



CITY OF NEWPORT BEACH

Sewer Rate Study



August 13, 2017



HF&H Consultants, LLC

CITY OF NEWPORT BEACH

592 Superior Avenue
Newport Beach, CA 92663



SEWER RATE STUDY

August 13, 2017

HF&H CONSULTANTS, LLC
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Walnut Creek, CA 94596

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August 13, 2017

Mr. George Murdoch
Municipal Operations Director
City of Newport Beach
100 Civic Center Drive
Newport Beach, CA 92660

Subject: Sewer Rate Study

Dear Mr. Murdoch:

HF&H Consultants, LLC, is pleased to submit this Sewer Rate Study to the City of Newport Beach (City). The report summarizes the analysis that was conducted to develop the recommended rates. A copy of the rate model is included in the appendix.

Very truly yours,
HF&H CONSULTANTS, LLC

A handwritten signature in black ink, appearing to read 'John W. Farnkopf', written over a horizontal line.

John W. Farnkopf, P.E., Senior Vice President
Geoffrey Michalczyk, Associate

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY	1
Findings And Recommendations	1
2. INTRODUCTION.....	5
Study Purpose And Objectives	5
Background	5
3. PROJECTED REVENUE INCREASES	7
Revenue Requirement Projections.....	7
Salaries	8
Benefits	8
Operations & Maintenance	8
Internal Services Allocation	9
Capital Reserve Expense	9
Revenue Increases	9
Fund Balance.....	11
4. RATE DESIGN.....	13
Current Rate Structure	13
Rate Structure Evaluation.....	13
Proposed Rate Structure	15
Sewer Service Component of Rate Structure	15
Sewer Use Component of Rate Structure	17
Balanced Rate Design	19
Projected Rates	20
Current and Proposed Customer Bill Comparisons	21
Comparison with Neighboring agencies	21

APPENDIX A. SEWER RATE MODEL

TABLE OF FIGURES

Figure 1-1. Projected Revenue Increases	1
Figure 1-2. Current and Proposed Monthly Sewer Rates	3
Figure 1-3. Current and Proposed Monthly Sewer Rates – Sewer-Only Customers	3
Figure 1-4. Current and Proposed Average Monthly Sewer Bills (FY 2017-18)	4
Figure 3-1. Annual Escalation Factors	7
Figure 3-2. Annual Revenue Requirement Components.....	8
Figure 3-3. Capital Projects.....	9
Figure 3-4. Projected Revenue Increases.....	10
Figure 3-5. Operating Fund Balance With and Without Rate Increases.....	11
Figure 4-1. Monthly Sewer Service Charges (FY 2017-18 Before Rate Increase)	16
Figure 4-2. Monthly Sewer Service Charges (FY 2017-18 With Rate Increase)	17
Figure 4-3. Monthly Sewer Use Component – Sewer-Only (FY 2017-18 Before Rate Increase)	18
Figure 4-4. Monthly Sewer Use Component – Sewer Only (FY 2017-18 With Rate Increase)	18
Figure 4-5. Monthly Sewer Charge – Sewer-Only (FY 2017-18)	19
Figure 4-6. Fixed and Variable Revenue.....	19
Figure 4-7. Monthly Sewer Rate Projections	20
Figure 4-8. Monthly Sewer Rate Projections – Sewer-Only Customers.....	21
Figure 4-9. Monthly Customer Bill Comparison (FY 2017-18)	21
Figure 4-10. Neighboring Agency Monthly Bill Comparison	22

ACRONYMS

CIP	Capital Improvement Plan
EDU	Equivalent Dwelling Unit; an average single-family residential customer
EMU	Equivalent Meter Unit
FY	Fiscal Year
GPD	Gallons Per Day
HCF or CCF	Hundred Cubic Feet of metered water; 748 gallons; a cube of water 4.6 feet on edge
I&I	Inflow and Infiltration; stormwater runoff that enters collection systems through surface or subsurface connections, cracks, or other openings
IRWD	Irvine Ranch Water District
O&M	Operations and Maintenance
OCSD	Orange County Sanitation District
OCWD	Orange County Water District
OPEB	Other Post-Employment Benefits
PAYGo	Pay-As-You-Go, in reference to funding capital improvements from cash rather than from borrowed sources of revenue
PERS	Public Employees Retirement System
SFR	Single Family Residential

ACKNOWLEDGEMENTS

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Diane Dixon, Council Member
Brad Avery, Council Member
Jeff Herdman, Council Member
Scott Peotter, Council Member
Will O'Neill, Council Member

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SEWER RATE STUDY



1. EXECUTIVE SUMMARY

This report summarizes the analysis of the City's sewer rates. The analysis represents a collaborative effort of the City's Staff and consulting team. HF&H prepared the financial plan model using the City's FY 2017-18 operating budget. The financial model forecasts expenditures and revenues for the next ten years; a copy is included in the appendix to this report. For rate adoption purposes, five-year projections are presented.

FINDINGS AND RECOMMENDATIONS

1. **Key Assumptions.** Rates were set to generate revenue sufficient to fund the City's sewer collection system expenses, to fund local capital improvements, and to fund the Sewer Fund's reserves at targeted levels. The proposed rate structures reflect current legal standards and industry practices.
2. **Revenue Projections.** The projected annual revenue increases enable the City to address sewer collection and pump station improvement projects that were identified in the City's Sewer Facilities Master Plan. These increases enable the City to ramp up funding for capital projects to \$1,000,000 per year on a pay-as-you-go cash basis without issuing debt.

The annual revenue increases for the next five years are shown in **Figure 1-1**. Note that the Sewer Fund is currently operating at a significant deficit. The revenue increases proposed during the next five years steadily reduce the deficit. By FY 2021-22, the Sewer Fund will be operating at a slight surplus with revenue increases at inflationary levels.

Figure 1-1. Projected Revenue Increases

	FY 2017-18 (Eff. 1/1/18)	FY 2018-19 (Eff. 1/1/19)	FY 2019-20 (Eff. 1/1/20)	FY 2020-21 (Eff. 1/1/21)	FY 2021-22 (Eff. 1/1/22)
Revenue from Current Rates	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662
Increase in Revenue from Rates	9.4%	9.4%	9.4%	8.4%	2.0%
Revenue from Rate Increases					
FY17-18 (effective 1/1/18)	\$166,599	\$333,198	\$333,198	\$333,198	\$333,198
FY19-20 (effective 1/1/19)	\$0	\$182,259	\$364,519	\$364,519	\$364,519
FY20-21 (effective 1/1/20)	\$0	\$0	\$199,392	\$398,784	\$398,784
FY21-22 (effective 1/1/21)	\$0	\$0	\$0	\$194,929	\$389,858
FY21-22 (effective 1/1/22)	\$0	\$0	\$0	\$0	\$50,310
Subtotal - Revenue Increases	\$166,599	\$515,458	\$897,109	\$1,291,429	\$1,536,668
Total Rate Revenue with Increase	\$3,711,261	\$4,060,119	\$4,441,770	\$4,836,091	\$5,081,330
Net Revenue Requirements	\$4,579,977	\$4,684,594	\$4,791,719	\$4,901,415	\$5,013,746
Surplus/(Deficit) after Increase	(\$868,716)	(\$624,474)	(\$349,949)	(\$65,324)	\$67,583

Source: Model Tab 8.

3. **Rate Design.** The City's current sewer customers pay the sum of the following: a fixed monthly sewer service charge that is the same for all customers and a sewer use charge based on monthly metered water use. In addition, for meters 2-inch or larger, a \$10.00 monthly surcharge is assessed. For connections servicing two or more dwelling units on the same connection, a monthly \$2.00 per dwelling unit surcharge is assessed for any additional dwelling units. For customers receiving only sewer service from the City, a \$6.25 flat charge per account is charged plus a \$2.00 charge per additional dwelling unit, if any.

We recommend combining the two surcharges into the monthly sewer service charge and maintaining the uniform sewer use charge. Under this proposed rate structure, customers will pay the sum of only two charges: a monthly sewer use charge, graduated in proportion to the size of the water meter, and the uniform sewer use charge. For customers receiving only sewer service from the City, the proposed structure would comprise the same sewer service charge per account plus a sewer use charge based on the average flow per meter for the City's water customers.

It is recognized that the sewer use charge, which is based on year-round monthly water use, has the effect of billing most residential customers for irrigation flow that is not discharged to the sewers. This is a long-standing practice of the City that will continue with the proposed rates. The benefit of this form of flow-based rate structure outweighs the benefit customers receive over being charged a flat rate that does not reflect any differences in flow, which is a common alternative structure. The amount of irrigation water that may figure into the bill can be reduced by using winter water use, rather than year-round water use. However, the City's current customer billing system is unable to calculate sewer bills based on winter water use. The City is evaluating the future capabilities of its billing system to determine winter water use.

4. **Projected Rates.** Figure 1-2 shows the sewer rates that are needed to cover the projected revenue requirements, and compares the revised structure to the current structure. In the revised rate structure, the sewer service charges are graduated from the smallest to the largest meters, rather than charging a flat amount and adding surcharges, as is presently done. This gradation recovers almost 60% of the revenue, which is consistent with the current rates.

The proposed rate structure maintains the sewer use charge, which is based on metered water use. Because the City's facilities only collect and convey wastewater and do not also treat wastewater, there is no need to differentiate flow charges to account for differences in wastewater strength among customer classes.

Figure 1-2. Current and Proposed Monthly Sewer Rates

	Current	Proposed				
	FY 2016-17	FY 2017-18 (Eff. 1/1/18)	FY 2018-19 (Eff. 1/1/19)	FY 2019-20 (Eff. 1/1/20)	FY 2020-21 (Eff. 1/1/21)	FY 2021-22 (Eff. 1/1/22)
Sewer Service Charges						
5/8"	\$4.50	\$6.46	\$7.07	\$7.74	\$8.39	\$8.55
3/4"	\$4.50	\$6.46	\$7.07	\$7.74	\$8.39	\$8.55
1"	\$4.50	\$6.46	\$7.07	\$7.74	\$8.39	\$8.55
1.5"	\$4.50	\$7.11	\$7.78	\$8.51	\$9.23	\$9.41
2"	\$14.50	\$9.70	\$10.61	\$11.61	\$12.58	\$12.83
3"	\$14.50	\$10.99	\$12.02	\$13.15	\$14.26	\$14.54
4"	\$14.50	\$12.93	\$14.14	\$15.47	\$16.77	\$17.11
6"	\$14.50	\$14.55	\$15.91	\$17.41	\$18.87	\$19.25
8"	\$14.50	\$16.16	\$17.68	\$19.34	\$20.97	\$21.39
10"	\$14.50	\$20.69	\$22.63	\$24.76	\$26.84	\$27.37
12"	\$14.50	\$25.86	\$28.29	\$30.95	\$33.55	\$34.22
Surcharge Per Dwelling Unit	\$2.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Sewer Use Charge (per HCF)	\$0.35	\$0.38	\$0.42	\$0.46	\$0.50	\$0.51

Source: Model Tab 8.

Figure 1-3 shows the rates for sewer-only customers. The proposed rates include the same sewer service charges in **Figure 1-2** plus a sewer use charge based on the average flow per meter for the City's water customers.

Figure 1-3. Current and Proposed Monthly Sewer Rates – Sewer-Only Customers

	Current	Proposed				
	FY 2016-17	FY 2017-18 (Eff. 1/1/18)	FY 2018-19 (Eff. 1/1/19)	FY 2019-20 (Eff. 1/1/20)	FY 2020-21 (Eff. 1/1/21)	FY 2021-22 (Eff. 1/1/22)
Flat Charges Per Account						
5/8"	\$6.25	\$9.90	\$10.83	\$11.85	\$12.84	\$13.10
3/4"	\$6.25	\$9.90	\$10.83	\$11.85	\$12.84	\$13.10
1"	\$6.25	\$11.59	\$12.68	\$13.87	\$15.04	\$15.34
1.5"	\$6.25	\$34.87	\$38.15	\$41.73	\$45.24	\$46.14
2"	\$6.25	\$35.92	\$39.30	\$42.99	\$46.60	\$47.54
3"	\$6.25	\$92.27	\$100.94	\$110.43	\$119.70	\$122.10
4"	\$6.25	\$163.41	\$178.78	\$195.58	\$212.01	\$216.25
6"	\$6.25	\$287.97	\$315.04	\$344.65	\$373.60	\$381.07
8"	\$6.25	\$289.58	\$316.80	\$346.58	\$375.70	\$383.21
10"	\$6.25	\$294.11	\$321.75	\$352.00	\$381.57	\$389.20
Surcharge Per Dwelling Unit	\$2.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Source: Model Tab 8.

Comparing the current rates with the proposed rates for the larger meters can be misleading. In some cases such as hotels, the current bill would include the \$6.25 charge per account plus the \$2.00 surcharge per dwelling unit. A hotel with 100 rooms would be charged \$206.25 under the current rates. Under the proposed

rates, the charge would depend on the size of the water service but could be of similar magnitude because the majority of the City’s large water meters serve customers with a significant number of dwelling units. The proposed rate structure recovers approximately twice as much revenue from the sewer-only customers as the current rates.

- 5. **Customer Bills.** Figure 1-4 shows typical monthly residential and non-residential bills at the current and proposed rates (excluding current dwelling unit surcharges).

Figure 1-4. Current and Proposed Average Monthly Sewer Bills (FY 2017-18)

Customer Type	Meter Size	Monthly Flow (HCF)	Current Service Charge	Current Flow Charge	Current Monthly Bill	Proposed Service Charge	Proposed Flow Charge	Proposed Monthly Bill	Proposed Minus Current
Single Family Residential (low flow)	5/8" - 1"	3.0	\$4.50	\$1.03	\$5.53	\$6.46	\$1.13	\$7.60	\$2.06
Single Family Residential (avg flow)	5/8" - 1"	11.8	\$4.50	\$4.13	\$8.63	\$6.46	\$4.52	\$10.99	\$2.35
Single Family Residential (high flow)	5/8" - 1"	23.6	\$4.50	\$8.27	\$12.77	\$6.46	\$9.05	\$15.51	\$2.74
Sewer-only (no additional DUs)	3/4"	9.0	\$6.25	\$0.00	\$6.25	\$6.46	\$3.44	\$9.90	\$3.65
Commercial	1.5"	29.7	\$4.50	\$10.40	\$14.90	\$7.11	\$11.38	\$18.49	\$3.59
Commercial	2"	118.9	\$14.50	\$41.61	\$56.11	\$9.70	\$45.52	\$55.21	-\$0.89
Commercial	3"	237.7	\$14.50	\$83.21	\$97.71	\$10.99	\$91.03	\$102.02	\$4.31

Source: Model Tab 8.

2. INTRODUCTION

STUDY PURPOSE AND OBJECTIVES

The purpose of this study is to update the City's sewer rates, which have not been adjusted since 2006. The City's current rate-making objectives include the following:

- Provide revenue sufficiency and financial stability to cover the projected capital and O&M costs.
- Meet the City's operations and capital funds reserve targets for the sewer enterprise fund.
- Rates should reflect equity of costs in proportion to the level of service.
- Provide for efficient administration and customer billing.
- Minimize "rate shock" to customers by smoothly moderating annual rate increases.
- Rates should be clear and understandable to the customers.
- The rates must comply with Proposition 218 and applicable State codes.

BACKGROUND

The City provides sewer service to a population of approximately 86,700 residents. The City's sewer collection system consists of 197 miles of gravity sewers, 4.7 miles of force mains, 4,922 manholes and cleanouts, and 21 lift stations. Most of the City's 27,100 sewer accounts also receive water service from the City. As a result the City has ready access to metered water data, which enables the City to include a component in the sewer rate structure that bills customers based on their individual water. However, approximately 500 accounts only receive sewer service; their water service is provided by either Irvine Ranch Water District (IRWD) or Mesa Water District; these customers cannot be billed based on their individual metered water use.

The City's service area lies within the Orange County Sanitation District (OCSD), which is responsible for treating the City's wastewater. OCSD is responsible for setting its charges and bills customers on the tax rolls. The City plays no roll in setting OCSD's rates. Customers are therefore billed for wastewater collection service on the City's monthly utility bills and for wastewater treatment service on the annual Orange County tax rolls.

3. PROJECTED REVENUE INCREASES

The City's Sewer Fund is an enterprise that is funded from revenue from sewer rates paid by residents and businesses located within the City. The City does not serve customers outside the city limits. The General Fund provided \$3.5 million to the Sewer Fund to avert the need for a rate increase proposed in 2016. This form of funding from the General Fund is very unusual. Because the Sewer Fund is an enterprise that can set its rates to cover its costs, it is preferable to set rates that will allow the Sewer Fund to be financially self sufficient. The purpose of a rate study is to determine how much and when rates need to be increased to cover its costs and maintain adequate reserves.

REVENUE REQUIREMENT PROJECTIONS

Rate analysis begins by determining the revenue requirements that must be funded by rates. For purposes of this study, a ten-year rate projection period was developed using a spreadsheet model (a copy is provided in the Appendix). For rate-making purposes, however, only the first five years are presented. Under Proposition 218, the City can adopt annual rate increases for as many as five years under one notification. Those five years have been set within the context of a ten-year projection. The projections are based on the draft budget for FY 2017-18. The future years were projected based on a number of escalation factors that are summarized in **Figure 3-1**.

Figure 3-1. Annual Escalation Factors

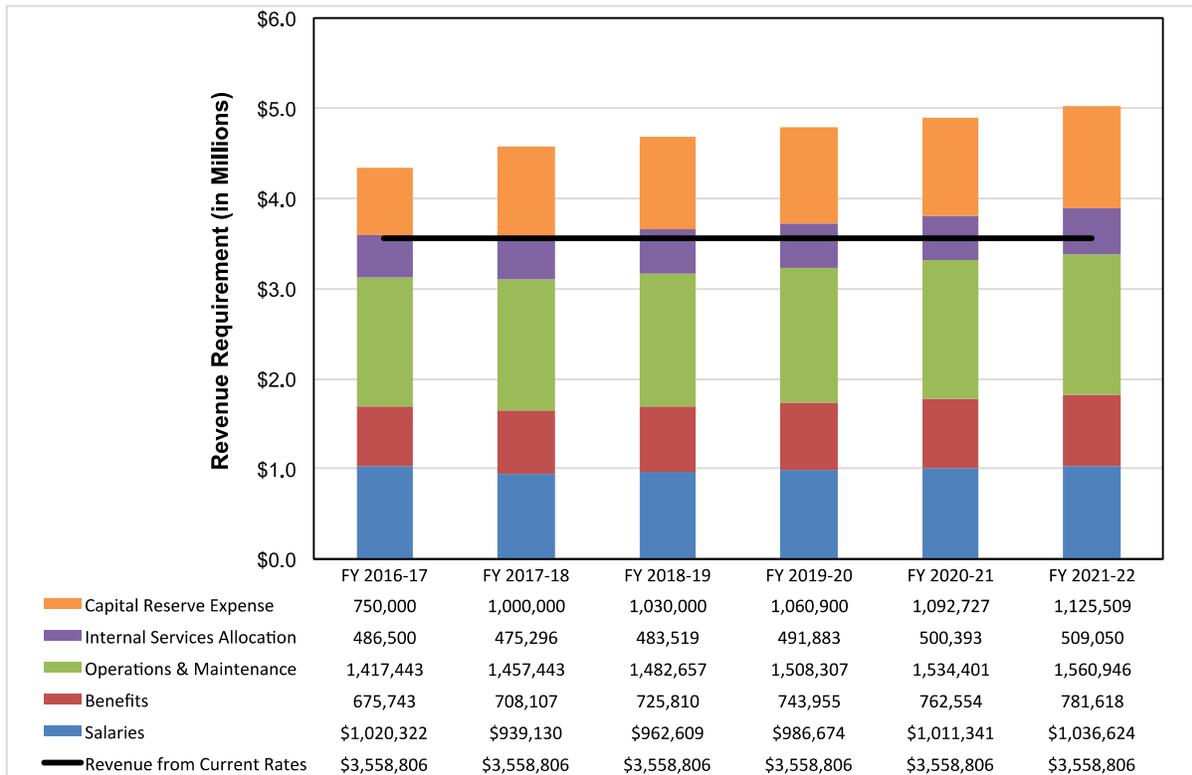
Factors	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22
Interest on Reserve Balance	0.75%	0.75%	0.75%	0.75%
General inflation	1.73%	1.73%	1.73%	1.73%
Personnel Increases	2.5%	2.5%	2.5%	2.5%
Benefits cost increases	2.5%	2.5%	2.5%	2.5%
Percent of Bad Debt	0.4%	0.4%	0.4%	0.4%
Utilities Increases - electricity	1.73%	1.73%	1.73%	1.73%
Increase in Sewer Accounts	0.00%	0.00%	0.00%	0.00%
Increase in Water Consumption	0.00%	0.00%	0.00%	0.00%
Increase in Recycled Water Use	0.00%	0.00%	0.00%	0.00%
Construction cost inflation	3.00%	3.00%	3.00%	3.00%

Source: Model Tab 1B.

We note the following regarding the escalation factors in **Figure 3-1**. Although the model allows for annual variations in the factors, it was assumed that they would remain constant during the projection period. The general inflation rate that applies to many costs in the revenue requirement is based on a recent average of inflation in the Los Angeles area based on US Statistics. It was assumed that there would be no growth in customer accounts or estimated wastewater flow.

Figure 3-2 summarizes the revenue requirements projections for the next five years based on the major cost categories, which are described below. The projection shows a relatively gradual increase in expenditures after an initial increase in FY 2017-18.

Figure 3-2. Annual Revenue Requirement Components



Source: Model Tab 1A.

Salaries

This cost category includes regular and overtime pay and is projected to increase gradually at 2.5% per year during the projection period. There has been a slight reduction in staffing in recent years and no staff headcount increases are anticipated; the cost trend is driven primarily by cost of living adjustments set in labor agreements.

Benefits

This cost category includes health, dental, and vision as well as Other Post-Employment (OPEB) and Public Employees Retirement System (PERS) benefits. During the projection period these costs are projected to increase at 2.5% per year. The cost trend is driven primarily by increases in health care costs set in labor agreements.

Operations & Maintenance

This cost category includes non-personnel related operating and maintenance expenses as well as electrical utility costs, fuel, non-capital materials, and equipment. During the

projection period, these costs are expected to increase gradually at 1.73% per year, based on the five-year historical average of inflation for the Los Angeles area.

Internal Services Allocation

The City has historically transferred funds from the Sewer Fund to the General Fund as reimbursement for governmental costs incurred by the General Fund on behalf of the Sewer Fund. Much of this funding reimburses the General Fund for salaries, equipment, and program costs associated with general services. The amount of the reimbursement is based on studies conducted by the City.¹ During the projection period, these costs are forecast to increase gradually at 1.73% per year, based on the five-year historical average of inflation for the Los Angeles area.

Capital Reserve Expense

The City conducted a Sewer System Master Plan study in 2010 that identified the 30-year capital improvement program expenditures, which are summarized in **Figure 3-3**. The total averages about \$1 million per year.

Figure 3-3. Capital Projects

CIP Project Description	Project Cost
Collection System Capacity Improvements	\$1,281,391
Collection System Condition Improvements	\$16,648,060
Pump Station Improvements	\$11,088,000
	\$29,017,451

Source: Model Tab 8.

The City plans to fund these capital improvements with cash from rate revenue without the use of bonds, which is appropriate because these projects are largely required to keep up with constant sewer system depreciation rather than for large, periodic capital projects. To accomplish this goal, the program is phased based upon the implementation cost of the sewer system, and the quantity of work the City can reasonably administer each year. The programmed rate increases over the next five years allow the City to ramp up funding for capital projects and provide the City \$1.0 million annually, which is adjusted for construction cost inflation.

REVENUE INCREASES

Figure 3-2 also indicates the amount of revenue from current rates without any rate increases. It can be seen that rate revenue is not currently covering costs in FY 2016-17. Without the \$3.5 million transfer from the General Fund, the Sewer Fund's reserves would have dropped well below the amount required by City policy. No further transfers from the General Fund were included in the projections. Only rate increases were considered for eliminating the deficit condition.

¹ *City of Newport Beach Full Cost Plan*. October 31, 2016. P. 15.

To determine how much additional rate revenue is required, the projected revenue requirements are compared to the revenue from current rates. The estimated revenue from current rates for FY 2017-18 is derived from FY 2016-17. This may be a conservative (i.e., low) revenue estimate because revenue from the flow component of the current rate structure depends on flow. In FY 2016-17, flow was slightly lower because customer water use was influenced by conservation during the drought. In FY 2016-17, the City estimated that revenue from the flow component of its sewer rates was approximately \$500,000 lower due to conservation efforts.

For rate-making purposes, it would be imprudent to assume that water use will immediately return to pre-drought levels. The rate at which water use will rebound is highly speculative at this time. If, however, this estimate is too conservative and flow rebounds quickly, thereby generating additional revenue, the City will have the option of not increasing rates as much as currently projected.

Based on this current estimate, annual revenue increases were projected as shown in **Figure 3-4**.

Figure 3-4. Projected Revenue Increases

	FY 2017-18 (Eff. 1/1/18)	FY 2018-19 (Eff. 1/1/19)	FY 2019-20 (Eff. 1/1/20)	FY 2020-21 (Eff. 1/1/21)	FY 2021-22 (Eff. 1/1/22)
Revenue from Current Rates	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662
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Net Revenue Requirements	\$4,579,977	\$4,684,594	\$4,791,719	\$4,901,415	\$5,013,746
Surplus/(Deficit) after Increase	(\$868,716)	(\$624,474)	(\$349,949)	(\$65,324)	\$67,583

Source: Model Tab 8.

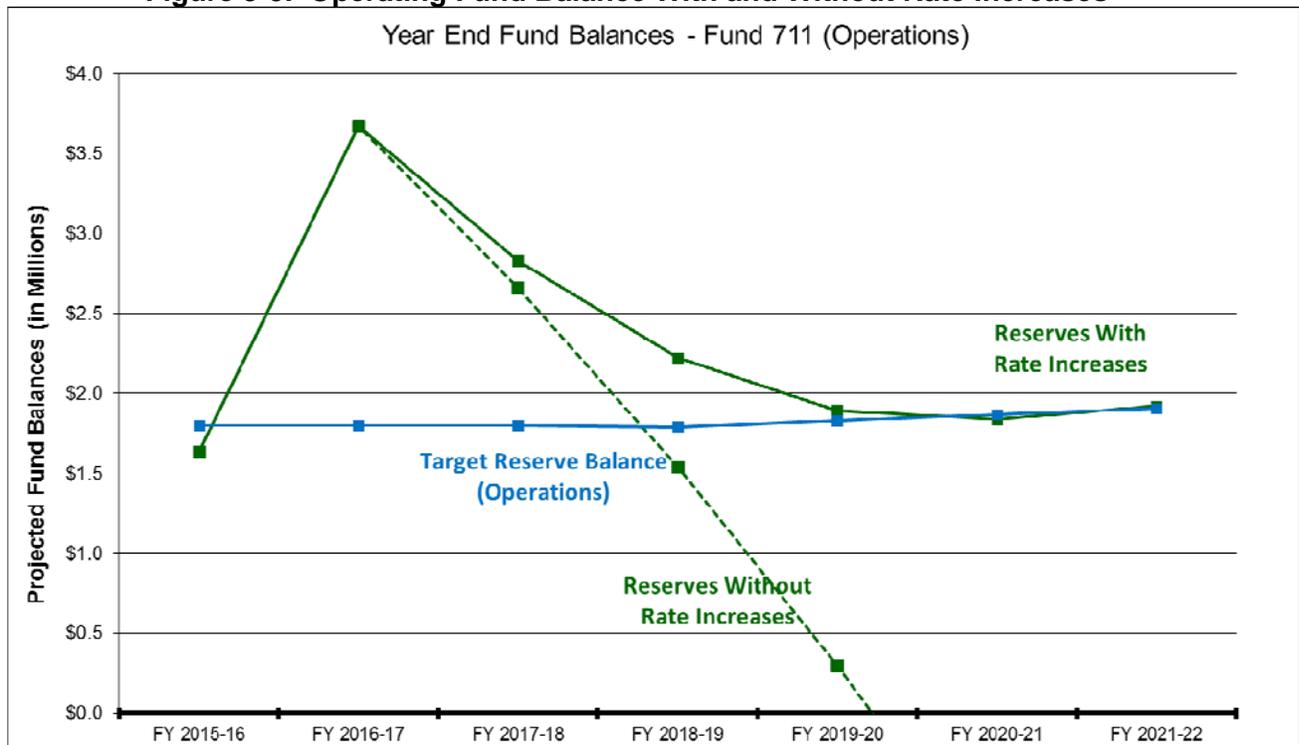
Figure 3-4 projects a series of three 9.4% rate increases and an 8.4% increase that draws the fund balanced down to the target by FY 2019-20. In subsequent years, the rate increases level out at inflationary increases. Prior to adopting any rate increases beyond FY 2021-22, the City should update the revenue requirement projections to reflect new expense projections, growth in customer accounts and flow, and reserve fund levels. If it is determined at that time that rate increases are required, the City will need to comply with Proposition 218.

FUND BALANCE

Figure 3-5 compares the operating fund balance with (solid green line) and without (dashed green line) rate increases with the target reserve balance (blue line). The steep increase in the fund balance from FY 2015-16 to FY 2016-17 shows the effect of the \$3.5 million General Fund transfer. This transfer only increased the fund balance approximately \$2.0 million because the fund has been operating at a deficit. The magnitude of the deficit can be seen in the dashed green line, which drops steeply in subsequent years. By FY 2018-19, the fund balance is projected to drop below the target balance if there are no rate increases.

With the proposed revenue increases, the fund balance (solid green line) is above or very near the target balance throughout the five-year rate projection period. Fluctuations in annual flow will affect revenue generation and the resulting fund balance. The City is advised to carefully monitor the fund balance in the event of downward fluctuations in flow.

Figure 3-5. Operating Fund Balance With and Without Rate Increases



Source: Model Tab 1A.

The target balance is based on City Policy F-2:

Stabilization and Contingency Reserve: This Reserve is used to provide sufficient funds to support seasonal variations in cash flows and in more extreme conditions, to maintain operations for a reasonable period of time

so the City may reorganize in an orderly manner or effectuate a rate increase to offset sustained cost increases. The intent of the Reserve is to provide funds to offset cost increases that are projected to be short-lived, thereby partially eliminating the volatility in annual rate adjustments. It is not intended to offset ongoing, long-term pricing structure changes. The target level of this reserve is fifty percent (50%) of the annual operating budget. This reserve level is intended to provide a reorganization period of 6 months with zero income or 24 months at a twenty-five percent (25%) loss rate. The City Council must approve use of these funds, based on City Manager recommendation. Funds collected in excess of the Stabilization reserve target would be available to offset future rate adjustments, while extended reserve shortfalls would be recovered from future rate increases. Should catastrophic losses to the infrastructure system occur, the Stabilization and Contingency Reserve may be called upon to avoid disruption to wastewater service. [Page 8.]

This reserve target does not provide reserves for capital projects. Instead, a capital account is maintained by Public Works out of which the CIP is funded. Although there is no target balance for this account, sewer rates are set to generate revenue that is deposited in the account for use by Public Works in funding the CIP.

The projected rate increases show the fund balance (solid green line) gradually climbing above the dashed green line as the annual deficits diminish, which is also shown in **Figure 3-5**. By FY 2021-22, the Sewer Fund is projected to be in a slight surplus condition.

4. RATE DESIGN

CURRENT RATE STRUCTURE

The City currently has 27,100 active sewer accounts that pay the sum of two charges every month for Sewer service: a basic service charge of \$4.50 per account plus a sewer consumption charge of \$0.35 per HCF based on metered water use during the billing period. In addition, customers with a water service connection of 2" or greater pay a \$10.00 monthly surcharge. Moreover, customers with more than one dwelling unit that is served by the same connection pay a surcharge of \$2.00 for each additional dwelling unit. Lastly, the City's 506 sewer customers who do not purchase potable water from the City are charged \$6.25 per account per month regardless of the size of their water service connection.

RATE STRUCTURE EVALUATION

The general design of the current rate structure has been in place for many years. The structure combines fixed and volumetric components customers. Such a design is in keeping with industry standards:

Rate designs based on a single fixed charge component remain common today among small utility systems and in service areas without water metering. However, the use of fixed charges exclusively is steadily declining and being replaced by rate schedules that combine fixed charges with a volume rate. When used in conjunction with volume rates, fixed charges commonly take the form of (1) service charges, (2) meter charges, (3) minimum charges, or combinations thereof.²

The addition of a volume rate to the fixed charge is intended to improve equity. Charging only a fixed charge has the effect of treating all customers equally, but not all customers are equal. Customers discharge different amounts of wastewater. Adding a volume rate to the structure can reflect differences among wastewater customers based on the wastewater they discharge.

It is to the City's credit that it has a sewer rate structure that combines a fixed charge with a volume rate. The current proportions of revenue from the fixed and volume charges is in balance with the fixed and variable costs in the revenue requirement. Approximately 60% of the revenue is generated by the fixed charges and 40% by the volume charge. With this combination, the average customer bill covers its share of the

² *Financing and Charges for Wastewater Systems*. Water Environment Federation Manual of Practice No. 27. 2004. P. 146. This publication provides guidance in setting wastewater rates similar to the American Water Works Association's Manual M1, which provides guidance for setting water rates.

fixed costs. We recommend maintaining a rate structure with the same 60%/40% balance between the fixed and volume rates.

Our review of the structure of the current fixed charges leads us to recommend the following refinement. The current set of three fixed charges (i.e., per account, per dwelling unit, and per large meter) is comparatively complex based on industry standards. We recommend consolidating the three fixed charges into a single set of charges that are graduated in proportion to the size of the meter.

In addition to simplifying the structure, rate payer equity will be improved in three ways by creating a single set of graduated fixed charges for three reasons. First, the current \$4.50 charge per account recovers a portion of fixed costs that are not clearly distinguished from the fixed costs recovered from the other fixed charges. Although there are certainly fixed costs associated with the charge per account, the cost of service corresponding to this charge has not been recently updated.

Second, the \$2.00 charge per dwelling unit can be viewed as problematic when it is charged to unoccupied dwelling units. Moreover, the cost of service corresponding to this charge has not been recently updated. Again, this is a case in which this charge recovers a portion of fixed costs that are not clearly distinguished from the fixed costs recovered from the other fixed charges.

Third, the \$10.00 charge for 2" and larger meters raises a question as to why this charge only applies to large meters beginning with 2" meters and is the same amount for all larger meters. And, again, this is another case in which this charge recovers a portion of fixed costs that are not clearly distinguished from the fixed costs recovered from the other fixed charges.

Consolidating the current three fixed charges into a single set of fixed charges resolves the complexity of having different fixed charges related to accounts, dwelling units, and large meters. Graduating the proposed fixed charges based on water meter size is appropriate because the size of the water meter is representative of the potential production of wastewater. Although there is a correlation between water meter size and wastewater discharge, the correlation for designing sewer rates is different than it is for designing water rates.

In designing fixed charges for water rates, it is common to graduate the charge reflecting the nominal capacity of each meter. The capacity of the meter represents the maximum possible flow that can be provided for inside, sewer uses and for outside unsewered uses like irrigation. The size of larger water meters may also be determined primarily based on fire flow requirements, which is also unsewered.

When designing graduated fixed charges for sewer rates, consideration should be given to reducing the capacity so that the sewer rate minimizes the amount of unsewered capacity. There is no wastewater industry standard for graduating the fixed charges. Our recommendation for designing the fixed charges is based on the existing fixed charges, which currently range from \$4.50 to \$14.50 for meters ranging from 5/8" to 10", a range of 1.0 to 3.2. To accommodate 12" meters, of which there are two, we extended the range to 1.0 to 4.0. This gradation is considerably less than the range in the City fixed charges, which ranges from \$17.27 to \$2,663.48 or 1.0 to 154.2. The gradation in the water fixed charges is much steeper because it reflects capacity that is required for fire flows and irrigation, which is particularly the case with larger meters. The gradation for the sewer fixed charges is comparatively flat and consistent with the City's historic practice. As flat as the gradation, it fairly distributes fixed costs across the meter sizes, shifting costs away from the smallest meters, which generally produce the least wastewater, to the larger meters without burdening the larger meters with capacity that is unsewered.

Our review of the structure of the current volume charge leads us to recommend making no further structural changes. The volume charge is intended to recover a portion of the fixed costs and all variable costs, which is appropriate. The volume charge is uniform and does not vary by customer class, which is also appropriate because the associated costs only relate to flows in the City's collection system. The cost of treatment, which should reflect differences in wastewater strength among customer classes, is charged separately by Orange County Sanitation District.

PROPOSED RATE STRUCTURE

The proposed rate structure should have two components. The fixed charge is a "Sewer Service Charge" comprising a single set of fixed charges per meter and the volume rate is a "Sewer Use Charge". The derivation of these two components is described below.

Sewer Service Component of Rate Structure

To give effect to these conclusions, a single set of fixed charges was derived in proportion to the size of the water meter as shown in **Figure 4-1**. The calculation combines the customers that receive both water and sewer service from the City as well as the customers that receive only sewer service from the City.³ In this way, the proposed rates for all customers will include a common fixed charge that is proportionate to the meter size regardless of whether they receive only sewer service from the City.

³ For ease of discussion, customers that receive both water and sewer service from the City will be referred to as "sewer customers". Customers that receive only sewer service from the City will be referred to as "sewer-only customers".

Figure 4-1. Monthly Sewer Service Charges (FY 2017-18 Before Rate Increase)

Meter Size	Meters	Sewer-Only Meters	Total Meters	EMU Multiplier	Total EMUs	Service Charge Per Meter	Revenue No Rate Increase
5/8"	16,604	275	16,879	1.00	16,879	\$5.91	\$1,196,868
3/4"	4	85	89	1.00	89	\$5.91	\$6,322
1"	7,437	57	7,494	1.00	7,494	\$5.91	\$531,385
1.5"	552	21	573	1.10	630	\$6.50	\$44,702
2"	1,465	58	1,523	1.50	2,284	\$8.86	\$161,958
3"	48	2	50	1.70	85	\$10.05	\$6,041
4"	253	4	257	2.00	513	\$11.82	\$36,378
6"	178	1	179	2.25	404	\$13.30	\$28,623
8"	95	1	96	2.50	239	\$14.77	\$16,965
10"	3	2	5	3.20	16	\$18.91	\$1,160
12"	2	-	2	4.00	8	\$23.64	\$567
	26,641	506	27,147		28,642		\$2,030,970

Source: Model Tab 7.

The “EMU⁴ Multiplier” in **Figure 4-1** refers to the amount of capacity provided by larger meters compared to the smallest meters. The multipliers used in **Figure 4-1** follow a smooth progression from smallest to largest meter without the abrupt increase that occurs in the current rates when the charge for large meters is added for 2” and larger meters. The range from small to large EMUs is 1.0 to 4.0, which is considerably less than the full hydraulic capacity of the larger meters. The range was kept low to avoid including the peak capacity of larger meters that is often needed for fire flows or irrigation, neither of which are sewered flows.

With these multipliers, the 27,147 meters of various sizes translate into 28,642 equivalent 5/8” meters. The unit charge per EMU (before rate increase) is \$5.90. Applying the EMU multipliers to the larger meters results in the Sewer Service Charges for the larger meter sizes. The total revenue from these charges is about 58% of the total rate revenue.

Figure 4-2 shows the sewer service charges for FY 2017-18 with the rate increase shown in **Figure 3-4**. Note that the revenue shown would occur if the proposed rates were effective for twelve months. Because the rates are planned to become effective January 1, 2018, only half of the revenue from the increase will be received.

⁴ “EMU” stands for “Equivalent Meter Unit.”

Figure 4-2. Monthly Sewer Service Charges (FY 2017-18 With Rate Increase)

Meter Size	Meters	Sewer-Only Meters	Total Meters	EMU Multiplier	Total EMUs	Service Charge Per Meter	Revenue With Rate Increase
5/8"	16,604	275	16,879	1.00	16,879	\$6.46	\$1,309,374
3/4"	4	85	89	1.00	89	\$6.46	\$6,916
1"	7,437	57	7,494	1.00	7,494	\$6.46	\$581,335
1.5"	552	21	573	1.10	630	\$7.11	\$48,904
2"	1,465	58	1,523	1.50	2,284	\$9.70	\$177,182
3"	48	2	50	1.70	85	\$10.99	\$6,608
4"	253	4	257	2.00	513	\$12.93	\$39,798
6"	178	1	179	2.25	404	\$14.55	\$31,314
8"	95	1	96	2.50	239	\$16.16	\$18,560
10"	3	2	5	3.20	16	\$20.69	\$1,269
12"	2	0	2	4.00	8	\$25.86	\$621
	26,641	506	27,147		28,642		\$2,221,881

Source: Model Tab 7.

Sewer Use Component of Rate Structure

Sewer service charges are the same for all customers with the same size meter regardless of customer class because the charge does not depend on what type of customer is connected. The sewer service charge is based on the capacity of connections, which is a reasonable approximation of the wastewater that can be discharged. Sewer use charges are uniform charges per HCF that are also independent of the type of customer that is discharging wastewater because the City's sewerage is only related to conveyance and not to treatment.

Hence, the same \$0.38 per HCF uniform sewer use charge is paid by all customers based on their ongoing, monthly metered water use. In the case of non-residential customers, significant irrigation water use is provided through irrigation accounts that are not charged sewer use charges.

For residential customers, the use of ongoing, metered water use will unavoidably include irrigation water. To minimize charging residential customers sewer use charges that include irrigation water use, utilities base the water use on winter water use when irrigation is minimal. In the City's case, the current customer billing system is unable to calculate sewer bills based on winter water use. The City is evaluating the future capabilities of its billing system to determine winter water use. Although it has been a long-standing practice by the City to use ongoing water use for calculating residential sewer use charges, the City recognizes the benefit of using only winter water use. The City intends to improve its billing system in the future so that it will be possible to bill residential sewer use charges based on winter water use.

For billing sewer-only customers sewer use charges, the City is at a disadvantage because it does not have immediate access to water meter readings; the meters for sewer-only customers are read by their water supplier and not the City. For lack of

meter readings, average water use per meter was calculated for the City’s water customers and applied to the sewer-only customers. These average flows result in sewer use charges for the sewer-only customers that are fixed for each size meter. **Figure 4-3** shows the derivation of the sewer use component of the rate structure for the sewer-only customers.

Figure 4-3. Monthly Sewer Use Component – Sewer-Only (FY 2017-18 Before Rate Increase)

Meter Size	Meters	Avg HCF Per Meter Per Month	Current Charge Per HCF	Monthly Use Charge	Annual Revenue
5/8"	275	8.97	\$0.35	\$3.14	\$10,370
3/4"	85	8.97	\$0.35	\$3.14	\$3,209
1"	57	13.39	\$0.35	\$4.69	\$3,205
1.5"	21	72.49	\$0.35	\$25.37	\$6,428
2"	58	68.49	\$0.35	\$23.97	\$16,601
3"	2	212.27	\$0.35	\$74.29	\$1,882
4"	4	393.01	\$0.35	\$137.56	\$5,808
6"	1	714.08	\$0.35	\$249.93	\$4,221
8"	1	714.08	\$0.35	\$249.93	\$2,111
10"	2	714.08	\$0.35	\$249.93	\$6,332
	<u>506</u>				<u>\$60,167</u>

Source: Model Tab 7.

Note that the averages for the 6” and larger meters involve very few customers. For these meter sizes, the 8” flow was used for all three meter sizes.

Figure 4-4 shows the monthly sewer use charges for sewer-only customers with the rate increase for FY 2017-18 shown in **Figure 3-4**.

Figure 4-4. Monthly Sewer Use Component – Sewer Only (FY 2017-18 With Rate Increase)

Meter Size	Meters	Avg HCF Per Meter Per Month	Charge Per HCF	Monthly Use Charge	Annual Revenue
5/8"	275	8.97	\$0.38	\$3.44	\$11,344
3/4"	85	8.97	\$0.38	\$3.44	\$3,511
1"	57	13.39	\$0.38	\$5.13	\$3,506
1.5"	21	72.49	\$0.38	\$27.76	\$7,032
2"	58	68.49	\$0.38	\$26.23	\$18,161
3"	2	212.27	\$0.38	\$81.28	\$2,059
4"	4	393.01	\$0.38	\$150.49	\$6,354
6"	1	714.08	\$0.38	\$273.42	\$4,618
8"	1	714.08	\$0.38	\$273.42	\$2,309
10"	2	714.08	\$0.38	\$273.42	\$6,927
	<u>506</u>				<u>\$65,823</u>

Source: Model Tab 7.

Figure 4-5 shows the flat charge per account for the sewer-only customers that combines the two rate components.

Figure 4-5. Monthly Sewer Charge – Sewer-Only (FY 2017-18)

Meter Size	Service Component	Use Component	Flat Charge
5/8"	\$6.46	\$3.44	\$9.90
3/4"	\$6.46	\$3.44	\$9.90
1"	\$6.46	\$5.13	\$11.59
1.5"	\$7.11	\$27.76	\$34.87
2"	\$9.70	\$26.23	\$35.92
3"	\$10.99	\$81.28	\$92.27
4"	\$12.93	\$150.49	\$163.41
6"	\$14.55	\$273.42	\$287.97
8"	\$16.16	\$273.42	\$289.58
10"	\$20.69	\$273.42	\$294.11

Source: Model Tab 7.

BALANCED RATE DESIGN

Although this rate study recommends several structural modifications, the underlying rate design balanced fixed and variable revenue with fixed and variable costs. **Figure 4-6** compares revenue from fixed and variable sources under the current rates with the proposed rates.

Figure 4-6. Fixed and Variable Revenue

	Revenue Summary (FY 2017-18)			
	Current Rates		Proposed Rates With 1/1/18 Increase	
Fixed Charges				
Service charge	\$1,438,614		\$2,085,636	
DU surcharge	\$347,076		\$0	
Large meter surcharge	\$245,280		\$0	
	\$2,030,970	57%	\$2,085,636	56%
Variable Charges				
Use charge	\$1,474,238	41%	\$1,543,527	41%
	\$3,505,208		\$3,629,163	
Sewer-Only				
Service charge	\$37,950		\$40,789	
DU surcharge	\$15,648		\$0	
Use charge	\$0		\$62,995	
	\$53,598	2%	\$103,784	3%
Total	\$3,558,806	100%	\$3,732,948	100%
Recap				
Fixed Revenue				
Service charges	\$1,476,564		\$2,126,425	
DU surcharge	\$362,724		\$0	
Large meter surcharge	\$245,280		\$0	
Nonseasonal Variable Charge	\$737,119		\$834,758.53	
	\$2,821,687	79%	\$2,961,184	79%
Variable revenue				
Seasonal Variable Charge	\$737,119	21%	\$771,764	21%
	\$3,558,806	100%	\$3,732,948	100%

Source: Model Tab 7.

Under the current rates, 57% of the revenue comes from fixed charges 41% from variable charges. Those proportions are nearly the same with the proposed rates.

Those proportions balance well with the fixed and variable costs of providing sewer service, which are at least 80% fixed. The lower part of **Figure 4-6** makes an adjustment for the portion of the water use that is nonseasonal and, hence, that also produces fixed revenue. Assuming that half of the revenue from the sewer use charge is related to nonseasonal water use shifts about 20% of the revenue from the flow charges to the fixed charges. As a result, 79% of the revenue comes from fixed revenue sources, which balances well with the fact that at least 80% of the costs are also fixed.

PROJECTED RATES

The FY 2017-18 rates shown in **Figure 4-2** and **Figure 4-5** are increased by the revenue increases shown in **Figure 3-4** for the five-year projection period, as shown in **Figure 4-7** for all of the sewer customers with the exception of sewer-only customers, which are shown in **Figure 4-8**.

Figure 4-7. Monthly Sewer Rate Projections

	Current	Proposed				
	FY 2016-17	FY 2017-18 (Eff. 1/1/18)	FY 2018-19 (Eff. 1/1/19)	FY 2019-20 (Eff. 1/1/20)	FY 2020-21 (Eff. 1/1/21)	FY 2021-22 (Eff. 1/1/22)
Sewer Service Charges						
5/8"	\$4.50	\$6.46	\$7.07	\$7.74	\$8.39	\$8.55
3/4"	\$4.50	\$6.46	\$7.07	\$7.74	\$8.39	\$8.55
1"	\$4.50	\$6.46	\$7.07	\$7.74	\$8.39	\$8.55
1.5"	\$4.50	\$7.11	\$7.78	\$8.51	\$9.23	\$9.41
2"	\$14.50	\$9.70	\$10.61	\$11.61	\$12.58	\$12.83
3"	\$14.50	\$10.99	\$12.02	\$13.15	\$14.26	\$14.54
4"	\$14.50	\$12.93	\$14.14	\$15.47	\$16.77	\$17.11
6"	\$14.50	\$14.55	\$15.91	\$17.41	\$18.87	\$19.25
8"	\$14.50	\$16.16	\$17.68	\$19.34	\$20.97	\$21.39
10"	\$14.50	\$20.69	\$22.63	\$24.76	\$26.84	\$27.37
12"	\$14.50	\$25.86	\$28.29	\$30.95	\$33.55	\$34.22
Surcharge Per Dwelling Unit	\$2.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Sewer Use Charge (per HCF)	\$0.35	\$0.38	\$0.42	\$0.46	\$0.50	\$0.51

Source: Model Tab 8.

Figure 4-8. Monthly Sewer Rate Projections – Sewer-Only Customers

	Current FY 2016-17	Proposed				
		FY 2017-18 (Eff. 1/1/18)	FY 2018-19 (Eff. 1/1/19)	FY 2019-20 (Eff. 1/1/20)	FY 2020-21 (Eff. 1/1/21)	FY 2021-22 (Eff. 1/1/22)
Flat Charges Per Account						
5/8"	\$6.25	\$9.90	\$10.83	\$11.85	\$12.84	\$13.10
3/4"	\$6.25	\$9.90	\$10.83	\$11.85	\$12.84	\$13.10
1"	\$6.25	\$11.59	\$12.68	\$13.87	\$15.04	\$15.34
1.5"	\$6.25	\$34.87	\$38.15	\$41.73	\$45.24	\$46.14
2"	\$6.25	\$35.92	\$39.30	\$42.99	\$46.60	\$47.54
3"	\$6.25	\$92.27	\$100.94	\$110.43	\$119.70	\$122.10
4"	\$6.25	\$163.41	\$178.78	\$195.58	\$212.01	\$216.25
6"	\$6.25	\$287.97	\$315.04	\$344.65	\$373.60	\$381.07
8"	\$6.25	\$289.58	\$316.80	\$346.58	\$375.70	\$383.21
10"	\$6.25	\$294.11	\$321.75	\$352.00	\$381.57	\$389.20
Surcharge Per Dwelling Unit	\$2.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Source: Model Tab 8.

CURRENT AND PROPOSED CUSTOMER BILL COMPARISONS

Figure 4-9 presents a comparison of monthly customer bills using the current rate structure and the recommended revised rate structure.

Figure 4-9. Monthly Customer Bill Comparison (FY 2017-18)

Customer Type	Meter Size	Monthly Flow (HCF)	Current Service Charge	Current Flow Charge	Current Monthly Bill	Proposed Service Charge	Proposed Flow Charge	Proposed Monthly Bill	Proposed Minus Current
Single Family Residential (low flow)	5/8" - 1"	3.0	\$4.50	\$1.03	\$5.53	\$6.46	\$1.13	\$7.60	\$2.06
Single Family Residential (avg flow)	5/8" - 1"	11.8	\$4.50	\$4.13	\$8.63	\$6.46	\$4.52	\$10.99	\$2.35
Single Family Residential (high flow)	5/8" - 1"	23.6	\$4.50	\$8.27	\$12.77	\$6.46	\$9.05	\$15.51	\$2.74
Sewer-only (no additional DUs)	3/4"	9.0	\$6.25	\$0.00	\$6.25	\$6.46	\$3.44	\$9.90	\$3.65
Commercial	1.5"	29.7	\$4.50	\$10.40	\$14.90	\$7.11	\$11.38	\$18.49	\$3.59
Commercial	2"	118.9	\$14.50	\$41.61	\$56.11	\$9.70	\$45.52	\$55.21	-\$0.89
Commercial	3"	237.7	\$14.50	\$83.21	\$97.71	\$10.99	\$91.03	\$102.02	\$4.31

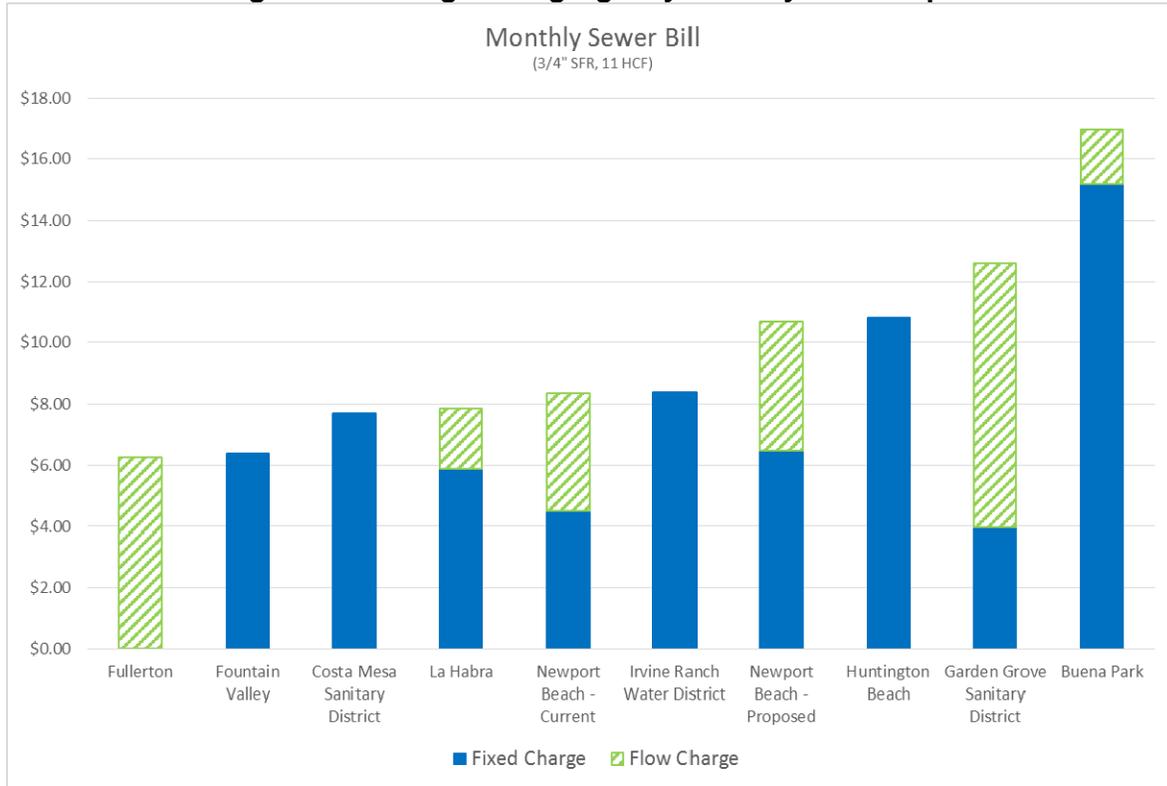
Source: Model Tab 8.

COMPARISON WITH NEIGHBORING AGENCIES

Based on available sources, Figure 4-10 shows the recent charges for sewer service among similar Orange County agencies. Note that comparisons with other agencies may not provide a complete understanding of the differences. For example, some of these other agencies are currently updating their rates; the amounts of their proposed increases were not known at this time. Some agencies' rates are supplemented by other sources of non-operating revenue such as property or sales taxes, insurance or settlement proceeds, rental or lease income, and general fund transfers, which are not available to all agencies.

The comparison shows that some agencies' rate structures are flat charges per account. Other agencies' rates are like the City's and include both fixed and volume components. The amount of these bills that is fixed varies considerably, which reflects the variability of the industry practice.

Figure 4-10. Neighboring Agency Monthly Bill Comparison



Source: Model Tab 9.

APPENDIX. SEWER RATE MODEL

City of Newport Beach
Sewer Rate Study
Table 1A. Summary

Fiscal Year:	Projected										
	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Revenue Increases - Sewer		9.40%	9.40%	9.40%	8.40%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Cumulative Increase		9.4%	19.7%	30.9%	41.9%	44.8%	47.7%	50.6%	53.6%	56.7%	59.8%

Annual Revenue Requirement	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27
Regular Salaries	\$971,539	\$889,567	\$911,806	\$934,601	\$957,966	\$981,915	\$1,006,463	\$1,031,625	\$1,057,416	\$1,083,851	\$1,110,947
Special Pays	3,784	4,563	4,677	4,794	4,914	5,037	5,163	5,292	5,424	5,560	5,699
Benefits	675,743	708,107	725,810	743,955	762,554	781,618	801,158	821,187	841,717	862,760	884,329
Lump Sum Pays	-	-	-	-	-	-	-	-	-	-	-
Other Pays	45,000	45,000	46,125	47,278	48,460	49,672	50,913	52,186	53,491	54,828	56,199
Contract Services	51,000	91,000	92,574	94,176	95,805	97,463	99,149	100,864	102,609	104,384	106,190
Utilities	97,700	97,700	99,390	101,110	102,859	104,638	106,449	108,290	110,164	112,069	114,008
Supplies & Materials	19,850	19,850	20,193	20,543	20,898	21,260	21,627	22,002	22,382	22,769	23,163
Maintenance & Repair	786,000	785,363	798,950	812,772	826,833	841,137	855,689	870,492	885,552	900,872	916,457
Travel & Training	10,260	10,260	10,437	10,618	10,802	10,989	11,179	11,372	11,569	11,769	11,973
General Expenses	412,497	412,497	419,633	426,893	434,278	441,791	449,434	457,209	465,119	473,166	481,351
Internal SVC Premium	486,500	475,296	483,519	491,883	500,393	509,050	517,856	526,815	535,929	545,201	554,633
Insurance Reserve	20,773	20,773	21,132	21,498	21,870	22,248	22,633	23,025	23,423	23,828	24,240
Capital Expenditures	33,000	33,000	33,571	34,152	34,743	35,344	35,955	36,577	37,210	37,854	38,508
Non-Operating Revenue	(13,000)	(13,000)	(13,225)	(13,454)	(13,686)	(13,923)	(14,164)	(14,409)	(14,658)	(14,912)	(15,170)
Storm Drain Operating											
Storm Drain Capital											
Transfers to Infrastructure Replace	\$750,000	\$1,000,000	\$1,030,000	\$1,060,900	\$1,092,727	\$1,125,509	\$1,159,274	\$1,194,052	\$1,229,874	\$1,266,770	\$1,304,773
	\$ 4,350,646	\$ 4,579,977	\$ 4,684,594	\$ 4,791,719	\$ 4,901,415	\$ 5,013,746	\$ 5,128,779	\$ 5,246,580	\$ 5,367,219	\$ 5,490,769	\$ 5,617,301
Annual increase		5.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%

**City of Newport Beach
Sewer Rate Study
Table 1B. General**

Factors	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	Source	Notes
a. Interest on Reserve Balance	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	0.75%	City Estimate	To Table 4
b. General inflation	1.73%	1.73%	1.73%	1.73%	1.73%	1.73%	1.73%	1.73%	1.73%	US Statistics, LA Area 5-year average	To Table 2
c. Personnel Increases	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	Estimate	To Table 2
d. Benefits cost increases	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	Estimate	To Table 2
e. Percent of Bad Debt	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	Based on City's Fund Worksheet	To Table 3A,3B
f. Utilities Increases - electricity	1.73%	1.73%	1.73%	1.73%	1.73%	1.73%	1.73%	1.73%	1.73%		
g. Increase in Sewer Accounts	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		To Table 3A
h. Increase in Water Consumption	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		To Table 2, 8
i. Increase in Recycled Water Us	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		To Table 2, 3B
j. Construction cost inflation	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	City Estimate	To Table 2B, 5

Reserve Policies

Operations Fund

Purpose	Working capital for O&M cash flow during the year.
Funding priority	Highest. If not maintained, interfund loans are needed.
Minimum balance	50% of annual O&M costs

Infrastructure Replacement Funds

Purpose	For wastewater master plan construction projects.
Funding priority	Second highest.
Target balance	No Minimum or Maximum. Should be reviewed periodically

Model Tables Included

- Table 1A. Summary
- Table 1B. General
- Table 2A. Revenue Requirement Projection - Sewer
- Table 3A. Revenue Increases - Sewer
- Table 4. Reserves
- Table 5. CIP
- Table 7A. Rate Revenue - Sewer
- Table 8. Sample Customer Bills
- Table 9. Sewer Agency Comparison

City of Newport Beach
Sewer Rate Study
Table 2A. Revenue Requirement Projection - Sewer

Table 1B		Budgeted					Projected						Notes
Factors		FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	
Regular Salaries													
	711001 SALRY MISC	c.	\$ 971,539	\$881,540	\$903,579	\$926,168	\$949,323	\$973,056	\$997,382	\$1,022,317	\$1,047,875	\$1,074,071	\$1,100,923
	711003 SALRY P/T	c.	-	\$8,026	\$8,227	\$8,433	\$8,644	\$8,860	\$9,081	\$9,308	\$9,541	\$9,779	\$10,024
	Total Regular Salaries		971,539	889,567	911,806	934,601	957,966	981,915	1,006,463	1,031,625	1,057,416	1,083,851	1,110,947
Special Pays													
	712003 NIGHT DIFF	c.	-	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	712004 CERT PAY	c.	3,784	\$4,563	\$4,677	\$4,794	\$4,914	\$5,037	\$5,163	\$5,292	\$5,424	\$5,560	\$5,699
	Total Special Pays		3,784	4,563	4,677	4,794	4,914	5,037	5,163	5,292	5,424	5,560	5,699
Benefits													
	713008 CALLBACK	c.	35,000	\$35,000	\$35,875	\$36,772	\$37,691	\$38,633	\$39,599	\$40,589	\$41,604	\$42,644	\$43,710
	713009 STANDBY	c.	26,250	\$26,250	\$26,906	\$27,579	\$28,268	\$28,975	\$29,699	\$30,442	\$31,203	\$31,983	\$32,783
	721001 CAF ALW FT	d.	281,086	\$245,814	\$251,959	\$258,258	\$264,715	\$271,333	\$278,116	\$285,069	\$292,196	\$299,500	\$306,988
	722001 PERS MBR M	d.	101,752	\$89,905	\$92,153	\$94,457	\$96,818	\$99,239	\$101,720	\$104,263	\$106,869	\$109,541	\$112,280
	723002 PERS ER M	d.	56,638	\$52,897	\$54,220	\$55,575	\$56,965	\$58,389	\$59,848	\$61,345	\$62,878	\$64,450	\$66,061
	723004 RET P/T	d.	-	\$301	\$309	\$316	\$324	\$332	\$341	\$349	\$358	\$367	\$376
	724001 EE CNTRB M	d.	(\$126,845)	(\$101,930)	(\$104,479)	(\$107,091)	(\$109,768)	(\$112,512)	(\$115,325)	(\$118,208)	(\$121,163)	(\$124,192)	(\$127,297)
	725001 UNFND LB M	d.	209,986	\$194,103	\$198,956	\$203,930	\$209,028	\$214,254	\$219,610	\$225,100	\$230,728	\$236,496	\$242,408
	725003 DISC UAL M	d.	-	\$79,895	\$81,892	\$83,940	\$86,038	\$88,189	\$90,394	\$92,654	\$94,970	\$97,344	\$99,778
	727003 CELLPHONE	d.	6,300	\$6,360	\$6,519	\$6,682	\$6,849	\$7,020	\$7,196	\$7,376	\$7,560	\$7,749	\$7,943
	727004 RHS \$2.50	d.	11,584	\$9,458	\$9,695	\$9,937	\$10,185	\$10,440	\$10,701	\$10,969	\$11,243	\$11,524	\$11,812
	727007 PAY > ARC	d.	-	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	727012 LIFE INS	d.	1,358	\$1,097	\$1,124	\$1,152	\$1,181	\$1,211	\$1,241	\$1,272	\$1,304	\$1,336	\$1,370
	727013 EAP	d.	326	\$239	\$245	\$251	\$257	\$264	\$270	\$277	\$284	\$291	\$298
	727016 MEDICARE	d.	18,218	\$17,796	\$18,241	\$18,697	\$19,164	\$19,643	\$20,134	\$20,638	\$21,154	\$21,683	\$22,225
	727019 SURV BEN	d.	-	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	728001 WC MISC	d.	20,068	\$20,068	\$20,570	\$21,084	\$21,611	\$22,151	\$22,705	\$23,273	\$23,855	\$24,451	\$25,062
	728003 COMP ABS	d.	34,022	\$30,854	\$31,625	\$32,416	\$33,226	\$34,057	\$34,908	\$35,781	\$36,675	\$37,592	\$38,532
	729001 PAYRL ACC	d.	-	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	729015 PENS EXPCT	d.	-	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Total Benefits		675,743	708,107	725,810	743,955	762,554	781,618	801,158	821,187	841,717	862,760	884,329
Lump Sum Pays													
	714001 LUMP SUM	c.	-	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
	Total Lump Sum Pays		-	-	-	-	-	-	-	-	-	-	-
Other Pays													
	713001 OT MISC	c.	45,000	\$45,000	\$46,125	\$47,278	\$48,460	\$49,672	\$50,913	\$52,186	\$53,491	\$54,828	\$56,199
	Total Other Pays		45,000	45,000	46,125	47,278	48,460	49,672	50,913	52,186	53,491	54,828	56,199
Contract Services													
	811004 EQUIP RNTL	b.	1,000	\$1,000	\$1,017	\$1,035	\$1,053	\$1,071	\$1,090	\$1,108	\$1,128	\$1,147	\$1,167
	811008 SVCS PROF	b.	20,000	\$60,000	\$61,038	\$62,094	\$63,168	\$64,261	\$65,373	\$66,504	\$67,654	\$68,825	\$70,015
	841060 OTHR AGENCY	b.	30,000	\$30,000	\$30,519	\$31,047	\$31,584	\$32,130	\$32,686	\$33,252	\$33,827	\$34,412	\$35,008
	Contract Services		51,000	91,000	92,574	94,176	95,805	97,463	99,149	100,864	102,609	104,384	106,190
Utilities													
	831002 UTL PHONE	b.	8,700	\$8,700	\$8,851	\$9,004	\$9,159	\$9,318	\$9,479	\$9,643	\$9,810	\$9,980	\$10,152
	831003 UTL GAS	b.	1,000	\$1,000	\$1,017	\$1,035	\$1,053	\$1,071	\$1,090	\$1,108	\$1,128	\$1,147	\$1,167
	831004 UTL ELCTRC	f.	68,000	\$68,000	\$69,176	\$70,373	\$71,591	\$72,829	\$74,089	\$75,371	\$76,675	\$78,001	\$79,351
	831005 ULT WATER	b.	20,000	\$20,000	\$20,346	\$20,698	\$21,056	\$21,420	\$21,791	\$22,168	\$22,551	\$22,942	\$23,338
	Total Utilities		97,700	97,700	99,390	101,110	102,859	104,638	106,449	108,290	110,164	112,069	114,008
Supplies & Materials													
	841007 OFC SUPPLS	b.	350	\$350	\$356	\$362	\$368	\$375	\$381	\$388	\$395	\$401	\$408
	841015 SPCDEPTSUP	b.	15,000	\$15,000	\$15,260	\$15,523	\$15,792	\$16,065	\$16,343	\$16,626	\$16,914	\$17,206	\$17,504
	841043 CONCRETE	b.	2,000	\$2,000	\$2,035	\$2,070	\$2,106	\$2,142	\$2,179	\$2,217	\$2,255	\$2,294	\$2,334
	841044 TOOLS	b.	2,500	\$2,500	\$2,543	\$2,587	\$2,632	\$2,678	\$2,724	\$2,771	\$2,819	\$2,868	\$2,917
	Total Supplies & Materials		19,850	19,850	20,193	20,543	20,898	21,260	21,627	22,002	22,382	22,769	23,163

Maintenance & Repair												
851001 GNRATR M&R	b.	18,500	\$18,500	\$18,820	\$19,146	\$19,477	\$19,814	\$20,157	\$20,505	\$20,860	\$21,221	\$21,588
851007 AUTO FUEL	b.	45,000	\$45,000	\$45,779	\$46,570	\$47,376	\$48,196	\$49,030	\$49,878	\$50,741	\$51,618	\$52,511
851010 EQP MNT&RP	b.	5,000	\$5,000	\$5,087	\$5,174	\$5,264	\$5,355	\$5,448	\$5,542	\$5,638	\$5,735	\$5,835
851016 BLDG MAINT	b.	4,662	\$4,662	\$4,743	\$4,825	\$4,908	\$4,993	\$5,079	\$5,167	\$5,257	\$5,348	\$5,440
851032 ROOT CUT	b.	16,601	\$16,601	\$16,888	\$17,180	\$17,478	\$17,780	\$18,088	\$18,400	\$18,719	\$19,043	\$19,372
851035 CCTV MAINT	b.	87,036	\$87,036	\$88,542	\$90,073	\$91,632	\$93,217	\$94,830	\$96,470	\$98,139	\$99,837	\$101,564
851036 GREASE DEV	b.	79,544	\$79,544	\$80,920	\$82,320	\$83,744	\$85,193	\$86,667	\$88,166	\$89,691	\$91,243	\$92,822
851037 MAINT&REP	b.	211,007	\$211,007	\$214,657	\$218,371	\$222,149	\$225,992	\$229,902	\$233,879	\$237,925	\$242,041	\$246,228
851049 MNT SCADA	b.	25,252	\$25,252	\$25,689	\$26,133	\$26,585	\$27,045	\$27,513	\$27,989	\$28,473	\$28,966	\$29,467
851050 MANHL LINE	b.	75,000	\$75,000	\$76,298	\$77,617	\$78,960	\$80,326	\$81,716	\$83,130	\$84,568	\$86,031	\$87,519
851051 MNTPUMPSTA	b.	13,000	\$13,000	\$13,225	\$13,454	\$13,686	\$13,923	\$14,164	\$14,409	\$14,658	\$14,912	\$15,170
851052 ALLEYRPL	b.	43,500	\$43,500	\$44,253	\$45,018	\$45,797	\$46,589	\$47,395	\$48,215	\$49,049	\$49,898	\$50,761
851053 MNHL MNT	b.	37,601	\$37,601	\$38,251	\$38,913	\$39,586	\$40,271	\$40,968	\$41,677	\$42,398	\$43,131	\$43,877
851054 ROOT FOAM	b.	85,000	\$85,000	\$86,471	\$87,966	\$89,488	\$91,036	\$92,611	\$94,214	\$95,843	\$97,501	\$99,188
851062 UTL FAC MN	b.	20,375	\$20,375	\$20,727	\$21,086	\$21,451	\$21,822	\$22,199	\$22,584	\$22,974	\$23,372	\$23,776
851066 SWR/PRPFEE	b.	18,922	\$18,285	\$18,602	\$18,923	\$19,251	\$19,584	\$19,923	\$20,267	\$20,618	\$20,975	\$21,338
Total Maintenance & Repair		786,000	785,363	798,950	812,772	826,833	841,137	855,689	870,492	885,552	900,872	916,457
Travel & Training												
861001 TRVL&MTGS	b.	1,000	\$1,000	\$1,017	\$1,035	\$1,053	\$1,071	\$1,090	\$1,108	\$1,128	\$1,147	\$1,167
861003 TRAINING	b.	9,260	\$9,260	\$9,420	\$9,583	\$9,749	\$9,918	\$10,089	\$10,264	\$10,441	\$10,622	\$10,806
Total Travel & Training		10,260	10,260	10,437	10,618	10,802	10,989	11,179	11,372	11,569	11,769	11,973
General Expenses												
871001 CERT MEMBR	b.	5,500	\$5,500	\$5,595	\$5,692	\$5,790	\$5,891	\$5,992	\$6,096	\$6,202	\$6,309	\$6,418
871004 PUBS&DUES	b.	1,000	\$1,000	\$1,017	\$1,035	\$1,053	\$1,071	\$1,090	\$1,108	\$1,128	\$1,147	\$1,167
871006 UNIFORM	b.	5,000	\$5,000	\$5,087	\$5,174	\$5,264	\$5,355	\$5,448	\$5,542	\$5,638	\$5,735	\$5,835
871017 SFTWR RNEW	b.	29,249	\$29,249	\$29,755	\$30,270	\$30,793	\$31,326	\$31,868	\$32,419	\$32,980	\$33,551	\$34,131
871024 ADMN SVC	b.	371,748	\$371,748	\$378,179	\$384,722	\$391,377	\$398,148	\$405,036	\$412,043	\$419,172	\$426,423	\$433,800
Total General Expenses		412,497	412,497	419,633	426,893	434,278	441,791	449,434	457,209	465,119	473,166	481,351
Internal SVC Premium												
726002 ANUAL OPEB	b.	50,697	\$55,932	\$56,900	\$57,884	\$58,885	\$59,904	\$60,940	\$61,995	\$63,067	\$64,158	\$65,268
881001 EQPMNT ISF	b.	157,069	\$154,868	\$157,547	\$160,273	\$163,046	\$165,866	\$168,736	\$171,655	\$174,624	\$177,645	\$180,719
881003 VEHL ISF	b.	190,435	\$193,854	\$197,208	\$200,619	\$204,090	\$207,621	\$211,213	\$214,867	\$218,584	\$222,365	\$226,212
881004 IT OP ISF	b.	72,358	\$48,845	\$49,690	\$50,550	\$51,424	\$52,314	\$53,219	\$54,140	\$55,076	\$56,029	\$56,998
881005 IT REPLC I	b.	15,941	\$21,797	\$22,174	\$22,558	\$22,948	\$23,345	\$23,749	\$24,160	\$24,578	\$25,003	\$25,435
Total Internal SVC Premium		486,500	475,296	483,519	491,883	500,393	509,050	517,856	526,815	535,929	545,201	554,633
Insurance Reserve												
891001 GL INS ISF	b.	20,773	\$20,773	\$21,132	\$21,498	\$21,870	\$22,248	\$22,633	\$23,025	\$23,423	\$23,828	\$24,240
Total Insurance Reserve		20,773	20,773	21,132	21,498	21,870	22,248	22,633	23,025	23,423	23,828	24,240
Capital Expenditures												
911001 OFC EQUIP	b.	2,000	\$2,000	\$2,035	\$2,070	\$2,106	\$2,142	\$2,179	\$2,217	\$2,255	\$2,294	\$2,334
911004 COMP EQUIP	b.	5,000	\$5,000	\$5,087	\$5,174	\$5,264	\$5,355	\$5,448	\$5,542	\$5,638	\$5,735	\$5,835
911023 SHOP EQP	b.	1,000	\$1,000	\$1,017	\$1,035	\$1,053	\$1,071	\$1,090	\$1,108	\$1,128	\$1,147	\$1,167
911024 EQUIP NOC	b.	25,000	\$25,000	\$25,433	\$25,872	\$26,320	\$26,775	\$27,239	\$27,710	\$28,189	\$28,677	\$29,173
Total Capital Expenditures		33,000	33,000	33,571	34,152	34,743	35,344	35,955	36,577	37,210	37,854	38,508
Non-Operating Revenue												
5860 DAMAGE TO CITY PROPERTY	b.	(\$5,000)	(\$5,000)	(\$5,087)	(\$5,174)	(\$5,264)	(\$5,355)	(\$5,448)	(\$5,542)	(\$5,638)	(\$5,735)	(\$5,835)
5870 REVENUE, N.O.C.	b.	(\$8,000)	(\$8,000)	(\$8,138)	(\$8,279)	(\$8,422)	(\$8,568)	(\$8,716)	(\$8,867)	(\$9,021)	(\$9,177)	(\$9,335)
Total Non-Operating Revenue		(13,000)	(13,000)	(13,225)	(13,454)	(13,686)	(13,923)	(14,164)	(14,409)	(14,658)	(14,912)	(15,170)
Contribution to Capital Reserve												
To Replacement Reserves		750,000	1,000,000	1,030,000	1,060,900	1,092,727	1,125,509	1,159,274	1,194,052	1,229,874	1,266,770	1,304,773
Total Contribution to Replacement Reserves		750,000	1,000,000	1,030,000	1,060,900	1,092,727	1,125,509	1,159,274	1,194,052	1,229,874	1,266,770	1,304,773
Net Revenue Requirement (before Reserve Expense)												
		\$ 4,350,646	\$ 4,579,977	\$ 4,684,594	\$ 4,791,719	\$ 4,901,415	\$ 5,013,746	\$ 5,128,779	\$ 5,246,580	\$ 5,367,219	\$ 5,490,769	\$ 5,617,301
			5.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%
		\$3,049,802	\$ 3,600,646	\$ 3,579,977	\$ 3,654,594	\$ 3,730,819	\$ 3,808,688	\$ 3,888,238	\$ 3,969,505	\$ 4,052,528	\$ 4,137,346	\$ 4,223,999

City of Newport Beach
Water Rate Study
Table 3A. Revenue Increases - Sewer

	Months in 1st FY of rate increase*	Estimated FY 2016-17	Projected										Notes
			FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26	FY 2026-27	
Revenue from Rates without Rate Increases													
Revenue from Current Rates			\$3,558,806	\$3,558,806	\$3,558,806	\$3,558,806	\$3,558,806	\$3,558,806	\$3,558,806	\$3,558,806	\$3,558,806	\$3,558,806	FY13-14 from Table 7A; Table 1B, g.
Bad Debt Expense			(\$14,144)	(\$14,144)	(\$14,144)	(\$14,144)	(\$14,144)	(\$14,144)	(\$14,144)	(\$14,144)	(\$14,144)	(\$14,144)	
Net Revenue			\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	
Net Revenue Requirements			\$4,579,977	\$4,684,594	\$4,791,719	\$4,901,415	\$5,013,746	\$5,128,779	\$5,246,580	\$5,367,219	\$5,490,769	\$5,617,301	From Table 2
Surplus/(Deficit) before rate increase			(\$1,035,315)	(\$1,139,933)	(\$1,247,058)	(\$1,356,754)	(\$1,469,085)	(\$1,584,117)	(\$1,701,918)	(\$1,822,558)	(\$1,946,107)	(\$2,072,639)	To Table 4
Revenue from Rates with Rate Increases													
Increase in Revenue from Rates				9.4%	9.4%	9.4%	8.4%	2.0%	2.0%	2.0%	2.0%	2.0%	From Table 1A
<i>Cumulative Increase</i>				<i>4.3%</i>	<i>14.1%</i>	<i>24.8%</i>	<i>35.9%</i>	<i>42.8%</i>	<i>45.6%</i>	<i>48.6%</i>	<i>51.5%</i>	<i>54.6%</i>	To Table 1A
Total Revenue from Existing Rates													
Revenue from Current Rates			\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	
Revenue from Rate Increases													
FY17-18 (effective 1/1/18)	6		\$166,599	\$333,198	\$333,198	\$333,198	\$333,198	\$333,198	\$333,198	\$333,198	\$333,198	\$333,198	
FY19-20 (effective 1/1/19)	6			\$182,259	\$364,519	\$364,519	\$364,519	\$364,519	\$364,519	\$364,519	\$364,519	\$364,519	
FY20-21 (effective 1/1/20)	6				\$199,392	\$398,784	\$398,784	\$398,784	\$398,784	\$398,784	\$398,784	\$398,784	
FY21-22 (effective 1/1/21)	6					\$194,929	\$389,858	\$389,858	\$389,858	\$389,858	\$389,858	\$389,858	
FY21-22 (effective 1/1/22)	6						\$50,310	\$100,620	\$100,620	\$100,620	\$100,620	\$100,620	
FY23-24 (effective 1/1/23)	6							\$51,316	\$102,633	\$102,633	\$102,633	\$102,633	
FY24-25 (effective 1/1/24)	6								\$52,343	\$104,685	\$104,685	\$104,685	
FY25-26 (effective 1/1/25)	6									\$53,390	\$106,779	\$106,779	
FY26-27 (effective 1/1/26)	6										\$54,457	\$108,915	
FY26-27 (effective 1/1/27)	6											\$55,547	
Subtotal - Revenue from Rate Increases			\$166,599	\$515,458	\$897,109	\$1,291,429	\$1,536,668	\$1,638,295	\$1,741,954	\$1,847,686	\$1,955,533	\$2,065,537	
Total Rate Revenue			\$ 3,558,806	\$3,711,261	\$4,060,119	\$4,441,770	\$4,836,091	\$5,081,330	\$5,182,957	\$5,286,616	\$5,392,348	\$5,500,195	FY13-14 from Table 7A
Net Revenue Requirements			\$ 4,350,646	\$4,579,977	\$4,684,594	\$4,791,719	\$4,901,415	\$5,013,746	\$5,128,779	\$5,246,580	\$5,367,219	\$5,490,769	From Table 2
Surplus/(Deficit) after Rate Increase			(\$791,840)	(\$868,716)	(\$624,475)	(\$349,949)	(\$65,324)	\$67,583	\$54,178	\$40,036	\$25,129	\$9,426	(\$7,102) To Table 4

City of Newport Beach
Sewer Rate Study
Table 4. Reserves

	Budgeted	Projected									Notes	
	FY 2016-17	FY 2017-18	FY 2018-19	FY 2019-20	FY 2020-21	FY 2021-22	FY 2022-23	FY 2023-24	FY 2024-25	FY 2025-26		FY 2026-27
Sewer Operating Reserve Funds With Rate Increase (530)												
Revenue Increase												
Annual increases		9.4%	9.4%	9.4%	8.4%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	From Table 1A
Cumulative increase		9.4%	19.7%	30.9%	41.9%	44.8%	47.7%	50.6%	53.6%	56.7%	59.8%	
Operations Fund												
Beginning Balance		\$3,675,000	\$2,830,589	\$2,225,001	\$1,890,428	\$1,839,036	\$1,920,666	\$1,989,452	\$2,044,559	\$2,085,116	\$2,110,216	
Surplus/(Deficit)		(\$868,716)	(\$624,475)	(\$349,949)	(\$65,324)	\$67,583	\$54,178	\$40,036	\$25,129	\$9,426	(\$7,102)	From Table 3A
Transfers (to)/from												
General Fund		-	-	-	-	-	-	-	-	-	-	
Subtotal - Fund Balance		\$2,806,284	\$2,206,114	\$1,875,052	\$1,825,103	\$1,906,620	\$1,974,844	\$2,029,488	\$2,069,687	\$2,094,542	\$2,103,114	
Estimated Interest Earnings		\$24,305	\$18,888	\$15,375	\$13,933	\$14,046	\$14,608	\$15,071	\$15,428	\$15,674	\$15,800	
Ending Balance		\$3,675,000	\$2,830,589	\$2,225,001	\$1,890,428	\$1,839,036	\$1,920,666	\$1,989,452	\$2,044,559	\$2,085,116	\$2,110,216	
Target balance		\$1,800,323	\$1,800,323	\$1,789,988	\$1,827,297	\$1,865,410	\$1,904,344	\$1,944,119	\$1,984,752	\$2,026,264	\$2,111,999	50% of annual O&M
Sewer Infrastructure Replacement Account (540)												
Beginning Balance		\$660,231	\$1,504,808	\$1,890,041	\$1,904,216	\$1,918,498	\$1,932,887	\$1,947,383	\$1,961,988	\$1,976,703	\$1,991,528	\$2,006,465
Capital Improvement Projects												
Master Plan Projects		(\$627,450)	(\$1,030,000)	(\$1,060,900)	(\$1,092,727)	(\$1,125,509)	(\$1,159,274)	(\$1,194,052)	(\$1,229,874)	(\$1,266,770)	(\$1,304,773)	From Table 5
Other Projects		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	From Table 5
Transfers (to)/from												
Revenue Requirement		\$1,000,000	\$1,030,000	\$1,060,900	\$1,092,727	\$1,125,509	\$1,159,274	\$1,194,052	\$1,229,874	\$1,266,770	\$1,304,773	(to)/from above
Subtotal - Transfers		\$1,000,000	\$1,030,000	\$1,060,900	\$1,092,727	\$1,125,509	\$1,159,274	\$1,194,052	\$1,229,874	\$1,266,770	\$1,304,773	
Subtotal - Fund Balance		\$1,877,358	\$1,890,041	\$1,904,216	\$1,918,498	\$1,932,887	\$1,947,383	\$1,961,988	\$1,976,703	\$1,991,528	\$2,006,464	
Estimated Interest Earnings		\$12,683	\$14,175	\$14,282	\$14,389	\$14,497	\$14,605	\$14,715	\$14,825	\$14,936	\$15,048	
Ending Balance		\$1,504,808	\$1,890,041	\$1,904,216	\$1,918,498	\$1,932,887	\$1,947,383	\$1,961,988	\$1,976,703	\$1,991,528	\$2,006,465	\$2,021,513

**City of Newport Beach
Sewer Rate Study
Table 7A. Rate Revenue - Sewer**

CUSTOMERS WITH CITY WATER AND SEWER SERVICE - CURRENT

Current Monthly Sewer Service Charge - Per Meter

Customer Class	FY 17-18 Meter Count	FY 17-18 Charge/meternual	FY 17-18 Revenu	FY 17-18 Surcharge	FY 17-18 nual Reven	FY 17-18 Total S/C Rev
5/8"	16,604	\$4.50	\$896,616			\$896,616
3/4"	4	\$4.50	\$216			\$216
1"	7,437	\$4.50	\$401,598			\$401,598
1.5"	552	\$4.50	\$29,808			\$29,808
2"	1,465	\$4.50	\$79,110	\$10.00	\$175,800	\$254,910
3"	48	\$4.50	\$2,592	\$10.00	\$5,760	\$8,352
4"	253	\$4.50	\$13,662	\$10.00	\$30,360	\$44,022
6"	178	\$4.50	\$9,612	\$10.00	\$21,360	\$30,972
8"	95	\$4.50	\$5,130	\$10.00	\$11,400	\$16,530
10"	3	\$4.50	\$162	\$10.00	\$360	\$522
12"	2	\$4.50	\$108	\$10.00	\$240	\$348
	<u>26,641</u>		<u>\$1,438,614</u>		<u>\$245,280</u>	<u>\$1,683,894</u>

Source: MeterUseConsumptCount-4-4-17 - MainQuery8.3

Current Monthly Supplemental Sewer Service Charge - Per additional DU

Customer Class	FY 17-18 DUs	FY 17-18 Charge/DU	FY 17-18 Annual Reve	FY 17-18 Annual Re	Total Annual Revenue
SINGLE FAMILY RES	81	\$2.00	\$1,944	\$48	\$1,992
MULTI FAMILY RES	8,477	\$2.00	\$203,448	\$1,327	\$204,775
COMMERICAL	759	\$2.00	\$18,216	\$48,746	\$66,962
CITY METER	42	\$2.00	\$1,008	\$48,746	\$49,754
CONSOLIDATED	949	\$2.00	\$22,776	\$816	\$23,592
	<u>10,308</u>		<u>\$247,392</u>	<u>\$99,684</u>	<u>\$347,076</u>

Current Sewer Use Charge With No Increase

Customer Class	CY 2016 Flow	FY 17-18 Charge/CCF	FY 17-18 Annual Reve	Average Month
SINGLE FAMILY RES	2,353,927	\$0.35	\$823,874	11.81
MULTI FAMILY RES	752,561	\$0.35	\$263,396	7.40
COMMERICAL	1,082,691	\$0.35	\$378,942	118.87
CONSOLIDATED	-	\$0.35	\$0	
POOL	22,930	\$0.35	\$8,026	
	<u>4,212,109</u>		<u>\$1,474,238</u>	
CITY METER	69,583	\$0.000	\$0	No Consumption Charge - Only Fixed Fee
BOAT DOCK	5,178	\$0.000	-	No Sewer Charge
SPRINKLER	794,347	\$0.000	-	No Sewer Charge
FIRE	879	\$0.000	-	No Sewer Charge
PUMP STATION	16	\$0.000	-	No Sewer Charge
	<u>870,003</u>		<u>\$0</u>	

Source: MeterUseConsumptCount-4-4-17

CUSTOMERS WITH CITY WATER AND SEWER SERVICE - PROPOSED

Proposed Sewer Use Charge With Rate Increase

Customer Class	CY 2016 Flow	FY 17-18 Charge/CCF	FY 17-18 Annual Reve	Average Month
SINGLE FAMILY RES	2,353,927	\$0.38	\$901,319	2,421.74
MULTI FAMILY RES	752,561	\$0.38	\$288,156	12.11
COMMERICAL	1,082,691	\$0.38	\$414,562	0.11
CONSOLIDATED	-	\$0.38	\$0	
POOL	22,930	\$0.38	\$8,780	
	<u>4,212,109</u>		<u>\$1,612,817</u>	
CITY METER	69,583	\$0.00	\$0	No Consumption Charge - Only Fixed Fee
BOAT DOCK	5,178	\$0.00	-	No Sewer Charge
SPRINKLER	794,347	\$0.00	-	No Sewer Charge
FIRE	879	\$0.00	-	No Sewer Charge
PUMP STATION	16	\$0.00	-	No Sewer Charge
	<u>870,003</u>		<u>\$0</u>	

Source: MeterUseConspntCount-4-4-17

Revised Monthly Sewer Service Charge Before Rate Increase - Per Meter

Meter Size	Meters	Sewer-Only Meters	Total Meters	EMU Multiplier	Total EMUs	Service Charge Per Meter	Revenue No Rate Increase
5/8"	16,604	275	16,879	1.00	16,879	\$5.91	\$1,196,868
3/4"	4	85	89	1.00	89	\$5.91	\$6,322
1"	7,437	57	7,494	1.00	7,494	\$5.91	\$531,385
1.5"	552	21	573	1.10	630	\$6.50	\$44,702
2"	1,465	58	1,523	1.50	2,284	\$8.86	\$161,958
3"	48	2	50	1.70	85	\$10.05	\$6,041
4"	253	4	257	2.00	513	\$11.82	\$36,378
6"	178	1	179	2.25	404	\$13.30	\$28,623
8"	95	1	96	2.50	239	\$14.77	\$16,965
10"	3	2	5	3.20	16	\$18.91	\$1,160
12"	2	-	2	4.00	8	\$23.64	\$567
	<u>26,641</u>	<u>506</u>	<u>27,147</u>		<u>28,642</u>		<u>\$2,030,970</u>

Proposed Monthly Sewer Service Charge With Rate Increase - Per Meter

Meter Size	Meters	Sewer-Only Meters	Total Meters	EMU Multiplier	Total EMUs	Service Charge Per Meter	Revenue With Rate Increase
5/8"	16,604	275	16,879	1.00	16,879	\$6.46	\$1,309,374
3/4"	4	85	89	1.00	89	\$6.46	\$6,916
1"	7,437	57	7,494	1.00	7,494	\$6.46	\$581,335
1.5"	552	21	573	1.10	630	\$7.11	\$48,904
2"	1,465	58	1,523	1.50	2,284	\$9.70	\$177,182
3"	48	2	50	1.70	85	\$10.99	\$6,608
4"	253	4	257	2.00	513	\$12.93	\$39,798
6"	178	1	179	2.25	404	\$14.55	\$31,314
8"	95	1	96	2.50	239	\$16.16	\$18,560
10"	3	2	5	3.20	16	\$20.69	\$1,269
12"	2	0	2	4.00	8	\$25.86	\$621
	<u>26,641</u>	<u>506</u>	<u>27,147</u>		<u>28,642</u>		<u>\$2,221,881</u>

SEWER ONLY CUSTOMERS (WATER PROVIDED BY OTHERS)

Current Monthly Sewer Service Charge

Customer Class	FY 17-18 Accounts or DL	FY 17-18 Charge	FY 17-18 Annual Revenue
Sewer Only - Flat charge	506	\$6.25	\$37,950
Sewer Only - DU charge	652	\$2.00	\$15,648
			<u>\$53,598</u>

Revised Monthly Sewer Service Charge With No Increase

Meter Size	FY 17-18 Meters	Service Charge	Annual Revenue
5/8"	275	\$5.91	\$19,512
3/4"	85	\$5.91	\$6,038
1"	57	\$5.91	\$4,042
1.5"	21	\$6.50	\$1,647
2"	58	\$8.86	\$6,138
3"	2	\$10.05	\$254
4"	4	\$11.82	\$499
6"	1	\$13.30	\$225
8"	1	\$14.77	\$125
10"	2	\$18.91	\$479
	<u>506</u>		<u>\$38,958</u>

Proposed Monthly Sewer Service Charge With Increase

Meter Size	FY 17-18 Meters	Service Charge	Annual Revenue
5/8"	275	\$6.46	\$21,346
3/4"	85	\$6.46	\$6,606
1"	57	\$6.46	\$4,422
1.5"	21	\$7.11	\$1,802
2"	58	\$9.70	\$6,715
3"	2	\$10.99	\$278
4"	4	\$12.93	\$546
6"	1	\$14.55	\$246
8"	1	\$16.16	\$136
10"	2	\$20.69	\$524
	<u>506</u>		<u>\$42,620</u>

Revised Monthly Sewer Use Charge With No Increase

Meter Size	Meters	Avg HCF Per Meter Per Month	Current Charge Per HCF	Monthly Use Charge	Annual Revenue
5/8"	275	8.97	\$0.35	\$3.14	\$10,370
3/4"	85	8.97	\$0.35	\$3.14	\$3,209
1"	57	13.39	\$0.35	\$4.69	\$3,205
1.5"	21	72.49	\$0.35	\$25.37	\$6,428
2"	58	68.49	\$0.35	\$23.97	\$16,601
3"	2	212.27	\$0.35	\$74.29	\$1,882
4"	4	393.01	\$0.35	\$137.56	\$5,808
6"	1	714.08	\$0.35	\$249.93	\$4,221
8"	1	714.08	\$0.35	\$249.93	\$2,111
10"	2	714.08	\$0.35	\$249.93	\$6,332
	<u>506</u>				<u>\$60,167</u>

Proposed Monthly Sewer Use Charge

Meter Size	Meters	Avg HCF Per Meter Per Month	Charge Per HCF	Monthly Use Charge	Annual Revenue
5/8"	275	8.97	\$0.38	\$3.44	\$11,344
3/4"	85	8.97	\$0.38	\$3.44	\$3,511
1"	57	13.39	\$0.38	\$5.13	\$3,506
1.5"	21	72.49	\$0.38	\$27.76	\$7,032
2"	58	68.49	\$0.38	\$26.23	\$18,161
3"	2	212.27	\$0.38	\$81.28	\$2,059
4"	4	393.01	\$0.38	\$150.49	\$6,354
6"	1	714.08	\$0.38	\$273.42	\$4,618
8"	1	714.08	\$0.38	\$273.42	\$2,309
10"	2	714.08	\$0.38	\$273.42	\$6,927
	<u>506</u>				<u>\$65,823</u>

Proposed Monthly Sewer Flat Charge (Combined Service and Use components) With Rate Increase

Meter Size	Service Component	Use Component	Flat Charge
5/8"	\$6.46	\$3.44	\$9.90
3/4"	\$6.46	\$3.44	\$9.90
1"	\$6.46	\$5.13	\$11.59
1.5"	\$7.11	\$27.76	\$34.87
2"	\$9.70	\$26.23	\$35.92
3"	\$10.99	\$81.28	\$92.27
4"	\$12.93	\$150.49	\$163.41
6"	\$14.55	\$273.42	\$287.97
8"	\$16.16	\$273.42	\$289.58
10"	\$20.69	\$273.42	\$294.11

	Revenue Summary (FY 2017-18)			
	Current Rates		Proposed Rates With 1/1/18 Increase	
Fixed Charges				
Service charge	\$1,438,614		\$2,085,636	
DU surcharge	\$347,076		\$0	
Large meter surcharge	\$245,280		\$0	
	\$2,030,970	57%	\$2,085,636	56%
Variable Charges				
Use charge	\$1,474,238	41%	\$1,543,527	41%
	\$3,505,208		\$3,629,163	
Sewer-Only				
Service charge	\$37,950		\$40,789	
DU surcharge	\$15,648		\$0	
Use charge	\$0		\$62,995	
	\$53,598	2%	\$103,784	3%
Total	\$3,558,806	100%	\$3,732,948	100%
Recap				
Fixed Revenue				
Service charges	\$1,476,564		\$2,126,425	
DU surcharge	\$362,724		\$0	
Large meter surcharge	\$245,280		\$0	
Nonseasonal Variable Charge	\$737,119		\$834,758.53	
	\$2,821,687	79%	\$2,961,184	79%
Variable revenue				
Seasonal Variable Charge	\$737,119	21%	\$771,764	21%
	\$3,558,806	100%	\$3,732,948	100%

City of Newport Beach
Sewer Rate Study
Table 8. Report Tables

WASTEWATER RATES

	Current	Proposed				
	FY 2016-17	FY 2017-18 (Eff. 1/1/18)	FY 2018-19 (Eff. 1/1/19)	FY 2019-20 (Eff. 1/1/20)	FY 2020-21 (Eff. 1/1/21)	FY 2021-22 (Eff. 1/1/22)
Sewer Service Charges						
5/8"	\$4.50	\$6.46	\$7.07	\$7.74	\$8.39	\$8.55
3/4"	\$4.50	\$6.46	\$7.07	\$7.74	\$8.39	\$8.55
1"	\$4.50	\$6.46	\$7.07	\$7.74	\$8.39	\$8.55
1.5"	\$4.50	\$7.11	\$7.78	\$8.51	\$9.23	\$9.41
2"	\$14.50	\$9.70	\$10.61	\$11.61	\$12.58	\$12.83
3"	\$14.50	\$10.99	\$12.02	\$13.15	\$14.26	\$14.54
4"	\$14.50	\$12.93	\$14.14	\$15.47	\$16.77	\$17.11
6"	\$14.50	\$14.55	\$15.91	\$17.41	\$18.87	\$19.25
8"	\$14.50	\$16.16	\$17.68	\$19.34	\$20.97	\$21.39
10"	\$14.50	\$20.69	\$22.63	\$24.76	\$26.84	\$27.37
12"	\$14.50	\$25.86	\$28.29	\$30.95	\$33.55	\$34.22
Surcharge Per Dwelling Unit	\$2.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Sewer Use Charge (per HCF)	\$0.35	\$0.38	\$0.42	\$0.46	\$0.50	\$0.51

	Current	Proposed				
	FY 2016-17	FY 2017-18 (Eff. 1/1/18)	FY 2018-19 (Eff. 1/1/19)	FY 2019-20 (Eff. 1/1/20)	FY 2020-21 (Eff. 1/1/21)	FY 2021-22 (Eff. 1/1/22)
Flat Charges Per Account						
5/8"	\$6.25	\$9.90	\$10.83	\$11.85	\$12.84	\$13.10
3/4"	\$6.25	\$9.90	\$10.83	\$11.85	\$12.84	\$13.10
1"	\$6.25	\$11.59	\$12.68	\$13.87	\$15.04	\$15.34
1.5"	\$6.25	\$34.87	\$38.15	\$41.73	\$45.24	\$46.14
2"	\$6.25	\$35.92	\$39.30	\$42.99	\$46.60	\$47.54
3"	\$6.25	\$92.27	\$100.94	\$110.43	\$119.70	\$122.10
4"	\$6.25	\$163.41	\$178.78	\$195.58	\$212.01	\$216.25
6"	\$6.25	\$287.97	\$315.04	\$344.65	\$373.60	\$381.07
8"	\$6.25	\$289.58	\$316.80	\$346.58	\$375.70	\$383.21
10"	\$6.25	\$294.11	\$321.75	\$352.00	\$381.57	\$389.20
Surcharge Per Dwelling Unit	\$2.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Customer Type	Meter Size	Monthly Flow (HCF)	Current Service Charge	Current Flow Charge	Current Monthly Bill	Proposed Service Charge	Proposed Flow Charge	Proposed Monthly Bill	Proposed Minus Current
Single Family Residential (low flow)	5/8" - 1"	3.0	\$4.50	\$1.03	\$5.53	\$6.46	\$1.13	\$7.60	\$2.06
Single Family Residential (avg flow)	5/8" - 1"	11.8	\$4.50	\$4.13	\$8.63	\$6.46	\$4.52	\$10.99	\$2.35
Single Family Residential (high flow)	5/8" - 1"	23.6	\$4.50	\$8.27	\$12.77	\$6.46	\$9.05	\$15.51	\$2.74
Sewer-only (no additional DUs)	3/4"	9.0	\$6.25	\$0.00	\$6.25	\$6.46	\$3.44	\$9.90	\$3.65
Commercial	1.5"	29.7	\$4.50	\$10.40	\$14.90	\$7.11	\$11.38	\$18.49	\$3.59
Commercial	2"	118.9	\$14.50	\$41.61	\$56.11	\$9.70	\$45.52	\$55.21	-\$0.89
Commercial	3"	237.7	\$14.50	\$83.21	\$97.71	\$10.99	\$91.03	\$102.02	\$4.31

	FY 2017-18 (Eff. 1/1/18)	FY 2018-19 (Eff. 1/1/19)	FY 2019-20 (Eff. 1/1/20)	FY 2020-21 (Eff. 1/1/21)	FY 2021-22 (Eff. 1/1/22)
Revenue from Current Rates	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662	\$3,544,662
Increase in Revenue from Rates	9.4%	9.4%	9.4%	8.4%	2.0%
Revenue from Rate Increases					
FY17-18 (effective 1/1/18)	\$166,599	\$333,198	\$333,198	\$333,198	\$333,198
FY19-20 (effective 1/1/19)	\$0	\$182,259	\$364,519	\$364,519	\$364,519
FY20-21 (effective 1/1/20)	\$0	\$0	\$199,392	\$398,784	\$398,784
FY21-22 (effective 1/1/21)	\$0	\$0	\$0	\$194,929	\$389,858
FY21-22 (effective 1/1/22)	\$0	\$0	\$0	\$0	\$50,310
Subtotal - Revenue Increases	\$166,599	\$515,458	\$897,109	\$1,291,429	\$1,536,668
Total Rate Revenue with Increases	\$3,711,261	\$4,060,119	\$4,441,770	\$4,836,091	\$5,081,330
Net Revenue Requirements	\$4,579,977	\$4,684,594	\$4,791,719	\$4,901,415	\$5,013,746
Surplus/(Deficit) after Increase	(\$868,716)	(\$624,474)	(\$349,949)	(\$65,324)	\$67,583

CIP Project Description	Project Cost
Collection System Capacity Improvements	\$1,281,391
Collection System Condition Improvements	\$16,648,060
Pump Station Improvements	\$11,088,000
	<u>\$29,017,451</u>



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