

Methodology Report

Water System Development Charges

Prepared For
Eugene Water & Electric Board

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Introduction

System development charges (SDCs) are an important funding source for water system capital improvement projects. As such, the Eugene Water & Electric Board (EWEB) has a practice to review SDCs at a minimum of every five years. The last review was completed in 2010, and resulted in an increase to the SDCs of 12.7 percent, effective July 1, 2011. Since the 2011 adoption, the SDCs have been increased periodically for inflation, as measured by the Engineering News Record (ENR) Construction Cost Index (CCI).

Oregon legislation establishes guidelines for the calculation of 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, in accordance with state law.

In early 2014, EWEB initiated a process to update its Water Master Plan. The Master Plan Update provides projections of future water demands, and identifies improvements to the system necessary to address anticipated growth needs. The proposed 2016 water SDCs are intended to bring the SDCs into alignment with current estimates of capacity costs (both existing and future), and system use characteristics.

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 as: (1) a reimbursement fee, (2) an improvement fee, or (3) 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.

Water SDC Methodology

Overview

The general methodology used to calculate water SDCs begins with an analysis of system planning and design criteria to determine growth's capacity needs. Then, the capacity to serve growth (in existing facilities and planned improvements) is valued to determine the "cost basis" for the SDCs. Finally, the growth costs are divided by the projected growth units to determine the system wide unit costs of capacity.

System Planning Data

Table 1 shows the existing and projected future water demands through build-out of the current Urban Growth Boundary (UGB), as contained in Water System Master Plan (Master Plan). System-wide figures are shown for average day, maximum day, and peak hour demands. Maximum day demand (MDD) is also provided for the base and upper level service areas separately.

Table 1
Eugene Water & Electric Board
Summary of Existing and Future Water Demand (mgd)

	Current	Build-Out ¹	Growth
Maximum Day Demand	50.0	67.0	17.0
Base	44.2	58.3	14.1
Upper Level ²	5.8	8.7	2.9
Peak Hour Demand	77.0	102.4	25.4

¹ Current UGB

² Service areas that are directly fed through pressure levels 800 or above

Maximum day and hour demands are key factors in sizing water system facilities. As shown in **Table 1**, the current MDD is 50 million gallons per day (mgd), and has declined significantly compared to figures contained in EWEB's 2010 methodology.¹ The decline in water consumption is a regional and national trend, reflecting a variety of factors, including installation of low flow plumbing fixtures and water conservation education. Future projected MDD and peak hour demand (PHD) are 67 mgd and 102.4 mgd, respectively.

Table 2 provides a summary of the existing capacities by major system function. In evaluating sufficiency of production capacity to meet future demands for EWEB's SDC

¹ The 2010 SDC Methodology identified a utilized MDD capacity of 68.8 mgd.

analysis, the firm capacity of the Hayden Bridge Water Filtration Plant is used. As shown in Table 2, the total firm production capacity is estimated to be 80.5 mgd, compared to current MDD of 50 mgd and projected build-out capacity of 67 mgd (from Table 1). While the overall existing production and delivery capacity is sufficient to meet projected total development needs through build-out of the existing UGB, improvements will be needed to improve the system level of performance.

Table 2
Eugene Water & Electric Board
Capacity Analysis

Capacity Evaluation	Existing ¹ Capacity	Existing Required	Growth Required ²	
			Amt	%
Production & Delivery (mgd)³	80.5	50	17	21%
Storage (mg)				
Base	60.0	41.7	12.7	21%
Upper Level	19.1	11.3	2.9	15%
Pumping (mg)				
Base	74,700	35,000	11,785	16%
Upper Level	24,710	19,013	5,567	23%

¹ Excludes capacity of facilities to be decommissioned during planning period.

² From Water System Master Plan update. Based on build-out of existing UGB.

³ Based on Hayden Bridge Water Filtration Plant firm capacity.

As shown in Table 2, storage and pumping capacity are evaluated for each service area (base and upper level elevations) separately.

Cost Basis

The reimbursement fee is intended to recover an equitable share of existing facility costs from future development, and the improvement fee is based on the costs of future capacity-increasing improvements. An increase in capacity may be established if a project provides new facilities, or enhances the level of service or performance of existing facilities. 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

As shown in Table 2, all of EWEB’s major water system components (production, transmission, storage, pumping, and distribution) have available capacity that will be utilized in meeting the needs of growth in the planning period. The portion of available capacity varies across components, but in general the system can deliver approximately 80.5 mgd during MDD conditions, compared to existing MDD of 50 mgd. In determining the portion of existing facility costs to allocate to growth, the following factors were considered:

- EWEB’s fixed asset records were analyzed to determine their original cost. The value of contributed capital was deducted from the total asset costs.

- Existing facility costs were further reduced for facilities to be replaced by future improvements.
- For pumping and storage, costs were broken out between base and upper level service areas (given the different needs of these areas).
- Growth costs were determined for each system component by applying the capacity percentages shown in Table 2, to the fixed asset costs (as adjusted for the factors above).

The total value of water system facilities included in the fixed asset records exceeds \$237 million (based on original cost). After adjustments for contributed capital and facility replacements, the net value of the existing system is about \$193 million. Growth's share of the existing system value (the reimbursement fee cost basis) is approximately \$40 million (21 percent).

Improvement Fee Cost Basis

The Master Plan includes improvement costs exceeding \$156 million (in 2015 dollars) for servicing existing and future needs through build-out. Most of the improvements are needed to enhance system reliability, resiliency, and optimization, and therefore, benefit existing and future developments in proportion to capacity needs. The following factors were considered in determining the growth share of capital improvement costs:

- All costs are in current (2015) dollars
- Projects scheduled beyond 2035 are excluded
- Cost related to rehabilitation only, where an entire facility is not being replaced, are excluded. (For example rehabilitation of filters S1-S6, as the original costs of these facilities are included in the reimbursement fee cost basis.)
- System-wide facilities (production, transmission, distribution) are evaluated on a system-side basis to determine growth's share of improvements, while storage and upper level pumping consider individual pressure zone criteria (as shown in Table 2).

The total value of water system improvements allocated to growth within the planning period (the improvement fee cost basis) is \$24.7 million, as shown in the attached project list.

SDC Schedule

System-wide unit costs of capacity are determined by dividing the reimbursement and improvement fee cost bases by the aggregate growth-related capacity requirements shown in Table 1. The unit costs are then applied to a customer's estimated capacity requirements to determine the SDCs. Water SDCs are generally assessed based on a development's required water meter size, as the hydraulic capacity of the meter is a reasonable estimate of a development's potential water demand. The MDD per equivalent meter² is estimated to

² An equivalent meter is the capacity of a meter stated in terms of the number of standard 5/8" meters that could provide the same capacity.

be 621 gallons per day, based on existing MDD and the current number of meter equivalents served.

Tables 3a and 3b show the revised reimbursement and improvement SDCs for each meter size for the base and upper level service areas. The SDCs by service area are based on the following framework:

- System-wide production, treatment and piping costs are recovered uniformly from new development across the system (both base and upper level service areas).
- Storage costs are calculated individually for the base and upper level service areas, based on specific storage costs and water demands.
- Base pumping costs are allocated to all new development system-wide; however, upper level pumping is allocated only to new development in the upper area.

Table 3a
Eugene Water & Electric Board
Water System Development Charge
Revised SDC Schedule - Base

Meter Size	SDCr	SDCi	Compliance	SDC
5/8"	\$1,222	\$923	\$132	\$2,276
3/4"	\$1,833	\$1,384	\$198	\$3,415
1-inch	\$3,054	\$2,307	\$329	\$5,691
1 1/2-inch	\$6,109	\$4,615	\$659	\$11,382
2-inch	\$9,774	\$7,384	\$1,054	\$18,211
3-inch	\$18,326	\$13,844	\$1,976	\$34,146
4-inch	\$30,543	\$23,074	\$3,294	\$56,911

Table 3b
Eugene Water & Electric Board
Water System Development Charge
Revised SDC Schedule – Upper Level¹

Meter Size	SDCr	SDCi	Compliance	SDC
5/8"	\$2,122	\$809	\$132	\$3,063
3/4"	\$3,183	\$1,214	\$198	\$4,594
1-inch	\$5,304	\$2,023	\$329	\$7,657
1 1/2-inch	\$10,609	\$4,046	\$659	\$15,314
2-inch	\$16,974	\$6,474	\$1,054	\$24,502
3-inch	\$31,827	\$12,138	\$1,976	\$45,942
4-inch	\$53,045	\$20,231	\$3,294	\$76,569

¹ Service areas that are directly fed through pressure levels 800 or above will be charged the upper level SDC

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), and annual budgeting. The estimated compliance cost per equivalent meter is \$132 (about 5 percent of the total SDC).

Inflationary Adjustments

In accordance with Oregon statutes, it is recommended that the SDCs be adjusted annually based on a standard inflationary index. Specifically, EWEB currently uses the ENR Construction Cost index as the basis for adjusting the SDCs annually.

Eugene Water & Electric Board							
<i>SDC Project List</i>							
Type/Improvement	Category	Total	Year	Allocation		Growth Allocation	
				Basis	Period	%	\$
Source							
HBWFP							
Splitter Box Replacement & Drain Pipeline	Existing/Rehab	\$650,000	2016-17	MDD	2035	21%	\$137,267
Filter S1-S6 Upgrade	Existing/Rehab	\$2,100,000	2016	MDD	2035	0%	\$0
Disinfection System Replacement	Existing/Rehab	\$3,350,000	2016-18	MDD	2035	21%	\$707,453
Sesimic Upgrades (Phase 2)	Existing/Resiliency	\$600,000	2017-18	MDD	2035	0%	\$0
Standby Power	Existing/Resiliency	\$1,650,000	2016-17	MDD	2035	21%	\$348,447
New Treatment Plant (AWS - phase 1)	Existing/Resiliency	\$57,800,000	2018-21	MDD	2035	21%	\$12,206,211
		\$66,150,000				20%	\$13,399,379
Transmission							
Phase 1	Optim/Resil.	\$8,971,000	post 2035	MDD	Post 2035	0%	\$0
Transmission System River Crossing & Pipeline Rehab	Resil/Rehab	\$2,000,000	2018-19	MDD	2035	0%	\$0
Phase 2 (Glenwood Transmission Main Improvements)	Resiliency	\$1,263,000	2019-21	MDD	2035	21%	\$266,720
Phase 4 (Upsize main from AWS to Knikerbocker Bridge)	Resiliency	\$8,433,000	post 2035	MDD	Post 2035	0%	\$0
Phase 5 (N. Transmission Improvements)	Optim/Fire Flow	\$5,682,000	post 2035	MDD	Post 2035	0%	\$0
		\$26,349,000				1%	\$266,720
Base Storage & Pumping							
Hawkins Hill Reservoir Improvements	Exist/Rehab/Res	\$1,930,000	2016-18	MG	2035	0%	\$0
New Reservoir at College Hill (5 MG)	Rehab/Resil.	\$9,370,000	2025-27	MG	2035	21%	\$1,988,002
New Reservoir at AWS Plant (5 MG)	Resiliency	\$6,000,000	2019-21	MG	2035	21%	\$1,273,000
Construct Santa Clara Pump Station	Rehab/Resil.	\$3,070,000	2021-23	MG	2035	16%	\$484,337
New Reservoir at Santa Clara (5 MG)	Rehab/Resil.	\$9,370,000	2021-23	MG	2035	21%	\$1,988,002
New Reservoir at Elliott (5 MG)	Resiliency	\$9,370,000	2023-25	MG	2035	21%	\$1,988,002
New Reservoir at Elliott - Phase 2 (5 MG)	Growth	\$9,370,000	2035	MG	2035	21%	\$1,988,002
		\$48,480,000				20%	\$9,709,343
Upper Level							
<i>Consolidate 800 Service Area</i>							
Install level control valve at Willamette 800 Res.	Optimization	\$151,000	2016	gpm	2035	10%	\$14,718
Piping Improvements (Distribution)	Optimization	\$2,058,000	2016	gpm	2035	10%	\$200,590
<i>Decommission Fairmount 850 PS; connect to Laurel Hill</i>							
New PRV Station to connect to Shasta 975	Optimization	\$151,000	2016	gpm	2035	39%	\$59,120
Additional Pump at Laurel Hill PS		\$230,000	2016	gpm	2035	39%	\$90,051
Scada & Telemetry at LH PS		\$77,000	2016	gpm	2035	39%	\$30,147
LH shut-off valve		\$77,000	2016	gpm	2035	39%	\$30,147
<i>Maintain Separate Willamette & Crest 1150 Service Areas</i>							
New Crest 1150 Pump Station	Rehab	\$461,000	2019-20	gpm	2035	10%	\$47,655
PRV station to connect Willamette 1325 and Crest 1150	Optimization	\$151,000	2016	MDD	2035	16%	\$24,304
<i>Pump Station Replacement</i>							
Willamette 975	Existing/Rehab	\$800,000	2016-17	gpm	2035	42%	\$339,971
Crenshaw (near Gillespie Butte)	Growth	\$800,000	2017-18	gpm	2035	0%	\$0
Hawkins 1150 Pump station	Rehab/Optim.	\$800,000	2018-19	gpm	2035	10%	\$82,699
<i>Pump Station Control System Improvements</i>	Existing/Rehab	\$1,900,000	varies		2035	17%	\$331,645
<i>Reservoir Improvements</i>							
Shasta 975 - Recoating	Existing/Rehab	\$300,000	2020		2035	0%	\$0
Willamette 800 Reservoir Replacement	Existing/Rehab	\$1,000,000	2016	MG	2035	10%	\$97,468
Shasta 800 - structural improvements	Existing/Rehab	\$1,000,000	2018-19	MG	2035	0%	\$0
		\$9,956,000				14%	\$1,348,515
Distribution							
Main Replacement	Rehab	\$3.1-\$3.5m/yr			Build out	0%	\$0
Fire Flow Improvements for Schools	Reliability	\$1,568,000			Build out	0%	\$0
Dual Source Improvements	Reliability	\$1,564,900	Post 2025		Build out	0%	\$0
Looping Improvements	Reliability	\$2,349,000			Build out	0%	\$0
		\$5,481,900				0%	\$0
Total System		\$156,416,900				16%	\$24,723,958