



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

King County Executive 2017 Monthly Sewer Rate and Capacity Charge Proposal

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1.0 Introduction

This report describes the underlying assumptions, projections, and key factors considered in developing the King County Executive's proposal for the Wastewater Treatment Division's (WTD) 2017 monthly sewer rate and capacity charge. This proposed 2017 monthly sewer rate is \$44.22, a \$2.19 or 5.2 percent increase from 2016 sewer rate of \$42.03. The proposed 2017 monthly capacity charge is \$60.80, representing a \$2.10 or 3.6 percent increase from the 2016 capacity charge of \$58.70.

Current, proposed and projected rates for the monthly sewer rate and capacity charge during the next three bienniums are shown in the table below:

Table 1-1 Current, Proposed and Projected Rates

	2016	2017	2018	2019	2020	2021	2022
Sewer Rate							
Monthly Rate (Proposed)	\$ 42.03	\$ 44.22	\$ 44.22	\$ 46.53	\$ 46.53	\$ 47.73	\$ 48.97
Amount of Increase	\$0	\$ 2.19	\$0	\$ 2.31	\$0	\$ 1.20	\$ 1.24
Percent Change	0.0%	5.2%	0.0%	5.2%	0.0%	2.6%	2.6%
Annual Amount	\$ 504	\$ 531	\$ 531	\$ 558	\$ 558	\$ 573	\$ 588
Capacity Charge							
Monthly Rate (Proposed)	\$ 58.70	\$60.80	\$62.62	\$64.50	\$66.44	\$68.43	\$70.48
Amount of Increase	\$1.80	\$2.10	\$1.82	\$1.88	\$1.94	\$1.99	\$2.05
Percent Change	3.0%	3.6%	3.0%	3.0%	3.0%	3.0%	3.0%
Annual Amount	\$ 704	\$ 730	\$ 751	\$ 774	\$ 797	\$ 821	\$ 846
Early Payoff Total *	\$ 8,664	\$ 8,974	\$ 9,242	\$ 9,520	\$ 9,806	\$ 10,100	\$ 10,402

*Assumes the current 2.8 percent discount rate.

The remainder of this document discusses the major factors underlying the 2017 monthly sewer rate and capacity charge proposal, including the following sections: 2) sewer rate management, 3) WTD's operating revenues and expenses, 4) WTD's capital improvement program, spending accomplishment rate, revenues, and financing, 5) current Residential Customer Equivalents (RCEs) and new customer connections, and 6) a summary of projections and assumptions. These various projections and assumptions are presented in Table 6-1.

2.0 Sewer Rate Management

In its simplest form, the monthly sewer rate is determined by the amount of revenue required to pay all the costs of the utility, given the estimated number of customers and other revenues for the year, while meeting the requirements of the County's financial policies and bond requirements.

WTD's capital program and the debt that was issued to finance that program are the major drivers of the annual revenue requirement upon which the monthly sewer rate is set. From 2006 to 2012, WTD's outstanding debt increased by \$1.75 billion to \$3.84 billion during the construction of the Brightwater Treatment Plant. The County incurred this debt in accordance with its policies and a financial plan that preserved the high credit ratings for the County's sewer revenue bonds (Aa2, Moody's, AA+; Standard & Poor's, the third and second highest ratings of each organization). These bond ratings are what allowed the County to have access to low-cost financing for the construction of the Brightwater Treatment Plant. Indeed, without this significant level of new debt, rate increases at that time would have been substantially higher.

The moderation in WTD's capital program relative to the Brightwater era now makes it possible and affordable for WTD to be less reliant upon debt financing. Small increments in the level of rate increases over time will produce significant reductions in future debt levels. Lower debt levels increase WTD's ability to deal with uncertainty, whether that uncertainty takes the form of new environmental regulations, natural disasters or increasing capital costs.

In making its recommendation for the 2017 monthly sewer rate, WTD has identified two practices that will improve the management of the utility's debt portfolio and reduce future debt issuance. What is equally important is that they can be achieved with the moderate level of rate increases shown in Table 1-1. The proposed 5.2 percent rate increase for 2017 is, in fact, the lowest two-year percentage rate increase since 2001.

The two objectives that WTD has identified are

- 1) Funding, on average, 40 percent of its capital program from cash generated from revenues.
- 2) Amortizing the utility's \$500 million variable rate bond portfolio.

WTD projects that these changes will reduce its debt levels by \$582 million by 2030 with average annual rate increases of 2.6 percent through 2030. By comparison, maintaining current debt practices (as described in Section 2.5) will require average annual rate increases of 2.3 percent through 2030. However, the status quo would see WTD's debt levels increasing by \$721 million, to \$4.7 billion by 2030. The new practices will significantly lower the increase in WTD's debt levels, making it a financially stronger utility.

2.1 40 Percent Cash Funding of the Capital Program

At the peak of Brightwater construction in 2008 and 2009, annual capital spending was over \$450 million and only seven percent of WTD's capital expenditures could be financed from cash generated out of net revenues for the year. By 2015, the cash funding percentage had increased to 56 percent, brought about by lower capital spending (\$152.8 million), the increase in net revenues and the growth in capacity charge revenues. Under current practices, though, the cash funding percentage will decline to 27 percent through 2030 as annual capital spending increases

to over \$218 million per year beginning in 2020 as several large combined sewer overflow (CSO) projects enter into their construction phase.

Increasing the cash-funding ratio to 40 percent allows WTD to moderate the increase in its debt levels. Under this plan, projected debt issuance over the next three bienniums of \$724 million is \$212 million lower than what was presented to Council as part of the six-year financial plan for the adopted 2016 rate.

In the six-year financial plan, the 40 percent cash-funding level represents an average for the period. Annual percentages range from 37 percent in 2020 and 2022 to 47 percent in 2017 and will vary with the actual capital expenditures and net revenues for the year. Because of the volatility associated with an annual ratio, WTD proposes to use the average cash-funding ratio over the six-year period to measure performance against this benchmark.

2.2 Amortization of Variable Rate Debt

WTD has six series of bonds totaling \$400 million in which interest rates are reset each week or month based on the prevailing level of short-term interest rates. Two other issues, the 2015A and 2015B Junior Lien Sewer Revenue Bonds, totaling \$100 million, have a fixed interest rate through November 16, 2016, and, subject to Council approval, are then expected to be remarketed with a variable interest rate. WTD's variable rate bonds have a much lower interest cost than its fixed rate bonds and have provided significant savings in interest expense (in 2015, approximately \$15 million).

These issues have final maturity dates occurring from 2032 through 2046. Unlike WTD's fixed rate bond issues, however, none of these issues have requirements to retire a portion of principal of the issue each year. As a result, WTD will owe bondholders the full amount of principal (either \$50 million or \$100 million) that is due for each issue at its maturity date. Structuring these variable rate bonds without a stated retirement schedule has helped to maximize interest savings over time and to maintain a level percentage of variable rate debt within WTD's total debt portfolio (currently 15 percent).

County policy states that the term of its borrowings should be structured to match the expected useful life of the assets that are being funded. WTD has complied with this policy and most of its debt has been issued with 30-year terms. While WTD could refund its variable rate bonds and extend the maturity date to the end of the life of the underlying assets, at that point, the bonds would have to be retired. As annual net revenues (without large rate increases) would be insufficient to retire the entire principal amount of the issue, the practical alternative is to retire portions of the issue prior to its final maturity date as permitted by the optional redemption provisions of such bonds.

In consultation with the County's Finance and Business Operations Division Director and Piper Jaffray & Co./Seattle-Northwest Division, the County's financial advisor, WTD has therefore developed a proposed amortization schedule for each series of variable rate bonds beginning ten

years prior to its final maturity date that fully repays its principal. The schedule for the 2015 A&B Junior Lien Sewer Revenue Bonds is based on the original issue dates for the commercial paper that was refunded with that issue, so that the 2015 Bonds would be fully retired by January 1, 2039, seven years prior to their 2046 maturity date.

Table 2-1 details this proposed amortization schedule which begins in 2017. Annual scheduled principal retirements through 2021 are less than \$1.2 million and will not significantly impact the funding of the capital program. Beginning with the \$10.3 million payment in 2022, however, the six-year financial plan and our long-term rate projections assume the issuance of some type of interim debt and the refinancing of that debt with variable rate bonds in order to maintain the 15 percent ratio and maintain cash funding levels for the capital program. Future series of such variable rate bonds will be amortized over their 30-year terms beginning one year after they are issued.

Information on how this interim variable rate debt program will be implemented will be presented to the Council by the Finance and Business Operations Division Director and the County's financial advisor in response to Council's request for a review of WTD's variable rate bond program as a condition for remarketing the 2015 A and B Junior Lien Sewer Revenue Bonds in the third quarter of 2016.

Finally, since such principal payments would not be mandatory, WTD would retain flexibility to vary this planned amortization schedule if necessary due to unforeseen circumstances (such as drought or emergency capital expenditures).

Table 2-1 Variable Rate Debt Amortization

Year Ending Dec 31	Total	2001AB Jr. Lien	2010AB Multi Modal	2011 Jr. Lien	2012 Jr. Lien	2015AB Jr. Lien
2017	\$ 920	\$ -	\$ -	\$ -	\$ -	\$ 920
2018	970	-	-	-	-	970
2019	1,025	-	-	-	-	1,025
2020	1,080	-	-	-	-	1,080
2021	1,135	-	-	-	-	1,135
2022	10,295	7,805	-	-	-	2,490
2023	11,365	8,225	-	-	-	3,140
2024	11,980	8,670	-	-	-	3,310
2025	12,625	9,135	-	-	-	3,490
2026	13,310	9,630	-	-	-	3,680
2027	16,370	10,150	-	-	-	6,220
2028	17,255	10,700	-	-	-	6,555
2029	19,355	11,275	-	-	-	8,080
2030	28,210	11,885	7,805	-	-	8,520
2031	29,725	12,525	8,225	-	-	8,975
2032	23,765	-	8,670	7,805	-	7,290
2033	31,960	-	9,135	8,225	7,805	6,795
2034	33,690	-	9,630	8,670	8,225	7,165
2035	35,500	-	10,150	9,135	8,670	7,545
2036	37,420	-	10,700	9,630	9,135	7,955
2037	32,840	-	11,275	10,150	9,630	1,785
2038	34,610	-	11,885	10,700	10,150	1,875
2039	34,500	-	12,525	11,275	10,700	-
2040	23,160	-	-	11,885	11,275	-
2041	24,410	-	-	12,525	11,885	-
2042	12,525	-	-	-	12,525	-
	\$ 500,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000

2.3 Rate Stabilization

Since 2005, WTD has used the rate stabilization reserve to defer operating revenues into future years to help manage its sewer rates. The \$76.5 million of deposits and \$42.2 million of withdrawals that were made through the end of 2011 has helped mitigate rate increases and reduced debt issuance from 2012 through 2015.

Maintaining a minimum balance within the rate stabilization reserve supports the County's policy of limiting increases in the sewer rate to every other year as it provides a cushion to deal with financial exigencies that might arise in the second year of the rate. Funds in the rate

stabilization reserve also enhance the liquidity metrics used by the rating analysts when they evaluate the credit quality of WTD.

Last October, WTD was able to address the rating agencies concerns about how WTD would manage the impact of the drought by noting that the balances in the rate stabilization reserve were available to cover shortfalls in revenues that might occur. The impact of future droughts, natural disasters or spikes in operating costs (as happened in the energy crisis of 2001) makes it financially prudent to retain a minimum balance in the rate stabilization reserve beyond the six-year horizon of the financial plan.

In the 2016 rate proposal, all of the \$34.3 million balance at the end of 2014 million was drawn down through 2020. In 2015, WTD added \$12 million to the reserve. Most of this addition came from the savings in debt service provided from refunding \$1.1 billion of bonds.

As shown in Table 2-2, the current rate stabilization reserve balance of \$46.3 million is expected to be maintained through 2018. Thereafter, the reserve will be drawn down to a \$12 million balance in 2023 to help moderate the rate increases associated with the amortization of variable rate debt and transition to the 40 percent funding level. To address the rating agencies ongoing concern with maintaining adequate liquidity, WTD recommends maintaining a \$12 million rate stabilization balance through 2030.

Table 2-2. Rate Stabilization Reserve, 2015-2022 (millions of dollars)

	2015	2016	2017	2018	2019	2020	2021	2022
Beginning balance	\$34.3	\$46.3	\$46.3	\$46.3	\$43.8	\$40.2	\$32.3	\$29.3
Additions	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reductions	0.0	0.0	0.0	2.5	3.6	7.9	3.0	9.4
Ending balance	\$46.3	\$46.3	\$46.3	\$43.8	\$40.2	\$32.3	\$29.3	\$19.9

2.4 Cost Containment

While the rate stabilization reserve provides a means of managing rate increases by redistributing a portion of operating revenues across years, it is only one of the tools of rate management. Cost containment is critical. As in prior years, WTD scrutinized all planned capital and operating expenditures with the goal of making reductions and implementing efficiencies while continuing to fulfill its regulatory obligations to protect public health and the environment. Table 2.3 provides a summary of this work. Through WTD's continuous improvement efforts and the Executive's Best Run Government Initiative, WTD has implemented a program ("Bright Ideas"), which encourages creative problem-solving throughout the organization and uses employees' ideas to improve how it does business. Using this and other tools, such as the Carbon and Energy Investment Program implemented in 2014, WTD has developed efficiency proposals for implementation over time.

Table 2-3. Current and Future Rate Reduction Measures

2016 Budget Reductions from Ongoing Efficiencies	\$350,000
2017 Initiatives for Efficiency and Estimated Impact:	
Employee-initiated through Bright Ideas Program (2014 and 2015)	\$770,000
Carbon and Energy Fund efficiencies (2014, 2015 & est. 2016)	<u>\$120,000</u>
Total	\$890,000
2017 Debt Service Savings from Bond Refundings in 2015 and 2016	\$5,780,000
2017 Rate Reduction Measures	\$7,020,000

2.5 Rates and Debt Service Coverage Compared to Past Practices

In previous rate proceedings, the key determinant of the monthly sewer rate has been the long-standing Council policy that rates would be set to provide net revenues sufficient to yield at least 1.15 times coverage on all debt service payments made during the year. After establishing the various projections and assumptions on expenses, capital spending, other revenues, interest rates and RCE levels, WTD determined recommended and projected monthly sewer rates so that the projected debt service coverage ratio would equal 1.15. The 1.15 times coverage ratio on projected debt service payments has been a constant feature of the six-year financial plans submitted to Council.

The higher cash funding of the capital improvement program and variable rate debt amortization that WTD is recommending will change this. Rates will no longer be determined solely by the amount of revenues needed to equal 1.15 times projected coverage, but by the revenues that would allow WTD to accomplish these new objectives.

Table 2-4 shows the proposed and projected monthly sewer rates and coverage levels over the next six-years and compares them to what they would be with no changes in WTD's debt practices.

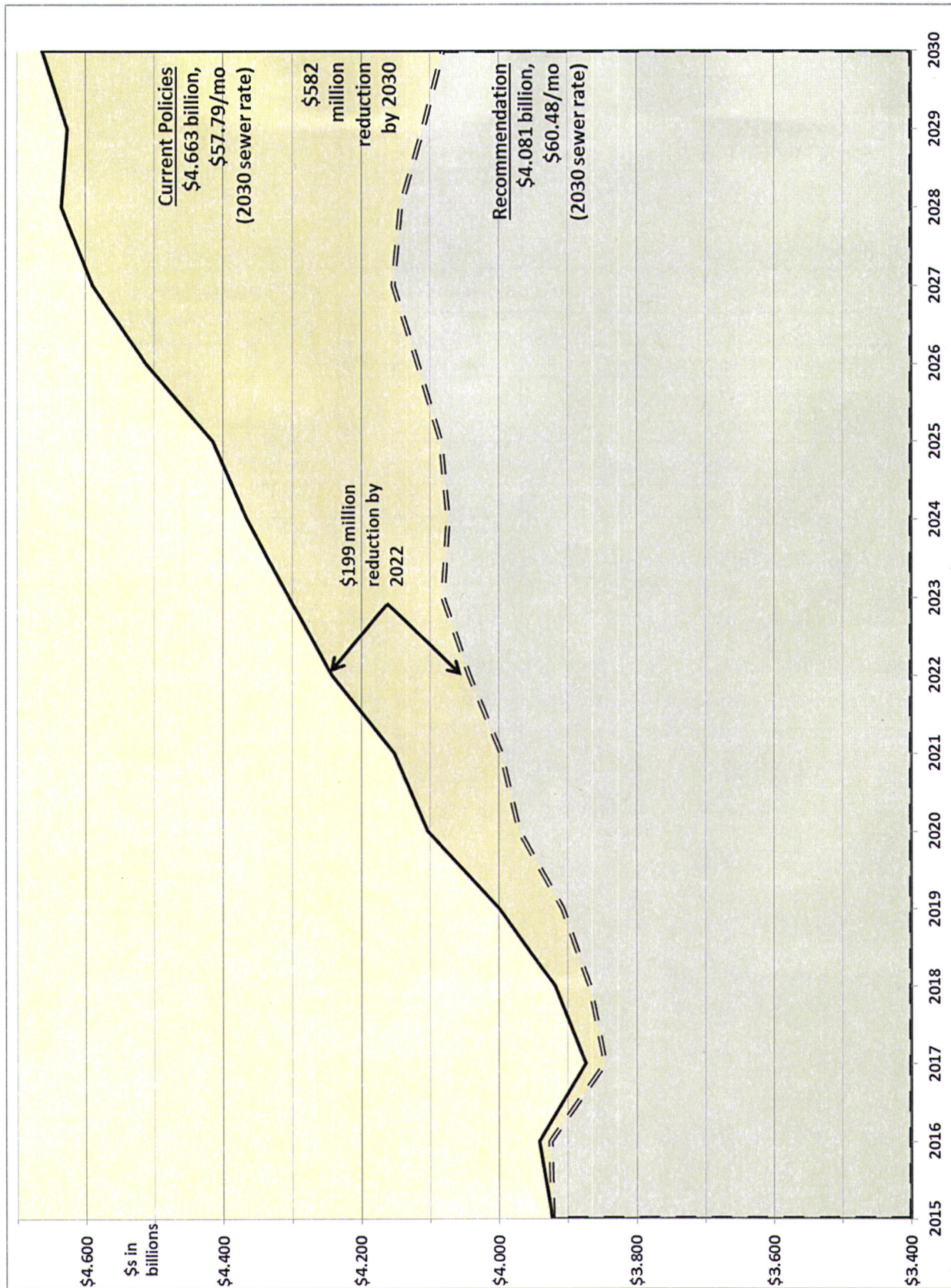
Table 2-4. Impact of Proposed Changes in Debt Practices on Rates and Debt Service Coverage

	2017	2018	2019	2020	2021	2022
Proposed and Projected Rates and Debt Service Coverage Associated with Proposed Changes in Debt Practices						
Monthly Sewer Rate	\$44.22	\$44.22	\$ 46.53	\$ 46.53	\$ 47.73	\$ 48.97
Percentage Increase	5.2%	0.0%	5.2%	0.0%	2.6%	2.6%
Coverage Ratio on All Debt Payments	1.24	1.22	1.27	1.26	1.26	1.28
Rates and Debt Service Coverage With No Changes in Debt Practices						
Monthly Sewer Rate	\$42.63	\$42.63	\$43.69	\$43.69	\$44.77	\$45.91
Percentage Increase	1.4%	0.0%	2.5%	0.0%	2.5%	2.5%
Coverage Ratio on All Debt Payments	1.18	1.15	1.15	1.15	1.15	1.15
Increase in Rates Associated with Proposed Changes in Debt Practices						
Monthly Sewer Rate	\$ 1.59	\$ 1.59	\$ 2.84	\$ 2.84	\$ 2.96	\$ 3.06

The impact of these higher monthly rates on reducing WTD’s outstanding debt is shown in Chart 2-1. Amortization of variable rate debt and 40 percent cash funding of the capital program are projected to reduce outstanding debt \$199 million by 2022 and \$582 million by 2030.

As Council policy describes the 1.15 ratio as a minimum coverage requirement, we have characterized the amortization of variable rate debt and the 40 percent cash funding of the capital program as changes in debt practices rather than as changes in Council policy. WTD looks forward to discussing with Council how these practices should be recognized in future rate proceedings

Chart 2-1. Projected Outstanding Debt



3.0 Operations

3.1 Revenues

In 2017, total operating revenues (including capacity charge receipts¹ and rate stabilization) are projected to be \$479.3 million, a 5.8 percent increase over the 2016 forecast of \$452.9 million. In 2018, total operating revenues are projected to be \$490.3 million, a 2.3 percent increase over the 2017 proposed revenues. As shown in Table 3-1, the net increase in revenues of \$26.4 million in 2017 is primarily from the 5.2 percent recommended increase in the monthly sewer rate. The net increase of \$11.0 million in 2018 reflects growth in RCEs and capacity charge revenues.

As highlighted in Table 3-1, amounts associated with the Rate Stabilization Reserve, will provide only a small portion of revenues through 2018, and \$24 million of drawdowns will be deferred to 2019 through 2022.

Table 3-1. 2016 through 2018 Operating Revenues (million dollars)

	2016 Forecast	2017 Forecast	Difference	% Change	2018 Forecast	Difference	% Change
Sewer rate	\$373.5	\$395.3	\$21.8	5.9%	\$397.3	\$2.0	0.5%
Capacity Charge	\$66.2	\$70.4	\$4.2	6.3%	\$75.6	\$5.3	1.0%
Other Income	\$10.7	\$11.0	\$0.3	3.2%	\$11.3	\$0.3	3.0%
Investment Income	\$2.6	\$2.6	\$0.0	0.4%	\$3.5	\$0.9	35.5%
Rate Stabilization	\$0.0	\$0.0	\$0.0	0.0%	\$2.5	\$2.5	100.0%
Totals	\$452.9	\$479.3	\$26.4	5.8%	\$490.3	\$11.0	2.3%

3.2 Expenses

Operating expenses for 2015 were \$128.7 million, \$6.3 million, or 4.7 percent, less than budgeted in 2015. Major factors resulting in this variance were a delay in implementation of the WaterWorks Grant Program, lower than planned diesel and grit disposal costs, reduced costs and usage of utilities (electricity, natural gas and water) and chemicals. The \$6.3 million under expenditure in 2015 will be expended in 2016, the second year of the biennial budget.

For 2016, operating expenses are projected to total \$147.8 million, the balance of the biennial budget which was adopted by the Council in November, 2014. Increases from 2015 include full biennial expenditures for the WaterWorks Grant Program, general inflation, projected increased labor costs, four new full-time employees needed to support WTD's new (CSO facilities, increased planned equipment maintenance at facilities, and a maintenance contract for the new control system at the treatment plants

¹ Although the capacity charge does not fund any operating expenses, capacity charge revenues are categorized as operating revenue for purposes of the debt service coverage calculation.

Operating expenses for 2017 are projected to be \$147.4 million, a 4.2 percent increase over the 2016 adopted budget. This increase is attributed to general inflation, projected increased labor costs, exterior painting at the South Treatment Plant, and support for meeting specific fuel reduction targets highlighted in the County's Strategic Climate Action Plan (SCAP).

For 2018, operating expenses are projected to be \$152.3 million, an increase of \$4.9 million or 3.3 percent over the 2017 proposed budget. This increase is attributed to general inflation, projected increased labor costs, and projected increased costs of utilities (electricity, natural gas, water) and chemicals due to higher projected usage and rates.

4.0 Capital Improvement Program

4.1 Capital Spending

WTD capital spending for 2015 of \$152.8 million was 5 percentage points lower than the planned 85 percent accomplishment rate for capital spending of \$162.5 million (see section 4.2 for more detail on the capital accomplishment rate). Planned capital spending ranges from \$162.8 million in 2017 to \$237.9 million in 2022, averaging approximately \$208.3 million per year during the six-year period.

The construction activity for WTD facilities continues to be a significant source of regional job creation. In 2017, WTD will invest approximately \$74 million in construction, supporting more than 764 full- and part-time jobs in the region.

Two aspects of capital project spending affect the sewer rate: 1) the total cost of the project over its lifetime and 2) the amount of spending in the specific rate period. In the process of defining capital priorities for 2017 and beyond, WTD critically reviewed project scopes, schedules, cash flow projections, and risk analyses to ensure funding for critical projects. Key criteria for assessing risk include: ensuring the continued operation and reliability of existing wastewater conveyance and treatment assets, enhancing regional water quality in compliance with federal, state, and local regulations pertaining to wastewater treatment, reducing CSO events, and continuing to create resources from wastewater.

Below are key projects in the capital program (total project cost):

- **WTD Ship Canal CSO Transfer (\$133.1 million)** - King County and Seattle Public Utilities (SPU) have each entered into federal court ordered consent decrees requiring control of CSOs to the Lake Washington Ship Canal, Duwamish River and Elliott Bay. The parties have jointly identified a storage tunnel along the Ship Canal as the preferred option to meet each jurisdiction's consent decree requirements. Legislation approving the County's participation in this joint project has been transmitted to the Council. SPU would be the lead agency for design and construction of the facility with King County WTD funding 35 percent of the shared cost. Project construction is currently scheduled for completion in 2024.

- **Michigan/Brandon CSO Control (\$180.3 million)** - The project consists of building the Georgetown Wet Weather Treatment Station, conveyance, and outfall to treat CSOs prior to discharge into the Lower Duwamish Waterway. Modifications to both the South Brandon Street and South Michigan Street Regulator Stations will be required to divert flows to the facility. Ancillary facilities include an odor control facility, electrical/controls building, and emergency generator. Project construction is currently scheduled for completion at the end of 2023.
- **North Creek Interceptor (\$56.6 million)** - The project consists of the design and construction of 9,650 feet of 36- to 48-inch diameter gravity sewer pipeline to control sanitary sewer overflows. The project is currently on schedule for construction completion at the end of 2018.
- **WTD's Resiliency and Recovery Program (\$67.9 million)** - The program funds the capital component of the program to identify and modify existing facilities to increase their resistance to damage, or to allow rapid recovery from such damage, and develop capital facilities that could mitigate damage or facilitate recovery. An assessment of WTD's ability to respond to and recover from natural disasters, and for capital funds for projects aimed at enhancing our facilities' structural integrity, is due for completion by the end of 2016. Two projects requiring immediate action are: 1) Interbay Pump Station Partial Forcemain Replacement to continue operating efficiently and improve structural stability and 2) West Point Primary Sedimentation Area Roof Structure Improvements to ensure basic components of wastewater treatment remain viable in the event of earthquake or other disaster.
- **Oxygen Generation and Distribution System Replacement (\$53 million)** - The scope of work will evaluate alternatives to replace the existing Oxygen Generation and Distribution System at the West Point Treatment Plant with newer, more energy efficient technology. Due to limited available space, the system design will place the new equipment within the existing footprint. The current schedule for completion is 2022.
- **CSO Control Hanford at Rainier and Bayview North (\$34.2 million)** - This project consists of building the Rainier Valley Wet Weather Storage facility to control the Hanford at Rainier and Bayview North CSOs to one event per year, on a 20-year moving average, in accordance with Washington State Department of Ecology (DOE) standards. Specifically, this project will install a new sewer pipeline near Rainier Avenue South and Martin Luther King Boulevard South, which will divert flows to an existing pipe with available capacity. The project also includes a storage tank to capture excess flows from the area. Project construction is currently scheduled for completion is 2018.

- **WTD Capital Project Formulation (\$8 million)** - This project funds process improvements on how new projects are queued up. When a need/problem is identified it will receive further scoping and analysis before being launched as a stand-alone project. This new process will improve: planning, project delivery and efficiency by having clearer objectives and scope before launching, will save money, and set reasonable cost expectations.

4.2 Capital Accomplishment Rate

Another factor that affects the sewer rate and the financing of the capital program is the accomplishment rate, which provides an estimate of the cash needs of the program. It reflects the capital program as a whole and is an estimate of the difference between planned capital spending in the budget and the capital spending that actually occurs. In this way, the program's revenue requirements anticipate possible delays in the execution of the capital program that reduce spending and, therefore, cash needs. The accomplishment rate is expressed as the percentage of the capital budget expected to actually be spent in a given year.

In 2015, the accomplishment rate for the capital program was 80 percent, compared to an assumed rate of 85 percent. This difference represents approximately \$9.7 million less spending in 2015 than anticipated. The accomplishment rate is assumed to remain at 85 percent for the forecast period 2017-2022.

To further illustrate the relationship between the sewer rate and the accomplishment rate, if the aggregate accomplishment rate was lowered by 5 percentage points to 80 percent for 2017, estimated capital spending would be reduced by approximately \$9.6 million, or the equivalent of lowering the 2017 sewer rate by approximately \$0.08. Conversely, if the program accomplishment rate were increased to 100 percent for 2017, estimated capital spending would increase by \$28.7 million, or the equivalent of increasing the 2017 sewer rate by approximately \$0.24.

4.3 Capital Revenues and Financing

4.3.1 Capacity Charge

The capacity charge is a monthly charge, with a duration of 15 years that is levied on new connections to the wastewater system. King County Code (K.C.C.) 28.86.160, Financial Policy (FP-15) provides a methodology for calculating the capacity charge in support of the Regional Wastewater Services Plan. The methodology requires new connections to pay ninety-five percent of the allocated costs of the additional system capacity during 2003 to 2030 via the capacity charges and the rates paid by these customers. The policy outlines the conceptual framework by which costs are allocated between existing and newly connecting customers in accordance with K.C.C. 28.84.050 and the financial policies in K.C.C. 28.86.160.

The proposed capacity charge for 2017 is \$60.80, a 3.6 percent increase from the 2016 level of \$58.70. If paid quarterly for the 15 year period this totals \$10,944. If the charge is paid upfront as a lump sum at the current discount rate of 2.8 percent, the total charge is \$8,974.

Every three years the data underlying the capacity charge calculation are updated to reflect the most current data available. This includes incorporating the latest historical data, customer growth and projected costs. The charge is assumed to increase at 3 percent annually during the intervening years. For example, with the update for 2017, it is assumed that 2018 and 2019 will increase by 3 percent, reflecting inflation.

During 2013, several policies regarding the capacity charge were changed and updated. Among them, the discount rate used to determine early payoff amounts was modified to reflect, and remain current with, economic and financial conditions. The capacity charge early-payoff discount rate is a weighted average of the 15-year mortgage rate and the 10- and 20-year Treasury Bond rates. This discount rate is updated annually to reflect general movements in interest rates in the economy. That is, as interest rates change over time, the discount rate will move in the same direction. For 2016, the early-payoff discount rate was changed was set to 2.8 percent.

The current capacity charge methodology has been in place for over 12 years. In light of this, during 2016, WTD will undertake a study of the charge in terms of identifying customer groupings and how the charge is levied to identify potential refinements and improvements to the capacity charge program.

4.3.2 Bonds and Interest Rates

More moderate levels of capital spending along with \$107.5 in loans from the State Revolving Fund (detailed in the next section) have lowered WTD's financing requirements. The 2015/2016 biennium budget projected \$139.2 million of new debt for capital projects. Current estimates for new money bond sales are at \$107.5 million (\$71.9 million from the 2015B Sewer Revenue Bonds, \$35.6 million of additional revenue bonds in 2016). Planned debt issuance in the 2017/2018 biennium is \$129.4 million.

An additional factor that will contribute to reduced debt issuance will be \$29.6 million in the Bond Reserve account that WTD expects to be able to spend on the capital program beginning in 2017. These funds will become available when an amendment to the bond ordinance becomes effective that changes the test as to when a surety bond (in lieu of cash deposits) is allowed to satisfy the Bond Reserve account requirement. The current requirement allows the use of a surety only when it is rated in the two highest rating categories of Moody's and Standard & Poor's. Downgrades by Moody's in 2010 disqualified \$29.6 million of sureties that had been purchased and made it necessary for WTD to deposit an identical amount of cash into the Bond Reserve.

The new requirement will be based on the bond rating of the surety at the time of original purchase and will become effective when the Sewer Revenue Bonds issued prior to 2010 are no longer outstanding. Refundings of those bonds (approximately \$130 million) are planned for the fourth quarter of 2016. The six-year financial plan includes the transfer of \$29.6 million of the Bond Reserve to the capital program over three years, from 2017 to 2020.

In addition to long-term bonds, WTD uses the proceeds from short-term variable rate bonds to finance a portion of the capital program, subject to a cap of 20 percent of total debt. Current plans are to defer any new issuance of variable rate bonds until 2018 when we expect to issue \$47.3 million.

While interest rates remain at low historical levels, the 2017 rate proposal and six-year financial plan do not incorporate savings from potential refundings as the amount of any future savings is highly uncertain. In anticipation of the Federal Reserve raising short-term interest rates, the financial plan accompanying this rate proposal assumes interest rates on new borrowings of 4.75 percent in 2016 and 6.0 percent thereafter.

Investment interest rates used in our six-year financial plan are from the March 2016 forecast from King County's Office of Economics and Financial Analysis and are detailed in Table 6-1. Short-term investment rates have been at historically low levels, but the yield on the King County Investment Pool did increase to 0.60 percent in 2015 from 0.51 percent in 2014. The Federal Reserve raised short-term rates this past December and additional increases are expected this year, but investment rates are expected to be up to one percent lower than a year ago.

4.3.3 Alternative Financing

This section highlights another element of cost containment achieved through WTD's aggressive pursuit of low-cost financing for capital projects. Because of the success of this work, WTD has regularly obtained grants or low-interest loans for capital projects. Collectively, these low-cost funds are referred to as alternative financing. Grants for capital projects are funded by federal or state agencies and, for energy-related projects, local utilities. While the allowable use of these grants is often highly restricted, they have the obvious benefit of not having to be repaid, in contrast to the low-interest loans. Grants received in the past assisted in the financing of upgrades to the South and West Point Treatment Plants, as well as the Alki Transfer/CSO Facilities project and the Denny Way CSO Control project. WTD has had several DOE grants to help fund the Lower Duwamish Cleanup Project and continues pursues grant funds as they become available.

Low-interest loans are provided by the DOE's State Revolving Fund (SRF) or the Washington State Public Works Trust Fund (PWTF). WTD helps ensure the success of its work to obtain loans by conducting a review process to ensure that projects will be considered high priority water-quality projects in the grant ranking process. WTD also ensures that the project schedule fits within the loan criteria and that the project meets specific criteria or thresholds. Projects that meet all of these are eligible for the loan application stage. The grants administrator then coordinates with the project manager to ensure that the thresholds are met in time and takes the lead in writing and completing the application.

Table 4-1 lists some of the completed projects that received SRF and PWTF funding. Table 4-2 lists the current SRF loans that partially or entirely fund the indicated WTD capital projects.

Table 4-1. Previous SRF & PWTF Fund Loans for WTD Capital Projects (million dollars)

Project	Loan Amount	Loan Type	Term (Years)	Interest Rate	Estimated Debt Service Savings
Brightwater Outfall	\$1.6	SRF	20	2.6%	\$11.8
Henderson/MLK CSO	\$57.5	SRF	20	1.5%	\$64.8
Denny Way CSO/Elliott West Pipelines	\$12.5	SRF	20	1.5%	\$14.1
Carnation Treatment Plant	\$14.1	SRF	20	3.1%	\$14.1
Vashon Treatment Plant	\$5.0	SRF	20	1.5%	\$3.9
Barton CSO Facilities Plan	\$1.1	SRF	20	1.5%	\$0.9
Murray CSO Facilities Plan	\$0.6	SRF	20	1.5%	\$0.5
North Beach CSO Facilities Plan	\$0.5	SRF	20	1.5%	\$0.4
North Creek Storage	\$10.0	PWTF	20	0.5%	\$10.4
Juanita Bay Pump Station	\$10.0	PWTF	20	0.5%	\$12.3
Brightwater Reclaimed Water Pipeline	\$7.0	PWTF	20	0.5%	\$8.6
Hidden Lake Pump Station	\$10.0	PWTF	20	0.5%	\$12.0
Barton CSO Control - Design	\$5.0	SRF	20	2.7%	\$5.7
Murray CSO Control - Design	\$4.6	SRF	20	2.7%	\$6.2
North Beach CSO Control - Design	\$2.9	SRF	20	2.7%	\$3.6
S. Magnolia CSO Control - Design	\$5.1	SRF	20	2.7%	\$6.4
Fremont Siphon – Facilities Plan	\$2.2	SRF	20	2.7%	\$2.7
Ballard Siphon	\$31.9	SRF	20	2.8%	\$41.7
Ballard Siphon	\$10.0	PWTF	20	0.5%	\$13.4
South Plant Agitation Blowers	\$.668	PWTF	10	1.0%	\$.853
Environmental Lab HVAC System	\$.332	PWTF	10	1.0%	\$.334
West Point Dewatering Centrifuges	\$.300	PWTF	5	1.0%	\$.383
North Beach CSO (Construction)	\$3.0	SRF	20	2.7%	\$1.5
Total	\$195.9				\$236.5

Table 4-2. Current State Revolving Fund Loans for WTD Capital Projects (million dollars)

Project	Loan Amount	Loan Type	Term (Years)	Interest Rate	Estimated Debt Service Savings
Barton CSO (Construction)	\$8.5	SRF	20	2.7%	\$4.0
S. Magnolia CSO (Construction)	\$26.5	SRF	20	2.7%	\$12.3
Fremont Siphon (Construction)	\$29.5	SRF	20	2.7%	\$15.7
Murray CSO (Construction)	\$30.7	SRF	20	2.4%	\$11.8
North Beach CSO (Construction)	\$9.1	SRF	20	2.4%	\$7.4
Total	\$104.3				\$51.2

In 2012, WTD received \$3 million in Qualified Energy Conservation Bonds (QECCB). These bonds enable qualified state, tribal, and local government issuers to borrow money at attractive

rates to fund energy conservation projects. These funds were allocated to WTD from King County's total share of the QECB received from the Washington State Department of Energy. These bond proceeds are being used to fund capital expenditures for the South Plant Raw Sewage Pumps Replacement project. Substantial completion of the project is scheduled at the end of the first quarter 2017. WTD will save approximately \$500,000 in interest over 10 years versus conventional bond financing. While alternative financing generally reduces total costs, it can sometimes result in upward pressure on the sewer rate if instruments have a shorter payback period than WTD's long-term bonds.

5.0 Residential Customer Equivalents and New Connections

WTD continues to use conservative projections for future growth in RCEs for rate and budget development. RCE and new connections forecasts take into consideration historical growth rates as well as regional economic forecasts and local water demand forecasts.

The near-term outlook for growth in our region suggests a deceleration in regional economic growth, bringing the Puget Sound region more in line with the national economy. The labor market, particularly in construction, began slowing in 2015. The March 2016 Conway-Pedersen economic outlook forecasts employment growth for the Seattle-Tacoma region of 1.8 percent in 2016 and 1.6 percent in 2017, down from 2.8 and 2.9 percent in 2014 and 2015, respectively.

Commercial, multi-family residential, and industrial customers can reduce their customer equivalents, and therefore their sewer bill, by reducing water consumption. Increased water conservation can result in low growth or reductions in the WTD customer base. Seattle Public Utilities projects that customers will continue to reduce their daily water use over the forecast period through changes in the market for appliances and fixtures as well as utility-based programs to encourage conservation.

In 2015, there were 736,085 RCEs being served by WTD, an increase of 1.37 percent from 2014 actual levels. The current forecast anticipates the annual growth in RCEs to slow to 0.6 percent to 740,502 RCEs in 2016 and continue to decelerate to a low of 0.5 percent in 2018 before returning to the long-term historic growth rate of 0.62 percent in 2020. Table 5-1 shows current and projected RCEs compared to those used in the 2016 sewer rate process.

Table 5-1. Current Residential Customer Equivalents Forecast

	2015	2016	2017	2018	2019
2017 Rate Proposal	736,085	740,502	744,945	748,670	752,787
Percent Change Between Years	1.37%	0.60%	0.60%	0.50%	0.55%
2016 Sewer Rate Proposal	730,920	735,310	739,720	743,420	747,510
Percent Change Between Years	0.43%	0.43%	0.43%	0.43%	0.43%
Change between 2017 Rate Proposal and 2016 Sewer Rate	5,165	5,192	5,225	5,250	5,277

New sewer connections to the regional wastewater system pay a capacity charge to fund new capacity. New connections to the system tend to reflect the cycles of residential and commercial construction. For example, during the 1998 to 2008 period, the number of new connections averaged 11,200 per year, with a peak of 12,700. Average connections for 2009-2011—a period dominated by the Great Recession—dropped to 5,700. The current forecast in Table 5-2 shows new connections peaking at 12,000 in 2016 and tapering from 2017 to 2019 to a long-term rate of 10,000 new connections annually thereafter². These adjustments reflect the anticipated slow-down in regional construction.

Table 5-2. Projected New Sewer Connections by Year of Connection

	2015	2016	2017	2018	2019
2017 Rate Proposal	11,291	12,000	11,000	10,500	10,000
2016 Sewer Rate	9,500	10,500	11,000	11,000	11,000
Change	1,791	1,500	0	(500)	(1,000)

² Annual connection totals are for the year that new customers connect to the sewer system. WTD also monitors connections by the year that new capacity accounts are created. Connections by year connected are a better indicator of emerging trends.

6.0 Summary of 2017 Rate Proposal Projections and Assumptions

Table 6-1 presents a summary of the general assumptions used in developing the 2017 rate proposal, compared to the values underlying the 2015/2016 Adopted Biennium Budget. Discussion of the various assumptions is included in the main body in this report.

**Table 6-1. WTD Comparison of Forecast Assumptions
2015 Adopted Budget and 2016 Proposed Rate**

	2015	2016	2017	2018	2019	2020	2021	2022
I. Wastewater Spending								
Operating Expense (000's)								
2017 Proposed Rate Forecast	(\$128,700)	(\$147,783)	(\$147,431)	(\$152,301)	(\$158,393)	(\$164,729)	(\$171,318)	(\$178,171)
Adopted 2015 Budget Forecast	(\$134,997)	(\$141,394)	(\$147,050)	(\$152,931)	(\$160,164)	(\$167,291)	(\$174,574)	(\$182,161)
Difference	\$6,297	(\$6,389)	(\$382)	\$630	\$1,771	\$2,562	\$3,256	\$3,990
Capital Expenditures (000's)								
2017 Proposed Rate Forecast	(\$152,800)	(\$175,975)	(\$162,832)	(\$184,242)	(\$219,912)	(\$226,811)	(\$218,105)	(\$237,917)
Adopted 2015 Budget Forecast	(\$170,183)	(\$177,447)	(\$187,100)	(\$201,576)	(\$206,074)	(\$218,250)	(\$191,629)	(\$192,839)
Difference	\$17,383	\$1,472	\$24,268	\$17,334	(\$13,838)	(\$8,561)	(\$26,476)	(\$45,078)
CIP Accomplishment Rate								
2017 Proposed Rate Forecast	80%	85%	85%	85%	85%	85%	85%	85%
Adopted 2015 Budget Forecast	85%	85%	85%	85%	85%	85%	85%	85%
II. Customers								
Total RCEs								
2017 Proposed Rate Forecast	736,085	740,502	744,945	748,670	752,787	757,455	762,151	766,876
Percent Change	1.37%	0.60%	0.60%	0.50%	0.55%	0.62%	0.62%	0.62%
Adopted 2015 Budget Forecast	724,349	727,464	730,607	733,748	736,904	741,472	746,069	750,695
Percent Change	0.43%	0.43%	0.43%	0.43%	0.43%	0.62%	0.62%	0.62%
Difference	11,736	13,038	14,338	14,921	15,884	15,982	16,081	16,181
New Connections								
2017 Proposed Rate Forecast	11,291	12,000	11,000	10,500	10,000	10,000	10,000	10,000
Adopted 2015 Budget Forecast	10,500	11,000	11,000	11,000	10,500	10,500	10,000	10,000
Difference	791	1,000	-	(500)	(500)	(500)	-	-
III. Interest Rates								
Bond Interest Rate								
2017 Proposed Rate Forecast	3.40%	4.75%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Adopted 2015 Budget Forecast	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%	6.00%
Difference	-2.60%	-1.25%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Variable Debt Interest Rate								
2017 Proposed Rate Forecast	0.54%	2.10%	3.18%	3.44%	3.44%	3.44%	3.44%	3.44%
Adopted 2015 Budget Forecast	1.25%	1.50%	2.00%	2.50%	3.00%	3.25%	3.75%	3.75%
Difference	-0.71%	0.60%	1.18%	0.94%	0.44%	0.19%	-0.31%	-0.31%
Investment Interest Rate								
2017 Proposed Rate Forecast	0.60%	0.70%	0.80%	1.10%	1.52%	2.07%	2.50%	2.83%
Adopted 2015 Budget Forecast	0.50%	0.60%	1.33%	1.98%	2.57%	3.03%	3.38%	3.64%
Difference	0.10%	0.10%	-0.53%	-0.88%	-1.05%	-0.96%	-0.88%	-0.81%

	2015	2016	2017	2018	2019	2020	2021	2022
IV. Reserves								
Bond & Loan Reserves (000's)								
2017 Proposed Rate Forecast	\$188,918	\$190,801	\$182,073	\$178,564	\$180,218	\$192,291	\$201,617	\$212,964
Adopted 2015 Budget Forecast	\$187,033	\$183,273	\$193,231	\$204,611	\$216,363	\$228,625	\$238,912	\$248,762
Difference	\$1,885	\$7,528	(\$11,158)	(\$26,047)	(\$36,145)	(\$36,334)	(\$37,295)	(\$35,797)
Rate Stabilization Reserve (000's)								
2017 Proposed Rate Forecast	\$46,250	\$46,250	\$46,250	\$43,750	\$40,150	\$32,265	\$29,265	\$19,900
Adopted 2015 Budget Forecast	\$24,784	\$10,126	\$5,063	\$0	\$0	\$0	\$0	\$0
Difference	\$21,466	\$36,124	\$41,187	\$43,750	\$40,150	\$32,265	\$29,265	\$19,900
Rate Stabilization Use (000's)								
2017 Proposed Rate Forecast	(\$12,000)	\$0	\$0	\$2,500	\$3,600	\$7,885	\$3,000	\$9,365
Adopted 2015 Budget Forecast	\$6,716	\$14,658	\$5,063	\$5,063	\$0	\$0	\$0	\$0
Difference	(18,716)	(14,658)	(5,063)	(2,563)	3,600	7,885	3,000	9,365