

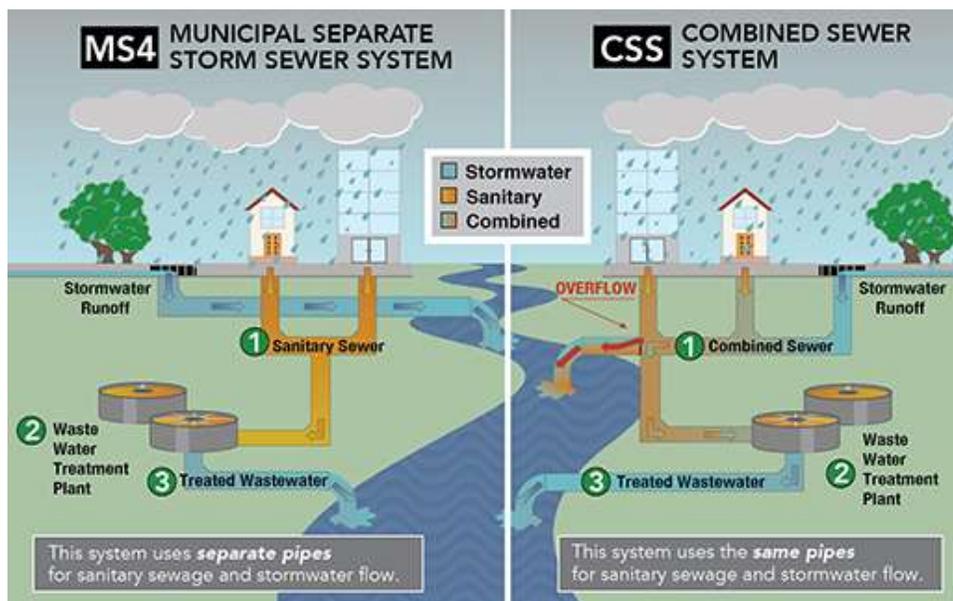


# Stormwater Utilities Overview for Non-Residential Property Owners

*This document provides a broad overview of the basic operation of stormwater utility programs, including background on typical fee structures used in other states. Information is provided on business-oriented incentives that are commonly employed. Examples of stormwater fees for commercial properties in nearby jurisdictions are also provided.*

## Background

As outlined in the diagram below, stormwater from rain and snowmelt generally does not go to a wastewater treatment plant, but rather is discharged into the nearest body of water. Depending on the locality, there are two types of stormwater systems: municipal separate systems (i.e., separate pipes for stormwater and sanitary flow) and combined sewer overflow systems. As stormwater flows over hardened, or impervious, surfaces such as driveways, parking lots, streets, and roofs, it accumulates debris, chemicals, sediment, and other pollutants that adversely affect water quality. Concentrating stormwater into straight channels and underground pipes increases its rate of flow, which often exacerbates local flooding. Finally, the combined sewer overflow systems found in older urban areas merge both stormwater and sanitary waste into one common pipe which is often overwhelmed during strong storms. As a result, untreated wastewater bypasses the local treatment plant and is discharged directly into surrounding waterways, thus posing a health risk that may trigger federal and state regulatory penalties for non-compliance with water quality standards.



New Jersey communities manage rainfall with stormwater management systems that are regulated by state and federal laws. They fall into two categories: combined systems that can be found in 21 cities and separate systems that cover most of the rest of the state.

Presently, New Jersey is one of only ten states that have not enacted legislation authorizing the creation of stormwater utilities by municipalities, counties or environmental authorities. Such legislation would enable localities to charge a user fee to support improvements to stormwater systems that are often underfunded. Besides realizing important flood control and pollution prevention benefits, the most compelling factors are the growing stringency of environmental permits (e.g., new Municipal Separate Storm Sewer System, or MS4), system failures resulting from the sheer age of the existing infrastructure, and potential penalties due to non-compliance with federal and state regulations or consent decrees.

Historically, stormwater management has been the “organizational stepchild” to traditional sewer and water infrastructure programs. Unlike water and sewer utilities, which have dedicated revenue streams from user rates, stormwater needs often compete unsuccessfully for limited funds in strapped local budgets. Presently, stormwater investments are often made in response to failed infrastructure, a grossly inefficient practice that increases the risk to public safety.

Stormwater utility revenue would address the following types of projects:

- Flood control measures
- Catch basin and culvert cleaning or rehabilitation
- Elimination of illicit discharges/connections
- MS4 permit compliance needs (i.e., avoid fines)
- Planned or emergency replacement of failing infrastructure (e.g., corrugated pipe)
- Combined sewer overflow (CSO) improvements (i.e., in communities with CSO facilities)
- Map/document sewerage inventories
- Public education

Fee revenue may also be used to pay debt service costs and to leverage State funds for capital improvements to the stormwater network.

### Stormwater Fee Structure

Stormwater fees can be charged as a flat fee, a tiered rate structure, or most commonly by Equivalent Residential Units (ERU), the latter of which reflects the average or median impervious area of a single family home in a given locality. Functionally, the ERU is essentially a standard unit that can be applied to all properties. Of the estimated 1,600 stormwater utilities currently in operation nationwide, nearly 90% charge a user fee based on the amount of impervious cover. Based on the wording of legislation (S-1073) pending in the NJ Legislature, this particular feature would be required in New Jersey. Specifically:

*Section 8b: “Any fee or other charge that a county, municipality, or authority charges and collects pursuant to this section shall be based on a fair and equitable approximation of the proportionate contribution of stormwater runoff from a real property.”*

Typically, single family residences are presumed to have one ERU of impervious area and thus are charged a simple flat rate fee. Non-residential properties are commonly charged a fee per the number of ERUs that fit on their property.

As opposed to other potential funding mechanisms, such as property tax, the user fee directly relates to the stormwater generated by a given property, thus incentivizing the owner to consider control measures. Most utilities offer partial fee credits to encourage stormwater mitigation measures, often in the form of green infrastructure that mimics the natural water cycle by reducing and treating stormwater at its source. As drafted, S-1073 would require stormwater utilities to offer such credits.

### Calculating Stormwater Fees

Stormwater fees are set by local governments and vary tremendously. When comparing fees in different states and cities, it is important to keep the following in mind:

- *Fully Allocated Cost* - Many cities do not reflect the full cost of stormwater capital and services in their rate base. To the degree that property tax revenue continues to fund certain costs, the public may not grasp the full magnitude of the problem. Proper comparisons of fees across jurisdictions require a case-by-case review.
- *Combined Sewer Overflow* - Many older cities, and particularly those in the northeast, have combined sewer systems. These facilities are subject to government-required upgrades that are major cost drivers. Since the cost of required services is the key factor in determining the fee rate, this needs to be considered when comparing fee structures and average annual payments.

Some other vital fee-related factors to consider:

- *Equity* - Stormwater utility fees ensure that the cost of infrastructure upgrades and services extends to a larger rate base. Typically, these fees are applied to non-metered properties (e.g., parking lots), that would not otherwise pay for water or sewer, as well as tax-exempt properties (e.g., universities, churches, and hospitals) that do not pay property taxes. Requiring property owners to pay based on the stormwater runoff generated by their parcel effectively spreads the cost across all contributors.
- *Fee/Cost of Service* - Unlike a tax, a fee must directly correspond to the cost of the service provided. When set in combination with the Equivalent Residential Unit noted below, this ensures a system that is fair and proportional to a property's contribution to stormwater runoff.
- *Equivalent Residential Unit (ERU)* - Typically, stormwater fees are based on an equivalent residential unit reflecting the average or median impervious area of a single family home. The ERU is essentially a standard unit that can be applied to all properties. Here is an example of how the ERU might be set for a given locality:

$$\text{ERU} = \frac{\text{Total Residential Impervious Area}}{\text{Total Dwelling Units}}$$

$$\frac{40,000,000 \text{ Total Impervious Sq. Ft.}}{18,407 \text{ Total Dwelling Units}}$$

$$\text{ERU} = 2,173 \text{ Sq. Ft}$$

- *Base Fee Rate* - The base fee rate (which is multiplied by the ERUs to generate the amount due) is set by dividing total anticipated annual stormwater expenses by the town's total ERUs. Nationwide, the average monthly single family residential stormwater fee in 2016 was \$5.14 (source: Western Kentucky University 2016 survey.):

$$\text{Base Rate} = \frac{\text{Total Anticipated Expenses}}{\text{Total ERUs in Locality}}$$

Here is one example of how a typical fee would be calculated:

Non-Residential Example

Building Footprint	10,000 sq ft
<u>Parking Lot</u>	<u>14,000</u>
Total Impervious Area	24,000 sq ft

Assume ERU = 3,000 sq ft:

Total = 24,000/3,000 sq ft	8 ERUs
<u>ERU Monthly Rate</u>	<u>\$4</u>
Monthly Charge	\$32

- *Exemptions* - The issuance of fee exemptions (e.g., religious and non-profit organizations and government facilities) weakens the argument that "all runoff is created equal" and should be discouraged. (Note: Other than a single exemption for agricultural and horticultural land, New Jersey's S-1073 does not authorize fee exemptions.)

Non-Residential Stormwater Fee Chart  
Key Points

*The following tables summarize samples of non-residential stormwater fees in small, medium, and large jurisdictions outside of New Jersey. The sample includes localities with varying degrees of combined sewer overflow (CSO) facilities as they are a key cost driver for stormwater controls. Major conclusions include:*

- *Fees vary tremendously nationwide, but are generally lower in small towns and higher in larger localities and those with CSO facilities.*
- *Most localities offer credits but outright exemptions are few and far between.*
- *Impervious cover is typically used as the basis for applying fees.*
- *The Equivalent Residential Unit (ERU) is used by most towns as a common measuring stick for assessing fees across different properties. One national study (Black and Veatch's 2016 survey) pegs the median ERU at 2,550 sq ft. The attached survey has considerable variation, with ERUs ranging from 100 to 3,700 sq ft.*

Stormwater Utility: Non-Residential Fee Comparison (Table 1)

- Summary level information of towns with/without combined sewers
- Most jurisdictions are in neighboring states
- Includes two smaller cities in PA whose population is consistent with the average population of NJ municipalities (15,000)
- Philadelphia's fee structure fundamentally different from the others

Non-Residential Stormwater Fee Comparison (Table 2)

- Main point is to estimate monthly and annual fee charges for all of the jurisdictions listed for the following scenarios, reflecting both small, medium, and large non-residential properties:
  - 1,000 sq ft of impervious cover
  - 3,000 sq ft of impervious cover
  - 7,000 sq ft of impervious cover
  - 20,000 sq ft of impervious cover
- Fees are markedly higher in Philadelphia, which has the highest population and percentage of combined sewers. Despite significant difference in population, fees in Rockville and Baltimore track similarly, particularly for larger properties.
- The results for the two smaller PA towns (Meadville and White Township) are generally lower than other jurisdictions with higher populations yet there are marked differences between the two.
- Populations of Lancaster and Rockville approximate that of mid-sized towns in NJ (e.g., Bayonne).

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- Column headers for Philadelphia’s stormwater fee, which is based on both gross area and impervious area, are unique from the rest.
- Lancaster, PA indicates that its experience with the business community was mostly positive and is seemingly the best case study in that regard. (See attached case study summary.)

Table 1: Stormwater Utility - Non-Residential Fee Comparison

- Across 1,600 stormwater utilities nationwide, average population = 73,000.
- In New Jersey:
  - Approximate average population across all towns = 15,000.
  - Approximate average population of NJ's ten largest cities = 127,000.

City	Population	Combined Sewer	Utility Implemented	Use of Credits?	Fee Basis	Tiered/ Graduated Fee	Exemptions
Wilmington, DE	71,000	95%	2007	Yes	Gross Area x Runoff Coefficient = (Impervious Cover/ERU) x Rate	No	No
Philadelphia	1,568,000	50%	2012	Yes	Gross Area and Impervious Area	No	No
Lancaster, PA	59,000	45%	2014	Yes	Impervious Cover/ERU x Rate	Yes (4 Tiers)	No
Baltimore	622,000	0%	2013	Yes	Impervious Cover/ERU x Rate	Yes - Residential (3)	<ul style="list-style-type: none"> <li>•Charitable/ Nonprofit - hardship</li> <li>•State and local</li> <li>•Residents - based on income</li> </ul>
Rockville, MD	67,000	0%	2008	Yes	Impervious Cover/ERU x Rate	No	No
Gwinnett County, GA	667,000	0%	2006	Yes	Impervious Cover/ERU x Rate	No	No
Meadville, PA	13,616	0%	2012	No	Impervious Cover/ERU x Rate	No	No
White Township, PA	15,821	0%	2015	No	Impervious Cover/ERU x Rate	No	No

*ERU = Equivalent Residential Unit, reflecting impervious area of the average or median single family property.*

Table 2: Non-Residential Stormwater Fee Comparison

	Sample Properties (Sq Ft)			
	Gross Area = 3,000	Gross Area = 7,000	Gross Area = 15,000	Gross Area = 50,000
1. Philadelphia	<u>Impervious = 1,000</u>	<u>Impervious = 3,000</u>	<u>Impervious = 7,000</u>	<u>Impervious = 20,000</u>
Gross area (\$/500 sq ft *\$0.63/month)	\$3.78	\$8.82	\$18.90	\$63.00
Impervious area (\$/500 sq ft*\$4.90/month)	\$9.80	\$29.40	\$68.60	\$490.00
<u>Billing factor</u>	<u>\$2.89</u>	<u>\$2.89</u>	<u>\$2.89</u>	<u>\$2.89</u>
Total monthly bill	\$16.47	\$41.11	\$90.39	\$555.89
Annual bill	\$197.64	\$493.32	\$1,084.68	\$6,670.68
2. Baltimore	<u>Impervious = 1000</u>	<u>Impervious = 3,000</u>	<u>Impervious = 7,000</u>	<u>Impervious = 20,000</u>
- <i>Equiv. Residential Unit = 1,050 sq ft</i>				
- <i>Rate = \$5 per ERU per month</i>				
Total monthly bill	\$5.00	\$15.00	\$35.00	\$95.00
Annual bill	\$60.00	\$180.00	\$420.00	\$1,140.00
3. Rockville, MD	<u>Impervious = 1000</u>	<u>Impervious = 3,000</u>	<u>Impervious = 7,000</u>	<u>Impervious = 20,000</u>
- <i>Equiv. Residential Unit = 2,330 sq ft</i>				
- <i>Rate = \$11 per ERU per month</i>				
Total monthly bill	\$11.00	\$22.00	\$33.00	\$88.00
Annual bill	\$132.00	\$264.00	\$396.00	\$1,056.00

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4. Gwinnett County, GA	<u>Impervious =</u> <u>1000</u>	<u>Impervious =</u> <u>3,000</u>	<u>Impervious =</u> <u>7,000</u>	<u>Impervious =</u> <u>20,000</u>
- <i>Equiv. Residential Unit =</i> <i>100 sq ft</i>				
- <i>Rate = \$2.46 per ERU per</i> <i>year</i>				
Total monthly bill	\$2.05	\$6.15	\$14.35	\$41.00
Annual bill	\$24.60	\$73.80	\$172.20	\$492.00
5. Lancaster, PA	<u>Impervious =</u> <u>1000</u>	<u>Impervious =</u> <u>3,000</u>	<u>Impervious =</u> <u>7,000</u>	<u>Impervious =</u> <u>20,000</u>
- <i>Equiv. Residential Unit =</i> <i>1,000 sq ft</i>				
- <i>Rate = \$52 per ERU per yr</i>				
Total monthly bill	\$2.17	\$10.83	\$30.33	\$86.67
Annual bill	\$26.00	\$78.00	\$364.00	\$1,040.00
6. Wilmington, DE	<u>Impervious =</u> <u>1000</u>	<u>Impervious =</u> <u>3,000</u>	<u>Impervious =</u> <u>7,000</u>	<u>Impervious =</u> <u>20,000</u>
- <i>Equiv. Residential Unit =</i> <i>800 sq ft</i>				
- <i>Rate = \$14.85 per ERU per</i> <i>yr</i>				
Total monthly bill	\$6.19	\$18.56	\$43.31	\$123.75
Annual bill	\$74.25	\$222.75	\$519.75	\$1,485.00
7. Meadville, PA	<u>Impervious =</u> <u>1000</u>	<u>Impervious =</u> <u>3,000</u>	<u>Impervious =</u> <u>7,000</u>	<u>Impervious =</u> <u>20,000</u>
- <i>Equiv. Residential Unit =</i> <i>2,660 sq ft</i>				
- <i>Rate = \$7.50 per ERU per</i> <i>month</i>				
Total monthly bill	\$7.50	\$8.46	\$19.74	\$56.39
Annual bill	\$90.00	\$102.00	\$240.00	\$672.00

8. White Township, PA	<u>Impervious =</u> <u>1,000</u>	<u>Impervious =</u> <u>3,000</u>	<u>Impervious =</u> <u>7,000</u>	<u>Impervious =</u> <u>20,000</u>
- <i>Equiv. Residential Unit =</i> <i>3,700 sq ft</i>				
- <i>Rate = \$2 per ERU per</i> <i>month</i>				
Total monthly bill	\$2.00	\$2.00	\$3.78	\$10.81
Annual bill	\$24.00	\$24.00	\$48.00	\$132.00

*Notes:*

*If the ERU exceeds the impervious cover in the examples above, it is assumed that the non-residential feepayer pays the base rate.*

*Similar to some other localities, Baltimore's ERU calculation rounds up to nearest whole ERU. (I.e., 3,000 sq ft impervious/1,050 sq ft ERU = 3 ERUs)*

Non-Residential  
Credit Programs and Other Business-Friendly Incentives

According to a 2016 survey by Black and Veatch, nearly half of all existing stormwater utilities offer partial fee credits to property owners to encourage the implementation of stormwater mitigation measures. Generally, credit programs are designed to encourage a greater amount of stormwater-related retrofitting of property than would have otherwise occurred (i.e., due to permit or development requirements). Wisely implemented, this strategy is entirely consistent with the program’s “user fee” strategy, reducing fees while also reducing stormwater runoff.

The vast majority of stormwater utilities (82%) cap the value of the credit. The table below outlines the range of maximum stormwater fee reductions:

<u>Maximum Fee Reduction</u>	<u>Participating Stormwater Utilities</u>
Over 75%	39%
50% - 75%	32%
25% - 50%	22%
< 25%	7%

Green infrastructure projects are very popular. Over 50% of stormwater utilities offer credits to encourage the construction of “green infrastructure,” essentially engineered systems that enable water to soak into the ground where it falls or to be captured for beneficial reuse. Examples include rain gardens, cisterns, green roofs and permeable pavement.

Some incentive examples are listed below:

- *Green Permit Program (Expedite Permit Review and/or Reduce Fees)* - In Chicago, commercial permit applications that are certified within the Leadership in Energy and Environmental Design (LEED) rating system and include green infrastructure such as green roofs, rainwater harvesting, solar panels qualify for expedited processing and possible reduction of permit fees. In Philadelphia, projects with 95% or more of impervious area disconnected from the local sewer system can qualify for fast track permitting review. Such incentives can be structured to particularly encourage businesses that are on the cusp of deciding whether to invest in green infrastructure, thus efficiently applying available credits to maximize the amount of land that is retrofitted. If successful, stormwater benefits are realized without additional government expenditures.
- *Decreased Stormwater Plan Review Standards* - Any redevelopment plan in Philadelphia that reduces stormwater by at least 20% is exempted from the City’s standard channel protection and flood control requirements. Redevelopment is an ideal time to consider stormwater management, as reduced review standards could accelerate the project in exchange for stormwater management improvements that would not have been realized otherwise.

- *Higher Densities* - In some cases, the sheer size of the annual stormwater fee does not pose a realistic incentive for construction of on-site stormwater improvements beyond the minimum required, however some cities consider allowing developers to build at higher densities. Localities receive stormwater reductions at no cost while improving the developer's profit margin.
- *Reduction in Mandated Parking* - For retail centers, industrial facilities, and suburban office parks, scaling back the amount of parking that is mandated for a given development can increase projected profits in exchange for on-site stormwater improvements. To the extent that local zoning requires parking based on peak demand, or simply more than the market truly demands, this reduction incentive could be attractive.
- *Additional Credit Structures* -
  - In several Maryland counties, landowners can cut stormwater fees by up to 50% by implementing approved best management practices at their expense. In some cases, the county maintains the infrastructure thereafter.
  - In Philadelphia, businesses that install green roofs may claim a 25% credit (up to \$100,000) against the Business Privilege Tax for the year in which the facility was built.
  - In Anne Arundel county in Maryland, properties that have stormwater controls in place as part of their NPDES permit as well as marinas that have been determined to have no stormwater exposure may reduce stormwater fees by up to 50%. (A residual fee is necessary to account for public infrastructure, such as roads, that are used by all.)
  - The City of Baltimore offers a Harbor Discharge Credit of 30% for property owners that drain to privately-owned and maintained storm drains that connect directly to Baltimore Harbor. To qualify, applicants must submit detailed drawings of the property, including manholes, roof drains, and outfalls. The credit, which is calculated by multiplying the square footage of directly-drained impervious cover by 30%, lasts for five years.

Other innovations that may be of interest to non-residential feepayers:

- *Fee Phase-in and Increase Cap* - To help soften the impact of its stormwater fee on non-residential properties, the City of Philadelphia phased in the program over four years and placed a cap on fee increases, limiting them to no more than 10% in any given year. The latter measure essentially stretched the planned increase over a ten-year period.

- *Advisory Committee* - Normally, non-residential feepayers participate only in the original version of the Advisory Committee that develops initial plans for the new utility. Ongoing participation after enactment allows businesses to have input as the program unfolds.
- *Multi-Municipal Fee Systems* - Towns that band together regionally under a common set of program parameters (e.g., fee structure, approved credits) can realize considerable savings by minimizing administrative costs, reducing permit fees (i.e., significantly fewer projects but on a larger, regional scale), eliminating duplicate services, (e.g., public outreach), cooperative purchasing (e.g., one contract for aerial surveillance of impervious cover), and overcoming land constraints (e.g., county use of private property to implement high-value improvements). The cooperative would submit a single, shared stormwater plan to the State for approval. County planning district commissions often serve as the common organization. In another example, the Wyoming Valley Sanitary Authority in Luzerne County, PA, agreed in 2017 to serve as the stormwater coordinating body for 35 towns within its service area. Individually, these municipalities planned to implement 455 stormwater projects at a cost of \$69m. Instead, the Authority will realize the same environmental benefit through 65 larger-scale, regional projects costing \$12m, a capital savings of \$57m.
- *Tradable Credits* - this alternative, which is loosely modeled on the air emissions “cap and trade” program that has been in operation for several years, has been slow to progress in states that have authorized it (MD, VA, PA). The owner of a property that is expensive to retrofit for stormwater controls would fund improvements at another, easier-to-retrofit property and receive a fee credit. If not motivated financially, the same result could be realized through a regulatory mandate when a site is being developed or redeveloped (i.e., development is blocked unless stormwater improvements are installed). As long as the cost of the improvements is less than resulting development-related profit, the owner is incentivized. If successful, this measure lowers the cost of stormwater improvements by accelerating less expensive but valuable projects that otherwise would not have advanced. (Such a program has been implemented in Washington, D.C., however additional study is required before other jurisdictions could implement this.)