

Methodology Report

Water System Development Charges

Prepared For
City of Newberg

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Introduction

Oregon legislation establishes guidelines for the calculation of system development charges (SDCs). Within these guidelines, local governments have 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 methodology for calculating updated water SDCs for the City of Newberg (the City) based on the recently completed Water System Master Plan (Murray Smith & Associates).

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 with 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. The notification requirements for changes to the fees that 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:

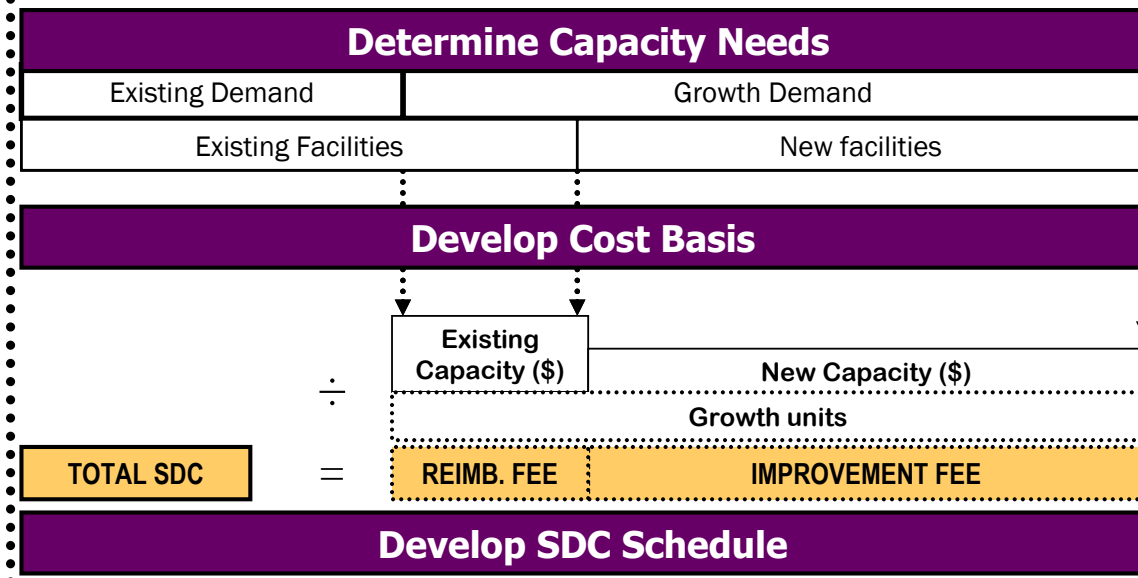
- Preparation of a capital improvement program (CIP) or comparable plan (prior to the establishment of a SDC), that includes a list of the improvements that the jurisdiction intends to fund with improvement fee revenues and the estimated timing, cost, and eligible portion of each improvement.
- Deposit 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.

Methodology Overview

The general methodology used to calculate water SDCs in Newberg is illustrated in **Figure 1**. It 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 spread over 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.

Figure 1 – Overview of SDC Methodology



Water SDC Methodology

This section presents the updated water system development charge (SDC) analysis, based on the City's recently completed Water System Master Plan (Master Plan).

Determine Capacity Needs

Table 1 shows the planning assumptions for the water system as determined by the Master Plan. Capacity requirements are generally evaluated based on the following system design criteria:

- Maximum Day Demand (MDD) -- The highest daily recorded rate of water production in a year. Used for allocating source, pumping and delivery facilities.
- Storage Requirements -- Storage facilities provide three functions: operational (or equalization) storage, and storage for emergency and fire protection needs. Used for allocating storage facility costs.

Table 1
City of Newberg
Water System Development Charge Analysis
Planning Data

	MDD (mgd) ¹	Storage (mg)
Capacity Requirements		
Current		
System	4.90	
Zone 1	4.86	5.87
High Elevation Zones	0.04	0.20
Future Requirements		
System	8.77	
Zone 1	7.35	8.8
High Elevation Zones	1.42	1.7
Growth Allocations		
System Growth	3.87	
<i>Share of Future Requirements</i>	<i>44%</i>	
Zone 1 Growth	2.49	2.93
<i>Share of Future Requirements</i>	<i>34%</i>	<i>33%</i>
High Elevation Growth	1.38	1.5
<i>Share of Future Requirements</i>	<i>97%</i>	<i>88%</i>

¹ Includes potable and non-potable systems

As shown in Table 1, system MDD is currently about 4.9 million gallons per day (mgd), including both potable and non-potable use. Growth in MDD is projected to be about 3.9 mgd over the study period. For supply and delivery purposes, the potable and non-potable

systems are evaluated on a combined basis, as collectively the systems will be used to meet future MDD.

Storage requirements are about 5.6 million gallons (mg) currently, and are limited to the potable system. Future storage requirements are expected to be 8.8 mg in Zone 1, and 1.7 mg in Zone 2. Pumping and storage requirements are evaluated separately for each zone.

Develop Cost Basis

The capacity needed to serve new development will be met through a combination of existing available system capacity and additional capacity from planned system improvements. The reimbursement fee is intended to recover the costs associated with the growth-related 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, adjusted for grants and contributions used to fund facilities, is referred to as the “cost basis”.

Reimbursement Fee

Table 2 shows the reimbursement fee cost basis calculations. The reimbursement fee cost basis reflects the growth share of existing system assets of June 30, 2016. As shown in Table 2, the value of the existing water system (based on original purchase cost) is almost \$44 million. When developer contributions are deducted, the City’s historical investment in water system facilities totals about \$39 million (excluding vehicles and minor equipment costs).

The growth share for each asset type is based on the planning data provided in Table 1. The existing supply, storage, and delivery system facilities all have capacity that will be utilized by future growth, and therefore the allocations are based on growth’s share of future demands. As shown in Table 1, growth share of future MDD (used to allocate supply and delivery costs) is 44 percent, and storage (based on Zone 1 requirements) is 33 percent. Support facilities are allocated 20 percent to future growth, based on the City’s estimates. The reimbursement fee cost basis excludes any assets (like the sodium hypochlorite equipment) that will be replaced by planned capital improvements. As show in Table 2, the reimbursement fee cost basis totals \$16.3 million.

Table 2

City of Newberg
 Water System Development Charge Analysis
 Reimbursement Fee Cost Basis

Description	Original	City	Growth Share	
	Cost	Cost	%	\$
Supply				
Wells	\$3,762,294	\$3,762,294	44%	\$1,660,214
Treatment	\$9,970,901	\$9,970,901	44%	\$4,399,930
Sodium Hypochlorite Equipment	\$167,464	\$167,464	0%	\$0
Springs	\$52,059	\$52,059	44%	\$22,972
Effluent Re-use	\$2,319,652	\$2,319,652	44%	\$1,023,609
Subtotal	\$16,272,370	\$16,272,370		\$7,106,726
Storage				
Corral Creek	\$3,573,002	\$3,573,002	33%	\$1,189,647
North Valley Rd. Reservoir	\$1,939,871	\$1,939,871	33%	\$645,889
Reservoir 1 & 2	\$1,157,019	\$1,157,019	33%	\$385,235
Reservoir 3	\$12,487	\$12,487	33%	\$4,158
East Reservoir	\$320,070	\$320,070	33%	\$106,569
Other	\$43,818	\$43,818	33%	\$14,589
Subtotal	\$7,046,267	\$7,046,267		\$2,346,087
Water Delivery				
Developer	\$4,576,425	\$0	44%	\$0
City Water	\$10,389,944	\$10,389,944	44%	\$4,584,844
Parallel River Line	\$3,191,301	\$3,191,301	44%	\$1,408,248
Water Line N Arterial S Curve	\$1,027,555	\$1,027,555	44%	\$453,436
Effluent Reuse	\$818,636	\$818,636	44%	\$361,245
Subtotal	\$20,003,861	\$15,427,436		\$6,807,774
Support Facilities				
3rd St. Building/Land	\$226,272	\$226,272	20%	\$45,254
2nd St. Parking	\$74,535	\$74,535	20%	\$14,907
Subtotal	\$300,807	\$300,807		\$60,161
Total	\$43,623,305	\$39,046,880		\$16,320,748

Source: City Fixed Asset Records as of June 30, 2016

Improvement Fee

Table 3 shows the improvement fee cost basis calculations. As with the existing facility costs, the costs of most planned improvements (from the Master Plan and the City's capital improvement plan) are allocated in proportion to future demands using the percentages shown in Table 1. Pumping and other high elevation water infrastructure improvements are allocated in proportion to the upper zone needs, and existing distribution main upsizing (which is specific to Zone 1) are allocated in proportion to Zone 1 MDD. System extension at Chehalem Drive and Columbia Drive, and in the nonpotable system is needed only for future growth. Support facilities are allocated 20 percent to growth based on the City's analysis.

As shown in Table 3, the total improvement fee cost basis is about \$15 million.

Table 3
City of Newberg
Water System Development Charge Analysis
Improvement Fee Cost Basis (Project List)

ID#	PROJECT	Time Period	Cost Estimate	SDC-Eligible Portion %	\$
Supply					
	2 mgd redundant supply development	2019-2023	\$3,619,000	44%	\$1,596,982
	Hypochlorite Generator	2018	\$500,000	44%	\$220,639
	Water Rights Review and Reconfiguration	2018	\$25,000	44%	\$11,032
Subtotal			\$4,144,000		\$1,828,652
Pumping					
P-1	Bell East Pump Station - Zone 3	2022-2023	\$1,450,000	97%	\$1,409,155
P-2	Bell West Pump Station - Zone 2	2019-2020	\$1,450,000	97%	\$1,409,155
Subtotal			\$2,900,000		\$2,818,310
Distribution					
M-1-M-8, M-18	Upsize existing mains; construct new distribution loops to improve fire flow capacity	2018-2022	\$2,202,000	34%	\$745,984
M-9	NE Zimri Dr Zone 3 distribution backbone within UGB	2023	\$346,000	97%	\$336,254
M-19	Chehalem Dr water system extension west and north to Columbia Dr	2018-2019	\$600,000	100%	\$600,000
M-14 & M-15	N College St - N Terrace Street - Bell West P.S. (P-2) - Veritas School	2019-2020	\$433,000	97%	\$420,803
	College Street WL to Mountain View	2018	\$470,000	10%	\$47,000
	Fixed Base Radio Read	2020	\$1,000,000	44%	\$441,277
Subtotal			\$5,051,000		\$2,591,317
Future High Elevation Water Infrastructure					
R-1	1.7 MG Bell Road Reservoir - Zone 3	20 Year +	\$2,400,000	88%	\$2,117,647
M-16	Zimri Dr. E transmission main to Bell Rd Reservoir	20 Year +	\$1,847,000	97%	\$1,794,972
M-17	Bell Rd W transmission main - N College Street to Zimri Dr.	20 Year +	\$1,726,000	97%	\$1,677,380
Subtotal			\$0		\$5,589,999
Planning					
	Seismic Resilience Study	2018	\$150,000	44%	\$66,192
	Water Management & Conservation Plan	2027	\$100,000	44%	\$44,128
	Water System Master Plan update	2027	\$250,000	44%	\$110,319
	SDC Study	2017	\$5,000	100%	\$5,000
	WTP & Bridge Transmission Main Slope Stability Study	2018	\$150,000	44%	\$66,192
Subtotal			\$655,000		\$291,830
Other					
	North non-potable water line and Otis Springs pumping improvements	2024-2027	\$1,750,000	100%	\$1,750,000
	Public Works Maintenance Facility Master Plan	2018-2022	\$737,500	20%	\$147,500
Subtotal			\$2,487,500		\$1,897,500
Total			\$21,210,500		\$15,017,608

Develop Unit Costs

The unit costs of capacity are determined by dividing the respective cost bases by the system-wide growth-related capacity requirements defined in Table 1. The system-wide unit costs are then multiplied by the capacity requirements per equivalent dwelling unit (EDU) to yield the fees per EDU. Table 3 shows these calculations.

Table 4
City of Newberg
Water System Development Charge
Unit Cost Calculations

	System Component						Total
	Supply	Storage/ Pumping	Distribution	Upper Elevation	Planning	Support	
Reimbursement Cost Basis	\$7,106,726	\$2,346,087	\$6,807,774	\$0	\$0	\$60,161	\$16,320,748
Growth Capacity Req (mgd)	3.9	3.9	3.9			3.9	
Unit Cost	\$1,836,363	\$606,224	\$1,759,115			\$15,546	
Capacity per EDU (mgd)	0.000605	0.000605	0.000605			0.000605	
Reimbursement \$/EDU	\$1,110	\$367	\$1,064	\$0	\$0	\$9	\$2,550
Improvement Cost Basis	\$1,828,652	\$2,818,310	\$4,341,317	\$5,589,999	\$291,830	\$147,500	\$15,017,608
Growth Capacity Req (mgd)	3.9	3.9	3.9	3.9	3.9	3.9	
Unit Cost	\$472,520	\$728,245	\$1,121,787	\$1,444,444	\$75,408	\$38,114	
Capacity per EDU (mgd)	0.000605	0.000605	0.000605	0.000605	0.000605	0.000605	
Improvement \$/EDU	\$286	\$440	\$678	\$873	\$46	\$23	\$2,346

EDU capacity requirements are estimated based on current MDD and the total number of meter equivalents in the system. The base service unit for the water system is a 3/4-inch meter, the standard size for a single family dwelling. The meter equivalents for larger meter sizes represent the equivalent hydraulic capacity relative to a 3/4-inch meter. **Table 5** shows the meter equivalency factors for each meter size.

Based on the existing MDD and meter equivalents, the estimated capacity requirement per EDU is 605 gallons per day (0.000605 mgd). Applying the capacity requirement per EDU by the unit costs of capacity yields reimbursement and improvement costs per EDU of \$2,550 and \$2,346, respectively as shown in Table 4.

SDC Schedule

Table 5 shows the SDC schedule for each meter size for potable and non-potable customers. The potable SDCs include the full cost per EDU shown in Table 4, while the non-potable SDCs exclude the costs of storage and upper elevation pumping and other improvements. The total SDC per EDU for potable and non-potable are \$4,896 and \$3,216, respectively. The SDCs for larger meter sizes are scaled up based on the hydraulic capacity factors.

Table 5
City of Newberg
Water System Development Charge Analysis
SDC Schedule

Meter Size	SDCr	SDCi	Potable SDC	Factor 3/4"
Potable				
3/4"	\$2,550	\$2,346	\$4,896	1.0
1"	\$4,335	\$3,989	\$8,323	1.7
1 1/4"	\$6,375	\$5,866	\$12,240	2.5
1 1/2"	\$8,415	\$7,743	\$16,157	3.3
2"	\$13,514	\$12,435	\$25,949	5.3
3"	\$25,499	\$23,463	\$48,961	10.0
4"	\$42,583	\$39,183	\$81,765	16.7
6"	\$84,145	\$77,427	\$161,572	33.0
8"	\$135,142	\$124,352	\$259,494	53.0
10"	\$195,489	\$179,880	\$375,368	76.7
NonPotable				
3/4"	\$2,183	\$1,033	\$3,216	1.0
1"	\$3,712	\$1,755	\$5,467	1.7
1 1/4"	\$5,458	\$2,581	\$8,040	2.5
1 1/2"	\$7,205	\$3,408	\$10,613	3.3
2"	\$11,572	\$5,473	\$17,044	5.3
3"	\$21,833	\$10,326	\$32,159	10.0
4"	\$36,461	\$17,244	\$53,706	16.7
6"	\$72,049	\$34,076	\$106,125	33.0
8"	\$115,716	\$54,728	\$170,443	53.0
10"	\$167,387	\$79,166	\$246,553	76.7