

Draft Methodology Report

Wastewater System Development Charges

Prepared For
City of Pendleton

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Introduction

Oregon legislation establishes guidelines for the calculation of system development charges (SDCs). Within these guidelines, local governments have some latitude in selecting technical approaches and establishing policies related to the development and administration of SDCs. A discussion of this legislation follows, along with the recommended methodology for calculating water SDCs for the City of Pendleton (the City), in accordance with state law and the City's recently adopted Wastewater System Master Plan (Murray, Smith & Associates, 2015). While the City has charged SDCs for many years, they have been limited to transportation infrastructure.

SDC Legislation in Oregon

In the 1989 Oregon state legislative session, a bill was passed that created a uniform framework for the imposition of SDCs statewide. This legislation (Oregon Revised Statute [ORS] 223.297-223.314), which became effective on July 1, 1991, (with subsequent amendments), authorizes local governments to assess SDCs for the following types of capital improvements:

- Drainage and flood control
- Water supply, treatment, and distribution
- Wastewater collection, transmission, treatment, and disposal
- Transportation
- Parks and recreation

The legislation provides guidelines on the calculation and modification of SDCs, accounting requirements to track SDC revenues, and the adoption of administrative review procedures.

SDC Structure

SDCs can be developed around two concepts: (1) a reimbursement fee, and (2) an improvement fee, or a combination of the two. The **reimbursement fee** is based on the costs of capital improvements *already constructed or under construction*. The legislation requires the reimbursement fee to be established or modified by an ordinance or resolution setting forth the methodology used to calculate the charge. This methodology must consider the cost of existing facilities, prior contributions by existing users, gifts or grants from federal or state government or private persons, the value of unused capacity available for future system users, rate-making principles employed to finance the capital improvements, and other relevant factors. The objective of the methodology must be that future system users contribute no more than an equitable share of the capital costs of *existing* facilities. Reimbursement fee revenues are restricted only to capital expenditures for the specific system which they are assessed, including debt service.

The methodology for establishing or modifying an **improvement fee** must be specified in an ordinance or resolution that demonstrates consideration of the *projected costs of capital improvements identified in an adopted plan and list*, that are needed to increase capacity in the system to meet the demands of new development. Revenues generated through improvement fees are dedicated to capacity-increasing capital improvements or the repayment of debt on such improvements. An increase in capacity is established if an improvement increases the level of service provided by existing facilities or provides new facilities.

In many systems, growth needs will be met through a combination of existing available capacity and future capacity-enhancing improvements. Therefore, the law provides for a **combined fee** (reimbursement plus improvement component). However, when such a fee is developed, the methodology must demonstrate that the charge is not based on providing the same system capacity.

Credits

The legislation requires that a credit be provided against the improvement fee for the construction of “qualified public improvements.” Qualified public improvements are improvements that are required as a condition of development approval, identified in the system’s capital improvement program, and either (1) not located on or contiguous to the property being developed, or (2) located in whole or in part, on or contiguous to, property that is the subject of development approval and required to be built larger or with greater capacity than is necessary for the particular development project to which the improvement fee is related.

Update and Review

The methodology for establishing or modifying improvement or reimbursement fees shall be available for public inspection. The local government must maintain a list of persons who have made a written request for notification prior to the adoption or amendment of such fees. The legislation includes provisions regarding notification of hearings and filing for reviews. “Periodic application of an adopted specific cost index or... modification to any of the factors related to the rate that are incorporated in the established methodology” are not considered “modifications” to the SDC. As such, the local government is not required to adhere to the notification provisions. The criteria for making adjustments to the SDC rate, which do not constitute a change in the methodology, are further defined as follows:

- “Factors related to the rate” are limited to changes to costs in materials, labor, or real property as applied to projects in the required project list.
- The cost index must consider average change in costs in materials, labor, or real property and must be an index published for purposes other than SDC rate setting.

The notification requirements for changes to the fees that *do* represent a modification to the methodology are 90-day written notice prior to first public hearing, with the SDC methodology available for review 60 days prior to public hearing.

Other Provisions

Other provisions of the legislation require:

- Preparation of a capital improvement program or comparable plan (prior to the establishment of a SDC), that includes a list of the improvements that the jurisdiction intends to fund with improvement fee revenues and the estimated timing, cost, and eligible portion of each improvement.
- Deposit of SDC revenues into dedicated accounts and annual accounting of revenues and expenditures, including a list of the amount spent on each project funded, in whole or in part, by SDC revenues.
- Creation of an administrative appeals procedure, in accordance with the legislation, whereby a citizen or other interested party may challenge an expenditure of SDC revenues.

The provisions of the legislation are invalidated if they are construed to impair the local government's bond obligations or the ability of the local government to issue new bonds or other financing.

Wastewater SDC Methodology

Overview

The general methodology used to calculate wastewater SDCs begins with an analysis of system planning and design criteria to determine growth's capacity needs, and how they will be met through existing system available capacity and capacity expansion. Then, the capacity to serve growth is valued to determine the "cost basis" for the SDCs, which is then divided by the total growth capacity units to determine the system wide unit costs of capacity. The final step is to determine the SDC schedule, which identifies how different developments will be charged, based on their estimated capacity requirements.

Determine Capacity Needs

Table 1 shows the planning assumptions for the wastewater system contained in the Master Plan. The primary relevant design criteria for the wastewater system include the following:

- Dry Weather Flow (DWF): base wastewater flow from residential, commercial, institutional and industrial sources, combined with groundwater infiltration. Base wastewater flow varies through the day in response to residential and non-residential usage trends. Groundwater infiltration is groundwater entering the collection system related to seasonal variation in the groundwater table, which in the City's case is related to flows in the Umatilla River and its tributary streams. Used to determine available capacity in the treatment system.
- Peak design flow (PDF): the maximum flow, including groundwater infiltration and rainfall-dependent infiltration and inflow experienced during a 10-year, 24-hour storm. Determines the hydraulic capacity of the collection system.

As shown in **Table 1**, current average DWF is estimated to be 2.8 million gallons per day (mgd), and the PDF is estimated to be 9.4 mgd. Future (2033) projected PDF is 13.3 mgd. As wastewater collection facilities are generally sized for build-out conditions, the PDF at build-out is also provided in Table 1. The PDF capacities required by growth are estimated to be 3.9 mgd in 2033, and 11.9 mgd at build-out. Average DWF is projected to increase 1.2 mgd to a total of 4.0 mgd in 2033.

Table 1

City of Pendleton Wastewater SDC Analysis
System Planning Assumptions

Capacity Parameter	Existing	2033	Build-Out	Growth	
				2033	Build-Out
Average DWF (mgd) ¹	2.8	4.0	6.3	1.2	3.5
PDF (mgd) ¹	9.4	13.3	21.3	3.9	11.9
¹ Wastewater System Master Plan (2015), Table 1-3					

Table 2 provides a summary of the existing capacities by major system function. The City treats wastewater conveyed from customers across 11 sewer basins at its Resource Recovery Facility (RRF). The existing RRF is estimated to have current capacity of 4.0 mgd, compared to current flow of 2.8 mgd (from Table 1). While the existing treatment capacity is sufficient for current and near-term development, additional capacity will be needed for future development through build-out; the exact timing of the next RRF expansion will be identified by future planning efforts.

Table 2

City of Pendleton Wastewater SDC Analysis
Wastewater System Existing Capacity Assumptions

	Capacity (mgd)	Firm (gpm)
Resource Recovery Facility¹	4.0	
Lift Station Capacity²		
Rieth		65
28 th Street		500
Bartsch		260
McKay		255
Westgate		250

¹ Based on information from RRF Facility Plan
² Table 2-3 Wastewater System Master Plan

Table 2 also provides existing lift station capacity by station. The City owns and maintains four lift stations; the Rieth lift station is owned by the Rieth Sanitary Sewer District (RSSD). The McKay and 28th Street lift stations do not have adequate capacity to meet current standards, and the Rieth lift station is approaching capacity during peak design flows. The McKay lift station will be decommissioned during the planning period, with capacity needs met through other facilities.

Gravity sewer lines and force mains are evaluated on individual basis in the Master Plan modeling. Many of the existing lines were funded by developers or require replacement during the planning period due to age or capacity deficiencies.

Future system capacity requirements include additional capacity associated with growth, along with capacity to remedy existing operational and other deficiencies.

Develop Cost Basis

The reimbursement fee is intended to recover the costs associated with the growth-related (or available) capacity in the existing system; the improvement fee is based on the costs of capacity-increasing future improvements needed to meet the demands of growth. The value of capacity needed to serve growth in aggregate within the planning period, is referred to as the “cost basis”.

Reimbursement Fee Cost Basis

The reimbursement fee cost basis is limited to the value of capacity *available* for future growth. Table 3 shows the calculation of the reimbursement fee cost basis for the City’s wastewater system. The City has about 1.2 mgd of its total 4.0 mgd treatment capacity available for future growth; therefore, 30 percent of the existing \$23.6 million value in RRF-related facilities is included in the reimbursement fee. Lift stations and other facilities are excluded from the reimbursement fee cost basis, as the facilities will either be replaced or cost data is not available in the City’s fixed asset records.

Table 3
City of Pendleton Wastewater SDC Analysis
Reimbursement Fee Cost Basis

Description	Value	Growth Share	
		%	\$
Influent Pump/Headworks	\$76,083	30%	\$22,825
Treatment	\$21,923,970	30%	\$6,577,191
Digester/Sludge	\$532,655	30%	\$159,797
Exfiltration Study	\$507,557	30%	\$152,267
Support Facilities	\$580,350	30%	\$174,105
Total	\$23,620,615		\$7,086,185

Source: City of Pendleton Fixed Asset Records

Improvement Fee Cost Basis

The cost of future capacity-increasing improvements (the improvement fee cost basis) is presented in **Table 4**. The improvements are based on costs identified in the Master Plan. Each improvement was reviewed to determine the portion of costs that expand capacity for growth for City customers versus remedy an existing deficiency or replace existing capacity. In addition, the the Master Plan includes recommended projects needed to expand capacity for the City’s two wholesale customers: RSSD and the Confederated Tribe of the Umatilla Indian Reservation (CTUIR). The SDC cost basis is limited to the proportion of the planned capacity expansion needed to serve growth in the City. An increase in system capacity may be established if a capital improvement increases the level of performance or service provided by existing facilities or provides new facilities.

Treatment

Table 4 does not include any improvements at the RRF, as the Master Plan did not include an assessment of wastewater treatment facilities. Future updates to the RRF Facility Plan will likely identify additional treatment improvements. However, for the purpose of this

analysis, the SDC cost basis is limited to the previous investment in the Phase I RRF expansion (presented in Table 3).

Table 4
City of Pendleton Wastewater SDC Analysis
Improvement Fee Cost Basis

PROJECT	Master Plan Cost	Local Cost ¹	SDC Portion	
			%	\$
Gravity Mains				
Immediate				
G-1	\$204,000	\$204,000	3%	\$6,120
AIA Projects (G-13 to 19)	\$3,025,000	\$3,025,000	100%	3,025,000
10-Year				
G-2	\$104,000	\$104,000	6%	6,240
G-5	\$597,000	\$597,000	83%	495,510
20-Year				
G-3	\$743,000	\$743,000	80%	594,400
G-6	\$356,000	\$0	78%	-
G-7	\$616,000	\$264,880	70%	185,416
Build-Out				
G-8	\$1,592,000	\$1,592,000	88%	1,400,960
G-9	\$169,000	\$169,000	57%	96,330
G-10	\$402,000	\$402,000	82%	329,640
G-11	\$323,000	\$323,000	93%	300,390
G-12	\$2,641,000	\$2,641,000	89%	2,350,490
Pipe Replacement Program (through 2033)	\$9,185,000	\$9,185,000	56%	5,131,526
Subtotal	\$19,957,000	\$19,249,880	72%	\$13,922,022
Lift Stations and Force Mains				
F-1 Upgrade 28th St. Lift Station Force Main ³	\$185,000	\$179,889	92%	\$165,661
F-2 Upgrade Rieth Lift Station Force Main ³	\$600,000	\$387,278	96%	371,093
L-6 Bartsch Lift Station VFD & Motor Replacement ²	\$128,000	\$128,000	0%	-
L-1A Increase Capacity of 28th St. Lift Station ²	\$446,000	\$446,000	92%	410,725
L-1B Increase Capacity of 28th St. Lift Station ³	\$3,328,000	\$3,236,056	92%	2,980,114
L-2 Increase Capacity of Rieth Lift Station ³	\$583,000	\$376,305	96%	360,579
Airport Force Main & Lift Station Projects ²	\$4,258,000	\$4,258,000	100%	4,258,000
Force Main Replacement	\$75,000	\$75,000	56%	41,901
Subtotal	\$9,603,000	\$9,086,528	95%	8,588,073
Total Wastewater CIP	\$29,560,000	28,336,408	79%	\$22,510,095
¹ Excludes wholesale customer share				
² Immediate project				
³ 20-year project				

Gravity Mains

Gravity mains included in Table 4 are sized for build-out conditions. Mains are evaluated individually within the hydraulic model. Based on this analysis, the future growth share of individual projects ranged from 3 percent (G-1) to 100 percent (G-13 – 19 in the Airport Industrial Area). Two projects (G-6 and G-7) include capacity for wholesale customers, which is excluded from the cost basis. Pipe replacement costs over the planning period are allocated in proportion to growth's share of total build-out PDF (56 percent). As a result of this process, approximately 72 percent of the total cost (\$19 million) of planned gravity main projects are included in the SDC cost basis.

Force Mains and Lift Stations

As with gravity mains, force main and lift station projects were reviewed individually, and allocated in proportion to capacity requirements. Both of the force main projects and

associated lift stations (28th Street and Rieth) serve future growth for wholesale customers, in addition to the City’s service area. The Bartsch lift station improvements do not expand capacity, so are not included in the cost basis. The Airport Industrial Area expansion improvements are allocated 100 percent to growth in the cost basis. Future force main replacement within the planning period is allocated to future growth in proportion to PDF (56 percent), as in the case of gravity mains.

Overall, the SDC cost basis includes 79 percent of the local portion of the planned improvements identified in the Master Plan. The total improvement fee cost basis is \$22.5 million.

Develop SDC Schedule

System-wide unit costs of capacity are determined by dividing the reimbursement fee and improvement fee cost bases by the aggregate growth-related capacity requirements shown in Table 1. The unit costs are then applied to the capacity requirements of a typical dwelling unit to determine the fee per equivalent dwelling unit (EDU). The EDU rate is then scaled up based on water meter size which is a common measure of potential capacity requirements.

EDU Capacity Requirements

Table 5 presents the calculation of the capacity requirements by design criteria per EDU from the Master Plan. Estimating capacity requirements begins with the base flow per dwelling unit, which is estimated to be 206 gallons per day (gpd). The base flow per EDU is estimated based on the current residential flow per capita of 88 gpd multiplied by 2.34 persons per household (from the Master Plan). To estimate system design flow EDU requirements, the base flows are adjusted for Master Plan estimated peaking factors of 1.3 (DWF) and 3.4 (PDF), respectively, yielding DWF flow per EDU of almos 277 gpd and PDF of 702 gpd.

Table 5

City of Pendleton Wastewater SDC Analysis

Capacity Requirements per Equivalent Dwelling Unit (EDU)

	Factors	gpd
Base flow per EDU		205.92
Persons per HH	2.34	
Peaking Factors		
DWF	1.3	276.8
PDF	3.4	702.2

Unit Costs and SDC per EDU

Tables 6 and 7 shows the reimbursement and improvement fee calculations. The reimbursement fee cost basis is dived by the estimated growth in DWF through 2033 (1.2 mgd) to determine the unit cost for treatment. The improvement fee cost bases for lift stations and mains are divided by the projected PDF requirements of growth through build-out from Table 1 to determine the improvement unit costs.

Table 6

City of Pendleton Wastewater SDC Analysis
Reimbursement Fee Calculation

	System Component			Total
	Treatment	Lift Stations	Mains	
Growth-related CIP cost	\$7,086,185	\$0	\$0	\$7,086,185
Available Capacity	mgd 1.2			
Unit cost of capacity (per mgd)	\$5,905,154			
Capacity Requirements per EDU	0.000277			
Additional capacity cost per EDU	\$1,635	\$0	\$0	\$1,635

Table 7

City of Pendleton Wastewater SDC Analysis
Improvement Fee Calculation

	System Component			Total
	Treatment	Lift Stations	Gravity	
Growth-related CIP cost	\$0	\$8,588,073	\$13,922,022	\$22,510,095
Growth-related capacity requirements		mgd 11.9	mgd 11.9	
Unit cost of additional capacity		\$721,687	\$1,169,918	
Capacity Requirements per EDU		0.000702	0.000702	
Additional capacity cost per EDU	\$0	\$507	\$822	\$1,328

Multiplying the per unit capacity requirements (from Table 5) by the system-wide unit costs, yields a reimbursement fee of \$1,635 per EDU, and an improvement fee of \$1,328 per EDU.

Combined Fee

Wastewater SDCs are generally assessed based on development's required water meter size, as the hydraulic capacity of the meter is a reasonable estimate of a development's potential wastewater flow. **Table 8** shows the combined SDC by meter size, based on the hydraulic meter equivalent of each meter size to a base ¾-inch meter.

Table 8
City of Pendleton Wastewater SDC Analysis
Proposed SDC Schedule

Meter Size	SDCr	SDCi	Compliance	Total SDC
¾-inch	\$1,635	\$1,328	\$126	\$3,089
1-inch	\$2,779	\$2,258	\$214	\$5,251
1 ½-inch	\$5,394	\$4,384	\$415	\$10,193
2-inch	\$8,664	\$7,040	\$667	\$16,371
3-inch	\$17,491	\$14,213	\$1,346	\$33,050
4-inch	\$27,299	\$22,184	\$2,101	\$51,583
6-inch	\$54,435	\$44,234	\$4,189	\$102,858
8-inch	\$130,774	\$106,269	\$10,064	\$247,106

Compliance Costs

Local governments are entitled to include in the SDCs, a charge to recover costs associated with complying with the SDC statutes. Compliance costs include costs related to developing the SDC methodology and project list (i.e., a portion of master planning costs). **Table 9** shows the calculation of the compliance charge per EDU, which is estimated to be \$126.

Table 9
City of Pendleton Wastewater SDC Analysis
Compliance Charge

Component	Years	Total	Growth	Annualized
SDC Study	5	\$6,500	100%	\$1,300
Master Planning	10	\$300,000	75%	\$22,391
Total Annual Costs		\$306,500		\$23,691
Estimated Annual EDUs				188
Admin Charge/EDU				\$126

Inflationary Adjustments

In accordance with Oregon statutes, the SDCs will be adjusted annually based on a standard inflationary index. Specifically, the City plans to use the Engineering News Record (ENR) 20-City Average Construction Cost index as the basis for adjusting the SDCs annually.