TECHNICAL MEMORANDUM #2

Environmental Scan

CITY OF PORTLAND, BUREAU OF ENVIRONMENTAL SERVICES | **SANITARY SEWER & STORMWATER COMPREHENSIVE RATE STUDY**

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Commonly Used Abbreviations and Acronyms

BES	Portland Bureau of Environmental Services
BMP	Best Management Practices
BOD	Biochemical Oxygen Demand
CIP	Capital Improvement Plan
CRR	Clean River Rewards
CSO	Combined Sewer Overflow
EPA	United States Environmental Protection Agency
ERU	Equivalent Residential Unit
FOG	Fats, Oils and Grease
FTE	Full Time Equivalent
FY	Fiscal Year
GRG	Galardi Rothstein Group
I/I	Infiltration/Inflow
Mg/l	Milligrams per liter
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
PFU	Plumbing Fixture Unit
ROW	Right of Way
SDC	System Development Charges
SF	Square Feet
TSS	Total Suspended Solids

Introduction

In June 2019, the City of Portland Bureau of Environmental Services (BES) authorized Galardi Rothstein Group (GRG) to conduct a comprehensive rate study (Rate Study) to assess the methodologies and structures that form the basis of the its sanitary sewer and stormwater rate program. The Rate Study comprises three phases of work; Phase 1 (due diligence and environmental scan) includes review of BES's own rate practices and metrics, and those of a limited number of benchmark utilities. Future phases of the Rate Study include study preparation and development of recommendations (Phase 2) and public engagement (Phase 3).

This memorandum summarizes the preliminary findings of the environmental scan (Phase 1), including key themes that emerged from initial policy discussions and technical workshops, and recommendations for further consideration in Phase 2. This memorandum references key findings from the benchmarking exercise; Technical Memorandum #1 (Utility Benchmarking, dated December 6, 2019) provides more detail on benchmarking sources, utilities and conclusions.

Stakeholder Meetings

Over the course of Phase 1 of the Rate Study, GRG met with advisory boards and other groups internal to the City of Portland (City) to discuss the Rate Study work plan, and to listen to stakeholder issues and objectives. The initial meetings were focused on key policy issues and included discussions with:

- BES Leadership – Commissioner's Office, Department Director, Bureau Leadership Team, and Public Information Office
- Portland Utility Board
- Citizens' Utility Board

Phase 1 meetings also included workshops with BES technical staff to provide a general overview of the systems, programs, and models. A series of six meetings were conducted with staff from key divisions, including: Stormwater, Wastewater, Revenue Program (Clean River Rewards), Industrial Permitting and Fats, Oils and Grease, Permitting and Development Review, and Finance. Additionally, an initial meeting with representatives from the Portland Water Bureau was also conducted to discuss customer service and billing system requirements.

Additional meetings with stakeholders will occur during Phase 2 of the Rate Study, with broader public outreach planned for Phase 3.

Key Rate Study Objectives

Within standard industry practices, utilities have flexibility in selecting approaches to rate and fee setting that align with local policy objectives. The key objectives that emerged from the Phase 1 meetings are summarized below.

Alignment with Strategic Plan

The 10-Year Strategic Plan (2018-2027) provides a framework for all of BES's work, including the Rate Study. The Rate Study touches all strategic initiatives indirectly, but in particular the following initiatives:

- **CITY-1: Evaluate and improve existing inter-bureau partnerships to advance the Bureau's mission, improve service delivery, and achieve City goals.** Key bureau partnerships related to the Rate Study include Water (billing and customer service), Transportation (stormwater maintenance), and Development Services (permitting and fees).

- **CUL-5: Create a culture of equity, diversity, and inclusion.** The Rate Study will evaluate current practices and potential alternatives in the context of BES's equity framework which is rooted in the City's overall strategy (discussed further under BES Equity Framework).

- **COMM-2: Conduct ongoing stakeholder engagement to maintain communication and to receive input that shapes our work, particularly in communities most impacted by our projects.** Stakeholder engagement helped inform the findings of Phase 1 of the Rate Study, presented in this memorandum. Additional stakeholder engagement will occur in subsequent phases, most broadly in Phase 3.

- **SD-1: Deliver services equitably.** The Rate Study will identify the costs incurred by BES to provide various wastewater and stormwater services, and develop a system of rates and charges that supports an equitable allocation of costs based on services delivered.

- **SYS-3: Evaluate existing service delivery and decision-making systems and prioritize systems for re-engineering or reorganization to align with the Strategic Plan.** The Rate Study includes a broad evaluation of existing rate-setting methods, policies, and procedures, and provides an opportunity to refine approaches to align with current goals and objectives.

Affordability

Utility rates are part of a broader concern over affordable living for Portland residents. In recent years, the City has expanded its low-income discount program to provide additional levels of discounts for residential customers, and crisis assistance for multifamily customers. While specific modification of the existing low-income program is outside the scope of the Rate Study, opportunities to address affordability through BES's rate structure and credit program design should be considered alongside any rate study recommendations.

Consistency with BES Equity Framework

Consideration should be given to how rate structure approaches may be tailored to promote the equity vision identified in BES's Equity Plan[1]:

> *"All Portlanders deserve access to a healthy and safe environment. Access to BES services is not limited by a person's race, gender, sexual orientation, disability, age, income, where you were born or where you live.*"

The Bureau's Equity Plan is rooted in the citywide equity plan, and includes goals related to equity literacy (skill building and accountability), equitable service delivery and business practices (purchasing and impact on communities), and workforce equity (hiring and retention and promotion of staff). Within the context of the Rate Study, the most relevant goals include:

- Equity literacy: considering ways to apply an equity lens to BES's work.
- Equitable service delivery: considering impact on communities through public involvement interactions and examining policies, practices and procedures to assess the impact of institutionalized disparities on communities of color and disabled community.

Consistency with Cost-of-Service Principles

Consistent with past practices and policies[2], the Rate Study should consider approaches that promote equitable cost recovery from new and existing users of the system based on cost-of-service principles including:

- Grouping customers with similar usage requirements.
- Recovery of costs from customer classes in proportion to estimated system use based on measurable service characteristics.
- Recovery of existing system reserved capacity and future new facility expansion costs recovered from new users of the system.

While theoretically, the costs of serving each individual customer may differ due to factors like location, elevation, and wastewater discharge and stormwater runoff characteristics, it is accepted practice given data limitations and practical constraints to establish a cost-of-service framework based on a limited number of service factors and classes[3]. The cost-of-service analysis will estimate the costs related to each system specifically (stormwater vs. wastewater), and different customer types (residential, commercial, etc.).

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[1] BES Equity Vision (2016-2021).

[2] As noted in the FY 2019-20 Sewer and Stormwater System Annual Rate Study, BES has been following Cost-of-Service Ratemaking Principles since adoption of the 1977 City of Portland Sewage Disposal Fund Rate Study by the City of Portland (Appendix H).

[3] Water Environment Federation, *Financing and Charges for Wastewater Systems*, Fourth Edition, p. 136.

Administrative Feasibility

Any potential modifications to current rate or fee structures will need to consider data limitations within BES control, and staffing and billing system constraints beyond BES control. Sufficient lead time will need to be incorporated prior to the implementation plan for the new rates to allow adequate time for customer data development, system programming, and customer communications on potential bill impacts.

Highlights from Technical and Document Reviews

The technical and document reviews identified key elements and principles of the existing rate-setting framework, as well as more recent factors impacting the wastewater and stormwater cost structures, levels of service, and customer service requirements. While BES updates rates annually based on system revenue requirements and customer data, it has been over a decade since BES conducted a comprehensive rate analysis to evaluate the underlying cost-of-service and rate structure framework.

Wastewater System Review

Cost Structure

Since the prior comprehensive rate study was completed in 2005 by Black and Veatch, BES has completed major Combined Sewer Overflow (CSO) investments, and staff indicate that the current focus of the capital improvement plan is on expanding secondary treatment capacity, and addressing chlorine residual limits and maintenance and reliability priorities based on ongoing inventory and condition assessment. BES has also made investments in resource recovery, specifically to convert digester gas to natural gas for vehicle fuel. Future regulatory requirements and treatment permits will define the need for investments to address nutrients (e.g., phosphorus) and temperature limits.

Cost Allocation Parameters

For rate-setting purposes, BES currently allocates wastewater system revenue requirements (costs) to: 1) sanitary sewage flow, and 2) sanitary sewage strength, as measured by Biochemical Oxygen Demand (BOD) and Total Suspended Solids (TSS)[4]. All costs are recovered through volumetric charges and extra-strength charges (discussed in the section below).

As part of a broader rate reform effort in 2000, a portion of BES overhead and public information costs that had formerly been allocated to customers on a per-account basis were shifted to volumetric charges, eliminating wastewater-specific service charges[5]. Prior rate reform efforts were designed to enhance rate affordability for low volume customers and give customers more control over the amount of charges on their bills[6].

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[4] BES Rate Study FY2019-20.

[5] Utility customers are still assessed a fixed service charge that recovers billing and customer services costs (administered by the City's Water Bureau); however, there is no longer a service charge for BES-specific costs. The BES fixed service charge was phased out fully in fiscal year 2007-08.

[6] Official Statement City of Portland, Oregon First Lien Sewer System Revenue Bonds (November 18, 2004).

Industrial Permitting and Fats, Oils and Grease (FOG)

Commercial and industrial customers discharging wastewater in excess of 300 milligrams per liter (mg/l) BOD and 350 mg/l TSS are assessed extra strength charges for each additional pound discharged, above the standard strength limits. BES staff note that future regulatory requirements and treatment permits may create a need for future investments related to nutrients and temperature limits; however, impacts may not be known within the Rate Study period.

BES has approximately 50 "measured" extra-strength customers whose strength charges are based on individual sampling results monitored by BES, and system-wide charges per pound of BOD and TSS. Extra strength charges for measured customers are in addition to a customer's volumetric charges.

Since the prior rate study, BES expanded its extra strength surcharge program to include about 3,200 commercial customers whose rates are based on "class average" concentrations of BOD and TSS derived primarily from local sampling data. For these customers, the additional strength costs are calculated based on the system-wide BOD and TSS rates per pound, assumed strength concentrations by class, and individual customer volumes. The Rate Study will consider potential new classes of extra-strength customers (e.g., beverage manufactures and food carts), and recalibrate domestic wastewater strength concentrations and extra-strength limits[7].

Expansion of the extra strength program resulted in the need for additional staffing. Initially, five Full Time Equivalents (FTE) positions were needed during the four-year program implementation period. Following implementation, the staffing impact was reduced to three additional FTE ongoing. Additional administration requirements relate to the need for ongoing account reviews, as well as facility inspections to monitor best management practices (BMPs) related to FOG. Customers who implement BMPs (e.g., grease traps or interceptors) are provided a discount on their wastewater extra strength charges[8].

High-strength food waste and FOG with high concentrations of convertible pollutant loadings help fuel the resource recovery program, yet BES still incurs costs related to delivering and treating this higher concentration waste. The Rate Study may be used to identify BES's net costs related to these high concentration loadings and affirm that net impacts provide limited basis for credit recognition or offer a foundation for credit development.

Specific Cost Assignments

The current rate-setting framework includes assignment of a portion of BES's costs directly to customer classes or subclasses, reflecting unique service requirements and policy decisions. The specific assignments include:

- A portion of Pollution Prevention Group budget allocated to extra strength customer class volume charges[9], reflecting specific services performed for these customers.

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[7] Residential customers and regular strength commercial customers are assumed to have wastewater concentrations of 293 mg/l BOD and 288 mg/l TSS, while extra-strength cut-off limits are 300 mg/l and 350 mg/l, respectively.

[8] Extra Strength Charge Program Administrative Rules (March 2019).

[9] BES Rate Model FY2019-20.

- A subset of commercial and industrial customers with special wastewater discharge meters are allocated additional costs associated with maintaining and billing these meters.
- The costs (in the form of foregone revenue) from the discount on wastewater and stormwater bills for residential low income customers is assigned specifically to other residential customers.
- Clean to stormwater drainage system rates are calculated based on a specific portion of stormwater system costs related to MS4 permitting requirements.
- The drinking fountain rate reflects specific assignment of a limited portion of permit-related costs based on a prior City Council policy. The rate has not been updated since 2012.

Capital Charges

Capital charges are one-time charges on new development and include system development charges (SDCs) and line and branch charges.

System Development Charges

System development charges designed to recover existing system capacity costs associated with major facilities (including sewer lines 12-inch diameter and larger). Non-residential wastewater SDCs are assessed based on a three-tier plumbing fixture unit (PFU) structure where nonresidential customers are assessed SDCs based on the number of PFUs installed and the estimated intensity of use, as determined based on the type of development (e.g., office, restaurant, etc.). Residential customers are assessed SDCs based on a uniform rate per dwelling unit (based on type of dwelling unit).

Staff note current areas to consider with respect to assessment of wastewater SDCs include:

- Consideration of alternatives to PFUs for some customer types that do not fit typical flow equivalencies.
- Defining flow factors for new customer types (e.g., beverage manufactures).
- Evaluating whether a process for true-up of charges based on actual flows might enhance equitable cost recovery.
- How to charge new housing types (accessory dwelling units, single room occupancy buildings, tiny houses, and micro-units).
- The existing three-tier system for estimating intensity of PFU use.

Line and Branch Charges

Line and branch charges recover the costs of extending smaller (generally less than 12-inch diameter) collection system lines, and are assessed on properties located in areas outside of previously created sewer Local Improvement Districts. Line charges for individual properties are assessed in proportion to estimated benefit area (measured in square feet) and branch charges

are per branch used by the property. In determining the system-wide average costs for installing collection lines, BES uses project costs from actual construction projects dating back to 2003.

Staff note issues related to line and branch charges include:

- Costs are based on a system-wide average, but there is a large variation in costs across system due to differences in soil types and installation costs.
- Recent projects are excluded because they carry relatively higher unit costs due to smaller scale construction, so drive up system unit costs (even though high and low costs are excluded from average).
- Annual update process is complicated by need to calculate specific benefit areas for new projects constructed as these calculations are no longer routinely calculated by engineering staff.

Other Fees

Other fees includes permit and land use fees, as well as other charges for services (e.g., industrial waste discharge). The current fee-setting process includes estimation of labor costs for staff position categories involved in providing direct and indirect (support) services, as well as bureau-wide administrative overhead. Fee-specific cost recovery is set at 75 percent for most fee categories, reflecting prior policy direction and the assumption that most services provide some general system benefit.

Labor costs are based on hourly rates that are updated annually, and estimated time requirements for most services are based on a time study conducted 8-9 years ago. Industrial waste discharge rates are based on more recent (2017-18) estimates of staff requirements by type of industry.

The Rate Study will review all elements of the fee-setting calculations, and provide recommendations for modifications. Staff also indicated a need for review of the current policy on refunds for over-counter permits. The current policy of providing 80 percent refunding results in developers pulling permits early in the process, before a project has full commitment.

Stormwater System Review

Cost Structure

Since BES conducted its last comprehensive rate study, annual rate updates have continued to rely on some of the same capital cost allocations factors established over a decade ago to determine annual revenue requirements specifically for wastewater and stormwater. However, the prior cost factors may not fully account for stormwater management costs, which may be relatively higher today, given significant stormwater management-related investments in both green and grey infrastructure.

Green infrastructure facilities generally have lower up-front capital investments compared to traditional grey infrastructure; however, they typically impose higher operation and maintenance (O&M) costs (per unit of volume of stormwater capture capacity), owing to the large number of smaller scale facilities and the more vulnerable natural treatment features of the facility versus

concrete and metal facilities. Additional pressure on stormwater O&M costs may also come from a public desire for higher levels of service for stormwater maintenance for green infrastructure facilities, given the visibility of these facilities.

Prospective costs for stormwater management will be impacted by stormwater system planning efforts currently underway that will identify future investments to preserve assets and address risks and policies. Staff note that historically, stormwater maintenance activities have been problem driven, and stormwater asset management programs are in initial phases of development. BES does not currently have a complete assessment of existing stormwater asset conditions, but estimates a significant backlog of repair and replacement which is not currently addressed in the BES system (financial) forecast.

Determination of Off-Site Costs

A key aspect of the current rate-setting methodology is allocation of stormwater costs between on-site and off-site cost components. The allocation of costs between on- and off-site categories followed the City Council's direction in April 2000 that BES explicitly calculate and identify on the customer bill, the share of stormwater charges associated with public streets and the environment (collectively "off-site" charges). Resolution No. 35876 (Revised) also included a directive for BES to "…commission an independent analysis of the relative costs of managing stormwater from private property as compared to public rights-of-way (ROW), including an estimation of the cost savings to the stormwater utility that result from on-site stormwater management…"[10]

An August 2000 study performed by Black and Veatch,[11] evaluated different methods for estimating the costs of managing stormwater from private properties and public ROW[12]. The adopted allocation method was predicated on estimating both the stormwater quantity and quality costs associated with streets/ROW based on respective total and impervious areas and water quality reference data from the Oregon Association of Clean Water Agencies. The resulting allocation of costs to streets/ROW was 48.4 percent of total costs. Additionally, indirect and direct program costs that were considered fixed in nature and unrelated to private property stormwater management were estimated to be 15.5 percent of total costs, resulting in a total off-site allocation of 63.9 percent of costs. These calculated values were then apparently rounded to the 65 percent off-site figure currently identified in the rate schedule and that serves as the non-creditable portion of stormwater charges.

The off-site cost calculation has not been updated since 2000, and it is likely that both ROW impervious area (relative to other impervious area), and fixed program costs included in the off-site portion of the charge have since changed.

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[10] City Auditor – City Recorder – Council Documents – 425-2003 Retroactive Stormwater Credits Exhibit D.

[11] Black and Veatch, Stormwater Cost Allocation Study, August 23, 2000.

[12] Other types of non-billed properties (i.e., open spaces and vacant lots) were also included in the estimation of these off-site costs.

Allocation of Off-Site Costs to Customers

While the focus of the 2000 Black and Veatch Study and recommended allocation approach was on developing a basis for determining the portion of a customer's bill that would be eligible for credits, the allocation strategy has other implications. Under the current rate methodology, both on-site and the off-site costs are allocated to customers in proportion to their on-site impervious area, even though on-site impervious area may be substantially unrelated to runoff generated from public ROW and cost causation and benefits received from system-wide environmental stewardship and compliance costs. For example, parcels with no impervious area enjoy substantially equal benefit from the off-site activities and paved ROW areas but pay nothing under an impervious area-based system. And, parcels that reduce their on-site impervious impact to (or even surpassing) undeveloped properties continue to pay the off-site portion.

The allocation of off-site stormwater costs to customers in proportion to on-site impervious area reflects prior City Council policy established following consideration of another report: Alternative Methods of Financing Portland's Stormwater Utility (January 6, 2000). This report presented four stormwater rate options, including an option to use trip generation as a basis for allocating street/ROW costs to customer classes. However, driven by the need to balance potential gains in rate equity with administrative feasibility and customer understanding and acceptance, the impervious area model was re-affirmed for continued use[13]. Even with its potential limitations, impervious area remains the most common approach to allocating stormwater costs, as discussed in the Utility Benchmarking memo (another Phase 1 Rate Study deliverable, dated December 6, 2019).

Drainage Area-Specific vs. City-Wide Framework

Another key aspect of the current stormwater rate methodology that similarly reflects the policy deliberations that occurred during the 2000 rate reform effort, is use of uniform city-wide rates and credits. The policy of charging city-wide rates reflected a number of considerations including the high percentage of system costs attributed to off-site (city-wide) stormwater management (discussed previously), difficulties in establishing on-site characteristics that are both homogeneous and sufficiently different from other areas across the City, and the benefits of "pooling environmental risks" across the customer base[14].

Both technical and policy review meetings highlighted some area-specific level of service issues including, transportation delays on the eastside (which is an equity issue for workers relying on public transportation), landslide risk on the west side, and areas that do not have access to certain stormwater facilities (e.g., portions of southwest Portland). However, it was also noted that even though some types of facilities (e.g., green streets) and soil and other conditions vary across the City, all ratepayers benefit from stormwater management, and asset management-based prioritization approaches for capital construction should be paid for by all ratepayers.

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[13] City Auditor – City Recorder – Council Documents – 425-2003 Retroactive Stormwater Credits Exhibit D.
[14] Ibid

Customer Class Issues

Over the course of the policy and technical review meetings, the following issues were noted with respect to charges for specific customer classes:

- The use of impervious area as the sole basis for distribution of costs to customers creates potential inequities, particularly for different types of residential customers (where the rates for high-rise condominium units result in charges that are a fraction of those for single family residential dwelling units), and because there are no charges for undeveloped properties.
- Equity issues existing within the single family residential customer class, as charges are uniform for all customers, regardless of parcel size, actual impervious area, or intensity of development.
- Rate-setting policies and practices for special stormwater rate classes, including the temporary exemption for overwater structures, and exclusion of parks structures with unlimited public access (e.g., impervious pathways and splash pads)[15].

Clean River Rewards Program[16]

A guiding principle of the existing Clean River Rewards (CRR) Program is that incentives and discounts are available to all eligible City ratepayers regardless of property class, use, or location. A summary of existing program options for each customer type are provided below.

Residential Customers

Credit options (up to 35 percent maximum) include:

- Full 35 percent discount when all roof drainage is fully retained on the property. Eco-roofs will be valued in the same manner as retention facilities (3.4 inches over 24-hours with a high concentration of rainfall in the middle of that time span).
- 23.5 percent discount (67 percent of the full potential discount) when private on-site stormwater management detains or partially retains stormwater discharges from roof areas.
- 8.7 percent discount (25 percent of the full potential discount) when the total developed area is less than 1,000 square feet.
- 2.8 percent discount (8 percent of full potential discount) when there are four or more trees on the property taller than 15 feet. This supplemental discount does not include street trees such as trees planted in an adjacent public ROW.

Commercial, Industrial, Institutional and Multi-Family Properties

BES calculates discounts based on the extent and effectiveness of private on-site systems to control the pollution, flow rate and disposal of stormwater runoff from all developed areas. Equal

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[15] Parks structures where public access may be restricted (e.g., restrooms, community centers, and other impervious area that is not always accessible) are charged stormwater rates, as are parking lots.

[16] BES Clean River Rewards Stormwater Discount Program Administrative Rules (March, 2019).

weight is given to each of these three components of stormwater management. The effectiveness of each stormwater facility is based on separate sizing standards for pollution reduction, flow rate and disposal control as determined by BES. Ratepayers are required to provide the size or capacity of the on-site stormwater management facilities and the amount of developed areas served by each facility type.

The Bureau has evaluated each type of on-site stormwater management facility based on its capacity to perform all three components of stormwater management under the most restrictive and demanding storm events. Additional consideration has been given to the way each facility performs in relationship to a diversity of stormwater discharge locations and public stormwater facilities. BES staff note this analysis was done in 2001 and has not changed since update of Stormwater Management Manual[17].

Program Participation

Participation levels for the CRR program have remained flat and have fallen short of original targets[18] at least for residential customers. Low participation rates may be an indication that the program may not be well understood by all customers. Approximately one-third to 50 percent of residential participants received the full 35 percent bill reduction. Overall, estimated foregone revenue (i.e., discount provided) from the program is about $9 million.

Issues noted during the policy and technical reviews with respect to program eligibility and participation include:

- The CRR program may favor more affluent parts of the service area by providing credits for property characteristics (e.g., tree cover) or activities that require up-front investment that may not be accessible to all.
- There has not even been full participation by customers in new development who would automatically qualify based on current development standards.
- Assuming the program continues, additional outreach is needed to low income and non-English speaking customers, along with improved program monitoring.
- Incentives for private partnerships (e.g., stream stewardship and education) that are important to the stormwater system should be considered.
- Expansion of activities (e.g., green street maintenance) to insure coverage of all areas of required or voluntary reduction in on-site runoff impacts should be considered.
- Infiltration differences may limit available options by area (e.g., east side has limited options for discharge to a water body, west side has more clay soils that limit infiltration potential).
- The method for determining the amount of maximum credit should be evaluated and other options considered.

[17] Clean River Incentive and Discount Program Council Decisions adopted in 2000 and 2003, BES August 18, 2005.
[18] The number of program participants has averaged about 34,000 compared to a target of 90,000.

System Development Charges

As with the wastewater system, SDCs are used to recover existing system capacity costs associated with major stormwater facilities. However, without a comprehensive asset system, staff note that the stormwater SDCs may not capture full capacity costs, particularly for "soft" asset classes like wetlands.

Stormwater SDCs are assessed to new development based on three factors: 1) impervious area, 2) street frontage, and 3) trip generation (based on land use type). BES staff indicate that both frontage and trip generation have been difficult to administer, and customers have the perception that they are being double-charged for the trip component – both through transportation SDCs and the stormwater SDC.

Other Fees

BES allows for payment of an off-site special circumstances fee for new development that cannot meet the requirements of on-site stormwater management standards. This charge needs review and updating, as cost assumptions were developed approximately 15 years ago.

Methodological Issues for Further Consideration

The Rate Study will include a comprehensive review and update of BES's wastewater and stormwater rate and fee setting practices and assumptions. Even within the existing methodology framework, there will likely be shifts in cost recovery between systems (wastewater and stormwater) and among rate components (e.g., wastewater flows and loads, and stormwater on-site and off-site costs), as BES's cost structure and customer characteristics have changed since the prior study conducted over a decade ago.

A comprehensive update also provides the opportunity to re-evaluate approaches to cost allocations, rate design, and credit programs in order to consider emerging industry trends and BES's current rate setting objectives.

Based on the initial environmental scan review and discussions, a number of potential methodological alternatives are identified for further consideration in Phase 2. Table 1 provides a summary of key considerations, organized by major technical element. Table 1 also provides an initial high level score (low, medium or high) for each option in terms of potential alignment with the Rate Study objectives discussed earlier in this memorandum. It is difficult to predict the redistributive effects of individual methods prior to evaluation of data, and without considering other modifications that might mitigate or amplify individual method changes.

The key considerations listed in Table 1 and discussed below, should be considered as a potential "short list" for further development and discussion in Phase 2. Specific options selected for technical development will depend, in part, on data availability and administrative feasibility to be further explored in Phase 2.

Table 1
Summary of Issues for Further Consideration

Rate Study Technical Element	Key Considerations	Alignment with Rate Study Objectives[1]
Cost Allocation Framework		
CSO-Related Cost Recovery	Capital cost factors for combined system conveyance	M
Wastewater Allocation Parameters	Additional flow components (peak sanitary and I/I)	L
Stormwater Allocation Parameters	Inclusion of Gross area factor (on-site); dwelling units, transportation or other factors for a portion of off-site costs	M
Rate Structure[2]		
Base Charges	Wastewater I/I or stormwater fixed charge	M
Single-family Residential[3] Stormwater Rates	Tiered	H
Single-family Residential Wastewater Rates	Tiered	L
Portland Harbor Remediation Charges	Include in Wastewater/Stormwater rates	H
Clean River Rewards Program		
Residential Credits	Eliminate or revise	M
Nonresidential Credits	Expand to include additional options	H
Maximum Credit	Other allocation bases (functions, programs, or storm events)	M
Other Activities	Education, stream maintenance	H
Capital Charges		
SDC Fee Structure	Reimbursement & Improvement	M
SDC Assessment: Wastewater	True-up process or other approach for special customers	M
SDC Assessment: Stormwater	Impervious area and gross area	H
SDC Credit Policies	Consider residential eligibility	L
Reimbursement Districts	Include for Stormwater	L

[1] L = low, M = Medium, H = High; Rate Study Key Objectives described previously and include: Alignment with Strategic Plan and BES Equity Framework, Affordability, Consistency with Cost-of-Service Principles, and Administrative Feasibility.
[2]Any rate structure modifications will be compatible with the billing system and will consider customer presentation and documentation enhancements to better promote customer understanding.
[3]Includes triplex and quadplex customers who are currently charged per dwelling unit.

Cost Allocation Framework

CSO-Related Cost Recovery

BES has made significant investments in CSO-related facilities since the prior rate study; identifying these costs and determining an appropriate basis for allocation to customers going forward will be an important methodological consideration in the Rate Study. Capital cost allocation factors developed in the prior comprehensive rate study[19] allocate conveyance-related capital costs (sanitary only and combined sanitary and stormwater) on the basis of customer wastewater volumes.

As indicated in the Phase 1 Rate Study memorandum on utility benchmarking (dated December 6, 2019), it is not uncommon for all or a portion of CSO-related costs to be recovered through stormwater rates, as opposed to being solely recovered through wastewater rates. Alternative allocation bases will consider data availability and impacts on customers if costs are to be distributed in a manner that differs from wastewater volumes.

Wastewater Cost Allocation Parameters

BES's current wastewater allocation framework includes a single flow component and two strength components: BOD and TSS. As discussed previously, future regulatory requirements and treatment permits may create need for future investments related to nutrients and temperature limits; however, impacts may not be known within the Rate Study period, so the existing strength parameters are likely appropriate for the current rate-setting period.

Further evaluation of wastewater flow parameters is recommended as both standard industry practice, and given the extent of wet weather related investments. Theoretically, explicit allocation of inflow and infiltration or peak sanitary flows may provide more precise assignments of cost responsibilities and enhance equity from a cost-of-service perspective. However, the availability of accurate data on these factors is typically limited on a system-wide basis, and even less readily ascribed to individual customer classes.

Stormwater Cost Allocation Parameters

BES's current practice of using impervious area as a basis for stormwater cost allocation is consistent with the majority of benchmark utilities reviewed (see December 6, 2019 Utility Benchmarking memo), and is consistent with broader industry practice. However, consideration should also be given to incorporation of other factors (e.g., gross area and intensity of development) which may help address affordability and sustainability objectives, if administratively feasible.

As discussed previously, the current methodology includes an explicit allocation of costs between on-site and off-site categories. The assumptions and method used for this allocation will be further evaluated, and consideration will be given to whether or not continued allocation of costs to an "off-site" category best meets the intended objectives of: 1) educating customers

[19] Black and Veatch, Capital Cost Allocation Study. April 14, 1999

about the significant costs of stormwater management for streets and ROW, and 2) establishing a basis for maximum stormwater credit.

As noted in the Utility Benchmarking memorandum, allocation of stormwater system costs to on-site and off-site categories for purposes of either rate or credit program design is not standard practice. It is recommended that the Rate Study consider alternative bases for determining maximum credit eligibility that relate to either stormwater program functions (water quality, average or peak quantity, etc.), programs, storm events, or other factors.

Also, the use of impervious area as the only allocation factor for what are now considered off-site costs should also be further evaluated, and other factors considered, particularly those that might better address equity concerns between single family and multifamily development. Given the nature of the current off-site costs and their relationship to the transportation network and general environment, other factors may include population, dwelling units, or travel-related bases. Changing the allocation basis to include one or more fixed charges would also have implications for the stormwater rate structure (discussed further below).

Rate Structure

Any potential rate structure modifications will be compatible with the billing system administered by the Water Bureau.

Base Charges

The combined utility bill includes a base charge for customer and billing costs (incurred by the Water Bureau).With the exception of special meter charges which are assessed only to customers with flow monitoring meters, BES's current rate structure does not include additional base charges specific to wastewater services. Base charges (assessed on an account or equivalent dwelling unit basis) are used by some utilities to recover a portion of wastewater infiltration or inflow costs or stormwater system fixed costs[20] from customers, for both revenue stability and equity reasons. Fixed charges assessed on an account basis tend to redistribute costs to single-family residential customers and away from larger volume customers, so any equity or revenue stability gains would need to be evaluated in the context of residential affordability objectives.

Inclusion of a dwelling unit based charge (or a minimum charge based on number of dwelling units) could be a way to address existing concerns related to high rise condominium units and their use of the ROW roadway systems, which is probably comparable to other single family residences.

Single Family Residential Rates

Stormwater

As discussed in the Utility Benchmarking memorandum, it has become common practice for agencies to assess single family residential stormwater rates using a tiered structure, where subclasses of residential are developed based on property size, and parcels with larger

[20] For example, the City of Salem (Oregon) recovers stormwater system costs associated with public right-of-way impervious area through base charges.

impervious or gross property area are charged more than the smaller parcel classes. Given concerns over the current CRR program in the context of BES's equity objectives, a tiered rate structure for single family residential customers may be a way to more broadly address affordability concerns. However, consideration of a tiered rate system for residential customers will need to be evaluated in the context of existing data and billing system constraints, given that the current system does not contain information on residential customer-specific property area.

Wastewater

The current residential wastewater rate structure is based solely on volume, giving customers more control over their bills, compared to a fixed charge structure. Some communities have implemented inclining block structures for wastewater rates in order to make lower volumes of use even more affordable. However, because low volume users are not necessarily low income users, and absent a similar rate structure for water rates, this option is likely less aligned with BES's objectives.

Portland Harbor Environmental Remediation Charges

The current practice of itemizing Portland Harbor remediation costs on customers' bills is unique among BES programs. Other BES program costs are included in the overall wastewater and stormwater rates. Elimination of these specific charges could simplify the rate structure and customer bills.

Clean River Rewards Program

As discussed previously, both the environmental scan and the utility benchmarking reviews identified a number of issues for further consideration regarding the CRR Program. General concerns relate to the level of complexity, equity, participation rate, and effectiveness. Specific issues recommended for further consideration include:

- Evaluation of a residential credit program in the context of potential changes to the rate structure (i.e., tiered rates) which may provide a more equitable way of addressing stormwater rate affordability, and further consideration of program effectiveness for small scale residential properties.
- Evaluation of the nonresidential program options to ensure current system priorities and design requirements are reflected in potential crediting options, like new options related to green street maintenance and stream stewardship.
- Evaluation of the existing maximum credit limit method and assumptions. As noted previously, different bases for determining maximum credit eligibility should be considered.
- Basis for inclusion of an education component. For example, many of the benchmark communities reviewed offer credits for education efforts which are seen to offset the local stormwater program's MS4 education requirements.
- Enhanced monitoring/enforcement (e.g., partnering with other departments for inspection).

- Enhanced customer outreach could include specific outreach to low income customers (if a residential credit program is to remain), and the potential for automatically registering new customers with drywells or that otherwise meet new development requirements for on-site management.

Any expansion of the program to further incentivize on-site stormwater management practices will need to be considered in the context of overall rate impacts, and potential effectiveness of specific practices.

Capital Charges

SDC Fee Structure

The current SDC methodologies for wastewater and stormwater are based on a reimbursement fee only structure, where existing capacity is valued using appreciated (replacement) cost. This basic structure is consistent with standard industry practice and Oregon SDC law where it can be demonstrated that the existing system has available capacity to serve future growth.

Under Oregon law, reimbursement fee revenues may be spent on any capital costs (including debt service) related to the system for which the fees were collected, so the existing structure gives BES maximum flexibility in how the revenues are spent. A potential disadvantage of a reimbursement fee only structure is that it may undervalue the cost of providing capacity for future growth if the costs of planned improvements are relatively more expensive (per unit) than existing capacity.

The Rate Study will include a comprehensive review of existing system valuation methods and available capacity calculations, as well as consideration of planned future capacity expansion costs, in order to determine the adequacy of the existing reimbursement fees and structure.

SDC Assessment

In response to issues raised during technical review workshops, it is recommended that the following system-specific SDC assessment issues should be further explored in the Rate Study:

- Plumbing fixture unit assumptions for wastewater SDC assessment, particularly for customers who do not fit into existing groups (e.g., breweries).
- Process for truing up wastewater SDCs for large customers once connected to the system and usage history is available.
- Simplified fee structure for stormwater.

SDC Credit Policies

In addition to the fee methodologies, the Rate Study will include a review of existing credit and exemption policies for both wastewater and stormwater.

Reimbursement Districts

Reimbursement districts are currently for wastewater line extensions only. Staff noted that a similar option for stormwater might also be helpful.