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SPU Water Rates SUM EXH A
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EXHIBIT A

Seattle Public Utilities

2016-2017 Water Rate Study

Table Of Contents

PREFACE - STRATEGIC BUSINESS PLAN COMPARISON

Seattle City Council Resolution 31534, passed August 11, 2014, adopted a six-year Strategic Business Plan (SBP) for Seattle Public Utilities (SPU) which guides utility investments, service levels, and rate paths through 2020. While not a formal rate package, the SBP does give guidance and create accountability for the rate setting process. **Table P-1** compares the overall retail water rate increase for 2015-2017 with those in the SBP.

Table P-1
Comparison of Overall Water Rate Increases

	2015	2016	2017
Strategic Business Plan	0.0%	5.2%	5.2%
Proposed Increase	0.0%	1.7%	2.7%

Since the adoption of the SBP, several factors for the Water Fund have changed, which result in smaller rate increases for 2016 and 2017. **Table P-2** highlights changes from the SBP and the impact of those changes on proposed rate increases for 2016 and 2017.

Table P-2
Rate Impacts of Changes Since SBP on Proposed Rate Increases

($1,000's)	2016 $ Change from SBP	% Change in Rev Req	2017 $ Change from SBP	% Change in Rev Req
Expenditure				
Operations and Maintenance (O&M)	4,379	2.3%	3,086	1.6%
Capital Financing	12,594	6.6%	9,190	4.7%
Other Financial Policy Requirements	3,040	1.6%	(6,092)	-3.1%
Total Expenditure Requirement	**20,012**	**10.5%**	**6,184**	**3.2%**
Other Funding Sources	(20,853)	-10.9%	(11,258)	-5.8%
Change in Retail Revenue Requirement	**(841)**	**-0.4%**	**(5,074)**	**-2.6%**
Strategic Business Plan Rate Increases		**5.2%**		**5.2%**
Change in Retail Rate Requirement		-0.4%		-2.6%
Impact of Demand/Connections /Low Income Credit*		-3.1%		0.2%
Proposed Rate Increases**		**1.7%**		**2.7%**

*Because rate increases are cumulative, the impact of demand, connections and low income credits are cumulative. A step change in these assumptions has a significant impact in a given year, but little impact on rate increases in subsequent years.

**Rates may not total due to rounding.

The largest expenditure change is an increase in capital financing. SPU is proposing using available operating cash balances and RSF withdrawals as capital financing sources, which allows the Water Fund to reduce its reliance on debt, reduce future debt service, and keep rates lower in the long term. Higher 2014 actual consumption, and an improved forecast for 2015-2017, enables SPU to use available cash to finance capital in 2016, both reducing and delaying the 2016 bond issue compared to the SBP. In 2017, this rate study includes an additional withdrawal of $6.5 million from the Revenue Stabilization Fund (RSF) to help fund capital.

Operations and Maintenance (O&M) has increased approximately $4 million from the adopted SBP in 2016 and $3 million in 2017. About 40 percent of the increase is related to additional expenditures in street restoration, which is largely driven by maintenance on watermains. The remaining O&M increases are mostly driven by labor forecasts, an apprentice class and additional expenditures related to increases in IT maintenance costs.

An increase in funding from other sources offsets the increase in capital and O&M. Increased additional revenues are primarily from a revised forecast in wholesale revenue, growth-related income (tap fees and connection charges) and reimbursement for additional reservoir work completed by SPU. In total, other funding sources are increasing faster than total expenditure, lowering the Water Fund retail revenue requirement by 0.4 percent in 2016 and 2.6 percent in 2017.

While generally not *revenue requirement drivers*, changing demand for water, meter connections and low income assistance, are significant *rate drivers*. As the economy continues to recover from the recession at the beginning of the decade, the decline in water consumption has slowed. As new data has become available, water consumption forecasts have been adjusted upward, which lowers rates, particularly for 2016. Increases in the forecasts for consumption and connections affect rates by allowing the revenue requirement to be spread over more units. **Table P-3** compares the water consumption forecast used in the SBP and the current projection.

Table P-3
Retail Water Consumption Forecast

(Consumption in CCF)	2016	2017
Strategic Business Plan Consumption	25,489	25,374
Rate Study Consumption	25,966	25,878
Consumption Forecast Increase	477	504
Percentage Increase	1.8%	2.0%

Both the SBP and this rate proposal include impacts of the Mayor's initiative to double the participation in the Utility Discount Program (UDP) by 2018. UDP participation has increased 16 percent over the year ending 12/31/14, which is on track with the 2018 goal. As a result, there is no significant update to the UDP growth assumption from the SBP.

1. EXECUTIVE SUMMARY

The water system is financed through an enterprise fund of the City of Seattle that is wholly supported by rate and fee revenues related to water service. In any given year, these rates and fees must be sufficient to pay the total costs of the water system and meet adopted financial targets. This total cost is known as the **water system revenue requirement**. The majority of the water system's revenues are from direct service ("rates") revenues from wholesale and retail customers. Wholesale contracts determine the amount SPU charges for wholesale service in any particular year. Thus, retail water rates and other revenues are the "balancing entries" that generate the difference between each year's total water system revenue requirement and wholesale revenues. For this reason, the retail rate study is performed subsequent to wholesale rate studies.

This study focuses on proposed retail water rates. **Chapter 1** provides an overview of proposed changes to the revenue requirement and their drivers, bill impacts, and projected financial performance. **Chapter 2** gives an overview of adopted financial policy targets used in the development of the revenue requirement. **Chapter 3** provides additional detail on the various components of the proposed revenue requirement, including a discussion of demand and the low-income rate assistance program. **Chapter 4** discusses how the proposed revenue requirement is allocated between different customer classes. **Chapter 5** presents proposed rates by customer class, as well as an overview of the rate design, or rate structure, for each class. The **Appendices** present additional supporting data.

The combination of an improving economic climate and decisions on operational and capital spending made by SPU management allowed for no rate increases in 2015 as rates set for 2014 were sufficient to meet the financial targets for both years. Because rates were last set for 2014, not 2015, references to prior years will be based on assumptions in the 2014 rate study. The proposed retail rates support increases to the **retail rate revenue requirement** of **$5.1** million in 2016 and **$4.6** million in 2017, for a combined total of **$9.7** million over the two-year period. **Table 1-1** presents the change in the retail revenue requirement and the monthly impact of proposed rate increases on typical residential customers and a sampling of general service customers. The proposed rates will affect general service customers to varying degrees depending on the volume of water used.

Table 1-1
Proposed Water System Revenue Requirement and Bill Impacts

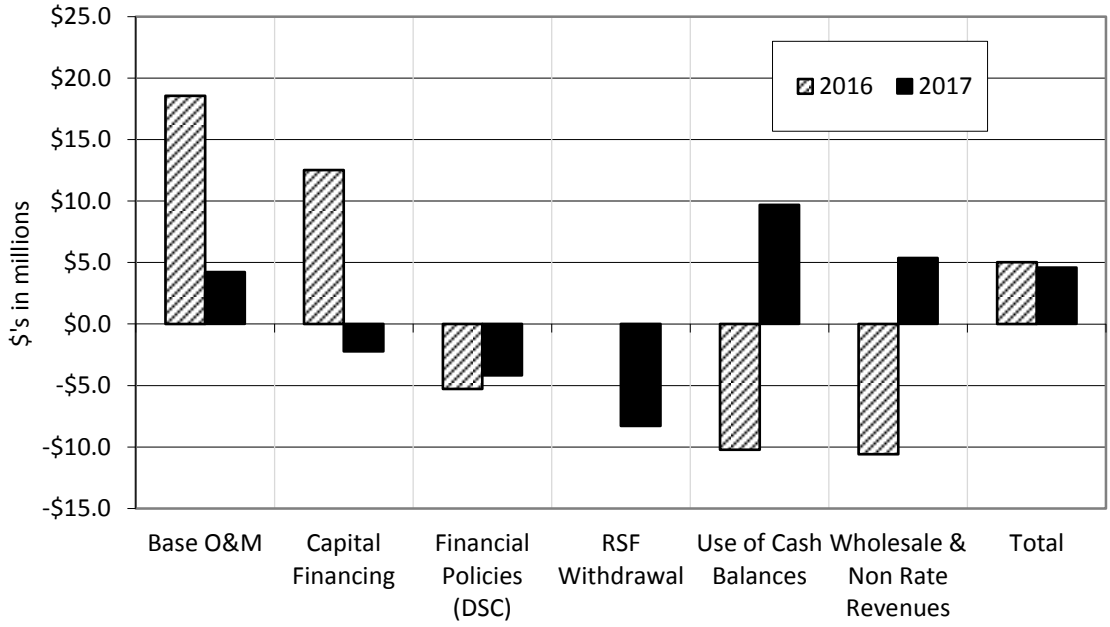
	2014*	2016		2017	
	Adopted	Proposed	Change from 2014	Proposed	Change from 2016
Retail Rate Revenue Requirement	$185,740,521	$190,764,540	$5,024,019	$195,359,590	$4,595,050
Typical Monthly Water Bills					
Residential	$38.93	$39.68	$0.75	$41.13	$1.45
Convenience Store	$95.80	$97.35	$1.55	$99.80	$2.45
Small Office Building	$310	$315	$5	$322	$7
Apartment Building (90 units)	$1,172	$1,190	$18	$1,215	$26
Medium Hotel	$7,379	$7,486	$106	$7,625	$139
Large Industrial	$17,884	$18,133	$249	$18,454	$321

*2014 amounts are based on the 2012-2014 rate study.

The overall water system expenditure increased $23.6 million between 2014, the final year of the most recent rate study, and 2017. Proposed O&M spending increases of $22.8 million account for the bulk of increased spending, with capital financing (debt service and cash financing) adding $0.8 million over the two years.

Expenditure changes are not the only factor in retail rate changes. Other funding sources, primarily wholesale and non-rate revenues, use of cash balances, and withdrawals from the Revenue Stabilization Fund offset the expenditure requirement, leaving a balance that must be recovered from retail rates. Other revenues (primarily tap fees and capital contributions) are expected to fund $14.1 million of the increase, with retail rates funding the remaining $9.6 million. Changes in these other funding sources can vary from year to year and have a direct impact on the retail revenue requirement. **Figure 1-1** breaks down, by year, the change in each retail revenue requirement driver. The drivers of a new rate are based on the change in each underlying assumption used to create the previous rate. Therefore, assumptions for 2016 are compared to assumptions used for 2014 rates in the 2012-2014 rate study, and 2017 assumptions are compared to 2016. See Chapter 3 for more detail.

Figure 1-1
Water Fund Retail Revenue Requirement Drivers by Year



The following section provides further description of the drivers presented in Figure 1-1.

Base O&M (and Taxes)
O&M has increased $16.7 million between the 2014 rate study and 2016 due to updated growth assumptions in labor costs, city central costs, and investments identified in the SBP. Taxes increased $1.9 million from the 2014 rate study amount.

Capital Financing
Figure 1-1 shows the combined impact of *cash* and *debt financing* of the capital program on the revenue requirement in both 2016 and 2017. While capital financing is a revenue requirement driver in 2016, the increase in spending is offset by the use of cash balances as a funding source. In 2017, there is less spending on capital financing, though it is still higher than the minimum target of 15 percent of annual CIP. Spending above the required target in 2017 is to be funded through a withdrawal from the Revenue Stabilization Fund.

Financial Policies (DSC)
The Water Fund has four primary financial targets. Debt service coverage is currently the binding policy target. See Chapter 2 for more detail on binding policy targets. The 2012-2014 rate study assumed a new revenue bond issuance in 2013, and set rates to meet the debt service coverage requirement with that bond. Since rates were last adopted, actual CIP has been significantly lower, particularly in 2013,

which resulted in a delay of the bond issue. In addition, a 2012 refunding of $282 million in outstanding bonds to lower interest rates dropped debt service about $1.5 million per year.

Other Funding Sources

- **RSF Withdrawal.** Withdrawals from the RSF can be used to increase cash contributions to CIP and offset retail rate revenue requirements. In 2017, SPU is proposing to do both. A withdrawal of $8.3 million is proposed, with $1.8 million offsetting retail rate revenue requirements, and $6.5 million used to cash fund capital projects. Using the RSF to fund the capital program substitutes for using bond funds, reduces future debt service and keeps long-term rates lower.

- **Use of Cash Balances.** SPU currently has an operating cash balance above its financial policy target. This rate study assumes the use of this cash on capital, primarily in 2016.

- **Wholesale & Non-Rate Revenues.** There is a significant increase in non-rate revenues in 2016 compared to the 2014 amount assumed in the 2012-2014 rate study. The largest gain comes from increased capital contributions, primarily tap fees. Another major contributor to the increase in non-rate revenues is a reimbursement of $3.7 million in 2016 associated with additional reservoir work.

Effects of Changes in Demand and Utility Discount Program

While generally not a *revenue requirement driver*, changing demand for water is a significant *rate* driver. Projected demand in 2016 is 1.7 percent higher than assumed for 2014, decreasing rates as the revenue requirement is spread over more consumption units. A small decrease in consumption is forecasted in 2017, adding to the rate increase for the year. **Table 1-2** shows the impact of demand and UDP changes on the overall average rate increase. This impact is the combination of declining water usage (demand unit for consumption based revenues), a small increase in meter count (demand unit for base service charges), and the Mayor's initiative to double UDP participation by 2018.

Table 1-2
Impacts of Demand on Rate Increase

	2016	2017
Revenue Requirement Increase	2.7%	2.4%
Demand Impact	-1.1%	0.1%
Utility Discount Program Impact	0.2%	0.2%
Average Rate Increase*	1.7%	2.7%

*Rates may not total due to rounding.

Financial Performance

The 2016-2017 rate study meets or exceeds all water system financial policy targets during the rate period as shown in **Table 1-3**. Retail rates were set to meet the DSC policy target of 1.70x; the proposed

withdrawal from the RSF in 2017 increases DSC above the target of 1.70x. Setting rates to meet the target, then withdrawing RSF funds above the target, ensures the withdrawal will fund the capital program. See Chapter 2 for further discussion of financial policy targets and their impact on rate setting.

Table 1-3
Water Fund Projected Financial Performance

($ in 000's)	Target	Projected 2015	Projected 2016	Projected 2017	Projected 2018	Projected 2019	Projected 2020
Net Income	positive	$29,226	$20,100	$23,496	$24,095	$20,739	$22,735
Debt Service Coverage	1.7x	1.91	1.70	1.78	1.78	1.70	1.70
Cash Financing of the Capital Program	20%*	58.6%	47.6%	35.9%	39.5%	31.9%	50.9%
from Contributions in Aid of Construction		4.4%	6.0%	5.5%	6.0%	6.9%	9.3%
from Rate Revenues		54.2%	41.6%	30.4%	33.5%	25.0%	41.6%
Year-End Operating Cash	varies**	$25,000	$15,000	$14,695	$15,179	$15,907	$16,521

* Current revenues should be used to finance no less than 15% of the CIP in any one year, and average not less than 20% over each rate proposal period.

** Year-End Operating Cash Target is 1/12th of the current year's operating expenses. Rates have been modeled with a minimum cash balance of 45 days.

2. FINANCIAL POLICY OVERVIEW

Financial policies provide a guiding framework for the finances of the water utility. They represent a balance between the competing goals of fiscal conservatism through higher rates today and minimizing these same rates by spreading costs over time to future ratepayers. The direct effect of the policies is to determine the level at which water rates shall be set, given estimated costs and demand, and to define the general manner in which the capital improvement program is to be financed.

The indirect effects of the policies are to:

- Shape the financial profile the utility presents to the financial community;
- Establish the utility's exposure to financial risk; and
- Allocate the utility's costs between current and future ratepayers.

In 2005, City Council passed Resolution 30742, which adopted new water system financial policies that reflect changes and additions to the financial policies initially adopted in 1992. This rate proposal is based on the 2005 policies which are as follows:

1. **Maintenance of Capital Assets.** For the benefit of both current and future ratepayers, the municipal water system will seek to maintain its assets in sound working condition. Future revenue requirement analyses will include provision for maintenance and rehabilitation of facilities at a level intended to minimize total cost while continuing to provide reliable, high quality service.

2. **Debt Service Coverage.** Debt service coverage on first-lien debt should be at least 1.7 times debt service cost in each year on a planning basis.

3. **Net Income.** Net income should generally be positive.

4. **Cash Funding of the Capital Improvement Program.** Current revenues should be used to finance no less than 15 percent of the municipal water system's adopted CIP in any year, and not less than 20 percent of the CIP over the period of each rate proposal. Cash in excess of working capital requirements may be used to help fund the CIP.

5. **Eligibility for debt financing.** Unless otherwise authorized by Council, the following criteria must be met before project expenditures are eligible for debt financing:
   i) Project is included in the CIP.
   ii) Total project cost exceeds $50,000.
   iii) Project has expected useful life of more than two years (more than five years for information technology projects).

iv) Resulting asset will be owned or controlled by Seattle Public Utilities (SPU), is part of the regional utility infrastructure, or represents a long-term investment for water conservation.

v) Consistent with generally accepted accounting practices, project costs include those indirect costs, such as administrative overhead and program management, than can be reasonably attributed to the individual CIP project.

6. **Revenue Stabilization Fund (RSF).** Ordinance 121761 requires that a target balance of $9 million be maintained in the RSF, except when withdrawals below this level are needed to offset shortfalls in metered water sales revenues, or to meet financial policy requirements. Withdrawals of funds in excess of the minimum balance will be used to meet operating expenses, to pay CIP expenditures, or to meet financial policy requirements. Withdrawals from the RSF must be authorized by ordinance, except that Bonneville Power Administration (BPA) Account funds may be withdrawn based on BPA spending.

   The Water Fund must deposit revenues in excess of planned metered water sales to the RSF in years where all financial policy targets are exceeded.

   SPU may also make discretionary deposits to the RSF, provided that these discretionary deposits are in excess of the amounts required to meet the financial policy requirements. Should the RSF balance fall below the target balance, SPU will submit a water rate proposal that rebuilds the balance in the RSF within one year.

7. **Cash Target.** The target for the year-end operating fund cash balance is one-twelfth of the current year's operating expenditures. For this rate study SPU has modeled year end cash at a minimum of 45 days operating expenditures. While exceeding the cash minimum target, this has a small impact on rates because cash is not the binding constraint. This strategy is in response to previous concerns by rating agencies about the Water Fund liquidity.

8. **Variable Rate Debt.** Variable rate debt should not exceed 15 percent of total outstanding debt. Annual principal payments shall be made on variable rate debt in a manner consistent with fixed rate debt.

In any future year, the minimum revenue requirement is the lowest amount of money necessary to simultaneously satisfy all financial policies in that year. At this level of revenues, some financial policies may be exceeded, but none will be missed – the financial target that is exactly met is known as the binding constraint. Debt service coverage is the binding constraint for 2016-2017. Thus, proposed rates

will generate enough revenue to meet the debt service coverage target, and more than enough revenue to meet or exceed the net income, cash funding of the capital improvement program, and cash targets.[1]

[1] The proposed rates will generate enough revenue to meet the debt service coverage policy target; however, SPU is proposing to withdraw additional funds from the RSF to fund capital projects. This additional withdrawal will also make SPU above the target for debt service coverage.

3. RETAIL WATER REVENUE REQUIREMENT

The **water system revenue requirement** is the minimum amount of operating revenue required to fund the water system operating budget and meet financial policy targets for net income, cash balances, cash financing of the CIP, Revenue Stabilization Fund balances, and debt service coverage. The component requiring the greatest amount of revenue generation (budgetary expenses or one of the financial policy requirements) is termed the "binding constraint." The **retail water revenue requirement** is equal to the water system expenditure requirement, less funding from sources other than retail rates including wholesale revenues, drawdowns of cash balances, withdrawals from the Revenue Stabilization Fund, and other operating/non-operating revenues.

Rate increases are required to fund increases in the revenue requirement from one rate setting period to the next. Where demand is constant, the average rate increase will equal the increase in the revenue requirement. Increasing demand (i.e., customers buying more units of water) will reduce the required rate increase and declining demand will increase the rate increase relative to the change in the revenue requirement. In addition, changes in participation in the utility discount program affect the rate changes. Increased participation in the program reduces revenues as more households are paying a discounted rate. The reduction in revenue must be made up through an increase in standard rates.

Table 3-1 summarizes the components of change in the retail water revenue requirement during the proposed rate period. Current (2015) rates were set in 2011 based on planned expenditures, demand, and other funding sources for the prior rate setting period (2012-2014). Due to changes in performance during the rate period, no new rates were adopted for 2015. Therefore, the change in the 2016 revenue requirement in Table 3-1 and throughout this section is relative to the 2014 plan assumed in the 2012-2014 rate study. Likewise, the 2017 changes are relative to planned spending/income in the prior year.

Table 3-1
Components of the Change in the Retail Water Revenue Requirement

($1,000's)	2014 Rate Study	2016	$ Change in Rev Req	% Change in Total Rev Req	2017	$ Change in Rev Req	% Change in Total Rev Req
Expenditure							
Operations and Maintenance Expense (O&M)							
Branch O&M	97,411	114,102	16,691	9.0%	117,563	3,461	1.8%
Taxes	39,029	40,911	1,882	1.0%	41,676	765	0.4%
Total	**136,440**	**155,013**	**18,573**	**10.0%**	**159,239**	**4,226**	**2.2%**
Capital Financing							
Cash financing (target)	10,968	14,991	4,023	2.2%	16,373	1,382	0.7%
Cash financing (incremental spending)		10,000	10,000	5.4%	6,805	(3,195)	-1.7%
Debt Service	85,894	84,408	(1,487)	-0.8%	83,988	(420)	-0.2%
Total	**96,863**	**109,399**	**12,536**	**6.7%**	**107,165**	**(2,234)**	**-1.2%**
Other Financial Policy Requirements	**15,683**	**10,678**	**(5,004)**	**-2.7%**	**6,215**	**(4,463)**	**-2.3%**
Expenditure Requirement	**248,985**	**275,090**	**26,105**	**14.1%**	**272,619**	**(2,471)**	**-1.3%**
Other Funding Sources							
Wholesale Revenues	(49,850)	(49,845)	5	0.0%	(49,340)	505	0.3%
Non-rate revenues	(13,613)	(24,480)	(10,867)	-5.9%	(19,315)	5,165	2.7%
RSF withdrawal	-	-	-	0.0%	(8,300)	(8,300)	-4.4%
Change in Cash Balance	218	(10,000)	(10,218)	-5.5%	(305)	9,695	5.1%
Total Other Funding Sources	**(63,245)**	**(84,325)**	**(21,081)**	**-11.3%**	**(77,260)**	**7,065**	**3.7%**
Net Retail Rates Revenue Requirement	**185,741**	**190,765**	**5,024**	**2.7%**	**195,359**	**4,595**	**2.4%**
Impact of Demand/Connections				-1.1%			0.1%
Change in Utility Discount Program			361	0.2%		479	0.3%
Effective Increase in Retail Rates				**1.7%**			**2.7%**

The **Expenditure** section of Table 3-1 presents the operating fund cash spending components that make up the water system revenue requirement. The **Other Funding Sources** section presents other sources of funding which reduce the amount of expense that must be recovered through retail rates. The final section of the table presents two items, "***Demand***" and "***Utility Discount Program,***" that do not affect the revenue requirement but do affect rates. For example, the total expenditure requirement decreases by 1.3 percent from 2016 to 2017. However, decreases in other funding sources increase the retail revenue requirement by 3.7 percent, resulting in a net increase of 2.4 percent in 2017 to the retail rates revenue requirement. The actual average rate increase of 2.7 percent is higher than the revenue requirement increase due to a projected decrease in demand and projected increase in utilization of the utility discount program.

The following sections include more detailed descriptions of the components of change in the revenue requirement.

3.1. Operations and Maintenance Expense (O&M)

The water system O&M revenue requirement includes expenses attributable to water operations, as well as a portion of administrative expense that water shares with the other SPU funds (e.g., finance, customer service, etc.). For rate study purposes, O&M includes taxes but does not include debt service, which is discussed under capital financing. O&M is broken into two categories: branch O&M and taxes.

Branch O&M equals the spending required to support operations and maintenance functions of the water utility. Under this proposal, 2016 branch O&M increases $16.7 million from the 2014 amount as projected in the 2012-2014 rate study.

The 2016 branch O&M increase from the 2014 rate study is due to the following:

- $7 million is associated with updated growth assumptions between the 2014 Rate Study and the 2016 Rate Study in city central costs, pensions, and other labor costs.
- $6 million is related to investments identified in the SBP, such as preparing for water supply and utility system threats that may occur from climate change and developing a plan to protect the drinking water system from earthquakes.
- $4 million in new additional expenditures above the SBP is related to street restoration work associated with watermain and tap maintenance. The remaining O&M increases are mostly driven by labor forecasts, an apprentice class and additional expenditures related to increase IT maintenance costs.

The proposal assumes an increase in the branch O&M of $3.4 million in 2017.

SPU pays three primary taxes, the City of Seattle Water Utility Tax, Washington State Utility Tax and the Washington State B&O Tax. While all three taxes are not applicable to all revenue sources, they all are revenue based taxes. As such, as revenue increases, tax expense increases. Taxes increase $1.9 million in 2016 and $0.8 million in 2017, due to a higher projected tax revenue base.

3.2. Capital Financing Expense

Financing of the capital program will increase the expenditure requirement by 6.7 percent in 2016, and decrease it by 1.2 percent in 2017, as presented in Table 3-1. Some of the capital financing expenditure is incremental, however, as $16.8 million comes from cash sources already on hand.

Major water capital programs to be funded during this period include:

- Transmission Pipeline Improvements
- Reservoir Seismic Retrofitting
- Alaskan Way Viaduct Utility Relocation Project
- Distribution System Improvements

- Technology Systems Upgrades
- Service renewals and retirements
- Regional Conservation Programs

SPU funds water system capital projects through a combination of cash (from direct service and non-rates revenue) and debt financing (revenue bonds and low-interest loans serviced by rates revenue). As discussed in Section 3.2.3, SPU will be issuing bonds in 2016 and 2017. This rate study forecasts CIP cash financing that will exceed the financial target of 20 percent of CIP over the two year rate period. The remaining CIP will be funded with revenue bond proceeds. **Table 3-2** presents CIP spending and financing assumptions during the rate period.

Table 3-2
Capital Spending and Financing Assumptions

($1,000's)	2016	2017	Rate Study Average
CIP Spending Assumption	74,954	81,863	
CIP Financing Breakdown			
Cash Financed	35,669	29,392	
Debt Financing			
Low Interest Loan	0	0	
Bond Financing	39,285	52,471	
Cash Financed Percentage	47.6%	35.9%	41.5%
Debt Financed Percentage	52.4%	64.1%	58.5%

3.2.1. Cash Financing (target only)

Water system financial policies require that a minimum of 20 percent of the CIP be financed with current cash revenues (as opposed to debt proceeds) over the rate period. The sources of cash that assist in meeting this 20 percent target are operating revenues and contributions in aid of construction[2].

Although CIP cash financing is projected to exceed the financial policy target, this section discusses only the cash necessary to just meet the 20 percent cash financing target. Since debt service coverage is the binding constraint (see Chapter 2), rates are set to generate enough revenue to meet the debt service coverage target, which is more than the revenue needed to meet the cash financing target. That excess amount of revenue over and above the cash financing target is discussed in section 3.2.3.

[2] Customers often pay for water facilities when they connect to the water system or cause the relocation of water facilities. For example, a developer pays for installation of a water meter and service line when building a new house.

As presented in **Table 3-3**, targeted cash financing of the CIP increases $4.0 million in 2016 and $1.4 million in 2017.

Table 3-3
Change in Target Cash Financing

($1,000's)	2014 *	2016	$ Change	2017	$ Change
Cash Financed (Target)	10,968	14,991	4,023	16,373	1,382

* 2014 assumptions used in 2012-2014 Rate Study

3.2.2. Cash Financing (Incremental)

The Water Fund is in a position to fund a large amount of capital with cash on hand. SPU proposes to use $10 million and $0.3 million from the cash balance in the operating fund to finance capital projects in 2016 and 2017, respectively. In addition $6.5 million from the RSF will be used for capital projects in 2017. **Table 3-4** presents this incremental cash funding of CIP.

Table 3-4
Change in Incremental Cash Financing

($1,000's)	2014 *	2016	$ Change	2017	$ Change
Cash Financed (Incremental)	-	10,000	10,000	6,805	(3,195)

* 2014 assumptions used in 2012-2014 Rate Study

3.2.3. Debt Service

Table 3-5 presents projected Water Fund debt service, by source, during the rate period.

Table 3-5
Change in Water Fund Debt Service

($1,000's)	2014 *	2016	$ Change	2017	$ Change
Debt Service Details					
Debt service for existing bond issues	84,652	76,826	(7,826)	76,783	(43)
2015 bond debt service w/ refunding**		5,583	5,583	1,879	(3,704)
2016 bond debt service**				3,349	3,349
Low interest loan debt service	1,242	1,999	756	1,977	(22)
Total Debt Service	85,894	84,408	(1,487)	83,988	(420)

* 2014 assumptions used in 2012-2014 Rate Study

** Bond principal and interest payments are assumed to begin in the year following issue.

SPU expects to issue approximately $49 million in new revenue bonds in the second quarter of 2015. A refunding of approximately $189 million in prior bonds is expected to occur at the same time. Debt service for the 2015 bond issue reflects the combination of debt service for the new money and changes due to refunding existing bonds.

In the fourth quarter of 2016, SPU expects to issue approximately $50 million in new revenue bonds. An additional $53 million of new money bonds are expected to be issued in the fourth quarter of 2017. SPU is proposing issuing bonds that are expected to fund roughly one year of CIP needs.

3.3. Other Financial Policy Requirements (DSC)

As discussed in Chapter 2, the binding constraint in the 2016-2017 rate period is debt service coverage. It became the binding constraint in 2008 after SPU refinanced $93 million of variable rate debt into fixed rate debt amidst the financial crisis, raising the debt from second lien to first lien. Second lien debt is not considered for debt service coverage calculations.

By generating enough revenues to meet the debt service coverage target, the cash financing of CIP target will be exceeded. Meeting the debt service coverage target is important and benefits rate payers. Financial targets are used by bond holders to assess SPU's creditworthiness, and favorable ratings help SPU sell revenue bonds to fund infrastructure investments at the lowest costs possible. This benefits both the utility and its rate payers.

Over the two-year rate period, cash financing of the CIP related to revenues raised to meet debt service coverage total $16.9 million. Tables 3-3 and 3-4 show the portion of CIP cash financing that meets the 20 percent target and the incremental use of cash already on hand. **Table 3-6** reflects the amount of

additional CIP cash funding that is derived from revenues generated to attain the 1.70x debt service coverage target each year.

Since debt service is planned to decrease between 2016 and 2017 and there is an increase in CIP (and therefore the minimum 20 percent), there is a drop in the additional revenue needed for debt service coverage.

The high level of CIP cash financing will ultimately minimize the size of future debt issues and rate increases driven by debt service coverage.

Table 3-6
Change in Water Fund Debt Service

($1,000's)	2014 *	2016	$ Change	2017	$ Change
Financial Polices (DSC)	15,683	10,678	(5,004)	6,215	(4,463)

* 2014 assumptions used in 2012-2014 Rate Study

3.4. Other Funding Sources

A significant portion of the total water system expenditure requirement is funded through wholesale revenues, capital contributions, asset sales, and other operating and non-operating revenues. These other funding sources reduce the amount to be recovered through retail rates and therefore are reflected as reductions to the retail revenue requirement in each year. Other funding sources, primarily use of cash balances and non-rate revenues, are projected to increase from 2014 projections by $21.1 million in 2016, offsetting most of the increased expenditure.

3.4.1. Wholesale Revenues

Revenues from wholesale customers, as presented in **Table 3-7,** are expected to be similar to the $49.8 million originally assumed for 2014, decreasing slightly in 2017.

Table 3-7
Change in Wholesale Revenues

($1,000's)	2014 *	2016	$ Change	2017	$ Change
Full & Partial Revenue**	24,385	23,479	(906)	22,372	(1,107)
Cascade Block Revenue	19,890	20,960	1,070	21,428	468
Northshore Block Revenue	5,160	5,406	246	5,540	134
Total	49,850	49,845	(5)	49,340	(505)

* 2014 assumptions used in 2012-2014 Rate Study
** Includes facilities charge revenues and Renton conservation payment.

Rates for wholesale customers were approved for 2015-2017 in accordance with wholesale contracts. These contracts define cost of service methodologies that determine how much the water system charges for wholesale service. Wholesale rate studies apply these methodologies based on expenditure projections (budget). Wholesale rates may be affected by actions that raise or lower the water system O&M or CIP budget. Outside of budget changes, there is very little flexibility to alter wholesale rates and revenues.

3.4.2. Non-rate Revenues

As presented in **Table 3-8**, other non-rate revenue (unmetered revenue) is projected to increase from $13.6 million assumed for 2014 to $24.5 million in 2016. Total non-rate revenue is projected to decrease to $19.3 million in 2017.

Table 3-8
Change in Non-rate Revenues

($1,000's)	2014 *	2016	$ Change	2017	$ Change
Unmetered Revenues					
Capital Contributions & Tap Fees	5,533	11,057	5,524	11,129	72
Operating Fund Interest Income	(8)	215	223	187	(28)
Unmetered revenue	2,089	310	(1,779)	298	(12)
Charges for shutoffs & others	3,363	2,168	(1,196)	2,242	74
Rentals & Others	2,135	7,593	5,458	3,811	(3,782)
Build America Bonds Reimbursement	500	2,135	1,635	2,135	-
Billing leads & lags	-	1,002	1,002	(487)	(1,489)
Total Unmetered Revenues	13,613	24,480	10,867	19,315	(5,165)

* 2014 assumptions used in 2012-2014 Rate Study

The largest category of other non-rate revenues is capital contributions and tap fees, which increases significantly in 2016 due to a substantial rise in new tap activity. The rise is generally the result of an improving economy and an increase in housing construction.

In 2016, the large increase in the "Rentals and Others" category is primarily due to an expected reimbursement of $3.7 million from a contractor for work related to seismic retrofitting of reservoirs in 2016. This reimbursement is not recurring, and accounts for the decrease in Rentals & Others in 2017.

Billing leads and lags are year-end cash effects that adjust for differences in when an expense (or revenue) is recorded in SPU financial systems[3] versus when the associated cash is paid (or received). These lags/leads result in an impact on rates when their sum dollar amount changes from year to year. The leads/lags presented in Table 3-8 are primarily associated with changes in the timing of CIP billed to SPU from year to year.

3.4.3. Revenue Stabilization Fund Withdrawals

As discussed in Chapter 2, the minimum balance in the RSF is $9 million. From a rates perspective, withdrawals from the RSF are part of the other funding sources pool. Increases in withdrawal size add to this pool and therefore reduce the retail rate revenue requirement. Decreases in withdrawal size reduce the size of this alternative funding pool and increase the direct service funding requirement.

At the end of 2014 the actual balance in the RSF was $27.9 million. In this rate period, SPU recommends withdrawing $8.3 million in 2017 to offset both the retail revenue requirement ($1.8 million) and fund the capital program ($6.5 million). As discussed in the capital financing section above, the increase in "incremental" spending and the use of RSF withdrawals offsets the need for future borrowing, lowering debt service and lowering rates in the long term.

Because withdrawals from the RSF are included in debt service coverage, the fund's binding financial target, the proposed withdrawal to fund the capital program will result in debt service coverage above the target. To ensure the withdrawal would fund capital, the retail revenue requirement was calculated with total revenues totaling 1.70x debt service coverage. This calculated retail revenue requirement was held steady and $6.5 million was added as a withdrawal from the RSF. The increase in revenue for the debt service calculation raises debt service coverage from 1.70x to 1.78x in 2017.

[3] In general, revenues are recorded when billed and expenses when invoiced.

Table 3-9 presents projected RSF balances.

Table 3-9
Projected Water Revenue Stabilization Fund Balances

($1,000's)	2014 *	2016	$ Change	2017	$ Change
Beginning RSF Cash Balance	9,162	28,138		28,419	
Interest	136	281		284	
Deposit (Withdrawal)	0	0		(8,300)	
Ending RSF Cash Balance	**9,298**	**28,419**		**20,403**	
Cash used to support revenue requirement	0	0	0	1,800	1,800
Cash used to support capital financing	0	0	0	6,500	6,500

* 2014 assumptions used in 2012-2014 Rate Study

3.4.4. Use of Cash Balances (Other Funding Sources)

Revenue generated by rates is used to fund current operating expenses, maintain a cash balance as a safeguard against unexpected expense, and fund a portion of the current capital program. A rate may be set to increase, hold constant, or decrease the Water Fund's Operating Fund cash balances. Decreasing, or drawing down, a cash balance in a given year may lower rates in that year as that cash does not need to be received through rate revenues. However, just like other funding sources, what affects rates is not the level of funding in any one year, but the year-to-year change in funding from that source.

In most years, cash balances are not a large rate driver for the Water Fund as the year-end cash balance target increases by less than $0.5 million per year. However, that is not the case in this rate period. In 2016, $10 million is to be drawn down from the cash balance as a funding source for capital.

Table 3-10 below illustrates the changes in cash balances each year of the rate study.

Table 3-10
Change in Water Operating Fund Cash Balances

($1,000's)	2014 *	2016	$ Change	2017	$ Change
Beginning Cash Balance	7,899	25,000		15,000	
Ending Cash Balance	8,118	15,000		14,695	
Cash used to support revenue requirement	**(218)**	**10,000**	**10,218**	**305**	**(9,695)**

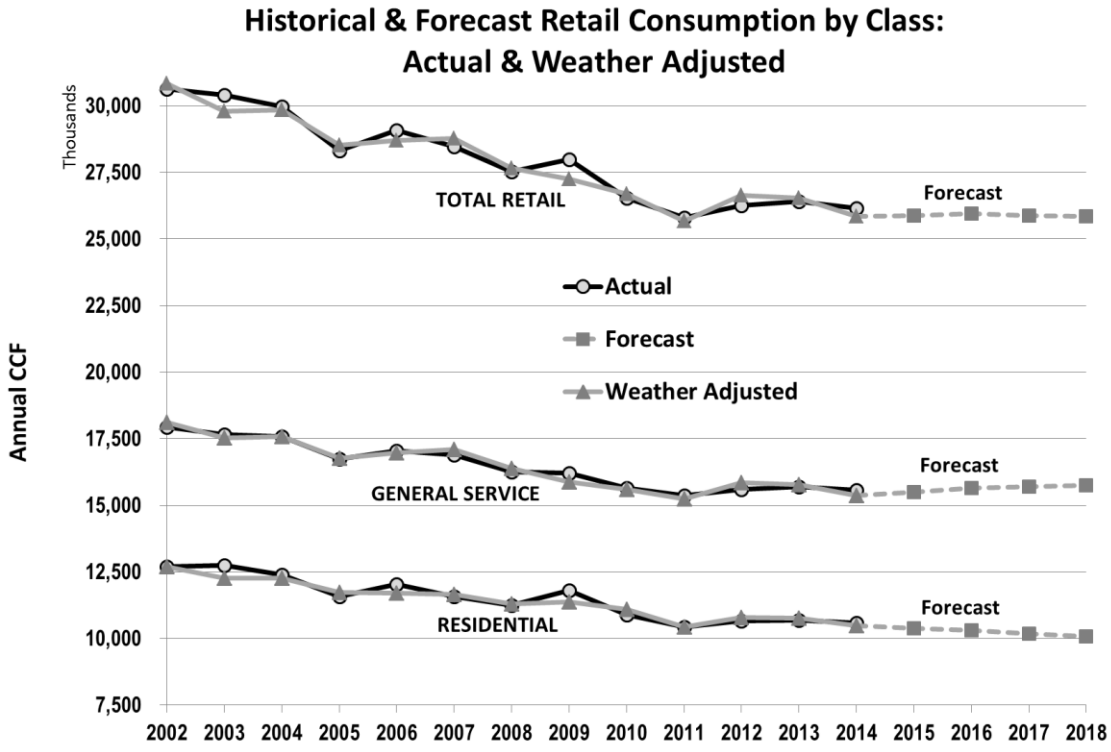
* 2014 assumptions used in 2012-2014 Rate Study

3.5. Effect of Demand (Rate Adjustment)

The volume of water sold to retail customers is projected to remain essentially flat over the forecast period. For the rate study period, total retail consumption is expected to be around 25.9 million CCF. Slightly falling residential consumption is anticipated to be offset by slightly increasing sales to general service customers.

Despite generally growing population and employment, water consumption through the 1990s and 2000s trended downwards due to various forms of conservation (programs, efficiency codes and standards, rising water and sewer rates, etc.). With the end of the 1% Conservation program in 2011 and a rebound in employment after the Great Recession, water consumption appears to have leveled off as shown in **Figure 3-1.** The effects of growth and conservation are forecasted to continue offsetting each other so that consumption remains close to current levels through the rest of the decade.

Figure 3-1



"Weather adjusted" consumption normalizes consumption to average historical summer weather.

SPU's forecast model was used to produce a short-term forecast for 2016 and 2017. The model is based on the following variables[4]:

- Households: Multifamily households are assumed to represent 85% of the total growth in the number of households.
- Employment: Employment is projected to grow 2.7 percent in 2015, 1.9 percent in 2016, 1.5% in 2017, and 1.3% percent in 2018.
- Growth in household income: Median household income is assumed to remain unchanged in real dollars through the forecast period.
- Growth in water and sewer rates: SPU projected rate increases through 2018.
- Estimates of conservation savings: Conservation is expected to reduce retail consumption by about 0.4 million gallons per day (mgd) or about 0.8% per year.

Based on the variables above, consumption levels are expected to hold at current levels despite the growth in households and employment. The results of the water demand model for residential and general service customers are shown in the Figure 3-1 and in **Table 3-11**.

Table 3-11
Short Term Water Consumption Forecasts (Annual ccf)

	Residential		Commercial		Total (Res + Com)	
Year	Consumption (ccf)	Percent Change	Consumption (ccf)	Percent Change	Consumption (ccf)	Percent Change
Actual*						
2013	10,753,400		15,778,727		26,532,127	
2014	10,475,879		15,373,019		25,848,898	
Projected						
2015	10,375,000	-1.0%	15,491,600	0.8%	25,866,600	0.1%
2016	10,308,700	-0.6%	15,656,800	1.1%	25,965,500	0.4%
2017	10,183,500	-1.2%	15,694,700	0.2%	25,878,200	-0.3%

* Weather Adjusted

For the above analysis, 2014 consumption was adjusted for weather and used as a base year. As a significant quantity of water is used for irrigation purposes during the summer, water sales depend on summer weather. The forecast model assumes the weather of a "normal" year in which summer weather is not particularly wet, dry, hot or cool. Actual demand will vary from forecast because summer weather varies.

[4] Economic variables from Conway's 10-year economic forecast (January 2015).

In terms of the impact of demand on water rates, small decreases in consumption are partially offset by an increase in the number of water meters. Water rates are made up of a fixed base service charge as well as a consumption charge. Water consumption is the unit of demand for the consumption charge while number of customers (measured by the number of meters) is the unit of demand for the base meter charge. When the number of meters increases, the customer base broadens. Residential meters are projected to increase by 0.4 percent annually, and commercial meters are projected to increase by a smaller amount during the 2016-2017 rate period.

As mentioned above, these combined changes in consumption and meters are a portion of the difference between the increase in revenue requirement and the increase in the rate. The effect for 2016-2017 is contained in **Table 3-12**. The 2016 effect is significant because of the relatively large increase in projected 2016 consumption relative to 2014 consumption. A small decrease is in consumption projected in 2017 has the effect of increasing rates.

Table 3-12
Effect of Demand on Rate Increase

	2014 *	2016	Change	2017	Change
Total Consumption	25,528	25,966	438	25,878	(87)
Total Retail Meters	192,745	192,848	103	193,635	787
Effect on Rate Increase			-1.1%		0.1%

* 2014 assumptions used in 2012-2014 Rate Study

3.6. Effect of Changes in the Utility Discount Program (Rate Adjustment)

Similar to demand, changes in customer participation in the UDP do not affect the Water Fund revenue requirement but do affect the rate increase. Increased participation in the program reduces revenues as more households are paying a discounted rate. The reduction in revenue must be made up through an increase in standard rates. Throughout the rate period, enrollment in low income rate assistance is forecast to rise as part of the Mayor's initiative to double enrollment by 2018. This rate study assumes roughly 14 percent increases in enrollment each year. The effect on rates is shown in **Table 3-13**.

Table 3-13
Effect of Changes to Rate Assistance Program on Rate Increase

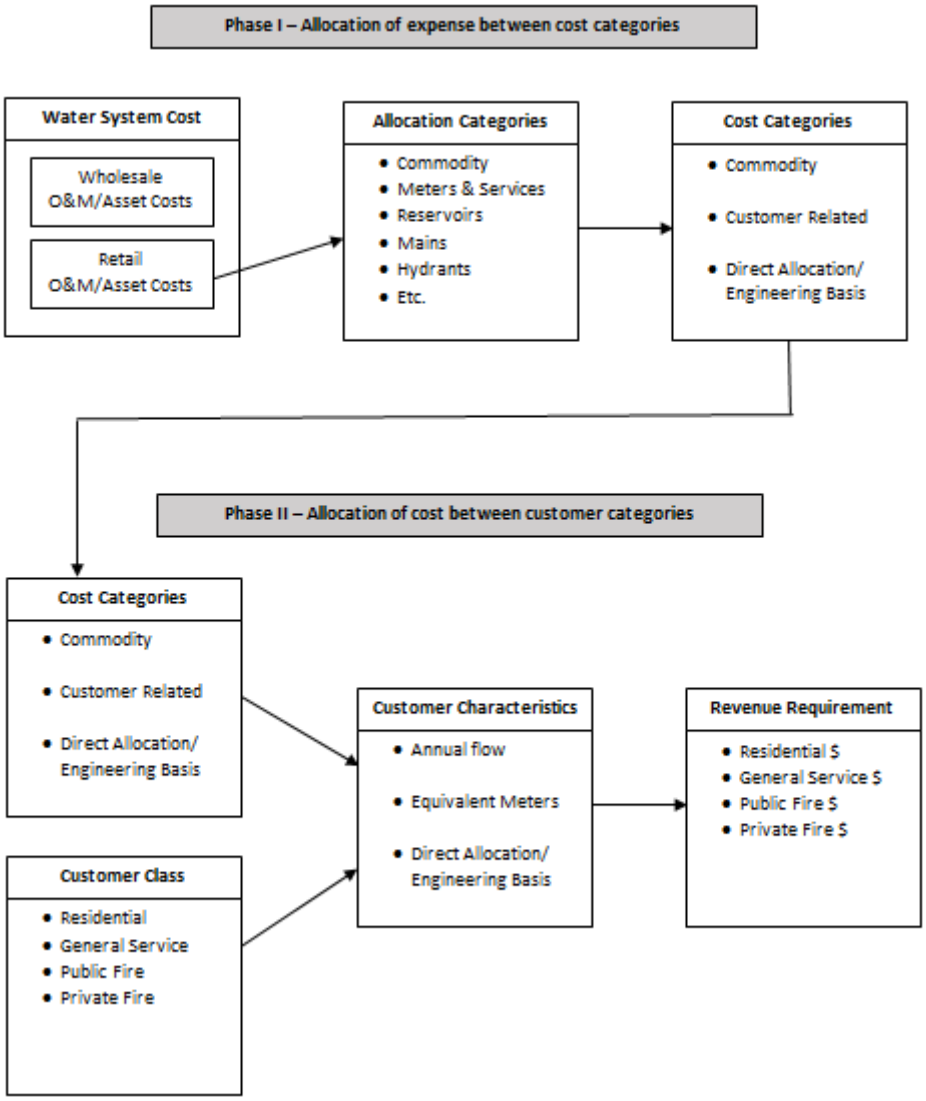
($1,000's)	2014 *	2016	$ Change	2017	$ Change
Total Discount	2,783	3,144	361	3,624	479
Effect on Rate Increase			0.2%		0.3%

* 2014 assumptions used in 2012-2014 Rate Study

4. COST ALLOCATION

Once the **retail revenue requirement** is set, it must be assigned to different customer classes. A customer class is a group of customers that places a unique cost on the utility or is administratively easier to serve as a group. **Figure 4-1** presents the multiple steps (divided into two phases) required to allocate water expense to individual customer classes. In the first phase, the retail component of water system expense is allocated between cost categories, or groupings of cost items, that are driven by similar factors. In the second phase, the cost assigned to each cost category is allocated between customer classes based on defined customer characteristics.

Figure 4-1
Cost Allocation Process



The cost allocation process presented above recognizes differences in the costs of providing service to different types of customers. For example a customer class with higher consumption requires increased use of the water treatment plants, whereas a customer class with more accounts requires increased use of the customer billing system.

The general framework for **Phase I** of the cost allocation process is presented in this chapter with complete details provided in Appendix A. This chapter, which focuses on **Phase II** of the cost allocation process, is organized as follows:

- Overview - cost categories
- Framework for allocation of retail water expense between cost categories (Phase I)
- Identification of customer classes and quantification of cost allocation characteristics
- Calculation of total cost of service, or revenue requirement, for each customer class

The current rate study does not propose any fundamental changes to the cost allocation methodology used in the prior rates process. The cost category of capacity was eliminated from this rate study; however the effect on final allocations is negligible. The change was made for two reasons:

1) due to falling demand, the current system is oversized from a cost allocation standpoint so very few assets were allocated using the capacity allocator, and
2) the difference in peaking characteristics of residential and general service has diminished as demand has fallen, so the allocator does not provide much distinction between customer classes.

4.1 Overview – Cost Categories

Retail water system costs are grouped into three main cost categories which can be allocated between customer classes based on customer characteristics: commodity, customer-related, and directly assigned. The costs assigned to the first two categories are shared among different customer classes based on characteristics such as total annual water volume and number of accounts. Costs included in the directly assigned category are assigned in their entirety to the applicable customer classes.

Commodity Costs. Commodity costs vary proportionately with the amount of water provided under average consumption conditions. These costs include items such as the Cedar and Tolt treatment plants, and chlorination at in-town reservoirs. They also include the cost of activities and assets that are shared with wholesale customers since the allocation between wholesale and retail is based on annual flow.

Customer-Related Costs. Customer-related costs encompass an umbrella of expenses associated with serving customers independent of the amount of water they use. These include the cost of meter maintenance and repair, meter reading, billing, customer accounting, and the call center.

Directly Assigned Costs. These are costs that are directly allocable to a single customer class. For this rate study, directly assigned costs are primarily fire hydrant asset and repair costs.

4.2 Framework for Allocation of Retail Expense to Cost Categories (Phase I)

The cost allocation framework for retail water rates uses the distribution of embedded or average costs from a prior period ("test year") to allocate future revenue requirements between different cost categories. Therefore, the 2016-2017 retail water system revenue requirements are assigned to customer classes based on the actual distribution of expense between those categories in 2013 (test year). The test year expense is defined according to a "utility basis" which is the sum of the following elements:

- Annual operations and maintenance (O&M) costs;
- Depreciation expenses on assets paid for by rates; and
- A return on assets calculated on infrastructure in service.

Phase I of the cost allocation involves the distribution of prior year expense between cost categories, as further described in Appendix A, Sections A1.2 and A1.3. Additional information on the "utility-basis" costing framework can be found in Appendix A, Section A1.1 to this study.

Table 4-1 presents the breakdown of 2013 retail water system expense by cost component (see **Appendix A** for the detail behind this data). As noted below, three-quarters of retail water system expense is driven by annual water flow (usage).

Table 4-1
Water Cost Component Summary

Component Cost Category	2013 Revenue	% of Total
Annual Flow	106,278,576	75.0%
Equivalent Meters	29,171,059	20.6%
Direct/Engineering Basis*	6,306,040	4.4%
Total	**141,755,675**	**100.0%**

*Public Fire

4.3 Retail Customer Classes and Characteristics

Retail water customers are divided into four customer classes.

- **Residential.** Customers living in single family or duplex residences.
- **General Service.** Commercial, governmental, and industrial customers as well as multi-family residential structures.
- **Private Fire.** The separately metered connections for fire-protection sprinkler systems installed on the customer's property. These customers pay a separate rate for these services in addition to their General Service or Residential rates for their domestic services.
- **Public Fire.** The governmental agencies responsible for providing public fire protection (hydrants).

Costs are assigned to these customer classes based on how the characteristics of each class drive water system costs. **Table 4-2** summarizes the allocator (customer characteristics) used to assign cost to each component cost category.

Table 4-2
Allocators by Cost Category

Allocation Category	Customer Characteristics	Comments
Commodity Costs	Annual flow	Actual 2013 total water consumption in hundreds of cubic feet (ccf).
Customer-related Costs	Equivalent Meters	Equivalent Meters is a weighted count of different sized meters by class (See Appendix A1.5 for calculation details).
Direct Assignment	Class specific expense assigned directly to applicable class	These are costs for activities or assets that are dedicated to one customer class only.

Table 4-3 quantifies the key characteristics (by class) that are used to allocate commodity, capacity and customer-related costs in the current rate study.

Table 4-3
Key Customer Characteristics

Customer Class	Annual Flow	Equivalent Meters
Residential	40.4%	70.7%
General Service	59.3%	20.0%
Private Fire	0.1%	9.3%
Public Fire	0.3%	0.0%
Total	**100.0%**	**100.0%**

As shown in the table, the residential class accounts for the majority of equivalent meters while the general service class accounts for the majority of annual water usage. Although public fire water use is not directly measured, the annual flow used is consistent with the estimate used for state non-revenue water reporting.

4.4 Cost of Service and Revenue Requirement by Customer Class

The customer characteristic percentages in Table 4-3 are applied to the appropriate 2013 allocation categories in Table 4-1 to determine each customer class' actual 2013 cost of service. **Table 4-4** summarizes the results of this allocation process.

Table 4-4
Retail Water Cost of Service Based on 2013 Actual Financial Data

Customer Class	Annual Flow	Equivalent Meters	Direct/ Engineering Basis	Total	% of Total
Residential	42,912,230	20,636,172	-	63,548,402	44.8%
General Service	62,998,862	5,820,239	-	68,819,101	48.5%
Private Fire	69,962	2,714,648	-	2,784,611	2.0%
Public Fire	297,522	-	6,306,040	6,603,562	4.7%
Total	**106,278,576**	**29,171,059**	**6,306,040**	**141,755,675**	**100.0%**

The allocations to the general service and residential customer classes account for the bulk (93 percent) of the retail water cost of service. Public and private fire represents only about seven percent of the total. The general service class is allocated the largest single share (48 percent). This class accounts for 59 percent of annual flows, which is applied to the largest portion of the water system revenue requirement.

The rate revenue requirements for each rate class are calculated by applying each class' percent of total 2013 cost to the 2016-2017 retail rates revenue requirements, with results as presented in **Table 4-5**.

Table 4-5
2016-2017 Retail Revenue Requirement
By Customer Class

Customer Class	2016	2017	Cost of Service Percentage
Residential	85,518,845	87,578,784	44.8%
General Service	92,611,771	94,842,562	48.5%
Private Fire	3,747,328	3,837,591	2.0%
Public Fire	8,886,596	9,100,652	4.7%
Total	**190,764,540**	**195,359,590**	**100.0%**

Using the same general allocation framework as the 2012-2014 rate proposal, there is very little movement in the cost shares by customer class. **Table 4-6** illustrates the small changes for the 2016-2017 rate study relative to the 2012-2014 rate study. See Appendix A for more information.

Table 4-6
Cost Shares by Customer Class

Customer Class	2012-2014 Rate Study	2016-2017 Rate Study
Residential	45.8%	44.8%
General Service	48.3%	48.5%
Private Fire	1.2%	2.0%
Public Fire	4.7%	4.7%
Total	**100.0%**	**100.0%**

5. RATE DESIGN

Rate design is the last element of the rate study. Chapter 3 presented the amount of retail water revenue required to fund proposed 2016-2017 O&M and capital programs while meeting adopted financial targets. Chapter 4 discussed the allocation of the revenue requirement between customer classes. This chapter identifies the rate structure and the proposed 2016-2017 rates, which will satisfy the retail revenue requirement and meet established rate design policy objectives.

The current rate study continues some rate design practices implemented in the previous rate study and are as follows:

- Proposed rates maintain meter and commodity rate parity between residential and general service customers[5].
- Proposed changes to meter charges utilize the meter cost analysis from the 2009-2011 rate study in determining the differential (or progression) between rates for different size meters.

Reversing the trend in the 2012-2014 rate study where commodity rates increased at a faster percentage than meter charges, this rate study increases meter charges at a faster rate to better match the results of the cost of service study.

No changes are proposed to some rates (larger meter charges), which are higher than their cost of service at current levels. Holding these rates constant rather than decreasing them somewhat mitigates the impact of the revenue requirement increase on the residential and general service commodity rate and provides rate stability.

The proposed rates increase the typical monthly residential bill by **$0.75** in 2016 and **$1.45** in 2017. The total increase over the two year period is **$2.20**. Typical residential consumption has remained 5.0 ccf per month in the 2016-2017 rate proposal, after declining 0.5 ccf per month in the 2012-2014 rate period. The exact increase in general service bills varies based on consumption and meter size. A typical convenience store would see increases of **$1.55 and $2.45** per month for 2016 and 2017, respectively. Likewise, a typical 90 unit apartment building would see increases of **$18 and $26** per month. Rates for public fire on larger mains **are flat in 2016 and increase 2.4 percent in 2017.** Private fire meter rates **increase 3.9 percent in 2016 and 1.6 percent in 2017.** There is no increase to private fire consumption rates.

[5] Both customer classes pay the same base charge for comparatively-sized meters and the same single commodity rate for off-peak water use. The general service peak commodity rate is set at the second tier peak rate for residential customers.

5.1 Rate Design Overview

A utility rate structure, or rate design, typically considers three elements: classification of customers served, billing frequency, and schedule of charges for each customer class. The schedule of charges or "rates" is designed to recover the utility's costs, given projected customer demand[6]. In addition to cost recovery, a rate structure should support and optimize a blend of various utility objectives and should work as a public information tool in communicating these objectives to customers.

5.1.1 Retail Water Rate Structure

Seattle's retail water customers are grouped into four broad customer classifications: Residential, General Service, Private Fire (e.g. building sprinklers), and Public Fire (municipal hydrants). SPU has developed rate structures for each of these customer classes which reflect the classes' cost of service structure, demand patterns, and policy objectives. A given rate class may be further divided into sub-classes. While the rate structure for each sub-class (under the same primary class) will be similar or identical, the actual rate assigned to each sub-class will vary based on actual differences in cost of service or historical contractual requirements. **Table 5-1** provides a summary of Seattle's retail water rate classes, subclasses, and associated rate structures.

Table 5-1
Retail Water Rate Structure Summary

Class	Sub-class	Rate Structure
Residential	• In-City • Out-of-City • Shoreline Franchise • Lake Forest Park Franchise • Master-Metered Developments	• Base Service Charge (meter-size based) • Single Off-Peak Commodity Rate • Tiered Peak Commodity Rate • Low-Income Rates
General Service	• In-City • Out-of-City • Shoreline Franchise • Lake Forest Park Franchise	• Base Service Charge (meter-size based) • Single Off-Peak Commodity Rate • Single Peak Commodity Rate

[6] Section 3.3 discusses projected customer demand and its influence on rates during the rate period.

Private Fire	• In-City • Out-of City • Shoreline Franchise • Lake Forest Park Franchise	• Base Service Charge (meter-size based) • Commodity Penalty Rate
Public Fire (hydrants)	N/A	• Charge for 4-inch mains • Charge for larger mains

Section 5.1.2 discusses the objectives that have been considered in the development of the rate structures outlined above. Sections 5.2 through 5.5 provide additional detail on the rate structures by customer class and subclass. **Appendix C** lists all 2016-2017 rate schedules by class and sub-class.

5.1.2. Rate Objectives

SPU staff, with input from past Rate Advisory Committees, has identified the following policy objectives for the retail water rate design:

- Provide financial soundness;
- Advance economic efficiency;
- Promote customer equity;
- Encourage customer conservation;
- Contribute to transparency and customer understanding; and
- Reduce impacts on low-income customers.

Certain of these objectives imply different directions in rate design than others. An appropriate rate design must strike the best overall balance among conflicting objectives. The first objective of financial soundness is overriding and should be met by all rate designs considered. The final objective of reducing impacts on low-income customers is partly met by a citywide program, in which SPU participates, to provide discounts to low-income and disabled customers. The remaining objectives are met to varying degrees by the individual rate structures, as further discussed in Sections 5.2 through 5.5.

5.2 Residential Rate Design

Residential accounts represent about 86 percent of total SPU retail water accounts. Residential customers are further broken into four subclasses: in-city customers, City of Shoreline/City of Lake Forest Park customers, other out-of-city customers, and master-metered customers. Low-income customers in any of these residential subclasses may qualify for a discount off their water utility bill. This section provides additional detail on the components of the residential rate design, the residential rate changes, residential rate subclasses and the UDP.

Under the proposed rates, rates increase a typical (median) single family residential bill by **$0.75** per month in 2016 and **$1.45** in 2017 (given constant consumption). The impact for different residential customers can vary based on the amount of water used, as presented in **Table 5-2**.

Table 5-2
Monthly Residential Bills at Proposed Rates

Customer Type	Monthly Consumption		2014 Adopted	2016 Proposed	Change from 2014	2017 Proposed	Change from 2016
Low Volume	Winter	2.9	$28.22	$28.82	$0.60	$30.09	$1.26
User	Summer	3.8	$33.24	$33.91	$0.67	$35.25	$1.34
(30th %tile)	**Average**	**3.2**	**$29.90**	**$30.52**	**$0.62**	**$31.81**	**$1.29**
Median	Winter	4.7	$37.20	$37.93	$0.73	$39.36	$1.42
User	Summer	5.5	$42.38	$43.17	$0.79	$44.67	$1.50
(50th %tile)	**Average**	**5.0**	**$38.93**	**$39.68**	**$0.75**	**$41.13**	**$1.45**
High Volume	Winter	9.8	$62.65	$63.74	$1.09	$65.62	$1.88
User	Summer	13.4	$92.66	$94.16	$1.51	$96.54	$2.37
	Average	**11.0**	**$72.65**	**$73.88**	**$1.23**	**$75.93**	**$2.05**
Typical 3rd Tier	Winter	10.3	$65.15	$66.27	$1.12	$68.20	$1.93
User	Summer	17.6	$119.28	$121.17	$1.88	$124.00	$2.84
	Average	**12.7**	**$83.19**	**$84.57**	**$1.38**	**$86.80**	**$2.23**

Note: All bill impacts are for in-city customers and assume a ¾" meter.

5.2.1. Residential Rate Structure

Residential customers pay a fixed base service charge plus a commodity rate. The commodity rate is a single rate in the off-peak season (September 16 – May 15) and a three-tiered rate structure in the peak season (May 16 – September 15).

Base Service Charge

The base service charge is a fixed monthly fee which varies by water meter size. This charge is structured to equitably distribute costs that are not related to the volume of water used (i.e. bill production, customer service, water service inspections, and meter reading, maintenance and replacement). The cost differential, or progression, between different meter sizes is based on 1) annualized costs, by meter size, for meter maintenance, testing, repair, replacement and service renewal; and 2) annual customer service costs. The progression used in this proposal is based on data from the 2009-2011 rate study.

Commodity Rate

Residential commodity rates are seasonal, with tiered peak (May 16 – September 15) rates and flat off-peak (September 16 – May 15) rates. Peak season rates are higher than off-peak rates and tiered for residential customers to provide a disincentive for wasteful summer water usage. During the off-peak season there is a single rate for all consumption.

Peak residential commodity rates consist of three tiers associated with differing usage volumes: 1) up to five ccf/month; 2) the next 13 ccf/month (six to 18 ccf); and 3) above 18 ccf/month. The third-tier water rates affect single-family residential (SFR) and duplex customers who use more than 36 ccf for a 60-day billing period (or more than 18 ccf for a 30-day billing period). Historically, one out of fifteen residential customers has some consumption at the third-tier level. In the past, the City has implemented a third-tier on a temporary basis to discourage water use under drought conditions. This tier became a permanent feature of the water rate structure in 2002 in response to the legal requirement of initiative I-63[7]. This rate study holds constant third-tier rates through 2017.

5.2.2. Residential Increase

This study includes increases in residential commodity rates and three-quarter-inch meter base service charges. Residential rate schedules by subclass are found in the following **Tables 5-3:**

[7] In October 2001, the Mayor and City Council adopted City of Seattle Ordinance No. 120532, otherwise known as I-63 Settlement Ordinance (I-63 SO). This ordinance established various measures designed to promote water conservation, including the creation of the "Everyone Can Conserve" program to fund water conservation in low-income housing. This ordinance also established the requirement for a residential summer peak use third block to be charged on residents and businesses that use extraordinary amounts of water.

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Table 5-3
Proposed Residential Rates

	Current Rate	2016 Rate	2017 Rate
Commodity			
Off-Peak ($/ccf)	$4.99	$5.06	$5.15
Peak ($/ccf)			
Up to 5 ccf/mo	$5.13	$5.20	$5.29
Next 12 ccf/mo	$6.34	$6.43	$6.54
Above 18 ccf/mo	$11.80	$11.80	$11.80
Base Service Charge			
3/4 inch	$13.75	$14.15	$15.15
1 inch	$14.20	$14.60	$15.60
1 1/2 inch	$21.85	$22.50	$24.10
2 inch	$24.20	$24.90	$26.65
3 inch	$89.65	$92.25	$98.80
4 inch	$128.45	$132.15	$141.50

Note: All rates above are in-city.

In 2016 and 2017 residential meter charges will go up 2.9 percent and 7.1 percent, respectively, per year. Currently, rates are aligned in a cost progression based on meter size, with the exception of the three-inch meter. The current three-inch charge is below the cost progression; however the percentage increases are matched to that of the three-quarter inch meter for this rate period in order to limit customer impact.

Commodity rates are increasing less than meter rates. Off-peak consumption rates are proposed to increase 1.4 percent and 1.8 percent in 2016 and 2017, respectively. Peak rates are increasing the same 1.4 percent in 2016, but 1.7 percent in 2017, with the exception that the third tier is not increasing in either year.

5.2.3. Residential Sub-Classes

The majority of Seattle Public Utilities' residential customers live within City limits (about 149,370 accounts). However, SPU also directly provides water service to about 10,570 residential customers in the City of Shoreline and City of Lake Forest Park, and 4,510 other residential customers who reside outside of City of Seattle boundaries. Each of these residential customer groups, or sub-classes, pay a different rate due to differences in cost of service and/or historic agreements governing these relationships. In addition, master metered residential developments (MMRD) comprise another residential sub-class with its own distinct rates.

Outside City Residential Rates (except Shoreline and Lake Forest Park)

SPU sets the base meter and commodity rates for SPU customers residing outside of Seattle City Limits at 14 percent greater than in-city rates. Certain characteristics of these areas increase the cost of service, including lower-density development and topography which limits the use of gravity fed systems. Both factors cause higher capital and operating costs (longer water mains, more pumping) per unit of water delivered. In addition, field crews, meter readers, inspectors, and other employees, along with vehicles and equipment, must travel farther to work on parts of the system that serve outside city customers.

Outside-City residential rates are found in Appendix C.

City of Shoreline/City of Lake Forest Park Residential Rates

SPU sets the base meter and commodity rates for SPU customers residing in Shoreline and Lake Forest Park approximately 21 percent higher than in-city rates. This rate surcharge is based on the 14 percent out-of-city surcharge (discussed above) plus an additional six percent to cover City of Shoreline and City of Lake Forest Park franchise fees. Since 1999, the City of Shoreline charges SPU a franchise fee on the water service SPU provides to Shoreline residents. This fee is set at six percent of total Shoreline customer revenue. All of the revenues from this fee are paid to the City of Shoreline and neither Seattle nor any water customer outside of Shoreline receives a benefit from the associated revenues.

In November 2009, the City of Lake Forest Park negotiated with SPU a six percent franchise fee for water service to Lake Forest Park customers. All of the revenues from this fee are paid to the City of Lake Forest Park and neither Seattle nor any water customer outside of Lake Forest Park receives a benefit from the associated revenues.

Shoreline and Lake Forest Park residential rates are found in Appendix C.

Master-Metered Residential Development Rates

These rates apply to residential developments with master meters of one and a half-inch or larger which operate and maintain their own distribution systems on private property. The water service to these developments primarily serves single-family detached residences on at least two separate legal parcels.

A separate rate structure was established for MMRD customers in 1995, with residential rates applying in the peak season and an escalated general service rate applying in the off-peak season. This rate structure recognizes the fact that MMRDs, although considered general service habitations, experience peak irrigation demands similar to those of residential customers. The off-peak (and second-tier peak) commodity rates for residential and general service were brought in sync in 2008, and therefore, MMRD rates are currently identical to residential rates. At present, all MMRD customers reside in Shoreline and pay Shoreline residential rates.

MMRD rates are found in Appendix C.

5.2.4. Utility Discount Program

The City assists qualified low-income customers with their water bills by providing a 50 percent credit on their utility bills, which is one of the most generous assistance policies in the nation. Income guidelines vary based on the number in the household, monthly income, and annual income. Income limits are updated every January and are based on 70 percent of the state median income.

Currently, about 12,700 water customers receive a utility discount. About half of these low-income assistance customers receive their credit on their SPU combined utility bill while the other half receives their credit through their City Light bill. For customers billed by SPU, the discount cuts their water bill in half. The City Light bill is used as the credit mechanism for customers who do not directly receive an SPU bill, such as customers living in apartment complexes, who typically receive a City Light bill but their utility costs for water, sewer and solid waste are included in their rent. These customers receive a fixed dollar credit via their City Light bill, which approximates the 50 percent discount.

Table 5-4 presents the discounts for 2016 and 2017.

Table 5-4
Rate Assistance Discounts

Customer-type	Adopted 2014	Proposed 2016	Proposed 2017
SPU-billed customers	50% Discount	50% Discount	50% Discount
Non-SPU-billed customers			
Single-family (Residential)	$19.46/month	$19.84/month	$20.57/month
Multi-family (Gen. Serv.)	$12.38/month	$12.38/month	$12.38/month

5.3. General Service Rate Design

General services accounts represent about 12 percent of total SPU retail water accounts. General Service customers are also broken into three subclasses: in-city customers, Shoreline/Lake Forest Park customers, and other outside-City customers. This section provides additional detail on the components of the general service rate design, the general service rate increase and general service rate subclasses.

The proposed rates will affect general service customers in varying degrees depending on the volume of water used. **Table 5-5** presents projected bill impacts for a sampling of general service customer types.

Table 5-5
Monthly General Service Bills at Proposed Rates

Customer Type	Monthly Consumption		2014 Adopted	2016 Proposed	Change from 2014	2017 Proposed	Change from 2016
Convenience	Winter	15.0	$89.05	$90.50	$1.45	$92.85	$2.35
Store	Summer	15.0	$109.30	$111.05	$1.75	$113.70	$2.65
(1" meter)	**Average**	**15.0**	**$95.80**	**$97.35**	**$1.55**	**$99.80**	**$2.45**
Small Office	Winter	49.9	$273	$277	$4	$284	$6
Building	Summer	56.8	$385	$390	$6	$398	$8
(2" meter)	**Average**	**52.2**	**$310**	**$315**	**$5**	**$322**	**$7**
Apartment	Winter	168.3	$929	$944	$14	$965	$22
Bldg (90 units)	Summer	247.3	$1,657	$1,682	$25	$1,716	$34
(3" meter)	**Average**	**194.6**	**$1,172**	**$1,190**	**$18**	**$1,215**	**$26**
Medium	Winter	1,180	$6,048	$6,135	$87	$6,253	$118
Hotel	Summer	1,559	$10,041	$10,186	$145	$10,369	$183
(6" meter)	**Average**	**1,307**	**$7,379**	**$7,486**	**$106**	**$7,625**	**$139**
Large	Winter	3,785	$19,086	$19,351	$265	$19,698	$347
Industrial	Summer	2,410	$15,478	$15,695	$217	$15,966	$271
(8" meter)	**Average**	**3,327**	**$17,884**	**$18,133**	**$249**	**$18,454**	**$321**

Note: All bill impacts are for in-city customers.

5.3.1. General Service Rate Structure

The general service rate structure is nearly identical to that for residential customers with a base service charge that varies by meter size and peak and off-peak commodity rates. In general, the discussion in Section 5.2.1 on these two rate components is applicable to general service rates.

The primary difference between the two rate structures is that general service customers do not have tiered peak rates[8]; all peak consumption is charged at a single rate. In addition, the general service base

[8] The residential first tier peak rate is intended as a "lifeline" rate and as such does not apply to general service. The third tier peak rate is intended to capture "excessive" or "wasteful" water consumption. Because each general service customer has a different level of consumption, SPU would not be able to set a threshold amount above which consumption is considered excessive.

service charge progression includes several larger meter rates which are not applicable to residential customers.

SPU will continue with parity between residential and commercial rates as long as each customer class can roughly recover its allocated cost of service and meet policy goals under these circumstances. In this rate proposal rate parity is continued. Proposed 2016-2017 commodity and base service charges for the two classes are virtually identical[9].

5.3.2. General Service Increase

This rates study maintains the parity between general service and residential rates described in 5.3.1, with the same increases for general service and residential meter and consumption rates (see 5.2.2 for further detail on proposed increases). With respect to larger meter rates not applicable to residential customers, rates for meter sizes ten-inch and larger remain at 2014 rate levels to recognize that these rates are already high relative to smaller meter rates. Six-inch meters will increase at the same proportion as three-quarter-inch meters in both years, while eight-inch meters only increase in 2017.

General service rates are shown in **Table 5-6**:

[9] The general service peak rate is equal to the second tier residential peak rate.

Table 5-6
General Service Rates

	Current Rate	2016 Rate	2017 Rate
Commodity			
Off-Peak ($/ccf)	$4.99	$5.06	$5.15
Peak ($/ccf)	$6.34	$6.43	$6.54
Base Service Charge			
3/4 inch	$13.75	$14.15	$15.15
1 inch	$14.20	$14.60	$15.60
1 1/2 inch	$21.85	$22.50	$24.10
2 inch	$24.20	$24.90	$26.65
3 inch	$89.65	$92.25	$98.80
4 inch	$128.45	$132.15	$141.50
6 inch	$158.05	$162.65	$174.10
8 inch	$199.00	$199.00	$205.00
10 inch	$297.00	$297.00	$297.00
12 inch	$402.00	$402.00	$402.00
16 inch	$477.00	$477.00	$477.00
20 inch	$614.00	$614.00	$614.00
24 inch	$771.00	$771.00	$771.00

Note: All rates above are in-city.

5.3.3. General Service Sub-Classes

As with residential accounts, the majority of Seattle Public Utilities' general service customers are located within City limits (about 21,300 accounts). In addition, SPU directly provides water service to 580 general service customers in the City of Shoreline and City of Lake Forest Park, and 390 other general service customers outside of City boundaries. Similar to residential accounts, Shoreline and Lake Forest Park general service customers pay a 21 percent surcharge over the in-city general service meter and commodity rates and other outside-City customers pay a 14 percent surcharge. For further details, see Section 5.2.3.

5.4. Private Fire Rate Design

Private fire rates are charged for water service to fire sprinkler systems located on a customer's property. Private fire service customers pay a **flat monthly meter base charge** which varies with meter size. This base fee includes an allowance for water consumption for testing and pump cooling. The monthly allowance is five ccf for meters up to six inches and 10 ccf for meters eight inches and larger. A **penalty charge** ($20.00/ccf) is assessed on non-fire related consumption in excess of the allowed amounts.

Fire service rates for inside city customers are presented in the **Table 5-7** below.

Table 5-7
Private Fire Rates

	Current Rate	2016 Rate	2017 Rate
Commodity			
Penalty Charge ($/ccf)	$20.00	$20.00	$20.00
Base Service Charge			
2 inch	$15.40	$16.00	$16.25
3 inch	$20.00	$21.00	$21.00
4 inch	$37.00	$38.00	$39.00
6 inch	$63.00	$65.00	$66.00
8 inch	$100.00	$104.00	$105.00
10 inch	$144.00	$150.00	$152.00
12 inch	$210.00	$218.00	$222.00

Note: All rates above are in-city.

Private fire service rate schedules by subclass are found in Appendix C of this study.

Similar to other retail customers, Shoreline and Lake Forest Park private fire customers pay a 21 percent differential over the in-city private fire rates and other outside-city customers pay a 14 percent differential. For further details, see Section 5.2.3.

5.5. Public Fire Rate Design (Hydrants)

Fire hydrants provide water used by public fire departments to fight fires. Most fire hydrants owned by SPU are located within the City of Seattle. The majority of other hydrants are in retail service areas just north or south of the city limits. In order to more closely associate the cost of providing water for firefighting with the customers that use this water, SPU directly charges local governments an annual fee for public fire service. Charging local governments for the public fire service within their jurisdiction ensures that this portion of revenue requirement is not borne by Seattle's retail customers.

5.5.1. Rate Structure

Public fire customers are charged ***a flat annual fee*** which varies based on the size of main attached to the hydrant. SPU has established two different flat rates for fire service to reflect both service level and cost differences between four-inch and larger mains[10]. Four-inch mains provide substantially lower fire flows than larger mains. In addition, four-inch mains, while sufficient for domestic service, generally do not meet current state installation standards for mains supporting hydrants. Consequently, all of the cost of over-sizing water mains to provide fire flow, about half of total hydrant service cost, is assigned to larger mains. The remaining costs are shared between two rates based on the number of units, or hydrants. Hydrants connected to larger mains currently account for about 99 percent of all units within the SPU service area.

5.5.2. Public Fire Rate Increase

This study proposes a 2016 rate *decrease* in the four-inch main rate and uniform rate increases for both the four-inch and larger mains rates in 2017. **Table 5-8** presents the proposed 2016-2017 public fire rates.

Table 5-8
Public Fire Rates

	Current Rate	2016 Rate	2017 Rate
4-inch Mains	$230.48	$197.67	$202.43
Larger Mains	$480.16	$480.16	$491.53

The 2016 changes are due to three primary factors: a) unchanging costs from 2014 to 2016, b) an increase in the total number of hydrants, and c) an increase in the number of larger main units relative to four-inch units since the last rate study. The combination of flat costs and increasing total hydrants lowers rates. However, the shift to larger main hydrants increases the allocation of non-main expense towards larger main hydrants and keeps the large main rate flat while decreasing the four-inch rate.

[10] State requirements for hydrant service have become progressively more stringent over the last century. Four-inch mains were considered sufficient to provide fire flows when originally installed. Now, a minimum of six inches is required. Most areas with both domestic and fire flow demands require a minimum of eight-inch mains.

Table 5-9 presents projected annual bills for public fire customers at proposed rates.

Table 5-9
Annual Public Fire Bills at Adopted Rates

	Hydrant Count			2016	2017
	4-Inch Mains	Larger Mains	Total	Bill	Bill
Seattle	124	17,058	17,182	$8,215,148	$8,409,546
Burien	40	118	158	$64,566	$66,097

APPENDIX A: COST ALLOCATION DETAILS

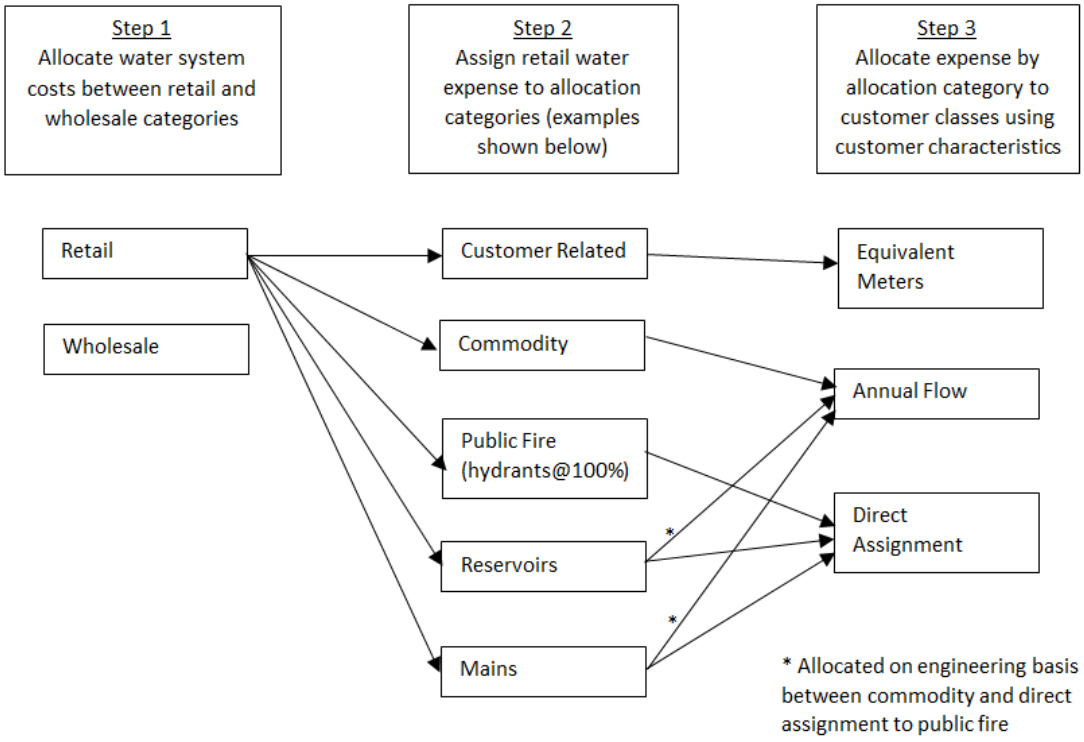
Chapter 4 contained an overview of how the 2016-2017 water revenue requirements were allocated to each cost category. This Appendix provides the detail behind those allocations.

SPU uses imbedded, or historical cost of service from a test year (2013 for this rate study), to determine the percentage of revenue to be assigned to each customer class in the rate-setting period. The costs from the test year are broken into service-based allocation categories that are then allocated to cost categories based on defined customer characteristics. The resulting percentages from the test year are then applied to the 2016-2017 revenue requirements.

Three steps are required to determine the revenue split between test year cost component categories:

1. Allocation of water system expense into retail and wholesale buckets.
2. Allocation of retail water expense between different allocation categories.
3. Allocation of the cost assigned to each allocation category between cost categories.

Figure A1-1
Assignment of Water System Expense to Cost Component Categories
Allocation Steps



Prior to launching into the details of the separate steps, however, it is important to provide some context.

A1.1. Cost Allocation Context

The test year cost of service is calculated using a utility-based cost method whereby test year revenue (or total cost) is the sum of three components: O&M expense, depreciation expense, and a return on plant in service. The cost allocation steps described in Sections A1.2 thru A1.4 are applied separately to each of the three cost components. Below is a description of each these components within the context of the current rate study.

O&M. Total O&M spending is equal to O&M presented in the test year (2013) Water Fund audited financial statements, excluding debt service, depreciation, and certain accrued expenses.

Depreciation (use of capital assets). Total depreciation is equal to the amount presented in the 2013 Water Fund audited financial statements, excluding depreciation on contributed assets (those assets, such as water meters, whose installation was paid for directly by individual customers).

Return on Assets. This is the result of applying an "interest rate" (rate-of-return or ROR) to the net book value of plant in service. Plant in service is equal to the amount presented in the 2013 audited financial statements, excluding contributed assets. Two rates of return are used in this cost allocation. "Regional" assets (assets that are shared with the wholesale customers and whose costs are allocated to wholesale – primarily watersheds and transmission assets) use the rate-of-return as defined in the wholesale contracts (6.2 percent in 2013). The rate-of-return on retail assets (i.e., everything that is not regional) is adjusted so that the total rate-of-return is equal to the difference between total retail service revenue and the sum of O&M and depreciation in the test year. Therefore,

(Retail portion of Regional assets*Regional ROR)
+ (Retail assets*Retail ROR)
+ Retail portion of Depreciation
+ Retail portion of O&M
= Retail revenue

where all values are for the 2013 test year. The rate-of-return on only retail assets for 2013 is 4.2 percent.

A1.2. Step One: Water System Expense Allocation

The first step is to allocate test year expenses between wholesale and retail. This is similar to the split that is done to determine the wholesale revenue requirement for each year of the rate study.

Both wholesale customers (suburban municipalities and water districts) and Seattle's direct service retail customers share the cost of the "regional" portion Seattle's water system, including facilities such as the watersheds and transmission pipelines. In addition, the system includes certain "subregional" assets, such as the West Seattle and Des Moines pipelines, which serve both Seattle retail customers and wholesale customers in the applicable subregions.

This step begins by assigning O&M and asset costs (depreciation and return on plant) to regional, subregional, and retail buckets. The regional O&M costs are then "grossed up" using various percentages specified in the contracts to reimburse the Water Fund for additional general and administrative overhead costs not directly included in the regional bucket. The mechanics of this are similar to the G&A allocation used for CIP, including the need to create a corresponding regional credit to avoid counting expenses twice.

The resulting regional costs, subregional costs, and regional credit are then split by annual flows (as per contracts) between wholesale and retail customers. For 2013, 48 percent of regional costs went to wholesale and 52 percent to retail. The 2013 split of all subregional costs was 12 percent to wholesale and 88 percent to retail. The portion of the regional credit that retail receives is the amount it would pay under the contracts as a wholesale customer, so it is 52 percent.

Table **A1-1** presents Seattle's share of combined O&M, depreciation, and return on asset expense in the 2013 test year.

Table A1-1
Seattle's Share of Water System Utility-based Expense (2013)

	System Expense	Retail Share	
Regional Expense	82,924,573	51.9%	43,038,367
Regional Credit	(26,086,985)	51.9%	(13,539,307)
Sub-regional Expense	4,076,007	87.7%	3,573,040
Retail Expense	108,683,575	100.0%	108,683,575
Total	**169,597,169**		**141,755,675**

A1.3. Step Two: Allocation of Retail Expense to Allocation Categories

In Step Two, the retail share of each O&M activity and water asset (for depreciation and return on plant allocation) during the test year is assigned to one of seven allocation categories. This is an intermediate step which groups assets and services to then be allocated using customer characteristics (described in section A1.4). **Table A1-2** presents the distribution of actual 2013 retail expense between the various allocation categories.

Table A1-2
2013 Retail Water Expense by Allocation Category

Allocation Categories	O&M	Depreciation	Return on Plant	Total Retail Expense
Commodity	25,203,470	14,266,337	22,574,466	62,044,273
Accounts	8,002,017	6,776,691	6,403,909	21,182,618
Public Fire	12,089	89,717	160,761	262,567
Reservoirs	995,547	2,070,965	5,612,551	8,679,063
Mains	723,086	2,517,227	7,104,438	10,344,752
Asset Composite	8,900,085	-	-	8,900,085
Overall Composite	23,699,457	9,171,381	(2,528,521)	30,342,318
Total	**67,535,752**	**34,892,319**	**39,327,604**	**141,755,675**

A1.4. Step Three: Allocation of Expense by Allocation Category to Cost Component Categories

In Step Three, each allocation category from Step Two is distributed between the cost component categories. Some of these are fairly straightforward (e.g. commodity is allocated by annual flow) and some are a little more complicated. The details of each assignment follow in Table A1-3.

Table A1-3
Allocation Factors for Assignment of Retail Expense
To Cost Component Categories

	Cost Categories		
Allocation Categories	**Annual Flow**	**Equivalent Meters**	**Direct/ Engineering Basis**
Commodity	100.0%		
Accounts		100.0%	
Public Fire			100.0%
Reservoirs	99.7%		0.3%
Mains	60.0%		40.0%
Asset Composite	74.4%	19.6%	6.0%
Overall Composite	75.0%	20.6%	4.4%

Commodity. This category is primarily made up of the regional and subregional costs identified in Step One. These costs are assigned to the commodity category because annual flow is what drives the cost to retail ratepayers.

Accounts. This category contains costs such as service replacements and meter testing and repair, which vary by meter size. It also includes customer related expenses which do not vary significantly with water usage or meter size, such as the Water Fund's share of the CCSS billing system, communication equipment (Interactive Voice Response) and other IT investments. Costs are allocated using a factor called "equivalent meters" that assigns a higher weight to larger meters. Additional details on equivalent meters are in Section A1.5.

Public Fire. These categories include expenses which are directly attributable to public fire service, such as hydrant repair and flow testing

Reservoirs. Reservoirs provide a source of water during fires as well as water for domestic purposes. Their cost is allocated to these uses based on an engineering analysis of the proportion of capacity devoted to each use. Further information on this allocator is in Section A1.6.

Mains. Watermains are sized to meet fire flow requirements and domestic demands for water. The cost for this allocation category is split between public fire and annual flow categories based on the proportional share of total installed main cost attributed to fire uses and to domestic uses. Section A1.7 contains a detailed description of this calculation.

Asset Composite. This category includes items that support the Water Fund's asset base, such as Maximo and the stage gate process. The allocation among customer characteristics is the average allocation of all previously assigned asset costs.

Overall Composite. This category includes costs that support the overall Water Fund, such as Finance and the Director's Office. The allocation among customer characteristics is the average allocation of all costs.

The application of the allocation factors identified in Table A1-2 to the test year (2013) expense by allocation category in Table A1-3 gives us the distribution of actual test year costs between cost component categories, as presented in **Table A1-4** below.

Table A1-4
Retail Component Cost Allocation
2013 Cost of Service (O&M + Depreciation + Rate-of-Return)

		Cost Categories		
Allocation Categories	**Total Retail Expense**	**Annual Flow**	**Equivalent Meters**	**Direct/ Engineering Basis**
Commodity	62,044,273	62,044,273		
Accounts	21,182,618		21,182,618	
Public Fire	262,567			262,567
Reservoirs	8,679,063	8,653,026		26,037
Mains	10,344,752	6,206,851		4,137,901
Asset Composite	8,900,085	6,625,861	1,744,476	529,749
Overall Composite	30,342,318	22,748,566	6,243,965	1,349,786
Total	**141,755,675**	**106,278,576**	**29,171,059**	**6,306,040**

These costs are then divided among customer classes based on the characteristics of each customer class. This step is discussed in detail in Sections 4.1 and 4.2.

A1.5. Calculation of Equivalent Meters Allocator

Section 4.3 in Chapter 4 discusses the use of the equivalent meters allocator to assign certain customer-service related expense between customer classes.

For customer related expenses, a hybrid allocator was used to reflect that some costs vary with meter size (e.g. meter repair), and some do not (e.g. customer billing). The first step was to calculate the percentage of meters by customer class, with private fire discounted 50% to reflect that these meters are typically secondary meters on a domestic account.

Table A1-5
Step 1 of Equivalent Meters Calculation - Meters by Customer Class

	0.75	1	1.5	2	3	4	6	8	10	12	16	20	24	Total	Percentage
Residential	144,943	16,924	1,251	449	1	1	1	1	-	-	-	-	-	163,571	87.0%
General Service	6,858	5,226	3,685	4,651	496	812	335	118	36	7	-	2	-	22,226	11.8%
Private Fire @50%	103	1	2	317	14	784	641	367	14	5	-	-	-	2,246	1.2%
Total	**151,904**	**22,151**	**4,938**	**5,417**	**511**	**1,597**	**977**	**486**	**50**	**12**	**-**	**2**	**-**	**188,043**	**100%**

Step two is to calculate the percentage of meters per customer class after weighting the meter counts using standard AWWA meter progression ratios by meter size. Similar to step one, the private fire ratios were discounted 50% to reflect that these meters are typically secondary meters on a domestic account.

Table A1-6
Step 2 of Equivalent Meters Calculation – Weighted Meter Counts by Customer Class

	0.75	1	1.5	2	3	4	6	8	10	12	16	20	24	Total
Residential Count	144,943	16,924	1,251	449	1	1	1	1	-	-	-	-	-	
Weighting Factor	1	2	3	5	10	17	33	53	77	143	250	325	420	
Residential Weighted Count	**144,943**	**28,771**	**4,128**	**2,380**	**10**	**17**	**33**	**53**	**-**	**-**	**-**	**-**	**-**	**180,335**

	0.75	1	1.5	2	3	4	6	8	10	12	16	20	24	Total
General Service Count	6,858	5,226	3,685	4,651	496	812	335	118	36	7	-	2	-	
Weighting Factor	1	2	3	5	10	17	33	53	77	143	250	325	420	
Gen Svc Weighted Count	**6,858**	**8,884**	**12,161**	**24,650**	**4,960**	**13,560**	**11,156**	**6,289**	**2,761**	**1,003**	**-**	**650**	**-**	**92,933**

	0.75	1	1.5	2	3	4	6	8	10	12	16	20	24	Total
Private Fire Count	206	1	4	634	27	1,567	1,282	734	28	9	-	-	-	
Weighting Factor @50%	0.5	0.9	1.7	2.7	5.0	8.4	16.7	26.7	38.4	71.7	125.0	162.5	210.0	
Private Fire Weighted Count	**103**	**1**	**7**	**1,680**	**135**	**13,084**	**21,345**	**19,561**	**1,074**	**645**	**-**	**-**	**-**	**57,635**

Table A1-7
Step 2 of Equivalent Meters Calculation – Weighted Meter Percentages

	Total	Percentage
Residential Weighted Count	180,335	54.5%
Gen Svc Weighted Count	92,933	28.1%
Private Fire Weighted Count	57,635	17.4%
Total	**330,903**	**100%**

The last step is to average the results of step one and step two. The hybrid allocator produced is used to allocate customer related expenses between customer classes.

Table A1-8
Equivalent Meters Allocation Percentage Basis

	Allocation on Meter Count Basis	Allocation on Weighted Basis	Hybrid Allocation
Residential	87.0%	54.5%	**70.7%**
General Service	11.8%	28.1%	**20.0%**
Private Fire	1.2%	17.4%	**9.3%**

A1.6. Allocation of Reservoirs to Public Fire

The allocation of reservoirs to public fire was updated for this rate study since the reservoir covering projects are nearly complete. (Note that for the rate study, "reservoirs" includes reservoirs, tanks, and standpipes.) From an allocation perspective, there are two types of reservoirs: regional/subregional reservoirs whose costs are shared with wholesale customers and those that are retail only. As discussed in Section 4, the retail portion of regional and subregional assets are considered commodity assets since the wholesale/retail split is determined by consumption. In other words, if a particular retail customer class uses more water, they will cause a higher portion of costs to be allocated to retail customers. Therefore, costs are caused by commodity regardless of the nature of the underlying asset.

For retail only reservoirs, detailed reservoir sizing is used to develop an overall allocation between public fire and commodity. For most reservoirs there is no dedicated fire storage, since water is available to the reservoir under gravity flow. It is only reservoirs that rely on pumped water for refill that have a dedicated amount of storage for public fire. That amount of dedicated storage is determined as 8,000

gpm for 15 minutes (equal to 0.12 MG), which is the response time needed to restore water flow to each of the non-gravity supplied reservoirs by remote start of a diesel pump or by activating a turbine driven pump. **Table A1-9** is based on reservoir data from SPU's 2013 Water System Plan.

Table A1-9
Reservoir Capacities

Millions of Gallons (MG)	Capacity	Storage Required
Retail Reservoirs		
Bitter Lake	21.30	N/A
Beacon	50.00	N/A
Lincoln	12.70	N/A
Magnolia	5.50	0.12
Myrtle	5.00	0.12
View Ridge	2.50	N/A
Roosevelt	50.30	N/A
Volunteer	20.50	N/A
Retail Tanks		
Charlestown	1.30	0.12
Queen Anne	1.90	0.12
North Trenton	1.20	N/A
South Trenton	1.20	N/A
Volunteer Park	0.90	0.12
Magnolia Bluff	1.00	N/A
Total	175.30	0.60
Percentage allocated to Public Fire		**0.3%**

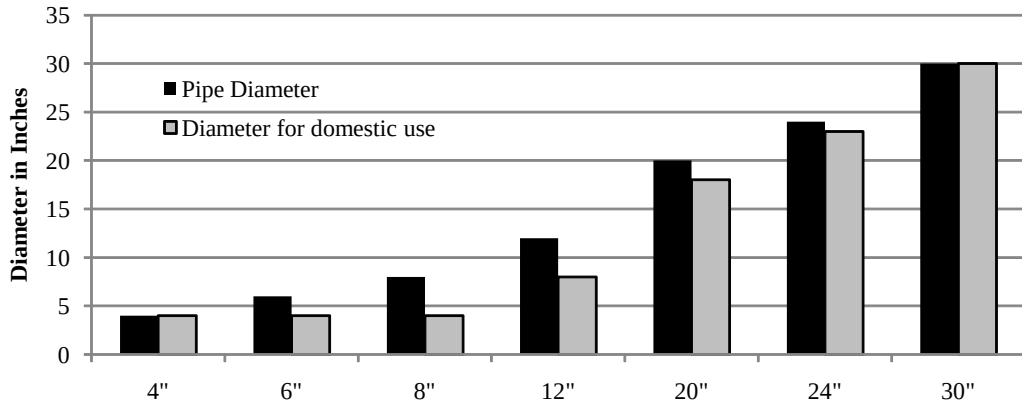
A1.7. Calculation of Watermains Allocator

Watermains are sized to meet fire flow requirements and domestic demands for water. In sizing the watermain, the pipe must have sufficient capacity to meet two separate criteria; (i) peak hour domestic demand and (ii) peak day domestic demand + fire flow requirements. For medium and small-size pipes (8 inch diameter or less) the second criteria will be the binding constraint. For larger size pipe i.e., pipes that are serving very large areas or areas with very dense developments, the first criteria (peak hour demand) will be the binding constraint.

The most common size pipe in Seattle's system is, by far, an 8 inch diameter pipe. In areas served by 8 inch mains, domestic peak hour flows, i.e., the first criteria, can typically be met with 4 inch mains. The

oversizing from 4 inch to 8 inch is needed to meet the second criteria. Taking into account that hydraulic capacity grows exponentially with the diameter of the pipe, this means about 25 percent of the 8 inch pipe is serving domestic flows and 75 percent is providing fire protection. Pipes smaller than 8 inch were installed on the system when the fire flow requirements were lower than they are today. For this allocation exercise, the cost of 4 inch mains were assigned to domestic service and the cost of 6 inch mains were assigned to public fire protection. For pipes larger than 8 inch, the share of capacity needed for fire flows shrinks until we reach pipes with diameters of 30 inch or more. The graph below shows the relationship between pipe size and fire flow requirements expressed in diameters.

Figure A1.2
Actual Pipe Diameters versus Diameter Required for Domestic Use



Pipe Diameter	4	6	8	12	20	24	30
Diameter for domestic use	4	4	4	8	18	23	30
Capacity for domestic use	100%	44%	25%	44%	81%	92%	100%

The cost of watermains is split between fire protection and domestic uses based on each group's proportionate share of total watermain asset value. The calculation of this asset value takes into account the shares of hydraulic capacity discussed above. The steps to determining the appropriate allocation for watermain assets are as follows:

1. Estimate net book value by pipe size for all the mains in the system. SPU financial systems track net book value for total water mains but not by pipe size. For the purposes of this allocation, net book value by pipe size is estimated by applying estimated accumulated depreciation to estimated replacement cost by pipe size. An adjustment factor is then applied in order to adjust each pipe size so that the total estimated net book value equals actual total watermains net book value as of 12/31/13. Estimated replacement cost and by pipe size is determined as follows:

Estimated Replacement Cost = ($Cost/ LF_d) x (LF_d)

Where $Cost/ LF_d = the replacement cost per lineal feet of a pipe of diameter 'd,' and
LF_d = the number of lineal feet in the system of pipe of diameter 'd' as of 2013.

Using cost indices by year installed, the replacement cost net book value is converted to an estimated original net book value by year installed.

2. Determine cost associated with fire protection service.

   Fire Protection Net Book Value =
   $\sum$ (Hydraulic Capacity for $Fire_d$) ÷ (Hydraulic Capacity of $Pipe_d$) x (Net Book Value by Pipe Length)

3. Determine the proportion of the watermain net book value devoted to fire protection.

   Proportion of costs for fire protection =
   (Fire Protection Net Book Value) ÷ (Total Net Book Value)

The percentage share determined in Step Three is then used to assign watermain costs to fire protection. Using the above methodology, the cost share assigned to fire protection for this rate period is 40 percent.

APPENDIX B: INFORMATIONAL TABLES

B1.1. Residential Rate History

Effective Date:	1/1/07	1/1/08	1/1/09	3/31/09*	1/1/10*	1/1/11	1/1/12	1/1/13	1/1/14
Residential - Inside Seattle									
Commodity Rate (per ccf)									
Off-Peak	$2.53	$2.62	$2.95	$3.25	$3.50	$3.62	$4.04	$4.50	$4.99
Peak 1st Block	$2.88	$2.88	$3.25	$3.58	$3.86	$3.98	$4.34	$4.73	$5.13
Peak 2nd Block	$3.35	$3.35	$3.78	$4.17	$4.49	$4.63	$5.15	$5.72	$6.34
Peak 3rd Block	$8.55	$8.55	$9.64	$10.62	$11.44	$11.80	$11.80	$11.80	$11.80
Meter Charge ($s/mtr/mo)									
3/4 inch	$8.05	$9.40	$10.60	$11.68	$12.56	$13.00	$13.25	$13.50	$13.75
1 inch	$8.60	$10.00	$10.90	$12.01	$13.00	$13.40	$13.65	$13.90	$14.20
1 1/2 inch	$13.60	$14.50	$16.90	$18.62	$19.95	$20.70	$21.05	$21.45	$21.85
2 inch	$21.00	$21.70	$22.50	$24.80	$25.57	$22.90	$23.35	$23.75	$24.20
3 inch	$47.30	$55.30	$69.10	$76.15	$81.88	$84.70	$86.35	$88.00	$89.65
4 inch	$79.00	$92.20	$99.00	$109.10	$117.36	$121.40	$123.75	$126.10	$128.45
Utility Credit									
Fixed Credit (per month)	$12.50	$13.35	$13.88	$15.30	$16.46	$17.02	$16.97	$18.19	$19.46
Commodity Rate (per ccf)									
Off-Peak	$1.27	$1.31	$1.48	$1.63	$1.75	$1.81	$2.02	$2.25	$2.50
Peak 1st Block	$1.44	$1.44	$1.63	$1.79	$1.93	$1.99	$2.17	$2.37	$2.57
Peak 2nd Block	$1.68	$1.68	$1.89	$2.08	$2.25	$2.32	$2.58	$2.86	$3.17
Peak 3rd Block	$4.28	$4.28	$4.82	$5.31	$5.72	$5.90	$5.90	$5.90	$5.90
Meter Charges (Discount)	50%	50%	50%	50%	50%	50%	50%	50%	50%

* Includes 10.2% Surcharge

Effective Date:	1/1/07	1/1/08	1/1/09	3/31/09*	1/1/10*	1/1/11	1/1/12	1/1/13	1/1/14
Residential - Outside Seattle									
Commodity Rate (per ccf)									
Off-Peak	$2.88	$2.99	$3.36	$3.70	$4.00	$4.13	$4.61	$5.13	$5.69
Peak 1st Block	$3.28	$3.28	$3.71	$4.09	$4.40	$4.54	$4.95	$5.39	$5.85
Peak 2nd Block	$3.82	$3.82	$4.31	$4.75	$5.11	$5.28	$5.87	$6.52	$7.23
Peak 3rd Block	$9.75	$9.75	$10.99	$12.11	$13.04	$13.45	$13.45	$13.45	$13.45
Meter Charge ($s/mtr/mo)									
3/4 inch	$9.20	$10.70	$12.10	$13.33	$14.33	$14.80	$15.10	$15.40	$15.70
1 inch	$9.80	$11.40	$12.40	$13.66	$14.88	$15.30	$15.55	$15.85	$16.20
1 1/2 inch	$15.50	$16.50	$19.30	$21.27	$22.70	$23.60	$24.00	$24.45	$24.90
2 inch	$23.90	$24.70	$25.70	$28.32	$29.09	$26.10	$26.60	$27.10	$27.60
3 inch	$53.90	$63.00	$79.00	$87.06	$93.34	$96.60	$98.45	$100.30	$102.20
4 inch	$90.10	$105.10	$113.00	$124.53	$133.78	$138.40	$141.10	$143.75	$146.45
Utility Credit									
Fixed Credit (per month)	$12.50	$13.35	$13.88	$15.30	$16.46	$17.02	$16.97	$18.19	$19.46
Commodity Rate (per ccf)									
Off-Peak	$1.44	$1.50	$1.68	$1.85	$2.00	$2.07	$2.31	$2.57	$2.85
Peak 1st Block	$1.64	$1.64	$1.86	$2.04	$2.20	$2.27	$2.48	$2.70	$2.93
Peak 2nd Block	$1.91	$1.91	$2.16	$2.37	$2.56	$2.64	$2.94	$3.26	$3.62
Peak 3rd Block	$4.88	$4.88	$5.50	$6.06	$6.52	$6.73	$6.73	$6.73	$6.73
Meter Charges (Discount)	50%	50%	50%	50%	50%	50%	50%	50%	50%

* Includes 10.2% Surcharge

Effective Date:	1/1/07	1/1/08	1/1/09	3/31/09*	1/1/10*	1/1/11	1/1/12	1/1/13	1/1/14
Residential - Shoreline, Lake Forest Park**									
Commodity Rate (per ccf)									
Off-Peak	$3.07	$3.18	$3.58	$3.95	$4.25	$4.39	$4.90	$5.46	$6.05
Peak 1st Block	$3.49	$3.49	$3.94	$4.34	$4.67	$4.83	$5.26	$5.74	$6.22
Peak 2nd Block	$4.06	$4.06	$4.58	$5.05	$5.44	$5.62	$6.25	$6.94	$7.69
Peak 3rd Block	$10.37	$10.37	$11.69	$12.88	$13.87	$14.31	$14.31	$14.31	$14.31
Franchise Charge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Meter Charge ($s/mtr/mo)									
3/4 inch	$9.80	$11.40	$12.90	$14.22	$15.21	$15.80	$16.05	$16.35	$16.70
1 inch	$10.40	$12.10	$13.20	$14.55	$15.76	$16.30	$16.55	$16.85	$17.20
1 1/2 inch	$16.50	$17.60	$20.50	$22.59	$24.24	$25.10	$25.55	$26.00	$26.50
2 inch	$25.50	$26.30	$27.30	$30.08	$30.97	$27.80	$28.30	$28.80	$29.35
3 inch	$57.40	$67.10	$83.80	$92.35	$99.29	$102.70	$104.70	$106.70	$108.70
4 inch	$95.80	$112.00	$120.10	$132.35	$142.38	$147.20	$150.10	$152.95	$155.80
Utility Credit									
Fixed Credit (per month)	$12.50	$13.35	$13.88	$15.30	$16.46	$17.02	$16.97	$18.19	$19.46
Commodity Rate (per ccf)									
Off-Peak	$1.54	$1.59	$1.79	$1.97	$2.13	$2.20	$2.45	$2.73	$3.03
Peak 1st Block	$1.75	$1.75	$1.97	$2.17	$2.34	$2.42	$2.63	$2.87	$3.11
Peak 2nd Block	$2.03	$2.03	$2.29	$2.52	$2.72	$2.81	$3.13	$3.47	$3.85
Peak 3rd Block	$5.19	$5.19	$5.85	$6.44	$6.94	$7.16	$7.16	$7.16	$7.16
Meter Charges (Discount)	50%	50%	50%	50%	50%	50%	50%	50%	50%
Master Metered Residential Development									
Commodity Rate (per ccf)									
Off-Peak	$3.07	$3.18	$3.58	$3.95	$4.25	$4.39	$4.90	$5.46	$6.05
Peak 1st Block	$3.49	$3.49	$3.94	$4.34	$4.67	$4.83	$5.26	$5.74	$6.22
Peak 2nd Block	$4.06	$4.06	$4.58	$5.05	$5.44	$5.62	$6.25	$6.94	$7.69
Peak 3rd Block	$10.37	$10.37	$11.69	$12.88	$13.87	$14.31	$14.31	$14.31	$14.31
Meter Charges (See above)									

* Includes 10.2% Surcharge

** Lake Forest Park rates began 3/31/09

B1.2. General Service Rate History

Effective Date:	1/1/07	1/1/08	1/1/09	3/31/09*	1/1/10*	1/1/11	1/1/12	1/1/13	1/1/14
General Service - Inside Seattle									
Commodity Rate (per ccf)									
Off-Peak	$2.29	$2.62	$2.95	$3.25	$3.50	$3.62	$4.04	$4.50	$4.99
Peak	$3.35	$3.35	$3.78	$4.17	$4.49	$4.63	$5.15	$5.72	$6.34
Meter Charge ($s/mtr/mo)									
3/4 inch	$8.05	$9.40	$10.60	$11.68	$12.56	$13.00	$13.25	$13.50	$13.75
1 inch	$8.60	$10.00	$10.90	$12.01	$13.00	$13.40	$13.65	$13.90	$14.20
1 1/2 inch	$13.60	$14.50	$16.90	$18.62	$19.95	$20.70	$21.05	$21.45	$21.85
2 inch	$21.00	$21.70	$22.50	$24.80	$25.57	$22.90	$23.35	$23.75	$24.20
3 inch	$47.30	$55.30	$69.10	$76.15	$81.88	$84.70	$86.35	$88.00	$89.65
4 inch	$79.00	$92.20	$99.00	$109.10	$117.36	$121.40	$123.75	$126.10	$128.45
6 inch	$121.00	$125.00	$121.80	$134.22	$144.36	$149.40	$152.30	$155.15	$158.05
8 inch	$192.00	$199.00	$199.00	$219.30	$219.30	$199.00	$199.00	$199.00	$199.00
10 inch	$288.00	$297.00	$297.00	$327.29	$327.29	$297.00	$297.00	$297.00	$297.00
12 inch	$402.00	$402.00	$402.00	$443.00	$443.00	$402.00	$402.00	$402.00	$402.00
16 inch	$477.00	$477.00	$477.00	$525.65	$525.65	$477.00	$477.00	$477.00	$477.00
20 inch	$614.00	$614.00	$614.00	$676.63	$676.63	$614.00	$614.00	$614.00	$614.00
24 inch	$771.00	$771.00	$771.00	$849.64	$849.64	$771.00	$771.00	$771.00	$771.00
Utility Credit - Inside & Outside (Fixed Credit per month)									
Commercial (Multifamily)	$5.65	$6.10	$7.60	$8.38	$9.03	$9.32	$10.14	$11.22	$12.38

* Includes 10.2% Surcharge

Effective Date:	1/1/07	1/1/08	1/1/09	3/31/09*	1/1/10*	1/1/11	1/1/12	1/1/13	1/1/14
General Service - Shoreline, City of Lake Forest Park**									
Commodity Rate (per ccf)									
Off-Peak	$2.78	$3.18	$3.58	$3.95	$4.25	$4.39	$4.90	$5.46	$6.05
Peak	$4.06	$4.06	$4.58	$5.05	$5.44	$5.62	$6.25	$6.94	$7.69
Franchise Charge	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Meter Charge ($s/mtr/mo)									
3/4 inch	$9.80	$11.40	$12.90	$14.22	$15.21	$15.80	$16.05	$16.35	$16.70
1 inch	$10.40	$12.10	$13.20	$14.55	$15.76	$16.30	$16.55	$16.85	$17.20
1 1/2 inch	$16.50	$17.60	$20.50	$22.59	$24.24	$25.10	$25.55	$26.00	$26.50
2 inch	$25.50	$26.30	$27.30	$30.08	$30.97	$27.80	$28.30	$28.80	$29.35
3 inch	$57.40	$67.10	$83.80	$92.35	$99.29	$102.70	$104.70	$106.70	$108.70
4 inch	$95.80	$112.00	$120.10	$132.35	$142.38	$147.20	$150.10	$152.95	$155.80
6 inch	$147.00	$152.00	$148.00	$163.10	$175.22	$181.00	$184.70	$188.15	$191.70
8 inch	$233.00	$241.00	$241.00	$265.58	$265.58	$241.00	$241.00	$241.00	$241.00
10 inch	$349.00	$360.00	$360.00	$396.72	$396.72	$360.00	$360.00	$360.00	$360.00
12 inch	$488.00	$488.00	$488.00	$537.78	$537.78	$488.00	$488.00	$488.00	$488.00
16 inch	$579.00	$579.00	$578.00	$636.96	$636.96	$579.00	$579.00	$579.00	$579.00
20 inch	$745.00	$745.00	$745.00	$820.99	$820.99	$745.00	$745.00	$745.00	$745.00
24 inch	$935.00	$935.00	$935.00	$1,030.37	$1,030.37	$935.00	$935.00	$935.00	$935.00
Utility Credit - Inside & Outside (Fixed Credit per month)									
Commercial (Multifamily)	$5.65	$6.10	$7.60	$8.38	$9.03	$9.32	$10.14	$11.22	$12.38

* Includes 10.2% Surcharge

** Lake Forest Park rates began 3/31/09

B1.3. Wholesale Rate History

Effective Date:	1/1/07	1/1/08	1/1/09	1/1/10	1/1/11	1/1/12	1/1/13	1/1/14	1/1/15
Full and Partial Contracts									
Commodity Rate (per ccf)									
Off-Peak	$1.03	$1.04	$1.14	$1.15	$1.16	$1.52	$1.53	$1.53	$1.42
Peak	$1.59	$1.60	$1.77	$1.77	$1.79	$2.26	$2.26	$2.27	$2.10
Growth Charge	$0.60	$0.60	$0.60	$0.60	$0.60	$0.00	$0.00	$0.00	$0.00
Demand Charge ($/1000 gals of deficient storage)	$22.00	$22.00	$22.00	$22.00	$22.00	$22.00	$22.00	$22.00	$22.00
One Time New Service Fee ($s/mtr)									
3/4 inch	$713	$713	$713	$713	$783	$783			
1 inch	$1,426	$1,426	$1,426	$1,426	$1,566	$1,566			
1 inch and smaller							$877	$936	$936
1 1/2 inch	$3,565	$3,565	$3,565	$3,565	$3,915	$3,915	$3,915	$4,180	$4,180
2 inch	$5,704	$5,704	$5,704	$5,704	$6,264	$6,264	$6,264	$6,688	$6,688
3 inch	$15,686	$15,686	$15,686	$15,686	$17,226	$17,226	$17,226	$18,392	$18,392
4 inch	$22,103	$22,103	$22,103	$22,103	$24,273	$24,273	$24,273	$25,916	$25,916
6 inch	$47,058	$47,058	$47,058	$47,058	$51,678	$51,678	$51,678	$55,176	$55,176
8 inch	$79,856	$79,856	$79,856	$79,856	$87,696	$87,696	$87,696	$93,632	$93,632
10 inch	$120,497	$120,497	$120,497	$120,497	$132,327	$132,327	$132,327	$141,284	$141,284
12 inch	$169,694	$169,694	$169,694	$169,694	$186,354	$186,354	$186,354	$198,968	$198,968
16 inch	$169,694	$169,694	$169,694	$169,694	$186,354	$186,354	$186,354	$198,968	$198,968
20 inch	$169,694	$169,694	$169,694	$169,694	$186,354	$186,354	$186,354	$198,968	$198,968
24 inch	$169,694	$169,694	$169,694	$169,694	$186,354	$186,354	$186,354	$198,968	$198,968

B1.4. Private Fire Rate History

Effective Date:	1/1/07	1/1/08	1/1/09	1/1/10	1/1/11	1/1/12	1/1/13	1/1/14
Volume (Penalty) Rate per ccf								
Inside	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00
Outside	$22.80	$22.80	$22.80	$22.80	$22.80	$22.80	$22.80	$22.80
Shoreline, Lake Forest Park	$24.30	$24.30	$24.30	$24.30	$24.30	$24.30	$24.30	$24.30
Meter Charge ($s/mtr/mo)								
Inside Seattle								
2 inch	$15.40	$15.40	$15.40	$15.40	$15.40	$15.40	$15.40	$15.40
3 inch	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00	$20.00
4 inch	$37.00	$37.00	$37.00	$37.00	$37.00	$37.00	$37.00	$37.00
6 inch	$63.00	$63.00	$63.00	$63.00	$63.00	$63.00	$63.00	$63.00
8 inch	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00	$100.00
10 inch	$144.00	$144.00	$144.00	$144.00	$144.00	$144.00	$144.00	$144.00
12 inch	$210.00	$210.00	$210.00	$210.00	$210.00	$210.00	$210.00	$210.00
Outside Seattle								
2 inch	$18.00	$18.00	$18.00	$18.00	$18.00	$18.00	$18.00	$18.00
3 inch	$23.00	$23.00	$23.00	$23.00	$23.00	$23.00	$23.00	$23.00
4 inch	$42.00	$42.00	$42.00	$42.00	$42.00	$42.00	$42.00	$42.00
6 inch	$72.00	$72.00	$72.00	$72.00	$72.00	$72.00	$72.00	$72.00
8 inch	$114.00	$114.00	$114.00	$114.00	$114.00	$114.00	$114.00	$114.00
10 inch	$164.00	$164.00	$164.00	$164.00	$164.00	$164.00	$164.00	$164.00
12 inch	$239.00	$239.00	$239.00	$239.00	$239.00	$239.00	$239.00	$239.00
Shoreline, Lake Forest Park								
2 inch	$19.00	$19.00	$19.00	$19.00	$19.00	$19.00	$19.00	$19.00
3 inch	$24.00	$24.00	$24.00	$24.00	$24.00	$24.00	$24.00	$24.00
4 inch	$45.00	$45.00	$45.00	$45.00	$45.00	$45.00	$45.00	$45.00
6 inch	$76.00	$76.00	$76.00	$76.00	$76.00	$76.00	$76.00	$76.00
8 inch	$121.00	$121.00	$121.00	$121.00	$121.00	$121.00	$121.00	$121.00
10 inch	$175.00	$175.00	$175.00	$175.00	$175.00	$175.00	$175.00	$175.00
12 inch	$255.00	$255.00	$255.00	$255.00	$255.00	$255.00	$255.00	$255.00

B1.5. Public Fire Rate History

Effective Date:	1/1/07	1/1/08	1/1/09	1/1/10	1/1/11	1/1/12	1/1/13	1/1/14
Hydrants on 4 inch Mains	$163.67	$172.81	$162.55	$173.12	$194.80	$198.03	$213.17	$230.48
Hydrants on 6 inch and larger mains	$300.43	$317.21	$325.00	$346.12	$389.48	$412.56	$444.11	$480.16

B1.6. Average System Rate Increase History

Effective Date	Rate Increase
May 16, 2001	5.9%
July 16, 2001	3rd Tier Adopted
January 1, 2002	5.6%
September 16, 2002	14.5%
January 1, 2004	10.6%
January 1, 2005	0.2%
June 1, 2006	0.8%
January 1, 2007	4.6%
January 1, 2008	5.9%
January 1, 2009	11.7%
March 31, 2009*	6.9%
January 1, 2010	9.3%
January 1, 2011**	0.6%
January 1, 2012	9.9%
January 1, 2013	9.7%
January 1, 2014	3.4%
January 1, 2015	-0.4%

* Temporary surcharge to cover costs related to *Lane v. City of Seattle, 2008*

** Expiration of surcharge

B1.7. Historical Financial Performance

	Target	Actual 2008	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Actual 2013	Preliminary 2014
Net Income ($1,000's)	positive	500	5,871	709	1,797	20,666	28,191	31,505
Debt Service Coverage	1.7x	1.47	1.64	1.59	1.48	1.72	1.89	1.93
Cash Financing of the Capital Program	20%*	16.9%	16.2%	21.8%	28.5%	59.4%	60.9%	65.8%
from Rate Revenues		31.5%	10.0%	18.3%	24.7%	53.3%	46.7%	57.7%
from Contributions in Aid of Construction		-15.3%	6.1%	3.2%	3.7%	6.0%	14.2%	8.1%
from Bonneville Power Administration Account		0.8%	0.1%	0.3%	0.2%	0.0%	0.0%	0.0%
Year-End Operating Cash ($1,000's)	varies**	7,211	8,194	8,434	7,224	12,373	29,046	43,516
Revenue Stabilization Fund Deposit (Withdrawal) ($1,000)		0	0	(3,000)	(1,553)	3,354	7,000	8,172

* Current revenues should be used to finance no less than 15% of the CIP in any one year, and not less than 20% in each rate proposal

** Year-End Operating Cash Target is 1/12th of the current year's operating expenses

B1.8. Actual, Projected and Adopted Revenues

Revenue Source	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Projected 2015	Proposed 2016	Proposed 2017
Retail Water Sales	130,272,378	136,442,800	137,382,036	152,606,122	168,125,837	179,935,318	179,373,419	181,874,865	186,255,559
Wholesale Water Sales	48,280,764	44,830,234	43,750,260	49,524,873	55,114,897	52,808,240	48,820,427	48,933,764	48,428,606
Facilities Charges	173,259	242,420	280,830	450,225	911,238	839,024	911,239	911,239	911,239
Water Service for Fire Protection	5,670,084	5,958,484	6,681,034	7,186,677	7,761,828	8,291,984	8,285,095	8,889,680	9,103,800
Tap Fees	5,263,816	2,854,564	2,873,282	4,689,647	8,011,918	6,945,165	6,500,000	6,581,250	6,663,516
Other Operating Revenues	1,709,287	1,874,959	2,082,235	2,371,057	2,668,016	2,298,495	2,417,275	2,477,707	2,539,649
Build America Bond Interest Income	0	2,194,649	2,135,334	2,135,334	1,800,443	1,980,701	1,800,000	2,135,334	2,135,334
Rentals--Non-City	429,576	394,820	520,153	510,641	604,773	557,828	571,774	606,068	600,720
Other Non-Operating Revenue	3,719,589	385,003	555,324	305,831	467,886	442,881	428,752	434,111	439,537
Capital Grants and Contributions	3,154,167	1,605,384	2,000,987	5,451,204	5,616,744	4,262,289	4,250,253	4,476,169	4,465,712
Operating Grants	2,001,339	539,643	434,981	0	803,255	181,620	0	0	0
Transfers from Construction Fund	67,705,678	47,284,391	39,165,888	25,499,622	14,000,000	18,000,017	28,153,423	39,285,283	52,470,811
Withdrawal from Redemption Fund	93,000,000	0	0	0	0	0	0	0	0
Investment Income (See Construction Fund)	0	0	0	0	0	0	0	0	0
Public Works Loan Proceeds	3,000,000	9,000,000	0	0	1,413,000	0	12,000,000	0	0
Proceeds on sale of capital assets	4,726,259	0	0	0	0	0	0	0	0
Inventory Purchased by SDOT	732,191	708,330	689,294	458,601	702,680	771,241	801,585	817,616	838,057
Op Transfer In - Rev Stab Subfund	0	3,000,000	1,522,974	-3,354,239	-7,000,000	-8,171,712	0	0	8,300,000
Op Transfer In - Rev Stab Subfnd - BPA Acct	1,099,162	680,000	100,000	0	0	0	0	0	0
Call Center Reimbursement from SCL	1,653,722	1,637,727	1,510,299	1,514,804	1,514,804	1,704,802	1,787,936	1,823,695	1,869,287
GF Reimb Abandoned Vehicles	48,893	52,940	50,317	0	0	0	58,450	59,619	59,619
Reimbursement for NS activities	734,409	39,136	46,247	35,868	257,062	128,009	131,209	134,489	137,852
GF Lane Related Payments	10,246,113	0	0	0	0	0	0	0	0

B1.9. Actual and Projected Operations Expenditures

	Actual 2009	Actual 2010	Actual 2011	Actual 2012	Actual 2013	Actual 2014	Projected 2015	Projected 2016	Projected 2017
Branch O&M *	92,782,282	77,398,222	78,032,153	82,257,166	89,696,040	92,028,663	107,657,433	114,101,772	117,562,578
Taxes	34,326,595	36,834,240	31,033,547	34,579,191	38,439,778	40,801,911	40,388,294	40,911,044	41,676,404
Debt Service									
Interest	42,083,605	47,676,183	49,599,029	48,810,640	45,171,328	43,601,158	41,866,092	41,657,925	42,781,460
Principal	122,209,766	27,404,766	29,998,293	33,363,293	33,873,204	34,669,987	37,234,982	42,749,982	41,206,473

* Includes contracts associated with treatment plants

APPENDIX C: PROPOSED RATES

Effective January 1, 2016

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
	Direct Service											
RATE SCHEDULES	Inside City				Outside City				City of Shoreline / City of Lake Forest Park			
	Residential	MMRD*	Gen Svc	Fire Service	Residential	MMRD*	Gen Svc	Fire Service	Residential	MMRD*	Gen Svc	Fire Service
Commodity Charge ($/100 Cubic Feet)												
Offpeak Usage (Sept 16-May 15)	$5.06	$5.06	$5.06		$5.77	$5.77	$5.77		$6.14	$6.14	$6.14	
Peak Usage (May 16-Sept 15)												
Up to 5 ccf**	$5.20	$5.20	$6.43		$5.93	$5.93	$7.33		$6.31	$6.31	$7.80	
Next 13 ccf**	$6.43	$6.43	$6.43		$7.33	$7.33	$7.33		$7.80	$7.80	$7.80	
Over 18 ccf**	$11.80	$11.80	$6.43		$13.45	$13.45	$7.33		$14.31	$14.31	$7.80	
Usage over base allowance												
Utility Credit ($/month)	$19.84		$12.38		$19.84		$12.38		$19.84		$12.38	
Demand Charge ($/1000 gallons of deficient storage)				$20.00				$22.80				$24.30
Base Service Charge ($/month/meter)												
3/4 inch and less	$14.15		$14.15		$16.15		$16.15		$17.15		$17.15	
1 inch	$14.60		$14.60		$16.65		$16.65		$17.70		$17.70	
1-1/2 inch	$22.50	$22.50	$22.50		$25.65	$25.65	$25.65		$27.30	$27.30	$27.30	
2 inch	$24.90	$24.90	$24.90	$16.00	$28.40	$28.40	$28.40	$18.00	$30.20	$30.20	$30.20	$19.00
3 inch	$92.25	$92.25	$92.25	$21.00	$105.15	$105.15	$105.15	$24.00	$111.90	$111.90	$111.90	$25.00
4 inch	$132.15	$132.15	$132.15	$38.00	$150.65	$150.65	$150.65	$43.00	$160.25	$160.25	$160.25	$46.00
6 inch		$162.65	$162.65	$65.00		$185.40	$185.40	$74.00		$197.25	$197.25	$79.00
8 inch		$199.00	$199.00	$104.00		$227.00	$227.00	$119.00		$241.00	$241.00	$126.00
10 inch		$297.00	$297.00	$150.00		$339.00	$339.00	$171.00		$360.00	$360.00	$182.00
12 inch		$402.00	$402.00	$218.00		$458.00	$458.00	$249.00		$488.00	$488.00	$264.00
16 inch		$477.00	$477.00			$544.00	$544.00			$579.00	$579.00	
20 inch		$614.00	$614.00			$700.00	$700.00			$745.00	$745.00	
24 inch		$771.00	$771.00			$879.00	$879.00			$935.00	$935.00	

* Master Metered Residential Development

** per residence

Effective January 1, 2017

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
	Direct Service											
RATE SCHEDULES	Inside City				Outside City				City of Shoreline / City of Lake Forest Park			
	Residential	MMRD*	Gen Svc	Fire Service	Residential	MMRD*	Gen Svc	Fire Service	Residential	MMRD*	Gen Svc	Fire Service
Commodity Charge ($/100 Cubic Feet)												
Offpeak Usage (Sept 16-May 15)	$5.15	$5.15	$5.15		$5.87	$5.87	$5.87		$6.25	$6.25	$6.25	
Peak Usage (May 16-Sept 15)												
Up to 5 ccf**	$5.29	$5.29	$6.54		$6.03	$6.03	$7.46		$6.42	$6.42	$7.93	
Next 13 ccf**	$6.54	$6.54	$6.54		$7.46	$7.46	$7.46		$7.93	$7.93	$7.93	
Over 18 ccf**	$11.80	$11.80	$6.54		$13.45	$13.45	$7.46		$14.31	$14.31	$7.93	
Usage over base allowance												
Utility Credit ($/month)	$20.56		$12.38		$20.56		$12.38		$20.56		$12.38	
Demand Charge ($/1000 gallons of deficient storage)				$20.00				$22.80				$24.30
Base Service Charge ($/month/meter)												
3/4 inch and less	$15.15		$15.15		$17.25		$17.25		$18.35		$18.35	
1 inch	$15.60		$15.60		$17.80		$17.80		$18.90		$18.90	
1-1/2 inch	$24.10	$24.10	$24.10		$27.45	$27.45	$27.45		$29.25	$29.25	$29.25	
2 inch	$26.65	$26.65	$26.65	$16.25	$30.40	$30.40	$30.40	$19.00	$32.30	$32.30	$32.30	$20.00
3 inch	$98.80	$98.80	$98.80	$21.00	$112.65	$112.65	$112.65	$24.00	$119.80	$119.80	$119.80	$25.00
4 inch	$141.50	$141.50	$141.50	$39.00	$161.30	$161.30	$161.30	$44.00	$171.60	$171.60	$171.60	$47.00
6 inch		$174.10	$174.10	$66.00		$198.45	$198.45	$75.00		$211.15	$211.15	$80.00
8 inch		$205.00	$205.00	$105.00		$234.00	$234.00	$120.00		$249.00	$249.00	$127.00
10 inch		$297.00	$297.00	$152.00		$339.00	$339.00	$173.00		$360.00	$360.00	$184.00
12 inch		$402.00	$402.00	$222.00		$458.00	$458.00	$253.00		$488.00	$488.00	$269.00
16 inch		$477.00	$477.00			$544.00	$544.00			$579.00	$579.00	
20 inch		$614.00	$614.00			$700.00	$700.00			$745.00	$745.00	
24 inch		$771.00	$771.00			$879.00	$879.00			$935.00	$935.00	

* Master Metered Residential Development

** per residence