Methodology Report

Water System Development Charges

Prepared For

City of North Plains

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SECTION 1

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 North Plains (the City) based on the recently completed Water System Master Plan Update (Murraysmith).

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:

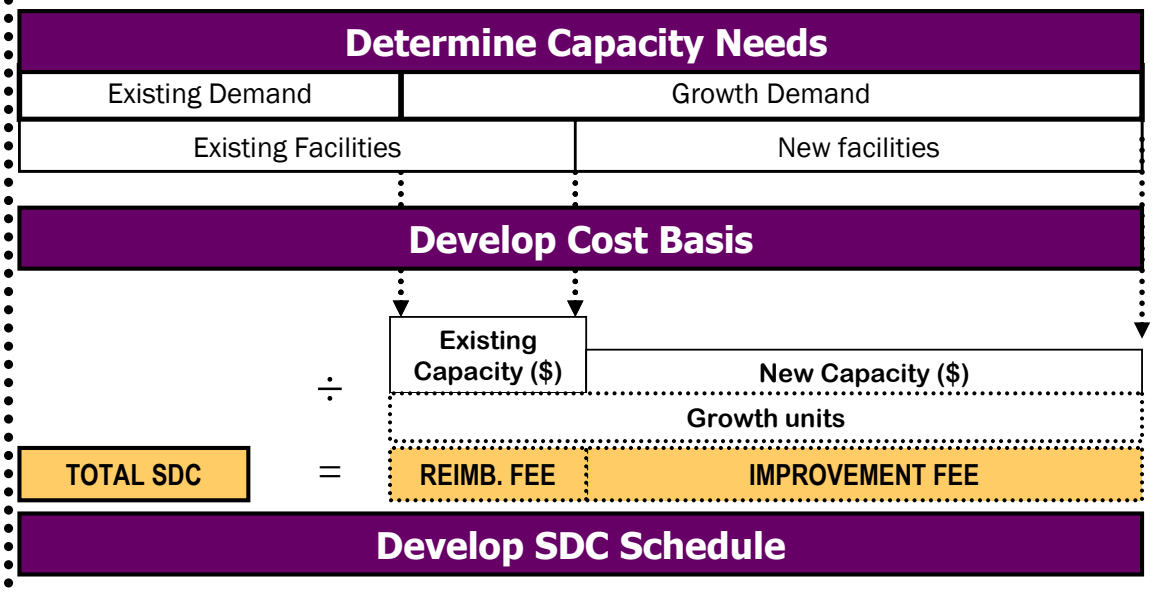
- Preparation of a capital improvement program (CIP) or comparable plan (prior to the establishment of a SDC), that includes a list of the improvements that the jurisdiction intends to fund with improvement fee revenues and the estimated timing, cost, and eligible portion of each improvement.
- Deposit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



SECTION 2

Water SDC Methodology

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

Determine Capacity Needs

Table 1 shows the planning assumptions for the water system. 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 North Plains
Water System Development Charge Analysis
Capacity Requirements

	Max Day (mgd)	Storage (mg)
Current	0.60	0.9
Future	1.61	3.0
Growth	*1.01*	*2.07*

As shown in Table 1, system MDD is currently about 0.6 million gallons per day (mgd). Future MDD is projected to be about 1.61 mgd (growth of 1.01 mgd over the study period.) Storage requirements are almost 1 million gallons (mg) currently, and are projected to increase to 3.0 mg in the future.

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 estimated contributions used to fund facilities, is referred to as the "cost basis".

Reimbursement Fee

Table 2 shows the reimbursement fee cost basis calculations based on the replacement value of existing facilities. Existing facilities are limited to a portion of the Joint Water Commission (JWC) Supply Line and the City's emergency back-up well, both of which have sufficient capacity to meet projected demands through the planning period. The SDC share (63 percent) is based on the projected growth in MDD (about 1 mgd from Table 1), as a percent of future MDD (1.6 mgd).

The capacity of the City's existing storage reservoir is about 1 mg (about equal to existing requirements), so no reimbursement value is included. Similarly, the reimbursement cost basis excludes existing distribution mains – some of which were funded by developers, and others which will be replaced by planned improvement projects. The growth capacity for storage and distribution is assumed to be met primarily by future improvements.

As show in Table 2, the reimbursement fee cost basis totals almost $4.5 million.

Table 2
City of North Plains
Water System Development Charge Analysis
Reimbursement Fee Cost Basis

Description	Replacement Cost	SDC Share %	SDC Share $
JWC Supply line	$6,522,450	63%	$4,084,151
Emergency Back-Up Well	$650,000	63%	$407,009
Total	**$7,172,450**		**$4,491,160**

Improvement Fee

Table 3 shows the improvement fee cost basis calculations. As discussed previously, the storage capacity requirements for growth are assumed to be met by a new 2.0 mg reservoir and pump station. Since existing development capacity needs are met by the existing reservoir, 100 percent of the new reservoir is included in the improvement fee cost basis.

As with the existing water delivery facility costs, the costs of planned distribution improvements funded by the City are allocated in proportion to future MDD requirements (63 percent for growth), as is master planning studies. These improvements are needed to upgrade the existing system, and as such will benefit both existing and future development. New distribution system improvements that are assumed to be funded by developers total over $10 million, and are excluded from the cost basis.

The improvement fee cost basis is just over $9 million, and includes almost $6 million for storage and pumping, and about $3 million in distribution and planning costs.

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

PROJECT	Time Period	Cost Estimate	SDC-Eligible Portion %	SDC-Eligible Portion $
Storage				
Proposed 2.0 MG Reservoir and Pump Station	2018	$5,973,000	100%	$5,973,000
Subtotal		**$5,973,000**		**$5,973,000**
Distribution Upgrades for Fire Flow				
Gordon Crossing	2021	$440,409	63%	$275,770
NR1	2020	$69,660	63%	$43,619
UE1	2022	$198,720	63%	$124,432
UE2	2023	$261,360	63%	$163,655
UE2	2023	$244,620	63%	$153,173
UE3	2024	$70,200	63%	$43,957
Subtotal		**$1,284,969**		**$804,606**
Distribution Standard Upgrades				
4"	2026	$804,580	63%	$503,802
6"	2027-2037	$2,905,455	63%	$1,819,304
Subtotal		**$3,710,035**		**$2,323,106**
Planning				
Master Plan	2017	$35,000	63%	$21,916
SDC Study	2017	$10,000	63%	$6,262
Subtotal		**$45,000**		**$28,178**
Developer-Funded Pipelines				
North	2018-2023	$3,585,938	0%	$0
East	2018-2023	$4,127,227	0%	$0
Northeast	2018-2023	$2,543,476	0%	
Subtotal		**$10,256,642**		**$0**
Total		**$21,269,646**		**$9,128,890**

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 3
City of North Plains
Water System Development Charge Analysis
Unit Cost Calculations

	System Component					
	Supply	Storage	Distribution Upgrades for Fire Flow	Distribution Standard Upgrades	Planning	**Total**
Reimbursement Cost Basis	$4,491,160					$4,491,160
Improvement Cost Basis		$5,973,000	$804,606	$2,323,106	$31,916	$9,132,628
Growth Capacity MDD (mgd)	1.0	1.0	1.0	1.0	1.0	
Unit Cost ($/mgd)	$4,468,816	$5,943,284	$800,603	$2,311,548	$31,757	
MDD Capacity per EDU (mgd)	0.000491	0.000491	0.000491	0.000491	0.000491	
$/EDU	**$2,193**	**$2,916**	**$393**	**$1,134**	**$16**	**$6,651**

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 ¾-inch meter. **Table 4** shows the meter equivalency factors for each meter size.

Based on the existing MDD and meter equivalents, the estimated capacity requirement per EDU is 491 gallons per day (0.000491 mgd). Applying the capacity requirement per EDU by the unit costs of capacity yields reimbursement and improvement costs per EDU of $2,193 and $4,459, respectively as shown in Table 3.

SDC Schedule

Table 4 shows the SDC schedule for each meter size. The total SDC per EDU, including compliance costs of $195 per EDU is $6,846. The SDCs for larger meter sizes are scaled up based on the hydraulic capacity factors.

Table 4
City of North Plains
Water System Development Charge Analysis
SDC Schedule

Meter Size	SDCr	SDCi	Compliance	Total SDC	Meter Factor [1]
3/4"	$2,193	$4,459	$195	$6,846	1.0
1"	$3,727	$7,579	$332	$11,639	1.7
1 1/2"	$7,235	$14,713	$644	$22,593	3.3
2"	$11,621	$23,630	$1,035	$36,286	5.3
3"	$21,926	$44,585	$1,953	$68,464	10.0
4"	$36,616	$74,457	$3,261	$114,334	16.7
6"	$72,355	$147,131	$6,444	$225,930	33.0
8"	$116,206	$236,301	$10,350	$362,857	53.0

[1]AWWA M6, 2nd Edition