

RATE STRUCTURE ALTERNATIVES

ISSUE

The City of Edgewood imposes annual surface water charges on parcels within the City limits, in order to fund the Surface Water Utility's operations, maintenance, and projects identified in the Capital Improvement Plan (CIP). The City has requested an evaluation to determine whether the current rate structure is optimal, given the City's policy objectives.

RATE STRUCTURE ALTERNATIVES

There are number of surface water rate structure options that are often considered as potential bases for recovering the costs of surface water management.

Impervious Surface Area (City's existing structure): The most common approach is to charge customers based on the amount of impervious surface area on their parcel. Impervious surface is defined as hard surface area that either prevents or impedes the permeation of water into the ground. Impervious surface area is widely accepted as an appropriate measure of a property's contribution of runoff, providing a rational nexus to service received from a surface water program. Given the diversity that exists among non-single-family residential properties, it is common to charge these customers based on actual measured impervious surface area. Because tracking parcel-specific measurements of impervious area for single-family customers would add considerable administrative effort and complexity to the rate structure, the more common practice is to impose a uniform rate on single-family residences based on an estimated average amount of impervious surface area. Though this approach may overcharge smaller residences and undercharge larger residences, it is widely considered to be an acceptable compromise between equity and practicality.

Density of Development: An alternative measurement of runoff contribution involves applying "density factors" to actual impervious area measurements, adjusting charges depending on the percentage of the parcel covered by hard surface. This approach can acknowledge that, for example, 3,000 square feet of impervious area on a 5,000 square-foot lot more directly impacts the public system than an equivalent impervious area on a one-acre lot. As with the approach based on impervious surface area, this approach is an appropriate charge basis because it adequately quantifies the relationship between the rate paid and the level of service received.

Runoff Coefficients: This approach is similar to the "density of development" approach in that it can be used to adjust a parcel's charge based on its runoff characteristics – however, it is more closely associated with a parcel's physical properties. When applied to lot size, runoff coefficients are generally accepted as a measure of runoff contribution (and service received). Implementing this approach requires information relating to the basic characteristics of land (e.g. slope and soil type), land use, and lot size. Depending on slope variables and soil characteristics, undeveloped parcels may also be subject to charges under this approach. In measuring runoff contributions by evaluating property-specific characteristics that may impact those contributions, this approach rationally recovers the costs of several aspects of the surface water program.

Land Use: Alternatively, runoff characteristics can be linked to types of land use. For example, empirical analysis may find that industrial land use has a more significant contribution to water quality problems from surface water runoff than undeveloped land (justifying a proportionately higher industrial rate to equitably recover program costs).

Trip Generation: While most rate structure options focus on runoff contribution, a structure based on trip generation relates automobile traffic to non-point-source pollution contributed by properties. The Institute of Transportation Engineers’ *Trip Generation* Manual assigns a number of daily trips to specific categories of land use – this information could be used to recover the costs of water quality activities within the surface water program. Customer land uses and lot sizes would also be required in order to calculate equitable rates.

CITY OF EDGEWOOD’S EXISTING RATE STRUCTURE

The following table summarizes the City’s existing rate structure, as defined in Edgewood Municipal Code 13.10.070, which is based on Pierce County Code, section 11.02.050. In this structure, Class 1 and 2 have flat rates per parcel. Class 4 has a flat rate per mobile home site. Class 3 (Multifamily) and Class 8 (all other parcels) have different rates per impervious square foot, while Classes 5 and 6 have a more unique structure. While the City does have an annual charge for state, county, and public highways (Class 7), the surface water utility does not currently charge any of them. The City also does not charge its own municipal streets.

Annual service charges by customer class:

1.	Residential	\$ 159.00 per parcel
2.	Duplex	\$ 205.10 per parcel
3.	Multifamily	\$ 0.06022 per square foot of impervious area.
4.	All Mobile Homes other than 1., above	\$ 159.00 x 55 percent per vacant or occupied mobile home site (mobile home equivalent).
5.	Vacant/Undeveloped	\$ 0.80/acre, but in no case shall the minimum service charge be less than \$40.00/parcel.
6.	Forest and Timber Land	\$ 40.00 per parcel, plus \$0.008/acre on lands classified as forest lands under Chapters 84.33 and 84.34 RCW.
7.	State, county and federal public highways	\$ 0.01805 per square foot of impervious area.
8.	All parcels other than 1. through 7., above	\$ 0.015055 per square foot of impervious area.

ANALYSIS

Background

A rate may be found legally valid if the services that it funds generally benefit those who pay it – a property-specific link between fees paid and level of service received is generally not required. Case

law in Washington, notably *Teter v. Clark County*, has supported the stance that an indirect linkage is adequate justification for a rate.

Throughout the United States, impervious surface area is a widely accepted measure of runoff contribution, providing the basis for rates in most surface water utilities. In addition, the functional nexus among impervious surface area, runoff contribution, and increased flooding / water quality degradation / damage to habitat is strong and supportable.

The following selection from Stormwater Strategies: Community Responses to Runoff Pollution describes this nexus clearly:

“The problem of polluted stormwater runoff has two main components: the increased volume and rate of runoff from impervious surfaces and the concentration of pollutants in the runoff. Both components are highly related to development in urban and urbanizing areas. When impervious cover (roads, highways, parking lots, and rooftops) reaches 10 and 20 percent of the area of a watershed, ecological stress becomes clearly apparent. Everyday activities, including driving and maintaining vehicles, maintaining lawns and parks, disposing of waste, and even walking pets, often cover these impervious surfaces with a coating of various harmful materials. Construction sites, power plants, failed septic systems, illegal discharges, and improper sewer connections also contribute substantial amounts of pollutants to runoff. Sediments, toxic metal particles, pesticides and fertilizers, oil and grease, pathogens, excess nutrients, and trash are common stormwater pollutants. Many of these constituents end up on roads and parking lots during dry weather only to be washed into waterbodies when it rains or when snow melts.

Together, these pollutants and the increased velocity and volume of runoff cause dramatic changes in hydrology and water quality that result in a variety of problems. These include increased flooding, stream channel degradation, habitat loss, changes in water temperature, contamination of water resources, and increased erosion and sedimentation. These changes affect ecosystem functions, biological diversity, public health, recreation, economic activity, and general community well-being. Urban stormwater is not alone in causing these impacts. Industrial and agricultural runoff are equal or greater contributors. But the environmental, aesthetic, and public health impacts of diffuse pollution will not be eliminated until urban stormwater pollution is controlled.”

Source: Peter H. Lehner, George P. Aponte Clarke, Diane M. Cameron, and Andrew G. Frank, Stormwater Strategies Community Responses to Runoff Pollution (Natural Resources Defense Council, May 1999), xi.

Supporting scientific research shows that in addition to increasing the deposition of pollutants, impervious surfaces greatly increase peak flows to streams while decreasing recharge to groundwater, which can decrease base flows and aquifer resupply rates. Higher peak flows cause flooding and erosion, increasing sediment deposition and damage to aquatic habitats; lower base flows can also impact habitats.

Considerations for City

The City’s existing rate structure is based on the impervious surface area methodology, as discussed in the Rate Structure Alternatives section. While the impervious surface area rate basis is widely supported and accepted, it is still worthwhile to examine how it has been applied. The City could

improve the equity of its single-family rate structure by moving to a tiered residential rate, but it should consider the potential expense of generating parcel-specific impervious area measurements in its decision-making process.

A second, more important area of examination is the value of the implied residential equivalent, which is discussed in the next section. Once updated, it would be advisable for the City to periodically revisit this value and update as needed.

The City could also enhance its rate structure by incorporating density factors, recognizing that more intense development may more directly impact the public surface water system, assuming that development at lesser density is not directly connected to the system. The runoff coefficient approach would be more difficult to administer than the existing structure based on impervious surface area, as it would require a relatively extensive data collection effort on the part of the City. It is also less defensible as a fee basis because it incorporates physical land characteristics over which the customer has minimal control.

While administratively simple compared to an impervious-area approach, an approach based on land use is typically used only when property-specific impervious area measurements are unavailable. Trip generation, while a supportable means of recovering costs related to water quality, provides little if any advantage over impervious surface area at greater administrative effort and associated cost.

EVALUATING CITY'S RESIDENTIAL EQUIVALENT

The City charges its residential parcels through a uniform, flat charge which treats all residential customers equally (\$159 per parcel). While there is some variation in residential impervious footprints, it's typically not as varied as non-residential parcels. In order to allow the schedule to scale for non-residential customers, the charge is expressed in a per-impervious square foot rate (currently \$0.015055 per square foot of impervious area for Class 8). Using the Class 3 (multifamily) rate of \$0.06022 per impervious square foot (ISF), the implied residential equivalent is 2,640 ISF ($\$159 \div 0.06022$), meeting Pierce County's definition. Theoretically, a non-residential parcel of the same size (2,640 ISF) should have a charge that is roughly equal to \$159. However, as described below, this is not the case.

The City's rate for Class 8 implies that a residential equivalent is equal to 10,561 ISF ($\$159 \div 0.015055$). In fact, barring a minimum charge, a Class 8 parcel with 2,640 ISF would have a charge of \$40, which is only 25% of the residential rate. This means that, on average, residential customers are paying much more for a given square foot of impervious area when compared to Class 8 parcels, effectively discounting non-residential customer rates.

RECOMMENDATIONS

The fee basis creates a standard of charging that quantifies how the amount of impervious surface area impacts the environment through flooding, changes in water quality, and habitat degradation. Therefore, the fee structure basis should proportionately charge customers their share of the system's cost burden and provide an equitable and defensible means of cost recovery. The City's current rate

structure generally meets these criteria by charging for the amount of measured impervious surface area for non-residential parcels.

However, to further meet these goals, we recommend the City consider the following adjustments to the rate structure:

No Longer Charge Undeveloped Parcels

While it is true that runoff from undeveloped land is conveyed to the public system, the intent of the impervious rate basis is to capture the impact of development over and above natural conditions. This provides some amount of “controllability” on the part of the ratepayer, a necessary feature of a rate, versus a tax.

Eliminate the Distinct Charge for Forest and Timber Land

The City likely does not have many, if any, customers that fall within the “forest” rate class. Even if there were parcels within this category, it is recommended that they be charged based solely for their impervious surface area—just like other parcels that do not fall within the single family, duplex, or mobile home criterion.

Create a Combined Class 3 (Multifamily) and Class 8 (All other parcels) Rate

It is recommended that there be a single rate for both Class 3 and Class 8. The cost of managing multifamily and commercial surface water runoff is not demonstrably different, therefore a rate differential is not justifiable. Currently, the multifamily rate is \$0.06022 which is four times as much as the Class 8 rate of \$0.015055. Impervious area from Class 3 parcels should not be treated differently from Class 8 parcels. Therefore, it is recommended that there be one non-residential rate per ISF—instead of having separate unit rates for multifamily and commercial.

Recalibrate the Implied Residential Equivalent

It is recommended that the City “recalibrate” the rates between residential and non-residential customers, such that the implied residential equivalent is more in line with the estimated average within the City. This is likely to be between 3,000 and 4,000 ISF, rather than the implied equivalent of 10,561 ISF assuming the Class 8 rate or 2,640 using the Class 3 rate.

In summary, if all of these adjustments were implemented, the resulting rate structure would consist of a flat rate for residential parcels, a flat rate for duplex parcels, a flat rate for mobile home sites, and a single rate per impervious square foot for all other parcels. This would result in less complexity in the code, be easier to implement and result in an equitable (at least on an impervious surface basis) structure across the classes. Commercial rates would increase relative to other customer types in order to achieve this equity.