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ISSUE BRIEF

MAKING IT RAIN:

EFFECTIVE STORMWATER FEES CAN CREATE JOBS, BUILD INFRASTRUCTURE, AND DRIVE INVESTMENT IN LOCAL COMMUNITIES

A growing number of U.S. municipalities are working to reduce the amount of polluted stormwater that flows into their local waterways. In many parts of the country, regulatory obligations drive municipalities to reduce runoff pollution. For example, state agencies and the U.S. Environmental Protection Agency (EPA) have established total maximum daily loads (TMDLs) that identify pollution reduction targets for stormwater sources. Agencies then incorporate these targets into permits that place binding obligations on municipalities to curb stormwater pollutant loads. Municipalities also strive to reduce runoff for reasons beyond regulatory compliance, such as reducing urban flooding.[1] However, it can be challenging for localities to pay for the infrastructure improvements needed to reduce the volume of polluted stormwater runoff.

This issue brief aims to demystify 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 recommendations for local governments in the process of initiating stormwater fees and accompanying programs. These recommendations position stormwater management as an opportunity to fund and build infrastructure, fairly apportion costs, create jobs, and invest in improvements to communities. We also reference real-world examples from around the country, with a special focus on the Chesapeake Bay watershed—a region where stormwater fee programs are relatively common. We conclude that a stormwater fee based on each property's contribution to total runoff is the ideal way to fund stormwater management both adequately and fairly.

THE STORMWATER CHALLENGE

Surfaces that do not absorb water, such as asphalt, concrete, and brick, are called impervious surfaces. When rain runs off these surfaces, it can collect a wide range of toxic pollutants, which are then dumped, usually untreated, into local waterways. This problem is exacerbated with older, "combined" sewer systems, in which stormwater pipes join with wastewater pipes, sending polluted runoffand wastewater from sinks and toilets into our waterways. Many cities are taking steps to reduce stormwater runoff through large-scale green infrastructure solutions.

This document was originally produced for the Choose Clean Water Coalition, which is made up of more than 230 local, state, regional, and national organizations working to restore clean water to the Chesapeake Bay watershed.

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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. These solutions can also beautify neighborhoods, cool and cleanse the air, reduce asthma symptoms and heat-related illnesses, lower heating and cooling energy costs, boost economies, and support U.S. jobs.[2]

A STORMWATER FEE IS AN ATTRACTIVE OPTION TO FUND STORMWATER IMPROVEMENTS

There are currently three primary ways to fund improvements to local stormwater infrastructure, whether carried out directly by a municipality or by a partner entity through a public–private arrangement.[3] These three options are general funds, municipal bond sale proceeds, and stormwater fees, sometimes called "user fees."[4]

General funds

A city's general fund is like its piggy bank. The general fund is a catchall, an unrestricted pot of money made up of local taxpayer dollars. This can include property taxes, sales taxes and fees, business license fees, parking citation revenues, and other revenues. General funds may be readily accessible as a funding source for stormwater management in any given year, and many cities rely on them to cover some fraction of their stormwater management costs each year.[5] However, in order to pay for stormwater projects, cities that rely on general funds will need to prioritize stormwater compliance over other allocations of general fund dollars year after year. This could prevent a city from directing general fund toward other pressing local services, such as schools or fire departments. This makes general funds a poor choice for funding long-life stormwater management infrastructure that requires initial capital as well as ongoing operational expenditures.[6,7]

Bond proceeds

Municipal bond proceeds can also play an important role in funding stormwater management. However, bonds are not an easy solution for all stormwater funding needs. Bonds are not a revenue source but rather a means for cities to borrow money. In addition, bonds can present high transaction costs for cities and may require significant administrative preparation to issue.[8]

There are generally 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 without a specified revenue source pledged to repay that debt. Instead of tying debt repayment to a particular 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 its 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.

Perhaps for a combination of these reasons, the use of debt to finance stormwater management appears to be on the decline. Black & Veatch's 2016 nationwide survey of municipal stormwater managers revealed that 88 percent of the municipalities polled paid for most stormwater management from cash (taxes, special financing districts, impact fees, etc.). Only 12 percent paid for a majority of stormwater costs through debt (bonds), a decrease from 26 percent just a decade earlier.[9]

Compared with general funds and bond sale proceeds, stormwater 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.

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 to 2,000 stormwater utilities now exist nationwide, a substantial rise from 600 to 800 a decade ago.[10]

Compared with general funds and bond sale proceeds, stormwater 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. In addition, such a fee creates fewer accounting and planning hurdles than debt financing and provides steadier funding than a municipal general fund.

Once collected, stormwater fees are typically placed in a dedicated fund used only for the municipality's stormwater program. The fees cover costs associated with constructing, maintaining, and improving stormwater systems of all kinds. User fees can even help with future debt financing, if needed, by providing a revenue stream that enables municipalities to issue bonds.

Stormwater fees have another advantage: they can be designed equitably (as described in later sections) so that property owners pay for municipal stormwater management costs in proportion to how much stormwater runoff they generate.[11] In contrast, under a general fund approach, a private property with a high assessed value but a small impervious-area footprint would shoulder a disproportionate amount of a city's stormwater management costs. Additionally, under a general fund approach, tax-exempt properties would not support any stormwater management costs, even if they were major contributors of stormwater runoff.

The remainder of this issue brief provides 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 PEOPLE UNDERSTAND THE STORMWATER PROBLEM

Opponents of stormwater fees sometimes call them a "rain tax," but that term is a misnomer: no one is taxed or charged a fee because it is raining. During wet-weather events, impervious areas on developed land generate polluted runoff, and local governments need to spend money to clean it up. 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. Similarly, 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 requires advance planning, research, and outreach. Indeed, surveys have shown that public outreach can determine the success or failure of such a fee.[12] Unfortunately, fee opponents have occasionally succeeded in mischaracterizing stormwater fees as financial burdens while downplaying their benefits. Because of this, proactive and positive messaging should form a central component of a municipality's strategy for adopting a stormwater fee. While specific messaging advice is beyond the scope of this paper, we urge all municipalities preparing to implement a stormwater fee to carefully consider the communications-focused resources that have been published on this subject.[13]

Public outreach is more likely to succeed with ratepayers and community leaders when the stormwater fee is structured in a fair and rational way. There are multiple approaches to stormwater fee structuring, some of which are relatively straightforward. For example, some localities charge a flat monthly fee, while others peg the fee to a property's assessed value or to another, existing charge, such as potable water consumption.[14] 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 runoff each parcel generates. This method is known as a "parcel-based" or "impervious area–based" fee.

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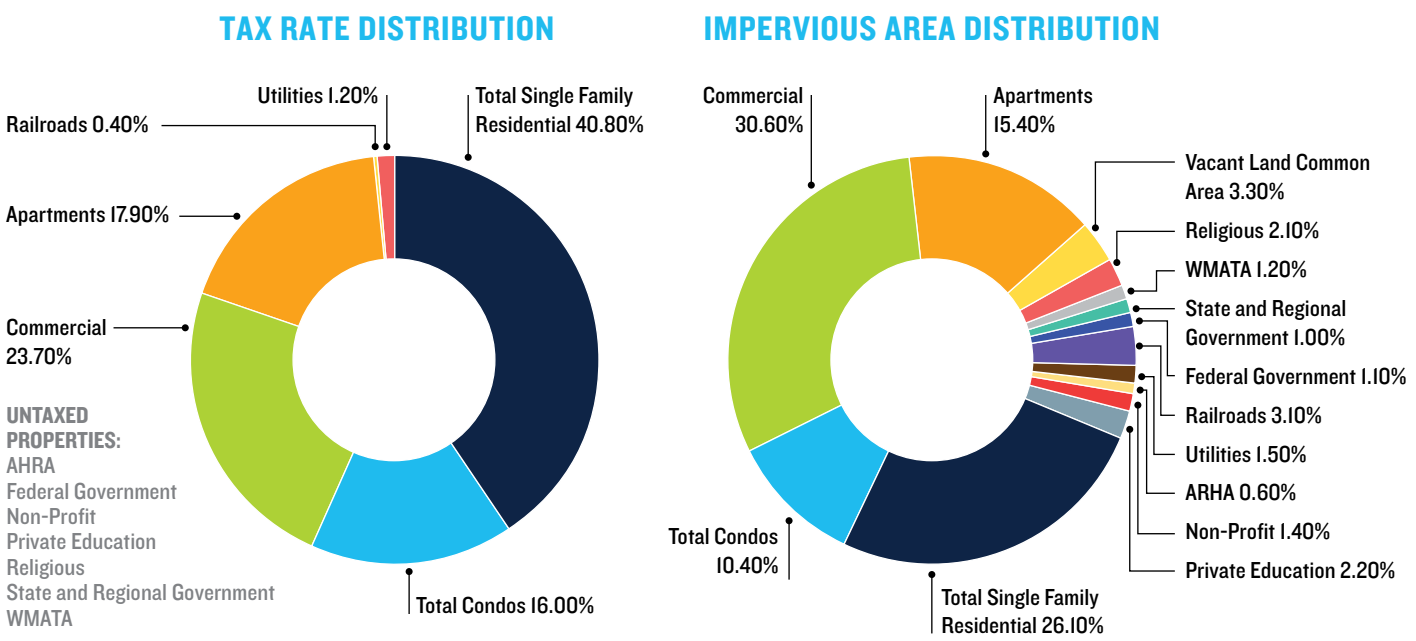
A parcel-based fee is premised on the "polluter pays" principle, as impervious area causes the polluted runoff—and thus the flooding, erosion, and water quality problems—that communities need to address. Linking the stormwater fee to this metric helps property owners understand the relationship between impervious area and stormwater, which in turn can increase a community's acceptance of the fee. Evidence shows that residential property owners, in particular, generally support an imperviousness-based fee model over a tax based on assessed property value.[15] A parcel-based fee is not only more fair than any other fee structure but also, as we describe below, less likely to be overturned in court.

The following example illustrates why an impervious area–based fee leads to a more equitable outcome. Imagine a commercial site—containing a parking lot and a big box store—that creates a large amount of stormwater runoff 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 for the city to manage the stormwater from that property. Likewise, if the fee is pegged to the property's assessed value, the fee is not linked to the municipality's stormwater program costs in a meaningful or rational way. But if the property's stormwater fee is based on the amount of impervious surface on the parcel, that property owner would bear a fair proportion of the city's stormwater management cost burden.

An impervious area–based fee helps align fees with the burden that users place on the municipal stormwater program. Such a structure also reminds the property owner and developer market that impervious area contributes to the cost and burden of managing the stormwater from any particular site, as described in the "Making a Market" section below. An impervious area–based fee also lays

TAX RATE VS. IMPERVIOUS CONTRIBUTION[16]



Example: Until 2017, the city of Alexandria, Virginia, charged property owners a stormwater fee based on the property tax rate. However, as demonstrated by these side-by-side charts, 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 percent of impervious area but contributed 40 percent of the total property taxes collected by the city and thus paid far more than their fair share for stormwater management. To correct this inequity, the city decided in 2017 to switch to an impervious area-based fee system.

Source: City of Alexandria.

groundwork for a city to provide incentives that encourage development to be designed with less runoff-producing impervious area, thus 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 stormwater finance, such as direct subsidies or incentives for private property owners to manage their own stormwater on site.

Stormwater fees can be allocated according to a flat rate or a tiered rate structure, or by Equivalent Residential Unit (ERU). The ERU system is the most widely used method of setting parcel-based user fees.[17,18] An ERU is the average impervious area of a single-family residential parcel in a given jurisdiction, which can be determined through random sampling within that jurisdiction. The stormwater fee is charged as a flat-rate fee per ERU. Single-family residential properties are presumed to have an ERU of 1 and charged the simple flat-rate fee. For other types of parcels, the fee depends on the actual amount of impervious surface on the property. In those cases, 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 calculated by multiplying the per-ERU fee by 3.4. The purpose of the ERU is to create a standard unit of measurement that can be applied across all properties in a city. Satellite imaging or another 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.

The size of an ERU is locally specific and based on average property size and density of development. According to a 2017 nationwide survey, the median ERU size was 2,900 square feet of impervious surface.[19] However, across all surveyed cities, ERU sizes ranged from 35 square feet to 5,000 square feet.[20] For example, an ERU in Indianapolis is 2,800 square feet, while Baltimore, a more densely populated city, 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 allows property owners to understand that impervious area, not rain, is why they need to contribute to pollution clean-up costs.

STORMWATER FEE IN PRINCE WILLIAM COUNTY, VIRGINIA

Since 1994, residential and nonresidential 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 nonresidential property owners are charged $19.12 per ERU, set at 1,000 square feet of impervious area). Fee reductions or credits (discussed below) are available for property owners who install green infrastructure.[21]

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 that a "negative court decision can be a barrier to implementing and funding stormwater programs, and utilities understandably want to avoid that occurrence."[22] 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 the challenges that had resulted in a final decision, 44 were decided in favor of the utility, while 16 cases went against the utility.[23]

In legal challenges to local stormwater utilities, the issues generally fall into one of two categories: the authority to enact, implement, and fund the program; and the legality of the financing mechanism and methodology involved.[24]

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."[25] While most states provide such authority, either through statute or via case law, some grants of authority may still be ambiguous or questionable.[26] 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."[27]

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. 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."[28] As with 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.[29] One alternative strategy is to seek, before implementation, "voter or legislative approval for a fee even if designed to be service-based."[30]

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 Black & Veatch's 2016 survey of 74 municipal stormwater utilities across 24 states, only 32 percent of participants indicated that they had adequate funding to meet their needs.[31] Cities planning to create stormwater fees can take steps to avoid fiscal shortfalls by setting stormwater fees at the right level from the start. Meanwhile, cities that already have established stormwater fees should regularly reevaluate the appropriateness of their rates.

Policy makers should assess their full array of needs to meet regulatory requirements and other stormwater management goals, including capital expenses, ongoing maintenance, and staffing. The comprehensive cost for these combined stormwater-related services, broken down by the annual life cycle costs, is the annual "cost of service." Localities should tailor the initial ERU to bring in the amount of revenue necessary to attain that level of service. Seattle Public Utilities, for example, defined its full cost of service, then established its stormwater fee at a level high enough to recover 97 percent of those costs.[32]

Localities can use impervious area–based fees to bring in the full amount of needed revenue and implement a schedule of timely rate adjustments to cover system expansions and upgrades. This represents the most fiscally prudent and equitable way to ensure adequate long-term funding for stormwater management.

The basic method for establishing the stormwater fee base rate is expressed in the following equation:

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

Stormwater fees should be set high enough to cover the full cost of operating the stormwater pollution control program.

In 2017 the average monthly single-family residential stormwater fee in the United States was $5.18, and the median fee was $4.00. The highest reported fees were $69.25 per month.[33] Jurisdictions with particularly low fees, such as Chesterfield County, Virginia ($2.08 per month for a single-family residence), do not collect enough revenue through their fees to cover the entire cost of service of their stormwater programs.[34] Montgomery County, Maryland, whose stormwater charge (known as the "water quality protection charge") is higher ($7.91 per ERU), still funds only about 20 percent of its stormwater management program through its stormwater utility, with the remainder paid for by other local service fees, bonds, loans, and state grants.[35] In contrast, the city of Baltimore funds the majority of its stormwater program through its stormwater fee ($5.00 per ERU). However, the city plans to get more of this funding from bonds and loans as the cost of its stormwater program rises in future years.[36]

WHO SHOULD PAY THE STORMWATER FEE?

To ensure that the rate is as fair as possible, localities should structure their stormwater fees to include all property types, including government properties. Local policy makers may face pressure to exclude airports, public rights-of-way, affordable housing, nonprofit 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, the rate structure should include any property that contributes stormwater to local waterways.[38]

At the same time, some property owners will need assistance in paying their fees. Rather than exclude certain property types altogether from the new fee system, cities should assign fees to all properties and provide some form of rate relief for qualifying owners—for example, through a customer assistance program. Exempting entire types

EXAMPLE BUDGET, RATE, AND FEE ESCALATION SCHEDULE FOR A HYPOTHETICAL COMMUNITY.[37]

FIRST 5 YEARS	**1**	**2**	**3**	**4**	**5**
1. PROGRAM COSTS					
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	$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	$0	$0	$0	$0	$0
LID Retrofits	$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	
Total Program Costs	**$1,935,000**	**$1,835,000**	**$2,285,000**	**$2,725,000**	**$2,653,250**
2. REVENUES OTHER THAN STORMWATER UTILITY FEES					
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
Total Revenues Other Than Stormwater Utility Fees	**$800,000**	**$800,000**	**$800,000**	**$800,000**	**$800,000**
3. REVENUES REQUIRED FROM STORMWATER UTILIITY FEES (1 MINUS 2)	$1,135,000	$1,035,000	$1,485,000	$1,925,000	$1,853,250
4. ESTIMATED STORMWATER UTILITY					
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**

of properties can undermine the legitimacy of the fee, giving rise to claims that the fee is preferential or unduly burdening to certain property types. For this reason, 90 percent of stormwater utility survey respondents indicate that they do not provide blanket exemptions to classes of property owners.[39]

For example, from 2008 to 2013, the city of Philadelphia phased out its potable water–based stormwater fee in favor of an impervious area–based fee. Over this period, large commercial properties with substantial impervious area were hardest-hit by the transition to the new fee structure. The city did not exclude these properties from the new fee but did allow owners to apply to the Philadelphia Water Department's Customer Assistance Program. This program extended the phase-in of the new fee so that increases came in smaller and more manageable increments.

In addition, localities can provide rate relief for eligible low- or moderate-income property owners and tenants through assistance programs that cap the total fee amount for a given ratepayer. For example, Baltimore's Hardship Exemption Program waives the Chesapeake Bay Restoration Fee and the Stormwater Remediation Fee for eligible customers. The program uses the same criteria as Maryland's Office of Home Energy Programs and considers customers' income levels and/or the receipt of public assistance or benefits.[40]

Nationwide, 24 percent of stormwater utility survey respondents indicate that they offer customer assistance discount programs for certain categories of ratepayers (such as senior citizens, low-income residents, and disabled people) and land uses, such as educational institutions and religious organizations.[41]

Early in the fee development process, public agencies should meet with local community-based, faith-based, and other not-for-profit organizations that would likely be eligible for fee subsidies or caps. This informs stakeholders about the purpose of the fee and communicates that the city has their interests in mind. Cities should also invite these stakeholders to participate in the shaping of rate assistance programs to ensure that those programs function as effectively as possible. Finally, cities should factor the costs of hardship or customer assistance programs into the calculation of costs to maintain the targeted level of service.

MAKING A MARKET: STORMWATER GRANTS AND CREDIT PROGRAMS TO ENCOURAGE RETROFITS

In many cities, a substantial fraction of the impervious area is privately owned. However, stormwater disappears into storm drains and is conveyed largely underground until it is dumped in the waterway. As a result, stormwater management is rarely top-of-mind for property owners unless there is a catastrophic event, such as a flood or sewer overflow.[42] Setting an impervious area–based fee presents an opportunity to educate property owners. In addition, grant and credit programs can help incentivize owners to take proactive steps to manage stormwater on their properties, such as undertaking stormwater retrofits.

Grant programs

Grant programs can help private property owners retrofit existing properties to better manage stormwater runoff on site. They generally focus on nonresidential properties and seek to heavily subsidize or cover the entire retrofitting costs for private property owners. Research by NRDC and other groups shows that well-designed stormwater grant programs can save money for a city because of the very cost-effective stormwater management opportunities that are often available on private land.[43] Each retrofitted square foot of impervious area on private land can avert the need for more expensive retrofits on public land. Thus, these relatively low-cost stormwater management opportunities on private land can help bring down the overall cost of managing stormwater for the whole municipality. Well-designed and well-advertised grant programs provide mechanisms for a city to identify and fund the most cost-effective stormwater retrofit opportunities across all property types—and thereby to save money.

Retrofitting impervious area on publicly owned land or in the public right-of-way, such as streets or sidewalks, can be expensive. The process entails finding adequate land on which to undertake the retrofits, closing public access, navigating the web of underground utilities and pipes beneath 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. Infrastructure costs can be far lower on private land because fewer obstructions tend to exist there. In addition, private land often contains more open space adjacent to impervious area. This makes it possible to divert runoff to existing open space, further reducing costs. Retrofitting costs on private land can be particularly low if the green infrastructure is included as part of an existing planned construction project such as a roof replacement or parking lot re-surfacing, because the construction crew and equipment are already on site. Finally, many commercial properties have existing landscaping crews who can maintain most green infrastructure practices.

RAINSCAPES REBATE PROGRAM, MONTGOMERY COUNTY, MARYLAND

Montgomery County's Water Quality Protection Charge funds a RainScapes Rebate Program, which offers rebates of up to $2,500 for residential projects and $10,000 for commercial, multifamily, or institutional projects that are installed voluntarily. RainScapes practices may include water harvesting (e.g., rain gardens and rain barrels), installation of permeable pavement and porous concrete, pavement removal, and conservation landscaping.[44]

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.[45] These are often implemented independently of grant programs. However, grants and credits go hand in hand as key means for cities to stimulate 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 40 percent, 50 percent, or even up to 80 percent applied to monthly stormwater fees is available in some cities for property owners who reduce runoff.[46] Cities do not typically provide an opportunity for a 100 percent reduction, however; they must collect a baseline fee from all properties to ensure the ongoing function of the stormwater collection system.[47]

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 a 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

To encourage all property owners to manage their own stormwater on site, Anne Arundel County offers up to 50 percent 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 nonresidential property types. Once approved, stormwater credits are applicable for three years, provided that property owners properly operate and maintain stormwater management practices.[48]

SAMPLE STEPS FOR GREEN INFRASTRUCTURE GRANT PROGRAM ADMINISTRATION

PHASE I: STEPS A WATER AGENCY CAN TAKE IN PROGRAM PREDEVELOPMENT

- City calculates how much it spends to capture a gallon of stormwater in a public right-of-way or on public property.
- City decides, 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.
- City decides whether it has capacity to administer a grant program or whether the program should be administered externally.
- City develops a list of "preferred" green infrastructure/runoff reduction practices and designs guidelines for each practice.
- City engages 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 predevelopment 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 are completed and construction cost estimate is 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 DEVELOPMENT AND REDEVELOPMENT

Whereas grants and fee discounts motivate owners of existing properties to retrofit and manage more stormwater runoff, regulatory on-site retention requirements for sites under development are needed to ensure that any new development or redevelopment does not add to the city's stormwater burden. On-site retention rules authorize a construction permit to be granted only on the condition that the property is designed to capture a certain amount of stormwater. On-site retention rules generate some of the lowest-cost capture available, as green infrastructure practices can be designed and installed when the property is under construction. Another advantage of on-site stormwater rules is that they encourage green infrastructure implementation at no direct cost to ratepayers. For these reasons, many cities and states have implemented stormwater standards mandating on-site retention.[49] 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.

A STRATEGIC APPROACH TO FUNDING STORMWATER MANAGEMENT IS POSSIBLE

Stormwater management is a public good: it can help keep pollution out of our waterways and promote the growth of green infrastructure, among many other benefits. However, it can be challenging for cities to fund the associated infrastructure improvements. A stormwater fee can provide a steady stream of funding for stormwater management. In particular, an impervious area–based stormwater fee provides a fee structure that attributes costs in proportion to how much stormwater runoff a property generates.

Municipalities should address stormwater issues strategically, which requires funding stormwater management both adequately and fairly. A well-structured stormwater fee should empower them to do just that.

ENDNOTES

1 In July 2016, Ellicott City, Maryland, 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 intensified the effects downstream. *See* Luke Broadwater, Scott Dance, and Pamela Wood, "After Deadly Flash Flood, Concern About Development's Impact on Ellicott City," *Baltimore Sun*, August 13, 2016, http://www.baltimoresun.com/news/maryland/howard/ellicott-city/bs-md-ho-ellicott-city-development-20160813-story.html.

2 For more information about green infrastructure, *see* Noah Garrison and Karen Hobbs, *Rooftops to Rivers II: Green Strategies for Controlling Stormwater and Combined Sewer Overflows*, Natural Resources Defense Council (hereinafter NRDC), 2011, https://www.nrdc.org/sites/default/files/rooftopstoriversII.pdf; Janet Clements and Alexis St. Juliana, *The Green Edge: How Commercial Property Investment in Green Infrastructure Creates Value*, NRDC 2013, https://www.nrdc.org/sites/default/files/commercial-value-green-infrastructure-report.pdf.

3 In a public–private partnership—sometimes called a "P3"—a local government enters an alliance 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* U.S. Environmental Protection Agency (hereinafter EPA), Region 3, *Community Based Public-Private Partnerships (CBP3s)*, April 2015, https://www.epa.gov/sites/production/files/2015-12/documents/gi_cb_p3_guide_epa_r3_final_042115_508.pdf.

4 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 via the Clean Water State Revolving Fund). *See* EPA, Region 1, "Funding Stormwater Programs," April 2009, at 2-3, https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/FundingStormwater.pdf.

5 Black & Veatch Management Consulting, "2016 Stormwater Utility Survey," at 15, 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.

6 EPA, *Getting to Green: Paying for Green Infrastructure – Financing Options and Resources for Local Decision Makers*, December 2014, at 3, https://www.epa.gov/sites/production/files/2015-02/documents/gi_financing_options_12-2014_4.pdf.

7 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).

8 EPA, *Getting to Green*, at 2.

9 Black & Veatch, "2016 Stormwater Utility Survey," at 15; Black & Veatch, "2005 Stormwater Utility Survey," at 3, http://docs.sandiego.gov/reportstocouncil_attach/2005/05-126%20Att%203.pdf.

10 *See* C. Warren Campbell et al., *Stormwater Utility Survey 2017*, Western Kentucky University, August 2017, at 1, https://www.wku.edu/seas/documents/wkusswusurvery17.pdf; Water Words That Work, "Stormwater Fees Literature Review," August 2014, https://mostcenter.org/sites/default/files/resources/file/Stormwater%20Fee%20Literature%20Review.pdf; Warren Campbell, *Stormwater Utility Survey 2007*, Western Kentucky University, (August 2007), at Preface, https://www.wku.edu/seas/documents/wku-swusurvey-2007.pdf.

11 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 would not necessarily apportion fees fairly among property owners.

12 *See* Water Words That Work, "Stormwater Fees Literature Review."

13 *See, e.g.*, Jersey Water Works, "Communication Resources for Funding Stormwater Management," http://www.jerseywaterworks.org/resource/communications-resources-funding-stormwater-management , (accessed February 8, 2018).

14 For an overview of different fee systems, *see* C. Warren Campbell, Randel L. Dymond, and Amanda Dritschel, *Stormwater Utility Survey 2016*, Western Kentucky University, June 2016, at 7-8, https://www.wku.edu/seas/documents/swusurvey-2016.pdf.

15 Water Words That Work, "Stormwater Fees Literature Review."

16 City of Alexandria, "Proposed Stormwater Management Fee: Staff Recommended Framework," November 1, 2016, at 19, https://www.alexandriava.gov/uploadedFiles/tes/Stormwater/Proposed%20Stormwater%20Management%20Fee_11.01.2016.pdf; *see also* City of Alexandria, "Stormwater Utility Fee Information," https://www.alexandriava.gov/tes/stormwater/info/default.aspx?id=93591, , (accessed February 8, 2018).

17 *See* C. Warren Campbell et al., *Stormwater Utility Survey 2017*, at 2.

18 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, "Funding Stormwater Programs," at 3-4.

19 C. Warren Campbell et al., *Stormwater Utility Survey 2017*, at 2.

20 Black & Veatch, "2016 Stormwater Utility Survey," at 4.

21 Prince William County, Environmental Services, "Storm Water Management Fee," http://www.pwcgov.org/government/dept/publicworks/environment/pages/storm-water-management-fee.aspx, (accessed February 8, 2018).

22 National Association of Clean Water Agencies (hereinafter NACWA), "Navigating Litigation Floodwaters: Legal Considerations for Funding Municipal Stormwater Programs," 2014, at 2, http://stormwater.wef.org/wp-content/uploads/2015/01/NACWAs-Navigating-Ligitagtion-Floodwaters.pdf.

23 C. Warren Campbell, *Stormwater Utility Survey 2013*, Western Kentucky University, July 2013, at 10-12, https://www.wku.edu/seas/documents/western_kentucky_university_swu_survey_2013.pdf.

24 NACWA, "Navigating Litigation Floodwaters."

25 Ibid.

26 Ibid.

27 Ibid.

28 Ibid., at 5.

29 Ibid. Common factors usually in play when courts determine whether a given stormwater program involves a fee or a tax include: (1) whether the purpose of the program 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 payment benefits those it is imposed upon; (4) whether the amount paid is a fair approximation of the cost to the government and the benefit to the individual payer or the burden to which he or she contributes; and (5) whether the rate is uniformly applied.

30 Ibid.

31 Black & Veatch, "2016 Stormwater Utility Survey," at 4.

32 Ibid., at 6.

33 C. Warren Campbell et al., *Stormwater Utility Survey 2017*, at 1.

34 Chesterfield County, Virginia, "Stormwater Utility," http://www.chesterfield.gov/stormwater/(can access date be added, in lieu of pub date?); Markus Schmidt, "Chesterfield Supervisors Approve $810 Million Budget, Stormwater Utility," *Richmond Times-Dispatch*, April 13, 2016, http://www.richmond.com/news/local/chesterfield/chesterfieldsupervisors-approve-million-budget-stormwater-utility/article_be9298c9-4e3c-5d09-a46b-2365d5ac88b9.html (the fee will "help fund" stormwater improvement projects).

35 Montgomery County Department of Environmental Protection, "WQPC Rates and Calculation," https://www.montgomerycountymd.gov/water/wqpc/rates.html, (accessed February 8, 2018); Montgomery County, Maryland, FY2016 Financial Assistance Plan, June 2016, http://mde.maryland.gov/programs/Water/StormwaterManagementProgram/Documents/Montgomery%20County%20FAP.pdf.

36 Baltimore City Department of Public Works, "Stormwater Management," http://publicworks.baltimorecity.gov/pw-bureaus/water-wastewater/stormwater, (accessed February 8, 2018); City of Baltimore, Maryland, Fiscal Year 2016 Financial Assurance Plan and Watershed Protection and Restoration Program Annual Report, June 2016, http://publicworks.baltimorecity.gov/sites/default/files/FAP-6-7-16.pdf.

37 Ed Beadenkopf and Christine Worley, "The Basics of Stormwater Utilities," URS Corporation, June 6, 2017, at 24, http://www.mafsm.org/MAFSM/wp-content/uploads/2017/01/2008_SW_Utilities.pdf.

38 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).

39 Black & Veatch, "2016 Stormwater Utility Survey," at 25.

40 For more information, *see* Baltimore City Department of Public Works, "Hardship Exemption Program," http://publicworks.baltimorecity.gov/hardship-exemption-program , (accessed February 8, 2018).

41 Black & Veatch, "2016 Stormwater Utility Survey," at 24.

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

43 *See generally* Alisa Valderrama et al., *Creating Clean Water Cash Flows*, NRDC, Encourage Capital, and the Nature Conservancy, January 2013, https://www.nrdc.org/sites/default/files/green-infrastructure-pa-report.pdf.

44 Montgomery County Department of Environmental Protection, "RainScapes," https://www.montgomerycountymd.gov/water/rainscapes/index.html, (accessed February 8, 2018).

45 Black & Veatch, "2016 Stormwater Utility Survey," at 27.

46 *See generally* Alisa Valderrama and Paul Davis, "Wanted: Greened Acres," NRDC, 2014, https://www.nrdc.org/sites/default/files/philadelphia-green-infrastructure-retrofits-IB.pdf.

47 *See* Black & Veatch, "2016 Stormwater Utility Survey," at 29. Eighty-two percent of survey respondents cap the total amount of credits offered through their programs.

48 *See* Anne Arundel County, *Stormwater Remediation Fee Credit Policy and Guidance*, January 2014, http://www.aacounty.org/departments/public-works/wprp/forms-and-publications/Stormwater/WPRF_Final_CreditPkg.pdf.

49 *See* EPA, "Summary of State Post Construction Stormwater Standards," July 2016, https://www.epa.gov/sites/production/files/2016-08/documents/swstdsummary_7-13-16_508.pdf.