Appendix E: A Technical Note on Structuring Stormwater Utility Rates

Setting stormwater utility rates is a data-intensive process. Ideally, your jurisdiction will have data of sufficient quantity and quality to support a straightforward approach. In this note, that ideal situation is presented first, and then complicating factors are introduced. The note draws on a project report by the Environmental Finance Center for the City of Salisbury, Maryland (2013).

The basic technique for establishing a stormwater utility rate structure is to base fees for individual properties on measures of impervious surface areas. This method means that fees will correlate with the volume of stormwater which different properties create and thus embody a measure of fairness: that is, "polluters pay."

Types of Stormwater User Fees.[17] There are three basic methods that stormwater utilities use to calculate service fees. These are sometimes modified slightly to meet unique billing requirements. Impervious area is the most important factor influencing stormwater runoff and is therefore a major element in each method.[18]

Intensity of Development (ID): This stormwater cost allocation system is based on the percentage of impervious area relative to an entire parcel's size. All parcels (including vacant and undeveloped properties) are charged a fee on the basis of their *intensity of development*, which is defined as the percentage of impervious area of the parcel. Rates are calculated for several ID categories.

- *Advantages:* The ID method accounts for stormwater from the pervious portion of parcels; therefore, it can be more equitable than other billing methods. It accounts for completely pervious parcels and therefore can allow vacant/undeveloped parcels to be billed. Even if a parcel's impervious area is increased slightly because of minor construction modification, it would not like result in a significant enough change to merit moving the parcel into the next higher ID fee category. This reduces the time required for staff to administer the program.
- *Disadvantages:* Parcels are grouped into broad categories. Parcels are not billed in direct proportion to their relative stormwater discharges. This method can be more difficult to implement because parcel pervious and impervious areas need to be calculated. It is also more complicated to explain to customers than more common billing methods.

Equivalent Hydraulic Area (EHA): Parcels are billed on the basis of the combined impact of their impervious and pervious areas in generating stormwater runoff. The impervious area is charged at a much higher rate than the pervious area.

- *Advantages*: The EHA method accounts for flow from the pervious portion of parcels; therefore, it is often seen to be more equitable than other methods. It also accounts for

[17] The following section is based on a fact sheet developed by the U.S. Environmental Protection Agency: "Funding Stormwater Programs." January 2008. EPA 833-F-07-012. Updated facts and data have been provided and cited where appropriate.

[18] Establishing a Stormwater Utility in Florida, Florida Association of Stormwater Utilities, Chapter 4, Rate Structure Fundamentals.

undeveloped/ vacant parcels and allows them to be billed. It is perceived to be fairer than the ID method because parcels are billed on the basis of direct measurements of pervious and impervious areas to which hydraulic response factors are applied to determine a unique EHA for such parcels.

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

Equivalent Residential Unit (ERU): The most widely used billing method is the ERU system. An ERU is usually the average impervious area on a single-family residential parcel, although some communities define it as the average of all residential parcels. Fees for non-residential properties are proportional to the ratio of the parcel impervious area to the ERU. National surveys show that the mean was 3,050 square feet impervious with a standard deviation of 2,134 square feet.[19]

To calculate a fee, a representative sample of parcels is reviewed to determine the impervious area of a typical parcel. This amount is called one ERU. In most cases, all parcels up to a defined maximum total area are billed a flat rate for one ERU. In some cases, several tiers of residential flat rates are established on the basis of an analysis of parcels within defined total area groups.[20] Having such a tiered, flat-rate approach improves the equitability of the bills sent to homeowners. The impervious areas of commercial parcels are usually individually measured. Each commercial impervious area is divided by the impervious area of the typical parcel to determine the number of ERUs to be billed to the parcel.

- *Advantages:* The relationship (or nexus) between impervious area and stormwater impact is relatively easy to explain to the public. The number of billable ERUs can be determined by limiting the parcel area review to impervious area only. Because pervious area analysis is not required, this approach requires the least amount of time to determine the total number of billing units.
- *Disadvantages:* Because the potential impact of stormwater runoff from the pervious area of a parcel is not reviewed, this method is sometimes considered to be less equitable than the Intensity of Development (ID) or Equivalent Hydraulic Area (EHA) methods because runoff-related expenses are recovered from a smaller area base. This method could still be used to charge a fee to all parcels, pervious as well as impervious, to cover expenses not related to area, such as administration and regulatory compliance.

Distinguishing among Types of Parcels

All jurisdictions contain a variety of property uses or types. Typically, communities will contain some combination of the following types:

1. Residential Single Family Dwelling
2. Residential Condominium
3. Residential Townhouse

[19] Western Kentucky University Stormwater Utility Survey 2013. Page 2.

[20] For example, Anne Arundel County Maryland has a tiered fee system based on zoning classification.

4. Residential Apartment Units
5. Commercial
6. Agriculture Not a Single Family Dwelling
7. Industrial
8. Exempt Commercial
9. Exempt Non-Commercial

Because different types of properties create different volumes of runoff, to structure your utility rates according to the polluter pays principle, you will need to distinguish among and base your rates on types of properties in your jurisdiction.

Setting Rates for Different Types of Properties: Using a Tiered System

When you calculated your ERU, if you found only small variations in impervious surface areas among single-family parcels, you are justified in setting a flat rate for that type of property. Setting a flat fee will ease your administrative burden and reduce the risk of making billing errors. Small variations in imperviousness coefficients may justify, also, extending the flat fee to related types of properties such as residential condominiums or townhouses.

Doubtlessly, however, variations in impervious areas will be significant when residential property is compared with non-residential, i.e., when residential is compared with commercial and industrial parcels. Given sufficient data and technical capacity, including the use of geographic information systems (GIS) methods, a jurisdiction would have the ability to base its fees for non-residential parcels on empirical estimates of the impervious area that is unique to each parcel. Lacking that ability, however, local governments can use a tiered-rate structure that: (1) distinguishes between residential and non-residential property; and (2) assesses fees based on parcel size. To distinguish between residential and non-residential properties, national coefficients for runoff, by property types, are available; for example, the national coefficient for commercial property is .85, meaning that, currently, on average, 85 percent of surface area of commercial properties is impervious. To assess fees using a tiered system, areas of parcels, as measured in square feet, may be used, and categories of area established; for example, commercial properties could be categorized into properties with more or less than 40,000 square feet; in this case, commercial parcels of more or less than 40,000 square feet would be assigned fees using two different rates.[21] Thus, for this example, 85 percent of the area of a commercial parcel of less than 40,000 square feet would be assigned a certain fee; but 85 percent of a parcel in the same use, but with more than 40,000 square feet of area, would be assigned another, higher, fee. Because it is demonstrably fair, building the local capacity to estimate the impervious area of each parcel, instead of using national averages and a tiered system, is preferred and recommended. If a jurisdiction launches its utility using a tiered rate system, it can build a data base and technical capacity, over time, to enable a shift from a tiered system to one that is parcel specific.

[21] The example of plus or minus 40,000 square feet categories comes from the tiered system established for the stormwater utility in Salisbury, Maryland. See Environmental Finance Center, 2013.

Using ERUs to Establish Fees

ERUs, if they are available, can be used to obtain revenues sufficient to a jurisdiction stormwater program budget. Assume, for example, that the ERU for a given jurisdiction is determined to be 3,344 square feet, and the total number of ERU in the community, for all types of properties, is 10,000 square feet. If the revenue needed for the annual stormwater program budget is $400,000, the rate would be set at $40 per ERU, per year: $40 X 10,000 = $400,000. If a commercial parcel in the community has 10,000 square feet of impervious surface, or three ERU, the annual bill for that property would be $120.00. Typically, employing a tiered rate system, which requires less data and local technical capacity, or employing an ERU system, which requires more data and capacity, are two different approaches to creating a utility rate structure.[22] When a community has the ability, either at the outset of a utility or over time, using the ERU approach is preferable because fees are demonstrably related to runoff volume.

Exemptions. Using utility fees to pay for stormwater services, instead of using ad valorem taxes, implies that all properties, including those that are tax exempt, are subject to fees; the polluter pays principle applies in that all properties create runoff. In creating a utility rate structure, jurisdictions decide if they should treat all properties the same, or if they should make adjustments in rates for certain types of properties. Some jurisdictions, for example, have relieved all or some fees for land that is vacant, is used for agriculture or public roads, or is owned by nonprofit organizations or the elderly.

Local jurisdictions should cautiously consider making exemptions for different kinds of properties. The consequences of making exemptions are: (1) the connection between land that creates stormwater volume and land that pays for stormwater services is compromised; and (2) the revenue stream needed for stormwater services will be reduced. If they are not considered justifiable or fair, exemptions will be judged to be discriminatory. And the exemptions-revenue tradeoff could undercut the budget needed to provide adequate stormwater services.

Credits. Another issue which local officials must consider when structuring a utility rate system is whether or not to grant credits to property owners for stormwater improvements they make to their lands. For example, should you provide credit to residential property owners for installing BMPs, such as rain barrels, rain gardens, or vegetative buffer strips along streams? Or, for developers and commercial and industrial property owners, should you provide credits for permeable pavement, tree canopy improvements, or the installation of stormwater detention basins?

Credits are provided by some stormwater utilities for approved practices that reduce the impacts of stormwater on a property or in a community. Some states require credits for approved practices, but some do not. In states where credits are optional, some utilities grant them, but some do not. Practices that have received credits include various improvements and activities to reduce the quantity of runoff, improve runoff quality, conduct outreach programs to the public, or provide educational programs about stormwater. Some utilities also provide credits in cases of financial hardship.

[22] A few jurisdictions have created stormwater utility rate structures that combine tiered and ERU systems.

If local governments have the option to consider stormwater utility credits, the consequences of so doing should be considered. Credits help to define, for the public, the difference between a fee, which is based on runoff, and a property tax, which bears no such relationship. Credits also create incentives among the public to become aware of practices that reduce runoff and to undertake such practices on their properties. Like exemptions, however, credits reduce the stream of revenues and thus should be considered with caution. Establishing a fair, easily understood, and effective credit program also requires administrative resources.

Rarely are credits provided for 100 percent of the applicable fee. Credits are usually correlated with the cost, size, and degree of sophistication involved in the creditable practice and are initiated by a written application submitted by a property owner. Typically, credits require verification by the local authority, are granted only when the property owner who applies is current on payments of stormwater bills, and are applicable for a limited number of years.

If credits are to be granted, an enforcement policy to review applications for accuracy and to inspect practices for functionality should be established before the opportunity for credits is made public. The enforcement policy should also include consequences for failing to meet or maintain standards and a notification period included for property owners to correct such deficiencies in practices that have received credits. Lastly, any credit policy should be explicit and documented.

Additional Complications in Setting Utility Rates

Even when a local jurisdiction has the ability to create a utility rate structure using ERU, state requirements can complicate local efforts to do so. In the Commonwealth of Virginia, for example, state authorities have established, at this time, a challenging time line for local governments to create stormwater program upgrades. In communities that are considering the creation of utilities to provide dedicated streams of revenue to fund the upgrades, little time is available to gather the data needed to create more than a tiered, flat fee utility rate structure.

Another complicating factor arises because of interdependencies among local jurisdictions. In creating utility rates, jurisdictions naturally look at fees being charged by their neighbors to guard against being “out of line” and thus risking the loss of commercial and industrial firms to nearby jurisdiction. Note also, however, that having neighboring jurisdictions that are establishing stormwater utilities offers an opportunity for local governments, that is, neighboring jurisdictions can use intergovernmental contracts to achieve economies of size in programs. For example, a collection of jurisdictions may be able to join together to contract for the services of a single private firm to help establish the databases needed to form their utilities. That type of contract could be a win-win for both the firm (more revenues) and the local jurisdictions (lower costs). Additionally, the jurisdictions might contract among themselves to administer a utility program. Intergovernmental contracting is a way to preserve the integrity of local jurisdictions, allowing them, thus, to create policies that reflect local tastes and preferences for public services while at the same time achieving economies of size in providing those services.

Appendix F: Acronyms and their Meanings

BMP	Best Management Practice
CRWA	Charles River Watershed Association
CWA	U.S. Clean Water Act
EPA	U.S. Environmental Protection Agency
HOA	Homeowners Association
HOBO	A data logger that records measurements, at set intervals, over a period of time
MCM	Minimum Control Measure
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
TMDL	Total Maximum Daily Load
WIP	Watershed Improvement Plan