 2,900 square feet of impervious surface.<sup>21</sup> Some cities use an ERU as small as 35 square feet, whereas others use an ERU of 5,000 square feet or more.<sup>22</sup> For example, both Baltimore and Indianapolis charge stormwater fees based on ERUs. However, in less-dense Indianapolis, an ERU is 2,800 square feet, whereas the more densely developed city of Baltimore has set its ERU at 1,050 square feet.

The ERU system ties the stormwater fee to a property's polluted runoff contribution, creating a fair apportionment of the fee while also debunking the "rain tax" narrative. This structure empowers property owners to understand that impervious area, not rain, is what triggers the need for them to contribute to pollution clean-up costs.

#### **Stormwater Fee in Prince William County, Virginia<sup>23</sup>**

Since 1994, residential and non-residential owners of developed property in Prince William County have paid stormwater fees based on the amount of impervious area on their property. The fees appear on the property tax bill. Owners of single-family dwellings are charged \$39.36 per year; owners of townhouses, apartments, and condominiums are charged \$29.55 per year; and non-residential property owners are charged \$19.12 per ERU, which equals 1,000 square feet of impervious area. Fee reductions or credits (see "Stormwater grants and credit programs" section, below) are available for property owners who install green infrastructure.

<sup>19</sup> See Western Kentucky University Stormwater Utility Survey 2016, *supra* note 12, at 2, 7.

<sup>20</sup> In a small minority of cases, municipalities have used other approaches, such as the "intensity of development" (ID) or "equivalent hydraulic area" (EHA) systems. These approaches are more difficult to implement and to explain to customers than the ERU method, and in the case of the ID approach, could inadvertently encourage sprawl development patterns. As a result, they are not recommended. For more information, see EPA Region 1, "Funding Stormwater Programs," *supra* note 4, at 3-4.

<sup>21</sup> Western Kentucky University Stormwater Utility Survey 2016, *supra* note 12, at 2.

<sup>22</sup> Black and Veatch, *supra* note 5, at 4.

<sup>23</sup> Prince William County Environmental Services, "Storm Water Management Fee,"

<http://www.pwcgov.org/government/dept/publicworks/environment/pages/storm-water-management-fee.aspx>.

## Core Principles to Help Stormwater Fees Survive Legal Challenge

As localities strive to implement stormwater utilities that withstand the scrutiny of residents, they must also navigate existing jurisprudence and consider how positive or negative precedent may affect the legal viability of their programs. The National Association of Clean Water Agencies warns, “[a] negative court decision can be a barrier to implementing and funding stormwater programs, and utilities understandably want to avoid that occurrence.”<sup>24</sup> According to an annual stormwater utility survey conducted by Western Kentucky University, as of 2013, there had been 76 legal or political challenges to stormwater utilities. Of those, 44 were decided in favor of the utility, while 16 cases resulted in unfavorable decisions (with 12 cases still pending at the time of the survey).<sup>25</sup>

When anticipating potential legal challenges to local stormwater utilities, the issues generally fall into one of two categories: (i) the authority to enact, implement, and fund the program, and (ii) the legality of the financing mechanism and methodology involved.<sup>26</sup>

Any given locality generally draws its authority to implement stormwater utilities from “an enabling statute enacted by the state legislature or via the state’s constitution or charter.”<sup>27</sup> While most states provide such authority, either through statute or through case law, some grants of authority may still be ambiguous or questionable.<sup>28</sup> In situations such as these, a locality should “consider requesting a state Attorney General opinion and/or working with the state legislature to make the grant of authority more explicit.”<sup>29</sup>

A majority of legal challenges to stormwater utilities hinge on the locality’s decision to classify the utility as a tax or as a fee, and because “most stormwater utilities/municipalities do not have authority to assess taxes . . . a stormwater fee [that] is deemed a tax . . . will be struck down as unauthorized.”<sup>30</sup> Similar to challenges involving authority, localities should make the effort to proactively avert such challenges to their programs by ensuring that they squarely meet the definition of a fee.<sup>31</sup> One alternative strategy is “to seek voter or legislative approval for a fee [before implementation] even if [the fee] is designed to be service-based.”<sup>32</sup>

---

<sup>24</sup> National Association of Clean Water Agencies, “Navigating Litigation Floodwaters: Legal Considerations for Funding Municipal Stormwater Programs” at 2 (2014), *available at* <http://stormwater.wef.org/wp-content/uploads/2015/01/NACWAs-Navigating-Ligitagtion-Floodwaters.pdf>.

<sup>25</sup> Western Kentucky University, Stormwater Utility Survey 2013, at 10-12, *available at* [http://www.wku.edu/engineering/civil/fpm/swsurvey/western\\_kentucky\\_university\\_swu\\_survey\\_2013.pdf](http://www.wku.edu/engineering/civil/fpm/swsurvey/western_kentucky_university_swu_survey_2013.pdf).

<sup>26</sup> NACWA, “Navigating Litigation Floodwaters,” *supra* note 24, at 4.

<sup>27</sup> *Id.*

<sup>28</sup> *Id.*

<sup>29</sup> *Id.*

<sup>30</sup> *Id.* at 5.

<sup>31</sup> *Id.* Common factors usually in play when courts determine whether a given stormwater program is a fee or a tax include: (1) whether the purpose of the fee is to regulate or collect revenue; (2) whether the revenue generated is segregated or allocated exclusively to regulating the activity or entity being assessed; (3) whether the fee benefits those it is imposed upon; (4) whether the fee is a fair approximation of the cost to the government and the benefit to the individual fee payer or the burden to which they contribute; and (5) whether the rate is uniformly applied.

<sup>32</sup> *Id.*

### ***Setting the stormwater fee: How much should it be?***

Stormwater fees should be set high enough to cover the full cost of operating the stormwater pollution control program. In a 2016 survey of 74 municipal stormwater utilities across 24 states, only 32% of survey participants indicated that they had adequate funding to meet their needs.<sup>33</sup> Cities planning to create stormwater fees can take steps to avoid the fiscal shortcomings that sometimes hamper local stormwater planning by setting stormwater fees at the right level from the start. In addition, cities that already have established stormwater fees should regularly reevaluate the appropriateness of their rates.

Policymakers should assess their full array of needs, including capital expenses, ongoing maintenance, and programs required to meet regulatory compliance, flood reduction, and other relevant goals. The all-in cost for this basket of stormwater-related services, broken down by the annual lifecycle costs, is the annual “cost of service.” The initial stormwater rate per square foot of impervious area (or ERU) should be tailored to bring in the amount of revenue necessary to attain that level of service. For example, Seattle Public Utilities defined its full cost of service and then established its stormwater fee at a level high enough to recover 97% of those costs.<sup>34</sup>

Using impervious area-based fees to bring in the full amount of needed revenue and implementing a schedule of timely rate adjustments to plan for system expansion and upgrade is the most fiscally prudent and equitable way to ensure adequate long-term funding for stormwater management.

$$\text{Base ERU Rate} = \frac{\text{total anticipated stormwater expenses}}{\text{\# of ERUs in the municipality}}$$

Nationwide, the average monthly single family residential stormwater fee in 2016 was \$5.14, and the median fee was \$4.00. Fees ranged from zero up to \$69.25 per month.<sup>35</sup> In Virginia, the average fee in 2016 was \$46 per year (\$3.83 per month), below the national average.<sup>36</sup> Jurisdictions with particularly low fees, such as Chesterfield County, Virginia, do not collect enough revenue through their fees to cover the entire cost of service of their stormwater programs.<sup>37</sup> Montgomery County, Maryland, whose stormwater charge (known as the “water quality protection charge”) is relatively higher, still only funds about 20% of its stormwater management program through its stormwater utility, with the remainder funded through other local service fees, bonds, loans, and state grants.<sup>38</sup> By contrast, Baltimore, Maryland funds the majority of its stormwater program through its stormwater fee, although it plans to

<sup>33</sup> Black and Veatch, *supra* note 5, at 4.

<sup>34</sup> *Id.* at 6.

<sup>35</sup> Western Kentucky University Stormwater Utility Survey 2016, *supra* note 12, at 2.

<sup>36</sup> Chesterfield County, Virginia, “Stormwater Utility,” <http://www.chesterfield.gov/stormwater/>.

<sup>37</sup> See Markus Schmidt, “Chesterfield Supervisors Approve \$810 Million Budget, Stormwater Utility,” *Richmond Times-Dispatch*, Apr. 13, 2016, *available at* [http://www.richmond.com/news/local/chesterfield/chesterfield-supervisors-approve-million-budget-stormwater-utility/article\\_be9298c9-4e3c-5d09-a46b-2365d5ac88b9.html](http://www.richmond.com/news/local/chesterfield/chesterfield-supervisors-approve-million-budget-stormwater-utility/article_be9298c9-4e3c-5d09-a46b-2365d5ac88b9.html) (the fee will “help fund” stormwater improvement projects).

<sup>38</sup> Montgomery County, Maryland, FY2016 Financial Assistance Plan (June 2016), *available at* <http://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/Montgomery%20County%20FAP.pdf>.

shift more of its funding sources to bonds and loans as the cost of its stormwater program rises in future years.<sup>39</sup>

	First 5 Years				
	1	2	3	4	5
<b>1. Program Costs</b>					
Maintenance of Drainage Systems	\$50,000	\$50,000	\$300,000	\$315,000	\$330,750
Stream Assessments/Watershed & Drainage Studies	\$500,000	\$500,000	\$50,000	\$100,000	\$100,000
Maintenance of BMP Facilities	\$50,000	\$50,000	\$375,000	\$750,000	\$787,500
Program Administration	\$100,000	\$100,000	\$300,000	\$300,000	\$300,000
Dam Safety inspections and related studies	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000
Dam Safety maintenance and upgrades <sup>2</sup>	\$0	\$0	\$0	\$0	\$0
NPDES Phase II Implementation	\$250,000	\$250,000	\$200,000	\$200,000	\$250,000
CIP Projects	\$0	\$0	\$0	\$0	\$0
Plan Reviews and Inspections	\$800,000	\$800,000	\$800,000	\$800,000	\$800,000
Stream Restoration & Stabilization Projects <sup>3</sup>	\$0	\$0	\$0	\$0	\$0
LD Retrofits <sup>3</sup>	\$0	\$0	\$0	\$0	\$0
Floodplain Management	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Water Quality Monitoring	\$0	\$0	\$0	\$0	\$0
Soil & Water Conservation District programs	\$10,000	\$10,000	\$10,000	\$10,000	\$10,000
Utility Billing System Implementation	\$100,000				
Repayment to Utilities Fund			\$175,000	\$175,000	
<b>Total Program Costs</b>	<b>\$1,935,000</b>	<b>\$1,835,000</b>	<b>\$2,285,000</b>	<b>\$2,725,000</b>	<b>\$2,653,250</b>
<b>2. Revenues Other Than Stormwater Utility Fees</b>					
Plan Review & Inspection Fees	\$800,000	\$800,000	\$800,000	\$800,000	\$800,000
General Fund Revenues	\$0	\$0	\$0	\$0	\$0
Additional Source 1	\$0	\$0	\$0	\$0	\$0
Additional Source 2	\$0	\$0	\$0	\$0	\$0
<b>Total Revenues Other Than Stormwater Utility F</b>	<b>\$800,000</b>	<b>\$800,000</b>	<b>\$800,000</b>	<b>\$800,000</b>	<b>\$800,000</b>
<b>3. Revenues Required From Stormwater Utility Fees (1 Minus 2)</b>					
	<b>\$1,135,000</b>	<b>\$1,035,000</b>	<b>\$1,485,000</b>	<b>\$1,925,000</b>	<b>\$1,853,250</b>
<b>4. Estimated Stormwater Utility</b>					
Number of ERUs	47,952	49,391	50,873	52,399	53,971
Rate/Month/ERU	\$ 1.97	\$ 1.75	\$ 2.43	\$ 3.06	\$ 2.86

Example budget, rate, and fee escalation schedule for a hypothetical Chesapeake Bay community.<sup>40</sup>

<sup>39</sup> City of Baltimore, Maryland, Fiscal Year 2016 Financial Assurance Plan and Watershed Protection and Restoration Program Annual Report (June 2016), available at <http://mde.maryland.gov/programs/water/StormwaterManagementProgram/Documents/Baltimore%20City%20FAP%20and%20WPRP%20Annual%20Report.pdf>.

<sup>40</sup> Ed Beadenkopf & Christine Worley, URS Corporation, "The Basics of Stormwater Utilities" at 24 (June 6, 2017), available at [http://www.mafsm.org/MAFSM/wp-content/uploads/2017/01/2008\\_SW\\_Utilities.pdf](http://www.mafsm.org/MAFSM/wp-content/uploads/2017/01/2008_SW_Utilities.pdf).

Table: Example Residential and Non-residential Stormwater Monthly Fee Rates in the Chesapeake Bay Watershed (in 2017 dollars)

Municipality	Residential property	Non-residential property	ERU size
Norfolk, VA <sup>41</sup>	\$11.25 flat rate	\$8.06 per ERU	2,000 sq. ft.
Chesterfield County, VA <sup>42</sup>	\$2.08 (single family) \$0.62 (condos/ townhomes)	\$2.08 per ERU	2,800 sq. ft.
Lynchburg, VA <sup>43</sup>	Three rate “tiers” based on impervious area	\$4.00 per ERU	2,672 sq. ft.
Washington, DC <sup>44</sup>	Six rate “tiers” based on impervious area	\$2.67 per ERU	1,000 sq. ft.
Montgomery County, MD <sup>45</sup>	Seven rate “tiers” based on impervious area	\$7.91 per ERU	2,406 sq. ft.
Anne Arundel County, MD <sup>46</sup>	Three rate “tiers” based on parcel size	\$7.08 per ERU	2,940 sq. ft.
Prince George’s County, MD <sup>47</sup>	Three rate “tiers” based on impervious area	\$1.74 per ERU, plus an administrative fee	2,465 sq. ft.
Baltimore, MD <sup>48</sup>	Three rate “tiers” based on impervious area	\$5.00 per ERU	1,050 sq. ft.
Lancaster, PA <sup>49</sup>	Properties under 3,000 sq. ft.: three rate “tiers” based on impervious area; properties over 3,000 sq. ft.: \$2.58 per ERU	Properties under 3,000 sq. ft.: three rate “tiers” based on impervious area; properties over 3,000 sq. ft.: \$2.58 per ERU	1,000 sq. ft.

<sup>41</sup> City of Norfolk, Virginia, Stormwater Fees (July 2017-June 2016), <https://www.norfolk.gov/DocumentCenter/View/3042>.

<sup>42</sup> Chesterfield County, Virginia, “Stormwater Utility,” *supra* note 37.

<sup>43</sup> City of Lynchburg Department of Water Resources, “Stormwater Utility: Keeping Lynchburg Waterways Clean,” available at <http://www.lyncburgva.gov/sites/default/files/COLFILES/Water-Resources/Documents/Stormwater/Fee%20Guide.pdf>.

<sup>44</sup> Washington, DC District Department of Energy & Environment, “Changes to the District’s Stormwater Fee,” <https://doee.dc.gov/service/changes-districts-stormwater-fee>.

<sup>45</sup> Montgomery County Department of Environmental Protection, “WQPC Rates and Calculation,” <https://www.montgomerycountymd.gov/water/wqpc/rates.html>.

<sup>46</sup> Anne Arundel County, “WPRF Rate Information,” <http://www.aacounty.org/departments/public-works/wprp/wprf-rate-information/>.

<sup>47</sup> Prince George’s County Department of the Environment, “Fee Structure,” <http://www.princegeorgescountymd.gov/276/Fee-Structure>.

<sup>48</sup> Baltimore City Department of Public Works, “Stormwater Management,” <http://publicworks.baltimorecity.gov/pw-bureaus/water-wastewater/stormwater>.

<sup>49</sup> City of Lancaster, Pennsylvania, “Stormwater Management Fee (SWMF): Policy and Procedures Manual,” available at <http://cityoflanasterpa.com/sites/default/files/documents/SWMF%20Policies%20and%20Procedures%20Nov.%202015.pdf>; City of Lancaster, Pennsylvania, “Understanding Your Stormwater Management Fee,” available at <http://cityoflanasterpa.com/sites/default/files/documents/Understanding%20Your%20Stormwater%20Management%20Fee.pdf>.

### ***Who should pay the stormwater fee?***

The fee should be structured to include all property types, including government properties, so that the rate is as fair as possible. Local policymakers may face pressure to exclude airports, public rights-of-way, affordable housing, non-profit organizations, churches, or schools from the stormwater fee, but because the new charge is a user fee and not a tax, even tax-exempt entities need to pay their fair share. In sum, any property owner whose parcel contributes stormwater to local waterways should be included in the rate structure.<sup>50</sup>

At the same time, certain property owners will need assistance paying their fees. Rather than exclude entire property types altogether from the new fee system, it is more desirable from a policy perspective for cities to assign fees to all property types and provide some form of rate relief for qualifying property owners, through a “customer assistance program” or other type of rate assistance. Exempting entire types of properties can undermine the legitimacy of the fee by giving rise to claims that the fee is unfair or preferential to certain property types while unduly burdening others. For this reason, 90% of stormwater utility survey respondents indicate that they do not provide blanket exemptions to classes of property owners.<sup>51</sup>

For example, as the city of Philadelphia phased out its potable water-based stormwater fee over a four-year period in favor of an impervious area-based fee, large commercial property owners with many acres of impervious area were hardest-hit by the transition to the new fee structure. Rather than exclude these properties from the new fee, these owners could apply for inclusion in the Philadelphia Water Department’s Customer Assistance Program. This Program extended the phase-in of the new fee so that fee increases happened in smaller and more manageable increments.

Additional types of assistance programs, which cap the total fee amount for a given ratepayer, can provide rate relief for eligible low- or moderate-income property owners and tenants. For example, the City of Baltimore has a hardship program that provides eligible customers with relief from paying the Chesapeake Bay Restoration Fee and the Stormwater Remediation Fee. The eligibility requirements for the hardship program are the same criteria that are used by Maryland’s Office of Home Energy Programs, and are based on income level and/or the receipt of public assistance or benefits.<sup>52</sup>

Nationwide, 24% of stormwater utility survey respondents indicate that they offer customer assistance discount programs for certain categories of ratepayers and land uses, such as senior citizens, low-income residents, disabled people, educational institutions, and religious organizations.<sup>53</sup>

As with any new program, a public agency should meet early in the fee development process with local community-based organizations, faith-based organizations that own land, and other not-for-profit organizations that would likely be eligible for fee subsidies or caps to ensure that those stakeholders understand the purpose of the fee and understand that the city has their interests in mind. Those groups should also be invited to participate in the shaping of rate assistance programs to ensure that

---

<sup>50</sup> Note that federally owned properties are legally required to pay local stormwater fees per a 2011 amendment to the Clean Water Act. 33 U.S.C. § 1323(a).

<sup>51</sup> Black and Veatch, *supra* note 5, at 25.

<sup>52</sup> For more information, see Baltimore City Department of Public Works, “Hardship Exemption Program,” <http://publicworks.baltimorecity.gov/hardship-exemption-program>.

<sup>53</sup> Black and Veatch, *supra* note 5, at 24.

those programs function as effectively as possible. The costs to administer or fund any hardship or customer assistance programs should also be factored into the calculation of costs to maintain the “level of service” as described above.

### ***Making a market: Stormwater grants and credit programs***

In many cities, a substantial fraction of the impervious area is privately owned. However, because stormwater disappears into storm drains and is conveyed largely underground until it is dumped in the waterway, stormwater management is rarely “top of mind” for property owners unless there is a catastrophic event caused by stormwater, such as a flood or sewer overflow resulting from an outdated sewer system.<sup>54</sup> Setting a new user fee based on impervious area presents an opportunity to educate property owners and, through grant and credit programs, provide a reason for property owners to take proactive steps to manage stormwater on their properties.

#### *Grant programs*

Grant programs are generally aimed at non-residential properties and seek to heavily subsidize or cover entirely the costs for private property owners to retrofit existing properties to better manage stormwater on-site. As research by NRDC and others has shown, well-designed stormwater grant programs can save money for a city because it is likely that some very cost-effective stormwater management opportunities are available on private land. Each square foot of impervious area retrofitted on private land can avoid the need for more expensive retrofits on public land. Thus, taking advantage of these relatively low-cost stormwater management opportunities on private land can help bring down the overall cost of managing stormwater for the municipality, when compared to looking solely at opportunities available on publicly-owned land or in the public right-of-way.<sup>55</sup> Well-designed and advertised grant programs provide mechanisms for a city to discover and fund the most cost-effective stormwater retrofit opportunities across all property types and thereby save money.

Retrofitting impervious area on publicly owned land or in the public right-of-way, such as streets or sidewalks, can be expensive because it entails finding adequate land to undertake the retrofits, closing public access, navigating the web of underground utilities and pipes under streets and sidewalks, and finally, spending public dollars both to build green infrastructure in the public right of way and to maintain that infrastructure over time. Fewer obstructions tend to exist on private land, so the costs to build infrastructure there can be far lower. Private land often contains more open space that is directly connected to impervious area, further reducing costs. Retrofitting costs on private land can be particularly low if the green infrastructure is being included as part of an existing planned construction project such as a new roof or parking lot re-surfacing. Finally, many commercial properties have existing landscaping crews who can take on the non-technical job of maintaining most green infrastructure practices.

---

<sup>54</sup> On May 6, 2016, nearly 50,000 gallons of sewage overflowed Baltimore, Maryland’s aging combined sewer overflow system, dumping untreated sewage into the Jones Falls. Tim Prudente, “Jones Falls Sewage Overflow Estimated at 46,000 Gallons,” *Baltimore Sun*, May 9, 2016, available at <http://www.baltimoresun.com/news/maryland/baltimore-city/bs-md-ci-sewage-20160509-story.html>.

<sup>55</sup> See generally Natural Resources Defense Council, Encourage Capital, and The Nature Conservancy, *Creating Clean Water Cash Flows* (Jan. 2013), available at <https://www.nrdc.org/sites/default/files/green-infrastructure-pa-report.pdf>.

### **RainScapes Rebate program, Montgomery County, Maryland<sup>56</sup>**

Montgomery County's RainScapes Rebate Program is funded by the county's Water Quality Protection Charge and issues rebates up to \$2,500 for residential projects and \$10,000 for commercial, multi-family, or institutional projects that meet specific design criteria and are not installed to meet stormwater regulatory requirements. RainScapes practices may include water harvesting (e.g., rain gardens and rain barrels), permeable pavement and porous concrete, pavement removal, and conservation landscaping.

### *Fee credit programs*

Fee credit programs reward property owners who voluntarily retrofit and install green infrastructure on their already-developed land by providing reductions in their impervious area-based stormwater fees. About half of stormwater utility survey respondents indicate that they have implemented credit programs.<sup>57</sup> While credit programs are often implemented independently of grant programs, grants and credits go hand-in-hand as key means for cities to stimulate property stormwater retrofits on private land. While the grant motivates the owner to undertake the project, the ongoing reduction to the stormwater fee creates an incentive for the owner to continue to maintain the on-site stormwater practices. For example, a credit of up to 40%, 50%, or even up to 80% from monthly stormwater fees for property owners who reduce runoff is available in some cities.<sup>58</sup> Cities do not typically provide an opportunity for a full, 100% reduction because the city must collect a baseline fee from all properties to ensure the ongoing function of the stormwater collection system.<sup>59</sup>

When the stormwater fee is based on impervious area, a credit program ensures that the fee structure is responsive to property improvements that reduce the pollution impacts of the site's impervious surface. Thus, a well-designed credit program is important to the integrity of an impervious area-based stormwater fee structure.

### **Fee Credits in Anne Arundel County, Maryland<sup>60</sup>**

To encourage all property owners to manage their own stormwater on-site, Anne Arundel County offers up to 50% credit against the county's Watershed Protection and Restoration Fee for property owners who implement one or more eligible stormwater practices or activities. Credits are available to both residential and non-residential property types. Stormwater credits, once approved, are applicable for three years. Stormwater management practices must be properly operated and maintained.

---

<sup>56</sup> Montgomery County Department of Environmental Protection, "RainScapes," <https://www.montgomerycountymd.gov/water/rainscapes/index.html>.

<sup>57</sup> Black and Veatch, *supra* note 5, at 27.

<sup>58</sup> See generally NRDC, *Wanted: Greened Acres* (2014), available at <https://www.nrdc.org/sites/default/files/philadelphia-green-infrastructure-retrofits-IB.pdf>.

<sup>59</sup> See Black and Veatch, *supra* note 5, at 29 (82% of survey respondents cap the total amount of credits offered through their programs).

<sup>60</sup> See Anne Arundel County, "Stormwater Remediation Fee Credit Policy and Guidance" (Jan. 2014), available at [http://www.aacounty.org/departments/public-works/wprp/forms-and-publications/Stormwater/WPRF\\_Final\\_CreditPkg.pdf](http://www.aacounty.org/departments/public-works/wprp/forms-and-publications/Stormwater/WPRF_Final_CreditPkg.pdf).

## Sample steps for green infrastructure grant program administration

### Phase 1: Steps a water agency can take in program pre-development

- ✓ Calculate how much the city spends to capture a gallon of stormwater in public right-of-way or on public property and decide, based on overall “green infrastructure” or pollution reduction goals, how much private property retrofit it wishes to stimulate and how much it would be willing to spend for stormwater capture on private land
- ✓ Decide whether it has capacity to administer a grant program or whether the program should be administered externally
- ✓ Develop a list of ‘preferred’ green infrastructure/runoff reduction practices and design guidelines for each practice
- ✓ Engage in customer identification and outreach to owners with largest amount of impervious area

### Phase 2: Owner outreach and site visit

- ✓ Owner contact is made and owner agrees to participate in the grant program
- ✓ Design/engineering firm (vendor) visits site and produces proposal and cost estimate for engineering services and any pre-development work completed
- ✓ Design/engineering firm provides owner with an estimate of the percentage of the project the utility will cover through an incentive program and estimates the ongoing utility bill “credit” value if the project is approved

### Phase 3: Project design and grant application submission

- ✓ Engineering design process begins
- ✓ Construction documents completed and construction cost estimate produced
- ✓ Grant program application submitted (by project engineer or owner)
- ✓ Application is approved

### Phase 4: Construction and utility bill crediting

- ✓ Initial grant dollars are disbursed and construction begins
- ✓ Grant dollars are disbursed as project construction milestones are met
- ✓ Project completion and verification occur, with final disbursement of grant dollars
- ✓ Utility bill is lowered to reflect the discount resulting from the reduction in impervious area

### ***Importance of on-site stormwater management rules for new and redevelopment***

Whereas grants and fee discounts motivate existing properties to retrofit and manage more stormwater, regulatory on-site retention requirements for development sites are needed to ensure that any property that gets developed or redeveloped does not add to the city’s stormwater burden. On-site retention rules condition construction permit approval on the property being designed to capture a certain amount of stormwater. On-site retention rules generate some of the lowest-cost capture

available, as the green infrastructure practices can be designed and installed at the time when the property is already under construction. An added advantage of on-site stormwater rules is that they result in green infrastructure implementation at no direct cost to ratepayers. For these reasons, many cities have implemented local stormwater ordinances mandating on-site retention. These rules work well when coupled with a generous stormwater fee discount policy because developers may already be seeking to minimize their monthly stormwater fees when they consider site design options. A property that meets the on-site retention rules by implementing stormwater capture practices would pay a reduced stormwater fee from the moment the site was developed.