



DRAFT
Water Rates Study

Prepared for
City of Turlock, California
September 2017

MUNICIPAL
FINANCIAL
SERVICES

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Henderson, Nevada 89052

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List of Abbreviations

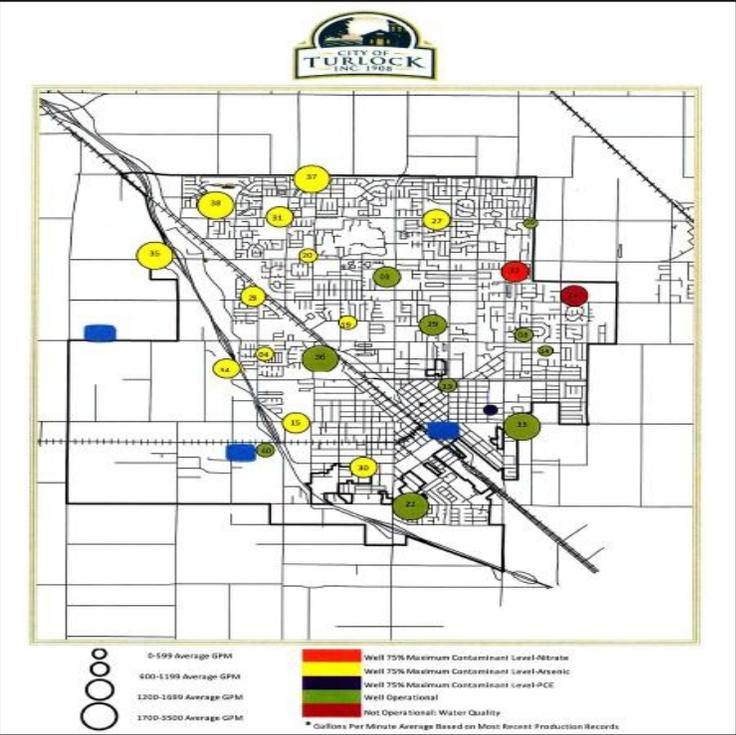
AF	acre feet (equal to 325,851 gallons)
AWWA	American Water Works Association
CAFR	Comprehensive Annual Financial Report
CCI	Construction Cost Index
CIP	Capital Improvement Program
City	City of Turlock
DSC	debt service coverage
DWR	Department of Water Resources
FY	Fiscal year (July 1 to June 30)
ENR	Engineering News Record
FY17	July 1, 2016 to June 30, 2017
gpd	gallons per day
HCF	Hundred Cubic Feet (~ 748.052 gallons)
mgd	million gallons per day
O&M	Operation and maintenance
R/R	Repair and replacement
SWSP	Surface Water Supply Project
SRWA	Stanislaus Regional Water Authority
SWRCB	State Water Resources Control Board
TMC	Turlock Municipal Code

Executive Summary

The City of Turlock, in conjunction with Municipal Financial Services, has analyzed the adequacy of revenues from rates to meet projected expenditures of the water enterprise fund to determine whether revenues will be adequate to cover operating and maintenance costs as well as needed capital costs while meeting reserve policy and debt management policy. Water rates were developed for the five-year period Fiscal Year 2017-18 (FY18) through FY22.

Water System Description

The City water utility provides service to its residents, institutions, industries, and businesses through approximately 18,500 service connections. The current city population is approximately 72,000 and it is the second largest city in the region. Turlock is also home to California State University, Stanislaus that has an enrollment of 8,000 students. The build-out (2030) population of the General Plan area is estimated to be 115,363.



The primary assets in the City’s water utility are 18 wells that produce potable water, three (3) one million gallon water storage reservoirs, 266 miles of transmission mains and distribution lines, and 2,922 fire hydrants.

In the 12 months ending June 2017, the City delivered approximately 5.03 billion gallons of water – an average of 13.8 million gallons of water per day.

As a member of the Stanislaus Regional Water Authority (SRWA), the City of Turlock is pursuing the development a Regional Surface Water Supply Project (SWSP) that would supply treated Tuolumne River water from the Turlock Irrigation District (TID). The SWSP has formally created a Joint Powers Authority (JPA), the Stanislaus Regional Water Authority (SRWA), consisting of the cities of Turlock and Ceres. The SRWA will pursue funding for various phases of the project. The SRWA

has an agreement with TID for the provision of the raw water. The SWSP would initially provide up to 16,800 acre-feet per year (15 million gallons per day, mgd) of potable water to the City of Turlock, but could ultimately provide up to 22,400 acre-feet per year (20 mgd). The SWSP facilities would include a surface water treatment plant and water transmission mains.

2014 Water Rate Study and Annual Rate Reviews

2014 Study and Rate Adoption Process. In 2014, water rate recommendations were developed for two scenarios – 1) rates that would support a groundwater only source of supply; and 2) rates that would support a combination of groundwater and surface water sources of supply. At that time, there was significant uncertainty regarding the feasibility of the Surface Water Supply Project; therefore, the City Council elected to adopt the rates for the groundwater only system. On April 8, 2014, Council adopted Ordinance No. 1194-CS which established maximum water rates beginning July 1, 2014, with increases each January 1st through the year 2019 (2014 Five-Year Rate Plan). The table below lists the rates from the 2014 Five-Year Rate Plan that have been implemented and adopted rates that could be implemented.

Table ES-1. Five-Year Rate Plan Adopted in 2014 for the Groundwater Only Supply Scenario

	Adopted and Implemented				Adopted	
	<i>effective date ></i>	<i>1/1/2015</i>	<i>1/1/2016</i>	<i>1/1/2017</i>	<i>1/1/2018</i>	<i>1/1/2019</i>
	<i>Fiscal Year ></i>	<i>FY15</i>	<i>FY16</i>	<i>FY17</i>	<i>FY18</i>	<i>FY19</i>
Commodity Charge, \$/1,000 gallons						
System Average	\$0.45	\$0.53	\$0.58	\$0.68	\$0.77	\$0.86
Single Family/Multi Residential	\$0.48	\$0.57	\$0.63	\$0.74	\$0.84	\$0.94
Commercial/Industrial/Institutional	\$0.37	\$0.43	\$0.46	\$0.54	\$0.60	\$0.67
Landscape	\$0.51	\$0.60	\$0.65	\$0.75	\$0.84	\$0.94
Capacity Charge, \$ per meter/month						
1" or less	\$17.50	\$20.00	\$21.20	\$24.10	\$26.50	\$29.40
1-1/2"	\$35	\$40	\$42	\$48	\$53	\$59
2"	\$56	\$64	\$68	\$77	\$85	\$94
3"	\$123	\$140	\$149	\$169	\$186	\$206
4"	\$210	\$240	\$255	\$290	\$318	\$353
6"	\$438	\$500	\$530	\$603	\$663	\$735
8"	\$840	\$960	\$1,018	\$1,157	\$1,272	\$1,412
10"	\$1,330	\$1,520	\$1,612	\$1,832	\$2,014	\$2,235
Customer Charge, \$ per acct/mo	\$2.20	\$2.50	\$2.60	\$3.00	\$3.30	\$3.60

2015 Rate Evaluation. In October 2015, City staff and its rate consultant completed an evaluation of adopted water rates in the 2014 Five-Year Rate Plan recommended for implementation beginning January 1, 2016. The evaluation of rates involved only the update of projected expenditures, revenue required from rates and water use. The allocation of costs among billable components (commodity, capacity and customer charges) that characterize a cost of service study were not evaluated. The City Council authorized implementation of rate changes effective January 1, 2016.

2016 Rate Evaluation. In October 2016, City staff and its rate consultant completed an evaluation of adopted water rates in the 2014 Five-Year Rate Plan recommended for implementation beginning January 1, 2017. The evaluation of rates involved only the update of projected expenditures, revenue required from rates and water use. The allocation of costs among billable components (commodity, capacity and customer charges) that characterize a cost of service study were not evaluated. The City Council authorized implementation of rate changes effective January 1, 2017.

Recommended Water Rates

Recommended commodity (water use), capacity (meter) and customer (account) rates that comprise the FY18 – FY22 Five-Year Rate Plan (2018 Five-Year Rate Plan) are listed in the table below.

Note that the initial recommended rate increases from the 2018 Five-Year Rate Plan are scheduled for March 1, 2018. The rate increases adopted from the 2014 Five-Year Rate Plan for the fourth fiscal year (FY18) were scheduled to be implemented January 1, 2018.

It is recommended that the adopted rate increases schedule for implementation on January 1, 2018 be cancelled and that the rates currently in effect (implemented on January 1, 2017) be extended for two months. The first increase of the 2018 Five-Year Rate Plan would then be implemented on March 1, 2018.

Table ES-2. Current, Recommended and Projected Water Rates

	Current		FY18 - FY22 Five-Year Rate Plan					FY23 - FY27 Five-Year Rate Projections				
	FY17	FY18	Recommended					Projected				
	effective date > 1/1/2017	1/1/2018	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Commodity Charge, \$/thous. gals.			3/1/2018	1/1/2019	1/1/2020	1/1/2021	1/1/2022	1/1/2023	1/1/2024	1/1/2025	1/1/2026	1/1/2027
System Average	\$0.68	\$0.77	\$0.75	\$0.89	\$1.07	\$1.30	\$1.55	\$1.68	\$1.76	\$1.85	\$1.89	\$1.93
Single Family	\$0.74	\$0.84	\$0.84	\$1.00	\$1.20	\$1.47	\$1.76	\$1.90	\$1.97	\$2.07	\$2.12	\$2.16
Multi Res/Com/Ind/Inst	\$0.54	\$0.60	\$0.63	\$0.75	\$0.89	\$1.08	\$1.28	\$1.39	\$1.45	\$1.53	\$1.56	\$1.59
Landscape	\$0.75	\$0.84	\$0.99	\$1.20	\$1.45	\$1.78	\$2.16	\$2.38	\$2.53	\$2.71	\$2.82	\$2.94
Capacity Charge, \$ per mtr./mo.												
1" or less	\$24.10	\$26.50	\$28.00	\$32.70	\$38.10	\$45.20	\$52.70	\$56.00	\$57.30	\$59.20	\$59.40	\$59.60
1-1/2"	\$48.20	\$53.00	\$56	\$65	\$76	\$90	\$105	\$112	\$115	\$118	\$119	\$119
2"	\$77.20	\$84.80	\$90	\$104	\$122	\$145	\$169	\$179	\$183	\$189	\$190	\$191
3"	\$169	\$186	\$196	\$229	\$267	\$316	\$369	\$392	\$401	\$414	\$416	\$417
4"	\$290	\$318	\$336	\$392	\$457	\$542	\$633	\$672	\$688	\$710	\$712	\$715
6"	\$603	\$663	\$700	\$816	\$952	\$1,130	\$1,318	\$1,401	\$1,433	\$1,480	\$1,484	\$1,489
8"	\$1,157	\$1,272	\$1,344	\$1,567	\$1,829	\$2,170	\$2,531	\$2,689	\$2,751	\$2,841	\$2,850	\$2,859
10"	\$1,832	\$2,014	\$2,128	\$2,482	\$2,895	\$3,435	\$4,008	\$4,258	\$4,355	\$4,498	\$4,512	\$4,526
Customer Charge, \$ per acct./mo.	\$3.00	\$3.30	\$3.50	\$4.10	\$4.75	\$5.65	\$6.55	\$6.95	\$7.10	\$7.30	\$7.35	\$7.35

The 2014 Five-Year Rate Plan was based on expenditures for a water supply source that included only groundwater. Rates based on expenditures for a water supply source that includes only groundwater were also developed for FY18 – FY27.

The recommended rates in the FY18 – FY22 Five-Year Rate Plan and the following five fiscal years are based on expenditures for a water supply source that includes groundwater and surface water.

A comparison of Single Family monthly bills for FY18 – FY27 using rates based on expenditures for a water supply source that includes only groundwater and rates based on expenditures for a water supply source that includes groundwater and surface water is shown in the figure below.

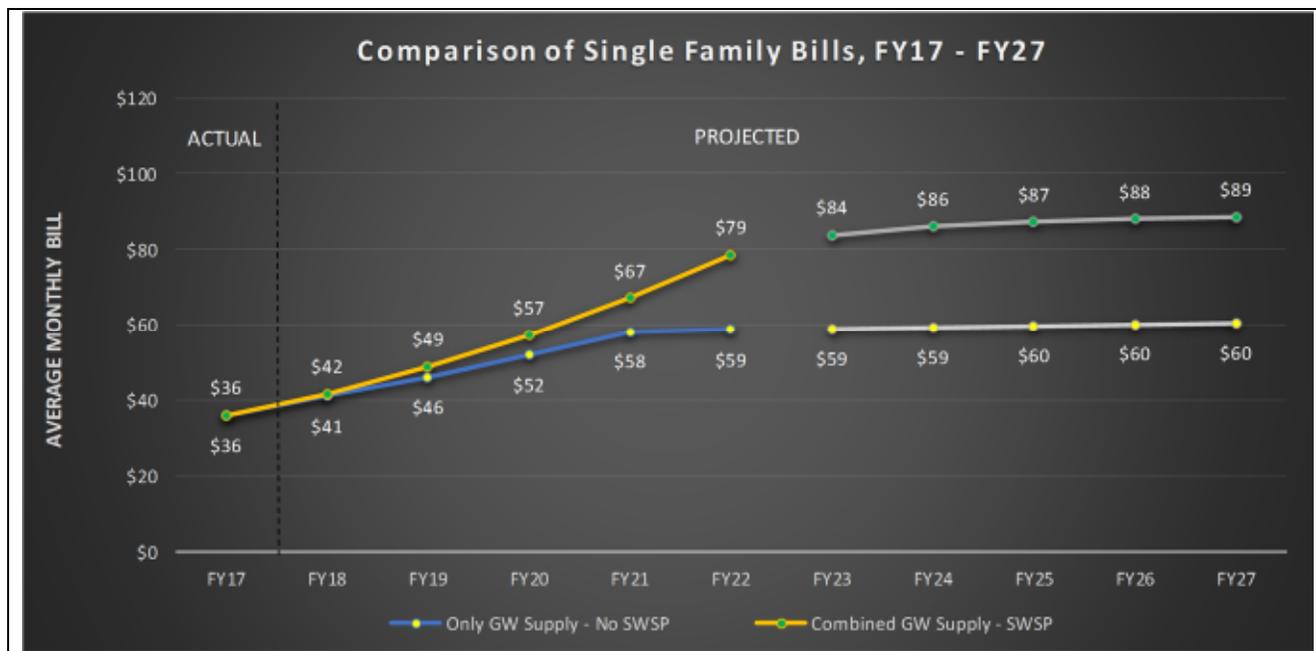


Figure ES-1. Monthly Bills for Only Groundwater and Groundwater + Surface Supply Scenarios

Significant Assumptions

There are several assumptions in this study related to future interest rates, cost inflation, the annual number of new connections, water sales and other items. The unifying theme underlying all assumptions is: water rates based on the assumptions should have a very high probability of recovering annual revenue requirements and meeting debt service requirements.

A summary of the most significant assumptions made in this study are listed below.

Assumption 1. Projections of growth in water accounts assumes 170 new connections per year.

Assumption 2. Projected metered water use for FY17 is approximately 5,033 million gallons.

Assumption 3. Reductions in metered water use for FY18 – FY22 are projected to be 5 percent for FY18 and 3 percent per year for FY19 – FY22 for single family accounts; 2 percent per year for multiple-family accounts; 1 percent per year for commercial, industrial and institutional accounts; and 3 percent per year for landscape accounts. Water use projected for FY23 – FY27 includes approximately 2 percent per year conservation for all users.

Assumption 4. The water meter maximum flow capacity assignments used in this study are based on those published by the American Water Works Association (AWWA).

Assumption 5. Preliminary estimates for the Surface Water System Project place the City's financial obligation for this project at approximately \$171 million. The preliminary estimate for the City's portion of annual Operation & Maintenance of the Surface Water Plant is approximately \$3.0 million beginning in FY23. Approximately \$146.3 million of the \$171.6 million capital expenditures (85%) are projected to be funded by a loan from the State of California State Revolving Fund.

Assumption 6. Estimated capital improvement project expenditures for FY18 – FY22 for the City's water system are approximately \$18.6 million.

Assumption 7. Annual debt service coverage tests for existing and new debt are projected to require Net Revenues up to 125 percent of the estimated debt service. Water rates developed in this study are set to generate Net Revenues equal to a minimum of 150 percent of the estimated debt service.

Assumption 8. The target operating reserve level is 180 days of operating expenditures. The target is met in all fiscal years.

Assumption 9. Expenditures for salaries, benefits, insurance, contractual-other, supplies and maintenance and utilities are projected to increase at an annual rate of 5%. Expenditures for other operating expenditures are projected to increase at an annual rate of 3%.

Assumption 10. Interest on cash reserves is projected at 0.8% per year.

Assumption 11. Peak water use factors for maximum, noncoincidental demand were used to develop commodity charges. Factors were developed for three groups of customer classes –Single Family accounts; Multiple Family and Nonresidential (Multiple Family, Commercial, Industrial and Institutional accounts) and Landscape irrigation accounts.

Revenues, Expenditures and Cash Balances

Water rates were developed to generate sufficient revenues to cover operating and maintenance expenditures, fund capital expenditures, satisfy debt service coverage requirements and meet target

	<i>\$thousands</i>
Beginning Cash Balance (FY18)	\$17,950
Revenues	
Commodity Charges	\$23,930
Capacity Charges	\$51,870
Customer Charges	\$5,230
Other Charges	\$500
Connection Fees	\$300
Interest Income	\$50
Total Revenues	\$81,870
Expenditures	
Operating Expenses	\$41,470
Capital Expenses	\$179,780
Net of SRF Loan Disbursements	(\$139,810)
Debt Service	\$13,830
Total All Expenditures	\$95,270
Net Cash Flow	(\$13,400)
Ending Cash Balance (FY22)	\$4,550
Coverage and Days Cash	
Coverage Ratio	2.98x
Days Operating Cash	184

reserve levels. A summary of the projected expenditures, revenues, beginning (FY18) and ending (FY22) fund balances and the FY22 target reserve amount is shown in the adjacent table.

The approximate amount of revenues required from water rates for the five-year period, FY18 through FY22, is \$81,030,000.

Projected operations and transfers funding requirements are approximately \$41,470,000 (44 percent of expenditures).

Projected capital expenditure funding requirements are \$179,780,000 net of \$139,810,000 in funding from the State of California State Revolving Fund (SRF).¹ The net amount of capital funding requirements is approximately \$39,970,000 (42 percent of expenditures).

Projected debt service funding (principal and interest payments) requirements are approximately \$13,830,000 (14 percent of expenditures).

Debt service coverage requirements (1.25 times annual net operating revenues) are met in all years. The annual days of operating cash exceeds 180 in all years and is projected to be 184 days as of June 30, 2022.

¹ The total SRF loan amount is projected to be approximately \$146.3 million including a disbursement of \$6.5 million in FY23.

Impact of New Rate Structure and Rates

The impact of the new rate structure and rates are shown in the table below by way of representative average monthly bills for each of the six customer classes. For the initial rate increase of the 2018 Five-Year Rate Plan on March 1, 2018, the impact of the new rate structure and rates varies between each customer class and within each customer class. For all subsequent rate increases, customers experience nearly the same percentage increase in average monthly bills.

Table ES-3. Impact of Recommended Water Rates on Monthly Customer Bills											
Customer Class	Use Level	Water Use, kgal	Meter Size	2014 Five-Year Rate Plan			FY18 - FY22 Five-Year Rate Plan Recommended				
				Prior FY16	Current FY17	Adopted FY18	FY18 *	FY19	FY20	FY21	FY22
Single Family	Avg Use	12	1" or less	\$31	\$36	\$40	\$42	\$49	\$57	\$68	\$80
	High Use	48	1" or less	\$54	\$63	\$70	\$72	\$85	\$100	\$121	\$144
Multiple Family	Avg Use	48	1" or less	\$54	\$63	\$70	\$62	\$73	\$86	\$103	\$121
	High Use	200	1.5"	\$171	\$199	\$224	\$186	\$219	\$259	\$312	\$368
Commercial	Avg Use	200	2"	\$163	\$188	\$208	\$220	\$258	\$305	\$367	\$432
	High Use	400	4"	\$442	\$509	\$561	\$592	\$696	\$818	\$980	\$1,152
Industrial	Low Use	100	2"	\$117	\$134	\$148	\$157	\$183	\$216	\$259	\$304
	High Use	6000	6"	\$3,293	\$3,846	\$4,266	\$4,484	\$5,320	\$6,297	\$7,616	\$9,005
Institutional	Low Use	100	1" or less	\$87	\$101	\$114	\$116	\$137	\$163	\$198	\$235
	High Use	1000	6"	\$993	\$1,146	\$1,266	\$1,334	\$1,570	\$1,847	\$2,216	\$2,605
Landscape	Low Use	100	1" or less	\$89	\$102	\$114	\$131	\$157	\$188	\$229	\$275
	High Use	1000	6"	\$1,183	\$1,356	\$1,506	\$1,694	\$2,020	\$2,407	\$2,916	\$3,485
Customer Class	Use Level			FY17	FY18	FY18 *	FY19	FY20	FY21	FY22	
Single Family	Avg Use			15%	11%	16%	17%	17%	20%	17%	
	High Use			16%	12%	15%	18%	18%	21%	18%	
Multiple Family	Avg Use			16%	12%	-1%	18%	18%	20%	18%	
	High Use			16%	13%	-7%	18%	18%	20%	18%	
Commercial	Avg Use			16%	11%	17%	18%	18%	20%	18%	
	High Use			15%	10%	16%	18%	17%	20%	18%	
Industrial	Low Use			15%	10%	17%	17%	18%	20%	17%	
	High Use			17%	11%	17%	19%	18%	21%	18%	
Institutional	Low Use			16%	13%	14%	18%	19%	21%	19%	
	High Use			15%	10%	16%	18%	18%	20%	18%	
Landscape	Low Use			15%	11%	28%	20%	20%	22%	20%	
	High Use			15%	11%	25%	19%	19%	21%	20%	

* Note that percent increases in monthly bills for the first year (FY18) of the FY18 - FY22 Five-Year Rate Plan are based on comparison with FY17 monthly bills

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Section 1

Introduction

This section describes the organization of the report, rate-making objectives, the rate-setting process, and a general description of the water system.

1.1 Organization of the Report

This report is divided into six sections. This introduction provides an overview of the study objectives and an overview of the rate development process.

Section 2 discusses characteristics of customers and their use of the water system. The number and type of connections to the system and water use projected for FY18 – FY22 is developed in this section.

Section 3 describes the evaluation of revenue required from rates.

Section 4 describes the allocation of costs and development of unit costs of service.

Section 5 describes the impact of rates changes on customer bills.

Section 6 describes the limitations of the study document.

1.2 Rate-Making Objectives

There are numerous rate-making objectives that must be considered when developing rates and rate structures.

Revenue sufficiency. Generate sufficient revenue to fund operating costs, capital costs and bonded debt, and maintain adequate reserves.

Revenue stability. Recover revenue from fixed and variable charges that will cover fixed and variable costs (barring water shortages when rationing may be required).

Conservation signal. Reward customer for efficient water use and discourage its waste.

Administrative efficiency. Enable efficient implementation and ongoing administration, including monitoring and updating.

Affordability. Be as affordable as possible while maintaining the utilities sound financial position and credit rating.

Customer acceptance. Be as simple as possible to facilitate customer understanding and acceptance.

Fairness. Provide for each customer class to pay its proportionate share of the required revenue in compliance with legal rate-making requirements.

1.3 Overview of Utility Rate Setting Process

Rate studies classically have three categories of technical analysis – the development of revenue required from rates, the allocation of costs among functional cost categories (cost-of-service analysis) and the design of a rate structure. An overview of the rate-setting analytical steps is shown in Figure 1-1.

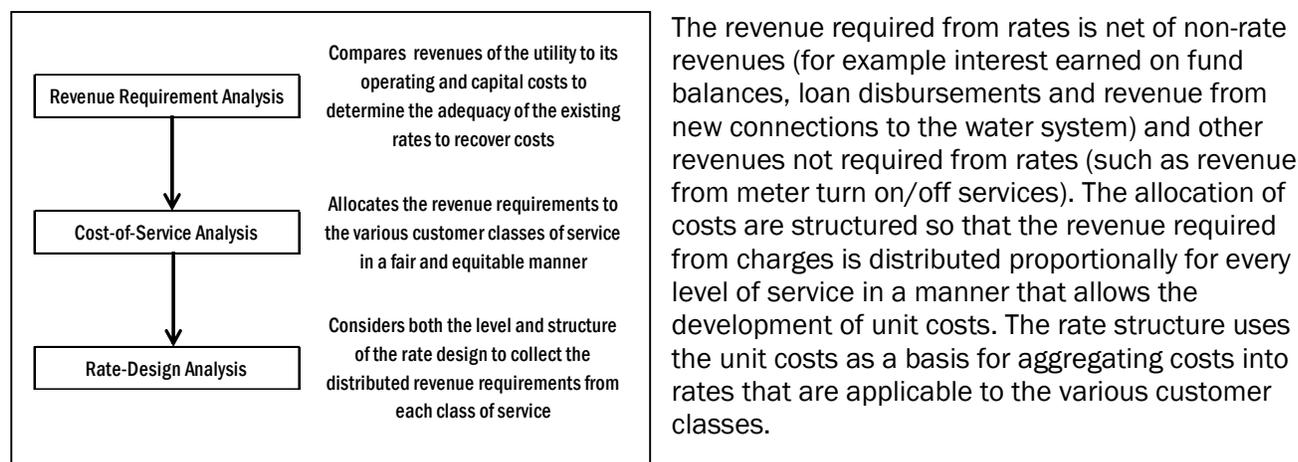


Figure 1-1. Overview of Rate Setting Analytical Steps

Information and data for the development of water rates and preparation of this report comes from several documents provided by the City. The list of documents, and the key information and data from each used in this study, are summarized below.

City of Turlock Fiscal Year 2017-18 and Fiscal Year 2018-19 Adopted Budgets and Accounting Reports.

This document shows the recommended FY 2017-18 and FY 2018-19 Annual Budgets. In addition to the published Budget, the City provided detailed expenditure and revenue data in separate expenditure and revenue reports from its accounting system.

City of Turlock Municipal Code. Ordinances relating to the water enterprise are codified in various sections of the Turlock Municipal Code, Title 6, Chapter 6-5-501. The charges evaluated in this study are in Chapter 6-5-501(b)(1) - monthly water charges consisting of the following three components: commodity charge, capacity charge, and a customer charge.

Stanislaus Regional Water Authority Surface Water Supply Project Data. Surface Water Supply Project cost projection data developed for the SRWA's Technical Advisory Committee.

5-Year Capital Improvement Program (5-Year CIP). The 5-Year CIP for projects not included in Surface Water Supply Project cost projections.

Utility Billing System data. Monthly water use data for each of the City's metered accounts, for the period July 2016 through June 2017, were provided in an Excel file. Each account record had descriptive information of the account's customer class and meter size.

1.4 Current Water Rates

Water rates were last increased on January 1, 2017. The City's current commodity (water use), capacity (meter) and customer (account) rates are shown in the sidebar.¹ The City bills water accounts monthly.

Commodity Charge, \$/1,000 gallons	
Single Family/Multi Residential	\$0.74
Commercial/Industrial/Institutional	\$0.54
Landscape	\$0.75
Capacity Charge, \$ per mtr/mo	
1" or less	\$24.10
1-1/2"	\$48
2"	\$77
3"	\$169
4"	\$290
6"	\$603
8"	\$1,157
10"	\$1,832
Customer Charge, \$ per acct/mo	\$3.00

Each water account has one or more meters and each meter is billed for metered water use at the rates shown.

The City has five main categories of user accounts in its billing system.

- Single Family
- Multiple Residential
- Commercial
- Industrial
- Institutional
- Landscape

1.5 Water Enterprise Fund 420

All the City's enterprise activities (water, sewer, transit and building department operations) are reported in separate financial accounts. Unlike governmental services, these services are supported by charges paid by the users of these services. The City established Water Enterprise Fund 420 to account for operation of its Water Utility. The Water Utility is responsible for water production, water distribution, water conservation, capital improvements and drinking water quality & safety.

¹ This study excludes evaluation of Minimum Usage Charges (TMC Section 6-5-501(d)(2)), Standby Charges (TMC Section 6-5-501(c)), Fire Line Service Charges (TMC Section 6-5-603), Off-site Construction Water Charges (TMC Section 6-5-701(a)(1)), and On-site Construction Water Charges (TMC Section 6-5-702).

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Section 2

User Characteristics

The purpose of this section is to summarize the identification of residential and nonresidential users and their corresponding water use characteristics. The data used in this section comes from the City's utility billing system.

2.1 FY17 Water Deliveries

Historical water delivery and service connection data for July 2016 through June 2017 (FY17) was gathered from the City's billing system. The City delivered approximately 5,033 million gallons (MG) in FY17. Detailed water delivery and service connection data is summarized in Table A-1 of Appendix A. Metered water deliveries by customer class and month for FY17 are shown in Figure 2-1.

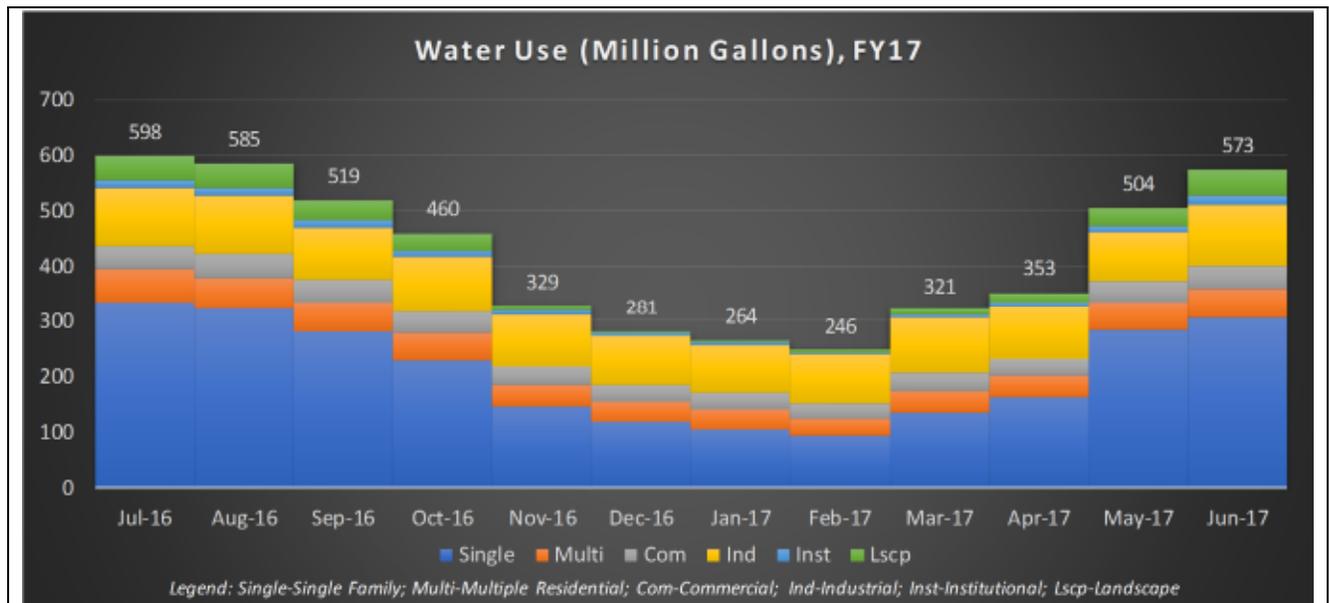


Figure 2-1. Metered Water Use by Customer Class and Month for FY17

2.2 Projected FY18 – FY27 Water Deliveries

Water delivery projections for FY18 – FY27 are based upon the net impact of two variables: 1) increase in water use due to the growth in the number of metered accounts; and 2) decrease in water use due to conservation. Growth in the number of metered accounts includes 170 single family connections per year. Projected water use for FY18 – FY27 is based on a percent reduction from the previous years' value.

Reductions in metered water use for single family accounts for FY18 – FY27 are projected to be 5 percent in FY18, 3 percent per year for FY19 – FY22 and 2 percent per year through FY27. Reductions in metered water use are projected to be 3 percent per year for the Landscape customer class. Reductions in metered water use are projected to be 2 percent per year for the Multiple Residential customer class. Reductions in metered water use are projected to be 1 percent per year for the Commercial, Institutional and Industrial customer class. Detailed water delivery is summarized in Table A-2 of Appendix A. Projected metered water deliveries, by customer class, are shown in the figure below.

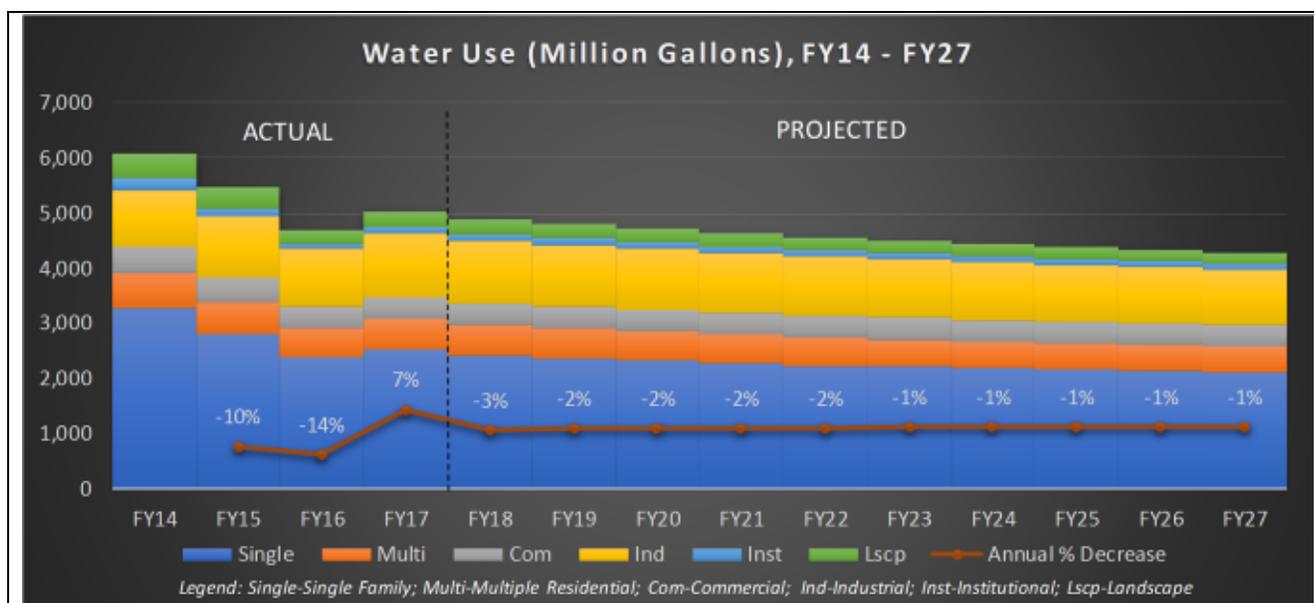


Figure 2-2. Projected Metered Water Use by Customer Class

2.3 Water Meters and Equivalent Water Meters

The projected number of water meters, by size, was based on data from the City’s utility billing system as of June 2017. Values from the utility billing system are shown in the table below.

Table 2-1. Number of Water Meter by Size and Customer Class, June 2017							
Meter Size	Single	Multi	Com	Ind	Inst	Lscp	Total
0.75	3,665	42	58		6	6	3,777
1	12,090	796	541		20	66	13,513
1.5	252	132	163	1	8	51	607
2	36	86	288	7	29	120	566
3		11	28	1	8	11	59
4		18	24	2	13	7	64
6		12	3	8	5	3	31
8		9	1	1	4		15
10				1	1	1	3
Total Count	16,043	1,106	1,106	21	94	265	18,635

Source: City of Turlock Billing System Data

Meter connections by size and by customer class for FY17 are shown in the figures below.

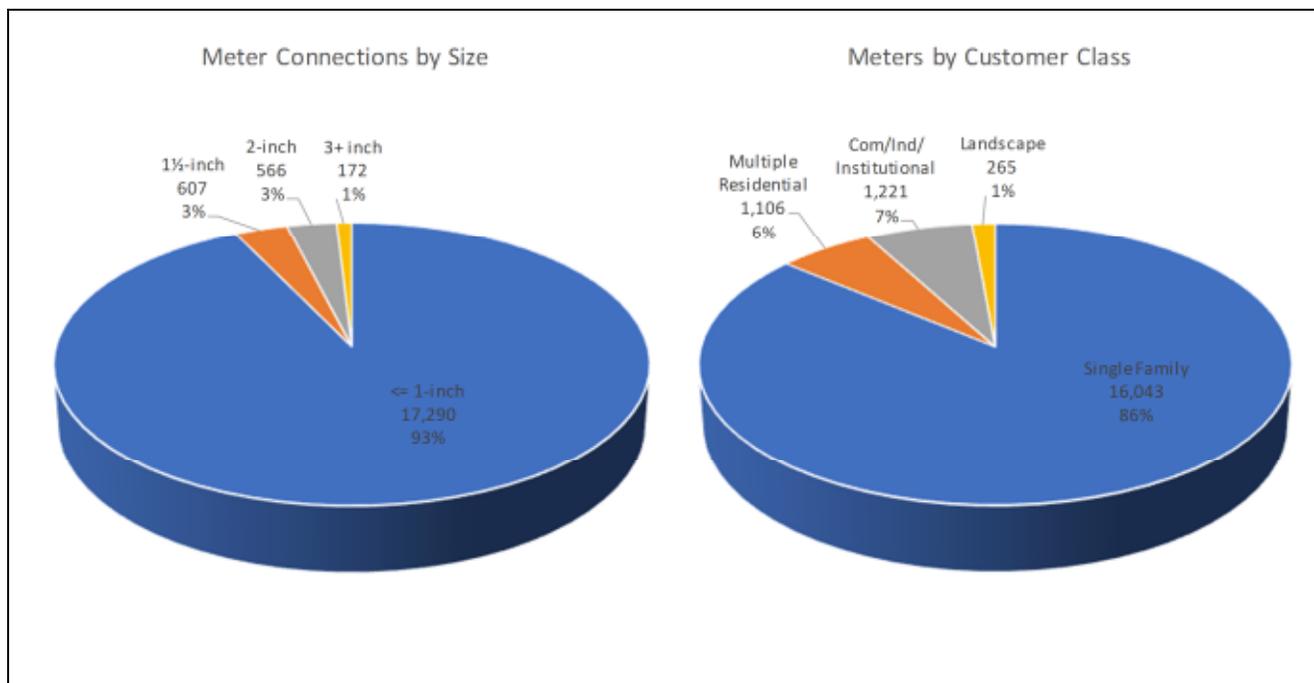


Figure 2-3. Water Meters by Size and Customer Class

The projected number of meters, by size, for FY18 – FY27 are shown in the table below.

Table 2-2. Projected Number of Water Meter Connections												
	June 2017		Projected [1]									
	% of Total	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
<=1	93%	17,290	17,460	17,630	17,800	17,970	18,140	18,310	18,480	18,650	18,820	18,990
1.5	3%	607	607	607	607	607	607	607	607	607	607	607
2	3%	566	566	566	566	566	566	566	566	566	566	566
3	0.3%	59	59	59	59	59	59	59	59	59	59	59
4	0.3%	64	64	64	64	64	64	64	64	64	64	64
6	0.2%	31	31	31	31	31	31	31	31	31	31	31
8	0.08%	15	15	15	15	15	15	15	15	15	15	15
10	0.02%	3	3	3	3	3	3	3	3	3	3	3
Total Count	100%	18,635	18,805	18,975	19,145	19,315	19,485	19,655	19,825	19,995	20,165	20,335
1 Projections for FY18 and onward are based on the following assumptions:												
		<i>Projected increase in meters <=1-inch</i>	170	170	170	170	170	170	170	170	170	170

Meter charges for meter sizes greater than 1-inch are based, in part, on an "equivalency factor" that relates the design maximum flow capacity of a meter (in gallons per minute, gpm) to that of a standard 1-inch meter. The water meter service charge ratios (equivalency factors) and maximum flow capacity used in this study are shown in the table below and are based on values published by the American Water Works Association.

Table 2-3. Water Meter Equivalency Factors				
Meter Size	Meter Type	AWWA Class	AWWA Maximum Flow Rate	1-inch Meter Equiv. Factor
<=1	Displacement	C700	50 gpm	1.0
1.5	Displacement	C700	100 gpm	2.0
2	Displacement	C700	160 gpm	3.2
3	Class I Turbine	C701	350 gpm	7.0
4	Class I Turbine	C701	600 gpm	12.0
6	Class I Turbine	C701	1,250 gpm	25.0
8	Class II Turbine	C702	2,400 gpm	48.0
10	Class II Turbine	C702	3,800 gpm	76.0

Source: American Water Works Association, M6 Water Meters - Selection, Installation, Testing and Maintenance, 2012 Fifth Edition, pages 63 - 65.

The equivalent number of water meters was developed using water meter equivalency factor. The projected number of equivalent number of water meters for FY18 – FY27 are shown in the table below.

	Meter Capacity	Equiv. Factor	Projected										
			FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
<=1	50 gpm	1.0	17,290	17,460	17,630	17,800	17,970	18,140	18,310	18,480	18,650	18,820	18,990
1.5	100 gpm	2.0	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214	1,214
2	160 gpm	3.2	1,811	1,811	1,811	1,811	1,811	1,811	1,811	1,811	1,811	1,811	1,811
3	350 gpm	7.0	413	413	413	413	413	413	413	413	413	413	413
4	600 gpm	12.0	768	768	768	768	768	768	768	768	768	768	768
6	1,250 gpm	25.0	775	775	775	775	775	775	775	775	775	775	775
8	2,400 gpm	48.0	720	720	720	720	720	720	720	720	720	720	720
10	3,800 gpm	76.0	228	228	228	228	228	228	228	228	228	228	228
Total Count			23,219	23,389	23,559	23,729	23,899	24,069	24,239	24,409	24,579	24,749	24,919

2.4 Evaluation of FY17 Average and Peak Water Use

Average annual and peak water use were evaluated and used to determine allocation of revenue requirements for commodity-related expenditures among customer classes. The six customer classes are aggregated into three groups corresponding to their ratio of Maximum Month/Average Month (“MM/AM”) water use. The “Multi”, “Com”, “Ind”, and “Inst” customer classes are combined into one category based on their similar MM/AM ratios (1.09-1.48). Single Family and “Lscp” are separate categories.

Average Month percentages for the aggregate and solitary groups are used to allocate “Base” water supply revenue requirements. Maximum Day percentages are used to allocate “Peak” water supply revenue requirements. Average annual and peak water use, and derivative allocation percentages, are shown in the table below.

Class	FY17		Coincidental		MM/AM Factor	Coincidental		% of Average Month	% of Maximum Month	% of Maximum Day
	Average Month (AM)	Maximum Month (MM) Month Use	Month	Month		Maximum Day (MD) Day Use	Day Use			
Single Family	209,602,555	335,309,733	Jul-16	1.60	2.45	27,357,214	50%	56%	59%	
Multi	45,975,473	59,818,609	Jul-16	1.30	1.99	3,969,379	11%	10%	9%	
Com	35,204,435	41,778,999	Jul-16	1.19	2.12	2,950,133	8%	7%	6%	
Ind	95,546,513	103,903,501	Jul-16	1.09	1.94	6,723,082	23%	17%	14%	
Inst	9,971,054	14,732,919	Jul-16	1.48	3.16	1,554,321	2%	2%	3%	
Lscp	23,105,237	42,462,215	Jul-16	1.84	2.81	3,979,889	6%	7%	9%	
Total	419,405,266	598,005,976		1.43		46,534,018	100%	100%	100%	
Class Groups										
Single Family	209,602,555	335,309,733		1.60	3.92	27,357,214	50%	56%	59%	
Multi/Com/Ind/Inst	186,697,474	220,234,028		1.18	2.44	15,196,915	45%	37%	33%	
Landscape	23,105,237	42,462,215		1.84	5.17	3,979,889	6%	7%	9%	
Total	419,405,266	598,005,976		1.43	3.33	46,534,018	100%	100%	100%	
* Calculation of MD Peak Factor										
		Single	Multi	Comm	Ind	Inst	Lscp			
MM/AM Delivery Factor		1.60	1.30	1.19	1.09	1.48	1.84			
System MD/MM Production Ratio **		1.53	1.53	1.53	1.53	1.53	1.53			
Weekly Usage Adjustment Factor		1.00	1.00	1.17	1.17	1.40	1.00			
Calculated MD Peak Factor		2.45	1.99	2.12	1.94	3.16	2.81			
** Calculation of System MD/MM Ratio										
Overall System coincident maximum-day (MD) production							29.51	< July 27, 2016		
Average System daily production maximum month (MM)							19.29	< July 2016		
System MD/MM Ratio							1.53			

2.5 Evaluation of Single Family Water Use

Annual average water use is commonly used as a break point for inclining block rate structures for single family residential accounts. An inclining block rate structure is a schedule of rates applicable to blocks of increasing usage in which the usage in each succeeding (higher usage) block is charged a higher unit rate than in the previous block. In this study, a two-block structure, with the first block including water use equal to or below annual average water use, will be evaluated. Note that the terms “block” and “tier” will be used interchangeably.

Average monthly water use for single family residential accounts for the 12-month period ending June 2017 is shown below in Figure 2-4. Detailed calculations summarized in Table A-3 of Appendix A. Single Family annual average water use for FY17 was approximately 13 thousand gallons per month.

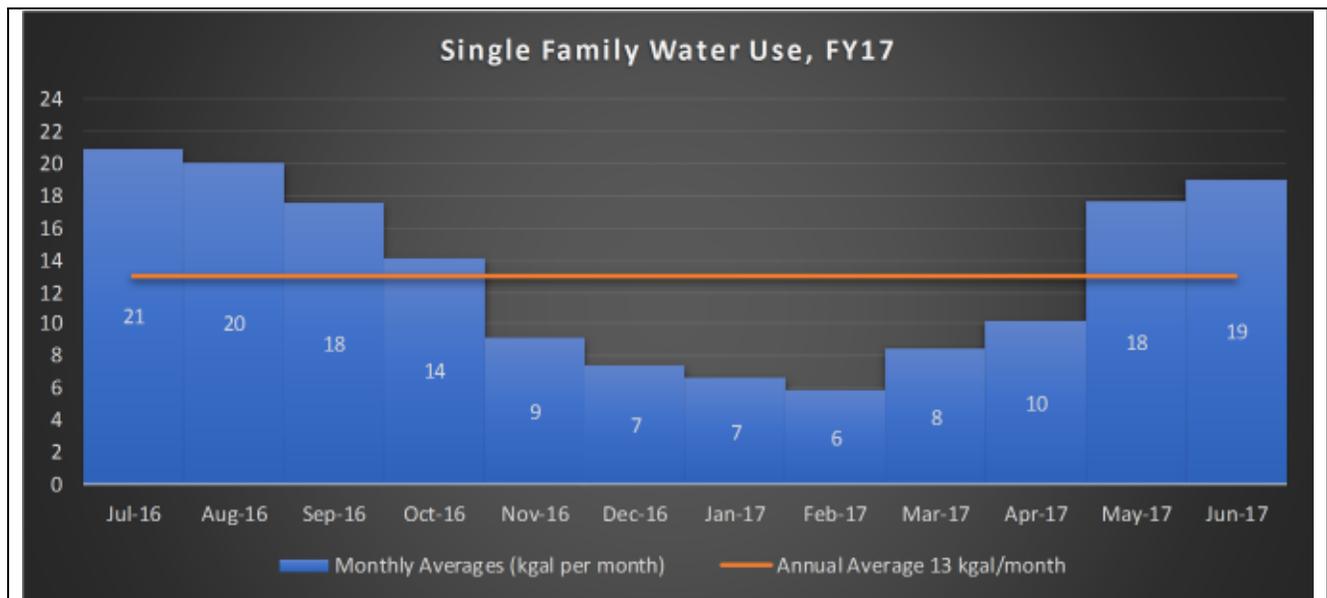


Figure 2-4. Single Family Residential Average Monthly Water Use

Projected reductions in metered water use for single family accounts of 5 percent in FY18, 3 percent per year for FY19 – FY22 and 2 percent per year through FY27 will cause the average monthly use to decrease and the break between first tier and second tier use to decrease.

For FY18, the first tier block consists of water use less than or equal to 12 thousand gallons per month. On an annual basis, the first block, Tier 1, contains approximately 65 percent of all water use. The next block Tier 2, contains approximately 35 percent of all water use. The percent use in each tier is projected to remain relatively constant after accounting for the change in the tier break point. Water use in each tier is shown below in Figure 2-5 for FY17.

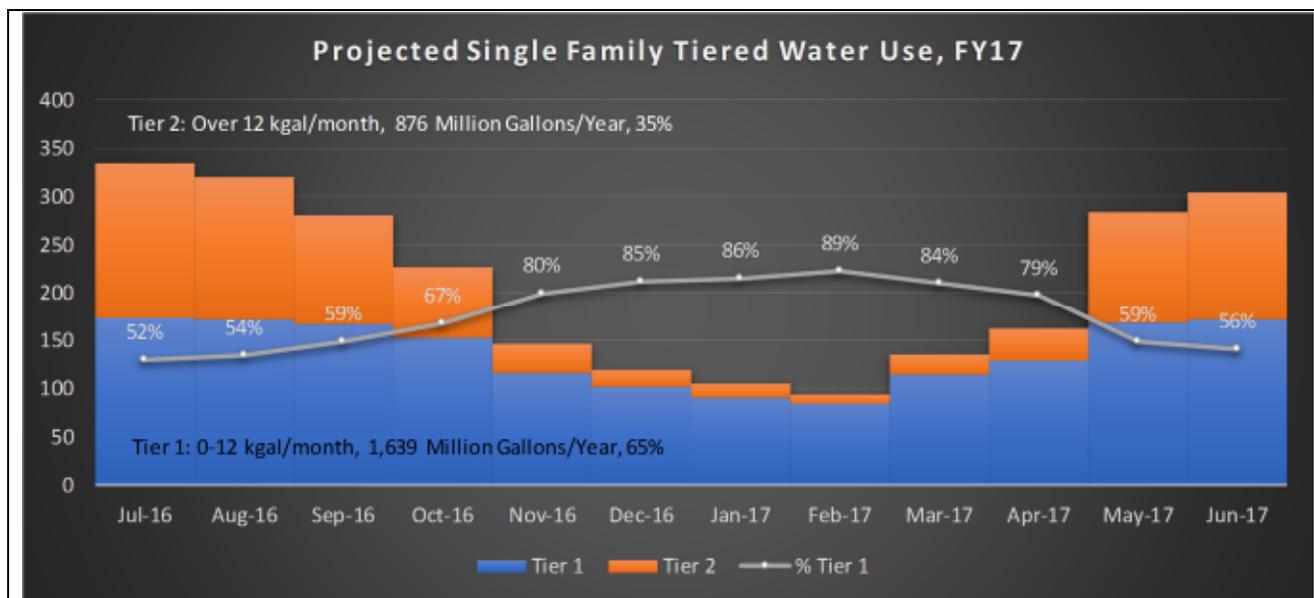


Figure 2-5. Single Family Residential Projected Tier Water Use

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Section 3

Revenue Required from Water Rates

Revenue from water rates must adequately fund water utility operations, capital costs, reserves, and bonded debt related to the provision of water service. Revenue required from water rates is developed in the section.

3.1 Current Water Rates and Revenue from Rates for FY17

Estimated revenues from Water Rates for FY17, based on rates that went into effect January 1, 2016 and January 1, 2017, are shown in the table below. Because the January 1, 2017 rate increases were effective halfway through the fiscal year, revenues from rates is lower than had rate increases been in effect for 12 months.

Note also that more water (55 percent of total 12 months' fiscal year use) is used in the first six months of a fiscal year – July through August – at the lower rates than in the next six months at the higher rates. Note also that revenue from Commodity rates is approximately 31 percent of total revenue.

Table 3-1. Revenue from Rates, FY17

	Rates		Units of Use		Revenue (\$000)			
	<i>effective date ></i>	<i>1/1/2016</i>	<i>1/1/2017</i>	<i>Jul-Dec 2016</i>	<i>Jan-Jun 2017</i>	<i>Jul-Dec 2016</i>	<i>Jan-Jun 2017</i>	<i>Total</i>
	<i>months in effect ></i>	<i>Jul-Dec 2016</i>	<i>Jan-Jun 2017</i>					
Commodity Charge, \$/1,000 gallons								
Single Family/Multi Residential		\$0.63	\$0.74	1,737	1,330	\$1,094	\$984	\$2,078
Commercial/Industrial/Institutional		\$0.46	\$0.54	878	811	\$404	\$438	\$842
Landscape		\$0.65	\$0.75	166	111	\$108	\$83	\$191
Capacity Charge, \$ per mtr/mo								
1" or less		\$21.20	\$24.10	17,275	17,305	\$2,197	\$2,502	\$4,700
1-1/2"		\$42	\$48	607	607	\$154	\$176	\$330
2"		\$68	\$77	566	566	\$231	\$262	\$493
3"		\$149	\$169	59	59	\$53	\$60	\$113
4"		\$255	\$290	64	64	\$98	\$111	\$209
6"		\$530	\$603	31	31	\$99	\$112	\$211
8"		\$1,018	\$1,157	15	15	\$92	\$104	\$196
10"		\$1,612	\$1,832	3	3	\$29	\$33	\$62
Customer Charge, \$ per acct/mo		\$2.60	\$3.00	18,620	18,650	\$290	\$336	\$626
Revenue Summary, x\$000								
Commodity						\$1,606	\$1,505	\$3,111
Capacity						\$2,952	\$3,360	\$6,313
Customer						\$290	\$336	\$626
Total						\$4,849	\$5,201	\$10,050
Percent of Total								
Commodity						33%	29%	31%
Capacity						61%	65%	63%
Customer						6%	6%	6%
Total						100%	100%	100%

3.2 Surface Water Supply Project Costs and Funding Sources

Capital and operating costs for the Surface Water Supply Project were developed by West Yost & Associates (West Yost) as part of their work for the SRWA. The project costs provided by West Yost for this study were those prepared for presentation to the SRWA Technical Advisory Committee at the August 4, 2017 meeting and updated in early September 2017. Capital project costs and funding sources are summarized in the table below.

Capital costs are for a regional wet well, other regional facilities and for local facilities that benefit only the City of Turlock. Total capital costs allocable to the City of Turlock are approximately \$171.6 million. For this rate study, it is estimated that approximately 85 percent (\$146.3 million) will be funded through a State Revolving Fund loan with the remainder (\$25.2 million) funded by cash from the City of Turlock Water Fund. Terms of the loan are projected to be a 30-year payback period at an interest rate of 2.0 percent. During the period of fund disbursements, the City would make interest-only payments. After the final disbursement, the City's annual loan principal and interest payment would be approximately \$6,510,000.

In addition to capital costs, West Yost estimated the annual operating costs for the surface water supply facilities to be approximately \$3,009,000 beginning in FY23. Operating costs are projected by West Yost to escalate by two percent per year.

Table 3-2. Surface Water Supply Project Costs and Funding Sources

\$ thousands	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	Total
Capital Costs	\$2,218	\$4,103	\$6,733	\$31,682	\$65,730	\$52,967	\$8,127					\$171,561
Percent Funded by SRF	100%	100%	100%	100%	80%	80%	80%					85%
Dollars Funded by SRF	\$2,218	\$4,103	\$6,733	\$31,682	\$52,649	\$42,427	\$6,510					\$146,322
Annual Disbursement	\$0	\$0	\$0	\$44,736	\$52,649	\$42,427	\$6,510					\$146,322
Interest Only Payments				\$895	\$1,948	\$2,796	\$2,926					\$8,565
Principal & Interest Payments								\$6,510	\$6,510	\$6,510	\$6,510	\$26,039

3.3 Projected Expenditures

Budgeted and projected expenditures are shown in the table below. All actual and budgeted expenditure values were provided by the City. Note that additional operating and maintenance (O&M) expenditures related to regulatory compliance for FY20 and onward were not included in the Adopted Budget and are added to projections used in this study. Projected operating expenditures are based on annual escalation rates provided by the City.

Table 3-3. Water Fund 420 Budgeted and Projected Expenditures

Expense Category	FY20+ % Inc.	Actual FY17	Adopted Budget			Projected						
			FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Operating Expenses (Division 550)												
Salaries	5%	\$1,635	\$1,713	\$1,735	\$1,822	\$1,913	\$2,009	\$2,109	\$2,214	\$2,325	\$2,441	\$2,563
Benefits and Insurance	5%	\$1,119	\$1,235	\$1,297	\$1,362	\$1,430	\$1,502	\$1,577	\$1,656	\$1,739	\$1,826	\$1,917
Contractual-Regional Mgmt	3%	\$515	\$500	\$500	\$515	\$530	\$546	\$562	\$579	\$596	\$614	\$632
Contractual-Other	5%	\$1,184	\$1,309	\$550	\$578	\$607	\$637	\$669	\$702	\$737	\$774	\$813
Supplies and maintenance	5%	\$311	\$333	\$333	\$350	\$368	\$386	\$405	\$425	\$446	\$468	\$491
Utilities (TID)	5%	\$1,367	\$1,372	\$1,440	\$1,512	\$1,588	\$1,667	\$1,750	\$1,838	\$1,930	\$2,027	\$2,128
Fleet expense	3%	\$95	\$95	\$95	\$98	\$101	\$104	\$107	\$110	\$113	\$116	\$119
Miscellaneous Expenses	3%	\$102	\$115	\$115	\$118	\$122	\$126	\$130	\$134	\$138	\$142	\$146
Capital Outlay	3%	\$4	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Transfers	3%	\$555	\$613	\$614	\$632	\$651	\$671	\$691	\$712	\$733	\$755	\$778
SWSP O&M	na	\$0	\$0	\$0	\$0	\$0	\$0	\$3,009	\$3,069	\$3,129	\$3,191	\$3,256
Add'l Regulatory Compliance O&M	na	\$0	\$0	\$1,688	\$1,063	\$1,438	\$1,375	\$1,416	\$1,458	\$1,502	\$1,547	\$1,593
Total Operating Expenses		\$6,887	\$7,285	\$8,367	\$8,050	\$8,748	\$9,023	\$12,425	\$12,897	\$13,388	\$13,901	\$14,436
Capital Expenses (Division 551)												
Capital, SWSP		\$2,218	\$4,103	\$6,733	\$31,682	\$65,730	\$52,967	\$8,127	\$0	\$0	\$0	\$0
Capital, R/R and Other		\$2,661	\$1,175	\$5,775	\$7,363	\$1,381	\$2,869	\$4,000	\$4,120	\$4,244	\$4,371	\$4,502
Total Capital Expenses		\$4,879	\$5,278	\$12,508	\$39,045	\$67,111	\$55,836	\$12,127	\$4,120	\$4,244	\$4,371	\$4,502
Debt Service												
2017 Water Revenue (Refunding) Bonds		\$2,029	\$1,638	\$1,640	\$1,639	\$1,637	\$1,637	\$1,640	\$1,636	\$1,645	\$1,642	\$1,642
SRF Loan Interest Only Payments		\$0	\$0	\$0	\$895	\$1,948	\$2,796	\$2,926	\$0	\$0	\$0	\$0
SRF Loan Principal & Interest		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,510	\$6,510	\$6,510	\$6,510
SRF Loan Net Reserve Fund Contr.		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$650	\$648	\$647	\$646
Total Debt Service		\$2,029	\$1,638	\$1,640	\$2,534	\$3,585	\$4,433	\$4,566	\$8,795	\$8,803	\$8,799	\$8,797
Total All Expenditures		\$13,795	\$14,201	\$22,515	\$49,628	\$79,443	\$69,292	\$29,118	\$25,812	\$26,435	\$27,071	\$27,736

3.4 Projected Revenues, Cash Flow and Debt Service Coverage

The City plans to fund its projected operating and capital expenditures through a mix of revenues from water rates, other operating and nonoperating revenues, and use of fund balance. Approximately 99 percent of revenues (excluding loan disbursements) are from water rates. The table below shows projected revenues, fund balances, debt service coverage and days operating cash.

Table 3-4. Projected Revenues, Cash Flow, Debt Service Coverage and Days Operating Cash												
Item (x\$000)	Actual	Adopted Budget		Projected								FY18-FY27
	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	Total
Beginning Cash Balance	\$21,520	\$17,953	\$15,204	\$6,236	\$17,210	\$9,207	\$4,558	\$6,815	\$7,104	\$7,670	\$8,289	
Revenues												
Commodity Charges	\$3,111	\$3,432	\$3,932	\$4,609	\$5,468	\$6,484	\$7,301	\$7,671	\$7,930	\$8,143	\$8,220	\$63,191
Capacity Charges	\$6,312	\$7,131	\$8,577	\$10,075	\$11,944	\$14,138	\$15,809	\$16,594	\$17,178	\$17,608	\$17,792	\$136,846
Customer Charges	\$626	\$715	\$865	\$1,017	\$1,205	\$1,426	\$1,592	\$1,671	\$1,728	\$1,773	\$1,794	\$13,785
Other Charges	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$1,000
Connection Fees	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$60	\$600
Interest Income	\$17	\$14	\$12	\$5	\$14	\$7	\$4	\$5	\$6	\$6	\$7	\$80
Total Revenues	\$10,227	\$11,452	\$13,546	\$15,866	\$18,791	\$22,216	\$24,866	\$26,101	\$27,001	\$27,690	\$27,972	\$215,501
Expenditures												
Operating Expenses	\$6,887	\$7,285	\$8,367	\$8,050	\$8,748	\$9,023	\$12,425	\$12,897	\$13,388	\$13,901	\$14,436	\$108,519
Capital Expenses	\$4,879	\$5,278	\$12,508	\$39,045	\$67,111	\$55,836	\$12,127	\$4,120	\$4,244	\$4,371	\$4,502	\$209,142
SRF Loan Disbursements	\$0	\$0	\$0	(\$44,736)	(\$52,649)	(\$42,427)	(\$6,510)	\$0	\$0	\$0	\$0	(\$146,322)
Debt Service	\$2,029	\$1,638	\$1,640	\$2,534	\$3,585	\$4,433	\$4,566	\$8,795	\$8,803	\$8,799	\$8,797	\$53,591
Total All Expenditures	\$13,795	\$14,201	\$22,515	\$4,892	\$26,794	\$26,866	\$22,608	\$25,812	\$26,435	\$27,071	\$27,736	\$224,929
Net Cash Flow	(\$3,567)	(\$2,749)	(\$8,968)	\$10,974	(\$8,003)	(\$4,650)	\$2,257	\$289	\$566	\$619	\$237	(\$9,428)
Ending Cash Balance	\$17,953	\$15,204	\$6,236	\$17,210	\$9,207	\$4,558	\$6,815	\$7,104	\$7,670	\$8,289	\$8,525	
Debt Service Coverage												
Net Revenues	\$3,340	\$4,167	\$5,180	\$7,817	\$10,044	\$13,193	\$12,441	\$13,204	\$13,613	\$13,789	\$13,536	
Debt Service	\$2,029	\$1,638	\$1,640	\$2,534	\$3,585	\$4,433	\$4,566	\$8,795	\$8,803	\$8,799	\$8,797	
Coverage Ratio	1.65x	2.54x	3.16x	3.09x	2.80x	2.98x	2.72x	1.50x	1.55x	1.57x	1.54x	
Over/(Under) 1.25x Req't	\$804	\$2,120	\$3,130	\$4,650	\$5,563	\$7,651	\$6,733	\$2,210	\$2,609	\$2,790	\$2,539	
Days Cash												
Operating Expenses	\$6,887	\$7,285	\$8,367	\$8,050	\$8,748	\$9,023	\$12,425	\$12,897	\$13,388	\$13,901	\$14,436	
180 Days Cash Target	\$3,396	\$3,593	\$4,126	\$3,970	\$4,314	\$4,450	\$6,127	\$6,360	\$6,602	\$6,855	\$7,119	
Evaluation												
Ending Cash Balance	\$17,953	\$15,204	\$6,236	\$17,210	\$9,207	\$4,558	\$6,815	\$7,104	\$7,670	\$8,289	\$8,525	
Calculated Days Cash	951	762	272	780	384	184	200	201	209	218	216	

Debt service coverage ratios exceed the minimum ratio of 1.25 in all years. Operating reserves exceed 180 days of operating expenditures in all years.

Section 4

Allocation of Costs

The total amount of revenue required from water rates is allocated between amounts to be recovered from commodity (water use), capacity (meter) and customer (account) rates. Allocation is accomplished by the development of factors that allocate costs among these functional cost categories.

4.1 Base – Extra Capacity Cost Allocation

Allocation of functional costs to cost components is performed using the “base-extra capacity” method. Using this method, costs are separated into five cost components. Each component is described below.³

1. Base costs – costs that tend to vary with the total quantity of water used plus those O&M expenses and capital costs associated with service to customer under average demand conditions;
2. Extra-capacity costs – costs associated with meeting peak demand rate of use requirements in excess of average (base) use and include O&M expenses and capital costs for system capacity beyond that required average rate of use; these costs are subdivided into costs necessary to meet maximum-day extra demand and maximum-hour demand in excess of maximum-day demand;
3. Fire protection – costs that apply solely to the fire protection function; these costs include those directly related to public fire hydrants and related branches and mains;
4. Transmission /Distribution-related costs – costs associated with transmitting and distributing water throughout the service are; and
5. Customer costs – costs associated with serving customers, irrespective of the amount or rate of water use or their meter connection size; these costs include those for meter reading and billing, customer accounting and collection, and financial and regulatory reporting.

4.2 Allocation of Costs to Functional Categories

The total amount of revenue required from water rates is allocated between amounts to be recovered from commodity, capacity and customer rates. Allocation is accomplished by the development of factors that allocate costs among functional cost categories.

The functional cost categories and the allocations are based on principles and methodology found in the American Water Works Association Manual of Water Supply Practices, *M1 Principles of Water Rates, Fees, and Charges*. The use of these industry standard principles and methods ensures that revenue requirements are equitably recovered from classes of customers in proportion to the cost of serving those customers.

³ A more complete discussion of functional cost categories as they apply to the base-extra capacity method may be found in the American Water Works Association, *Manual of Water Supply Practices, M1 Principles of Water Rates, Fees, and Charges*, 2012 Sixth Edition, page 62.

The cost of service allocation process includes the following steps:

1. Identification of annual revenue requirements by function;
2. Allocation of functional costs to cost components (which may include annual water usage, peak water demand, customer meters and bills, and fire protection);
3. Development of units of service by customer class for each cost component;
4. Development of unit costs of service for each cost component; and
5. Distribution of costs to customer classes.

The development of cost allocation percentages for the base year are shown in detail in Appendix B. Tables in Appendix B are Table B-1 (Water System "Plant in Service" Factors and Table B-2 (FY23 Cost Allocations).

Allocation of revenue required from rates to functional cost categories are summarized in the table below.

Table 4-1. Allocation of Costs to Functional Categories

Item	Estimated		Projected								
	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Revenue Requirements											
FY17 Estimated Rates Revenue	\$10,050										
Projected Annual Increase											
Percent		23%	18%	18%	20%	18%	7%	3%	4%	1%	1%
Dollars		\$2,261	\$2,154	\$2,532	\$3,314	\$3,555	\$1,671	\$766	\$1,052	\$274	\$276
FY18+ Projected		\$12,311	\$14,466	\$16,997	\$20,312	\$23,866	\$25,537	\$26,303	\$27,355	\$27,629	\$27,905
Allocations											
Base Water Supply	13%	\$1,609	\$1,890	\$2,221	\$2,654	\$3,119	\$3,337	\$3,437	\$3,574	\$3,610	\$3,646
Peak Supply	17%	\$2,055	\$2,414	\$2,837	\$3,390	\$3,983	\$4,262	\$4,390	\$4,566	\$4,611	\$4,657
Public Fire Protection	28%	\$3,473	\$4,080	\$4,794	\$5,729	\$6,732	\$7,203	\$7,419	\$7,716	\$7,793	\$7,871
Distribution Capacity	36%	\$4,384	\$5,152	\$6,053	\$7,234	\$8,499	\$9,094	\$9,367	\$9,742	\$9,839	\$9,938
Customer	6%	\$791	\$929	\$1,092	\$1,305	\$1,533	\$1,640	\$1,690	\$1,757	\$1,775	\$1,792
Total	100%	\$12,311	\$14,466	\$16,997	\$20,312	\$23,866	\$25,537	\$26,303	\$27,355	\$27,629	\$27,905

4.3 Commodity Rates - Uniform

Allocation of revenue required from rates to functional cost categories shown in the previous table is merged with units of service shown in Section 2 to develop commodity (water quantity) rates.

Development of the average quantity rate and uniform rates is shown in the table below.

Table 4-2. Commodity Rates-Uniform											
		FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Commodity - Average Uniform Rate											
Revenue Allocation (x\$000)	<i>allocation</i>										
Base Water Supply	13%	\$1,609	\$1,890	\$2,221	\$2,654	\$3,119	\$3,337	\$3,437	\$3,574	\$3,610	\$3,646
Peak Supply	17%	\$2,055	\$2,414	\$2,837	\$3,390	\$3,983	\$4,262	\$4,390	\$4,566	\$4,611	\$4,657
Total Supply	30%	\$3,663	\$4,305	\$5,058	\$6,044	\$7,102	\$7,599	\$7,827	\$8,140	\$8,221	\$8,304
Units of Use (thousand gallons)		4,896	4,813	4,731	4,650	4,570	4,514	4,459	4,405	4,351	4,297
Avg Commodity Rate (\$/1000 gal)		\$0.75	\$0.90	\$1.07	\$1.30	\$1.56	\$1.69	\$1.76	\$1.85	\$1.89	\$1.94
Single Family											
Revenue Allocation (x\$000)	<i>allocation</i>										
Base Water Supply	50.0%	\$804	\$945	\$1,110	\$1,326	\$1,559	\$1,668	\$1,718	\$1,786	\$1,804	\$1,822
Peak Supply	58.8%	\$1,208	\$1,419	\$1,668	\$1,993	\$2,342	\$2,506	\$2,581	\$2,684	\$2,711	\$2,738
Total		\$2,012	\$2,364	\$2,778	\$3,319	\$3,900	\$4,173	\$4,299	\$4,470	\$4,515	\$4,560
Units of Use (thousand gallons)		2,415	2,367	2,320	2,273	2,228	2,205	2,182	2,160	2,137	2,115
Single Family Commodity Rate (\$/1000 gal)		\$0.84	\$1.00	\$1.20	\$1.47	\$1.76	\$1.90	\$1.97	\$2.07	\$2.12	\$2.16
Multi/Commercial/Industrial/Institutional											
Revenue Allocation (x\$000)											
Base Water Supply	44.5%	\$716	\$841	\$989	\$1,181	\$1,388	\$1,485	\$1,530	\$1,591	\$1,607	\$1,623
Peak Supply	32.7%	\$671	\$788	\$926	\$1,107	\$1,301	\$1,392	\$1,434	\$1,491	\$1,506	\$1,521
Total		\$1,387	\$1,630	\$1,915	\$2,289	\$2,689	\$2,877	\$2,964	\$3,082	\$3,113	\$3,144
Units of Use (thousand gallons)		2,212	2,185	2,158	2,131	2,105	2,079	2,053	2,028	2,003	1,978
Multi/Com/Ind/Inst Commodity Rate (\$/1000 gal)		\$0.63	\$0.75	\$0.89	\$1.08	\$1.28	\$1.39	\$1.45	\$1.53	\$1.56	\$1.59
Landscape											
Revenue Allocation (x\$000)											
Base Water Supply	5.5%	\$89	\$104	\$122	\$146	\$172	\$184	\$189	\$197	\$199	\$201
Peak Supply	8.6%	\$176	\$206	\$243	\$290	\$341	\$365	\$375	\$390	\$394	\$398
Total		\$264	\$311	\$365	\$436	\$512	\$548	\$565	\$587	\$593	\$599
Units of Use (thousand gallons)		269	261	253	245	238	231	224	217	211	204
Landscape Commodity Rate (\$/1000 gal)		\$0.99	\$1.20	\$1.45	\$1.78	\$2.16	\$2.38	\$2.53	\$2.71	\$2.82	\$2.94

4.4 Commodity Rates – Single Family Tiered

Tiered commodity rates for Single Family users are based on allocation of revenue requirements to Single Family customers used in the development of uniform rates and water use at or below average annual use (Tier 1) and above average annual use (Tier 2). The development of tiered commodity rates for Single Family customers is explained in the next paragraph using revenue requirements and water use for FY18 in the explanation.

The FY18 Tier 1 commodity rate is calculated by dividing the total Base Water Supply revenue requirement allocated to the Single Family customer class (50% of \$1,609,000 = \$804,000) by the Single Family water use in Tier 1 (65% of 2,515 thousand gallons = 1,639 thousand gallons). The unit cost for Tier 1 water is \$0.49 per thousand gallons).

The FY18 Tier 2 commodity rate is calculated by dividing the total Peak Water Supply revenue requirement allocated to the Single Family customer class (58.8% of \$2,055,000 = \$1,208,000) by the Single Family water use in Tier 2 (35% of 2,515 thousand gallons = 876 thousand gallons). The unit cost for Tier 2 water is \$1.38 per thousand gallons).

Note that the tier break is recommended to decrease from 12 HCF to 10 HCF over a ten-year period due to water conservation within the Single Family customer class. Development of the tiered rates is shown in the table below.

It is recommended that the City maintain its uniform rate structure rather than switch to a tiered rate structure. Uniform rates are preferred because there is a relatively small difference between the rates (\$0.99 uniform vs \$0.49 Tier 1/\$1.38 Tier 2) and the conservation signal from uniform rates impacts more customer bills (approximately 70 percent of all customer bills are at 12,000 gallons or less).

Table 4-3. Commodity Rates-Single Family Tiered

		FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Commodity - All Users Revenue Requirements											
Revenue Requirement (x\$1000)	<i>allocation</i>										
Base Water Supply	13%	\$1,609	\$1,890	\$2,221	\$2,654	\$3,119	\$3,337	\$3,437	\$3,574	\$3,610	\$3,646
Peak Supply	17%	\$2,055	\$2,414	\$2,837	\$3,390	\$3,983	\$4,262	\$4,390	\$4,566	\$4,611	\$4,657
Total	30%	\$3,663	\$4,305	\$5,058	\$6,044	\$7,102	\$7,599	\$7,827	\$8,140	\$8,221	\$8,304
Single Family Revenue Requirements											
Revenue Allocation (x\$000)	<i>customer class allocation</i>										
Base Water Supply	50.0%	\$804	\$945	\$1,110	\$1,326	\$1,559	\$1,668	\$1,718	\$1,786	\$1,804	\$1,822
Peak Supply	58.8%	\$1,208	\$1,419	\$1,668	\$1,993	\$2,342	\$2,506	\$2,581	\$2,684	\$2,711	\$2,738
Total		\$2,012	\$2,364	\$2,778	\$3,319	\$3,900	\$4,173	\$4,299	\$4,470	\$4,515	\$4,560
Units of Use (thousand gallons)		2,415	2,367	2,320	2,273	2,228	2,205	2,182	2,160	2,137	2,115
Avg Commodity Rate (\$/1000 gal)		\$0.84	\$1.00	\$1.20	\$1.47	\$1.76	\$1.90	\$1.97	\$2.07	\$2.12	\$2.16
Single Family Water Use Characteristics											
Average Monthly Water Use, kgal		12.4	12.0	11.7	11.3	11.0	10.8	10.6	10.3	10.1	9.9
Tier Breaks											
Tier 1		0-12 kgal	0-12 kgal	0-12 kgal	0-11 kgal	0-11 kgal	0-11 kgal	0-11 kgal	0-10 kgal	0-10 kgal	0-10 kgal
Tier 2		> 12 kgal	> 12 kgal	> 12 kgal	> 11 kgal	> 11 kgal	> 11 kgal	> 11 kgal	> 10 kgal	> 10 kgal	> 10 kgal
Annual Water Use, Million Gallons											
Tier 1	<i>allocation</i>	68%	1,639	1,606	1,574	1,543	1,512	1,496	1,481	1,466	1,450
Tier 2	32%	876	761	746	731	716	709	701	694	687	680
Total		2,415	2,367	2,320	2,273	2,228	2,205	2,182	2,160	2,137	2,115
Single Family Inclining Block Quantity Rates, \$/kgal											
Tier 1 (Base Component)											
Dollar Allocation		\$804	\$945	\$1,110	\$1,326	\$1,559	\$1,668	\$1,718	\$1,786	\$1,804	\$1,822
Single Family Water Use in Tier 1		1,639	1,606	1,574	1,543	1,512	1,496	1,481	1,466	1,450	1,435
Tier 1 Quantity Charge		\$0.49	\$0.59	\$0.71	\$0.86	\$1.03	\$1.11	\$1.16	\$1.22	\$1.24	\$1.27
Tier 2 (Extra Capacity Component)											
Dollar Allocation		\$1,208	\$1,419	\$1,668	\$1,993	\$2,342	\$2,506	\$2,581	\$2,684	\$2,711	\$2,738
Single Family Water Use in Tier 2		876	761	746	731	716	709	701	694	687	680
Tier 2 Quantity Charge		\$1.38	\$1.87	\$2.24	\$2.73	\$3.27	\$3.54	\$3.68	\$3.87	\$3.95	\$4.03

4.5 Capacity Rates

Allocation of revenue required from rates to functional cost categories shown in the previous table is merged with units of service shown in Section 2 to develop capacity (water meter) rates.

Meter rates are the sum of two unit costs: 1) the public fire protection unit cost times the meter capacity ratio; and 2) the distribution capacity unit cost times the meter capacity ratio.

Development of capacity rates is shown in the table below.

Table 4-4. Capacity Rates											
	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	
Unit Costs (\$/eq mtr per month)											
Public Fire Protection											
Revenue Allocation (x\$000)	\$3,473	\$4,080	\$4,794	\$5,729	\$6,732	\$7,203	\$7,419	\$7,716	\$7,793	\$7,871	
Units of Use (equivalent meters)	23,389	23,559	23,729	23,899	24,069	24,239	24,409	24,579	24,749	24,919	
Public Fire Protection (\$/eq mtr per month)	\$12.37	\$14.43	\$16.84	\$19.98	\$23.31	\$24.76	\$25.33	\$26.16	\$26.24	\$26.32	
Distribution Capacity											
Revenue Allocation (x\$000)	\$4,384	\$5,152	\$6,053	\$7,234	\$8,499	\$9,094	\$9,367	\$9,742	\$9,839	\$9,938	
Units of Use (equivalent meters)	23,389	23,559	23,729	23,899	24,069	24,239	24,409	24,579	24,749	24,919	
Distribution Capacity (\$/eq mtr per month)	\$15.62	\$18.22	\$21.26	\$25.22	\$29.43	\$31.27	\$31.98	\$33.03	\$33.13	\$33.23	
Total Unit Cost	\$27.99	\$32.66	\$38.09	\$45.20	\$52.73	\$56.03	\$57.31	\$59.19	\$59.37	\$59.56	
Meter Rate (\$/mtr per month)											
Meter Size		1-inch Meter									
		<u>Equiv. Factor</u>									
<=1	1.0	\$28.00	\$32.70	\$38.10	\$45.20	\$52.70	\$56.00	\$57.30	\$59.20	\$59.40	\$59.60
1.5	2.0	\$56	\$65	\$76	\$90	\$105	\$112	\$115	\$118	\$119	\$119
2	3.2	\$90	\$104	\$122	\$145	\$169	\$179	\$183	\$189	\$190	\$191
3	7.0	\$196	\$229	\$267	\$316	\$369	\$392	\$401	\$414	\$416	\$417
4	12.0	\$336	\$392	\$457	\$542	\$633	\$672	\$688	\$710	\$712	\$715
6	25.0	\$700	\$816	\$952	\$1,130	\$1,318	\$1,401	\$1,433	\$1,480	\$1,484	\$1,489
8	48.0	\$1,344	\$1,567	\$1,829	\$2,170	\$2,531	\$2,689	\$2,751	\$2,841	\$2,850	\$2,859
10	76.0	\$2,128	\$2,482	\$2,895	\$3,435	\$4,008	\$4,258	\$4,355	\$4,498	\$4,512	\$4,526

4.6 Customer Rates

Allocation of revenue required from rates to functional cost categories shown in the previous table is merged with units of service shown in Section 2 to develop customer rates.

Development of customer rates is shown in the table below.

Table 4-5. Customer Rates										
	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Customer Unit Costs										
Revenue Allocation (x\$000)	\$791	\$929	\$1,092	\$1,305	\$1,533	\$1,640	\$1,690	\$1,757	\$1,775	\$1,792
Units of Use (accounts)	18,805	18,975	19,145	19,315	19,485	19,655	19,825	19,995	20,165	20,335
Customer (\$/account per month)	\$3.50	\$4.10	\$4.75	\$5.65	\$6.55	\$6.95	\$7.10	\$7.30	\$7.35	\$7.35

4.7 Recommended Water Rates

Current, recommended and projected commodity, capacity and customer rates are listed in the table below.

	Current		FY18 - FY22 Five-Year Rate Plan					FY23 - FY27 Five-Year Rate Projections				
	FY17	Adopted FY18	Recommended					Projected				
	effective date > 1/1/2017	1/1/2018	FY18 * 3/1/2018	FY19 1/1/2019	FY20 1/1/2020	FY21 1/1/2021	FY22 1/1/2022	FY23 1/1/2023	FY24 1/1/2024	FY25 1/1/2025	FY26 1/1/2026	FY27 1/1/2027
Commodity Charge, \$/thous. gals.												
System Average	\$0.68	\$0.77	\$0.75	\$0.89	\$1.07	\$1.30	\$1.55	\$1.68	\$1.76	\$1.85	\$1.89	\$1.93
Single Family	\$0.74	\$0.84	\$0.84	\$1.00	\$1.20	\$1.47	\$1.76	\$1.90	\$1.97	\$2.07	\$2.12	\$2.16
Multi Res/Com/Ind/Inst	\$0.54	\$0.60	\$0.63	\$0.75	\$0.89	\$1.08	\$1.28	\$1.39	\$1.45	\$1.53	\$1.56	\$1.59
Landscape	\$0.75	\$0.84	\$0.99	\$1.20	\$1.45	\$1.78	\$2.16	\$2.38	\$2.53	\$2.71	\$2.82	\$2.94
Capacity Charge, \$ per mtr./mo.												
1" or less	\$24.10	\$26.50	\$28.00	\$32.70	\$38.10	\$45.20	\$52.70	\$56.00	\$57.30	\$59.20	\$59.40	\$59.60
1-1/2"	\$48.20	\$53.00	\$56	\$65	\$76	\$90	\$105	\$112	\$115	\$118	\$119	\$119
2"	\$77.20	\$84.80	\$90	\$104	\$122	\$145	\$169	\$179	\$183	\$189	\$190	\$191
3"	\$169	\$186	\$196	\$229	\$267	\$316	\$369	\$392	\$401	\$414	\$416	\$417
4"	\$290	\$318	\$336	\$392	\$457	\$542	\$633	\$672	\$688	\$710	\$712	\$715
6"	\$603	\$663	\$700	\$816	\$952	\$1,130	\$1,318	\$1,401	\$1,433	\$1,480	\$1,484	\$1,489
8"	\$1,157	\$1,272	\$1,344	\$1,567	\$1,829	\$2,170	\$2,531	\$2,689	\$2,751	\$2,841	\$2,850	\$2,859
10"	\$1,832	\$2,014	\$2,128	\$2,482	\$2,895	\$3,435	\$4,008	\$4,258	\$4,355	\$4,498	\$4,512	\$4,526
Customer Charge, \$ per acct./mo.	\$3.00	\$3.30	\$3.50	\$4.10	\$4.75	\$5.65	\$6.55	\$6.95	\$7.10	\$7.30	\$7.35	\$7.35
Commodity Charge, \$/thous. gals.												
Single Family		14%	14%	19%	20%	23%	20%	8%	4%	5%	2%	2%
Multi Res/Com/Ind/Inst		11%	17%	19%	19%	21%	19%	9%	4%	6%	2%	2%
Landscape		12%	32%	21%	21%	23%	21%	10%	6%	7%	4%	4%
Capacity Charge, \$ per mtr./mo.												
1" or less		10%	16%	17%	17%	19%	17%	6%	2%	3%	0%	0%
1-1/2"		10%	16%	16%	17%	18%	17%	7%	3%	3%	1%	0%
2"		10%	17%	16%	17%	19%	17%	6%	2%	3%	1%	1%
3"		10%	16%	17%	17%	18%	17%	6%	2%	3%	0%	0%
4"		10%	16%	17%	17%	19%	17%	6%	2%	3%	0%	0%
6"		10%	16%	17%	17%	19%	17%	6%	2%	3%	0%	0%
8"		10%	16%	17%	17%	19%	17%	6%	2%	3%	0%	0%
10"		10%	16%	17%	17%	19%	17%	6%	2%	3%	0%	0%
Customer Charge, \$ per acct./mo.		10%	17%	17%	16%	19%	16%	6%	2%	3%	1%	0%

** Note that percent increases in rates for the first year (FY18) of the FY18 - FY22 Five-Year Rate Plan are based on comparison with FY17 rates*

4.8 Revenue from Water Rates

Revenue by rate category is summarized in the table below. Note that rate increases occur part way through each fiscal year.

Table 4-7. Revenue by Rate Category											
	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Revenue, x\$000											
Commodity	\$3,111	\$3,432	\$3,932	\$4,609	\$5,468	\$6,484	\$7,301	\$7,671	\$7,930	\$8,143	\$8,220
Capacity	\$6,312	\$7,131	\$8,577	\$10,075	\$11,944	\$14,138	\$15,809	\$16,594	\$17,178	\$17,608	\$17,792
Customer	\$626	\$715	\$865	\$1,017	\$1,205	\$1,426	\$1,592	\$1,671	\$1,728	\$1,773	\$1,794
Total	\$10,050	\$11,278	\$13,374	\$15,701	\$18,617	\$22,049	\$24,702	\$25,935	\$26,836	\$27,524	\$27,805
Percent of Total											
Commodity	31%	30%	29%	29%	29%	29%	30%	30%	30%	30%	30%
Capacity	63%	63%	64%	64%	64%	64%	64%	64%	64%	64%	64%
Customer	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Total	100%										

4.9 Water Utility Fund Cash Flow and Single Family Monthly Bills

Annual projected expenditures, ending fund balances, target operating reserves, and Single Family monthly bills are shown in the figure below for FY18 – FY27. Note that the “average” Single Family monthly bill is based on average annual use within the Single Family customer class.

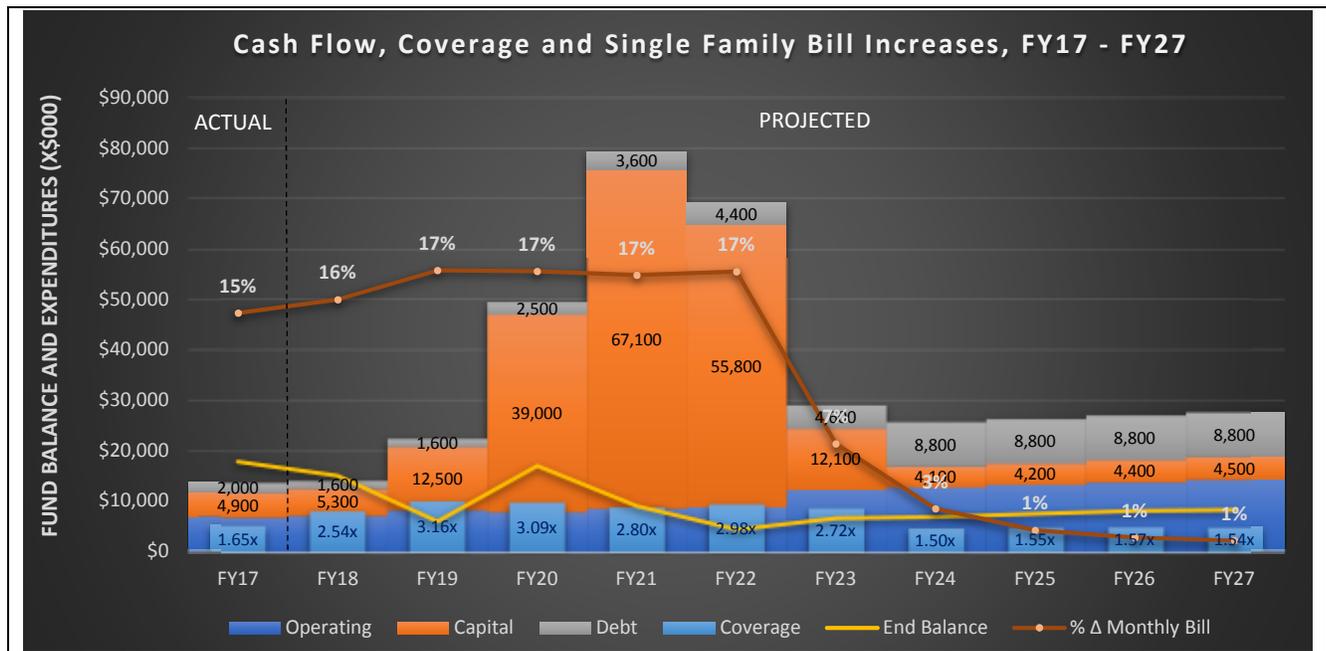


Figure 4-1. Projected Cash Flow for Water Fund 501 and % Increase in Single Family Monthly Bills

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Section 5

Impact of Water Rate Changes on Customer Bills

The impact of water rate changes on customer bills is summarized in this section.

5.1 Customer Classes Monthly Water Bills Comparison

Customer bills vary between customer classes and within customer classes. Variation between customer classes is due to different level of services (larger meters for non-residential) and different rate structures (uniform water quantity rates based on peak use characteristics). Variation within customer classes are due to different levels of water use.

Table 5-1. Customer Class Monthly Water Bills Comparison, FY16-FY27

Customer Class	Use Level	Water Use, kgal	Meter Size	2014 Five-Year Rate Plan			FY18 - FY22 Five-Year Rate Plan Recommended					FY23 - FY27 Five-Year Rate Projections Projected				
				Prior FY16	Current FY17	Adopted FY18	FY18 *	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Single Family	Avg Use	12	1" or less	\$31	\$36	\$40	\$42	\$49	\$57	\$68	\$80	\$86	\$88	\$91	\$92	\$93
	High Use	48	1" or less	\$54	\$63	\$70	\$72	\$85	\$100	\$121	\$144	\$154	\$159	\$166	\$169	\$171
Multiple Family	Avg Use	48	1" or less	\$54	\$63	\$70	\$62	\$73	\$86	\$103	\$121	\$130	\$134	\$140	\$142	\$143
	High Use	200	1.5"	\$171	\$199	\$224	\$186	\$219	\$259	\$312	\$368	\$397	\$412	\$431	\$438	\$444
Commercial	Avg Use	200	2"	\$163	\$188	\$208	\$220	\$258	\$305	\$367	\$432	\$464	\$480	\$502	\$509	\$516
	High Use	400	4"	\$442	\$509	\$561	\$592	\$696	\$818	\$980	\$1,152	\$1,235	\$1,275	\$1,329	\$1,343	\$1,358
Industrial	Low Use	100	2"	\$117	\$134	\$148	\$157	\$183	\$216	\$259	\$304	\$325	\$335	\$349	\$353	\$357
	High Use	6000	6"	\$3,293	\$3,846	\$4,266	\$4,484	\$5,320	\$6,297	\$7,616	\$9,005	\$9,748	\$10,140	\$10,667	\$10,851	\$11,036
Institutional	Low Use	100	1" or less	\$87	\$101	\$114	\$116	\$137	\$163	\$198	\$235	\$253	\$261	\$274	\$279	\$283
	High Use	1000	6"	\$993	\$1,146	\$1,266	\$1,334	\$1,570	\$1,847	\$2,216	\$2,605	\$2,798	\$2,890	\$3,017	\$3,051	\$3,086
Landscape	Low Use	100	1" or less	\$89	\$102	\$114	\$131	\$157	\$188	\$229	\$275	\$301	\$317	\$338	\$349	\$361
	High Use	1000	6"	\$1,183	\$1,356	\$1,506	\$1,694	\$2,020	\$2,407	\$2,916	\$3,485	\$3,788	\$3,970	\$4,197	\$4,311	\$4,436
Customer Class	Use Level			FY17	FY18	FY18 *	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	
Single Family	Avg Use			15%	11%	16%	17%	17%	20%	17%	7%	3%	4%	1%	1%	
	High Use			16%	12%	15%	18%	18%	21%	18%	7%	3%	4%	2%	1%	
Multiple Family	Avg Use			16%	12%	-1%	18%	18%	20%	18%	7%	3%	4%	1%	1%	
	High Use			16%	13%	-7%	18%	18%	20%	18%	8%	4%	5%	2%	1%	
Commercial	Avg Use			16%	11%	17%	18%	18%	20%	18%	8%	3%	5%	1%	1%	
	High Use			15%	10%	16%	18%	17%	20%	18%	7%	3%	4%	1%	1%	
Industrial	Low Use			15%	10%	17%	17%	18%	20%	17%	7%	3%	4%	1%	1%	
	High Use			17%	11%	17%	19%	18%	21%	18%	8%	4%	5%	2%	2%	
Institutional	Low Use			16%	13%	14%	18%	19%	21%	19%	8%	3%	5%	2%	2%	
	High Use			15%	10%	16%	18%	18%	20%	18%	7%	3%	4%	1%	1%	
Landscape	Low Use			15%	11%	28%	20%	20%	22%	20%	9%	5%	6%	3%	3%	
	High Use			15%	11%	25%	19%	19%	21%	20%	9%	5%	6%	3%	3%	

* Note that percent increases in monthly bills for the first year (FY18) of the FY18 - FY22 Five-Year Rate Plan are based on comparison with FY17 monthly bills

5.2 Single Family FY18 Monthly Water Bills

The impact of water rate changes on monthly water bills vary within the Single Family customer class due to different seasonal levels of water use and, if implemented, the introduction of tiered rates. The rates used for the “recommended” bills are those to be effective March 1, 2018. Single Family monthly bills based on the recommended FY18 uniform and tiered rates, and current rates, are shown in the figure below.

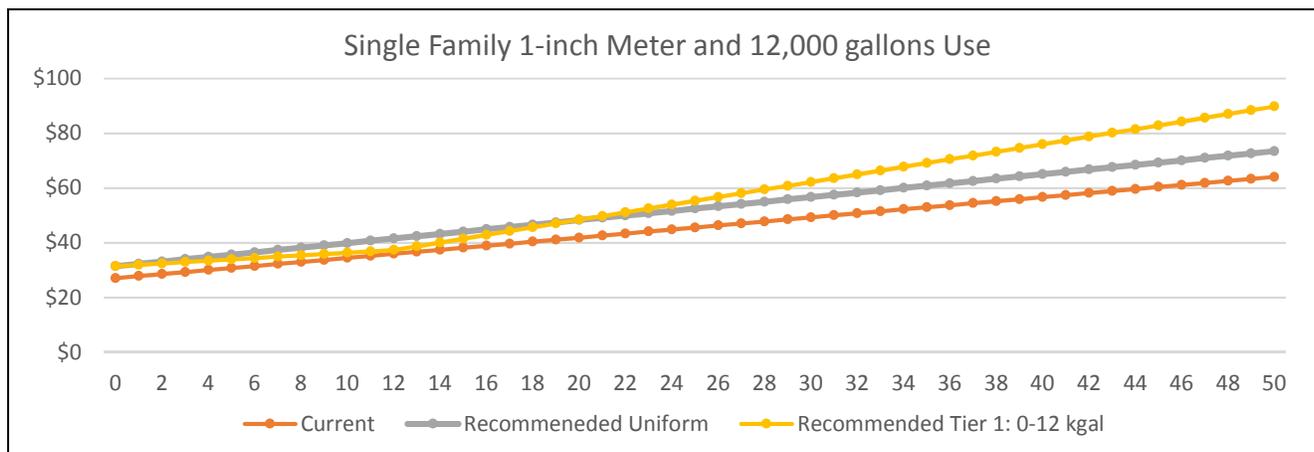


Figure 5-1. Monthly Single Family Water Bills, Current vs Recommended Rates

Detailed tabulation of monthly water bills over a range of water use from 0 to 50 thousand gallons using current and recommended FY18 water rates are shown in Table D-1 of Appendix D.

The percent change in Single Family monthly bills based on the recommended FY18 uniform and tiered rates, as compared to monthly bills based on current rates, are shown in the figure below.

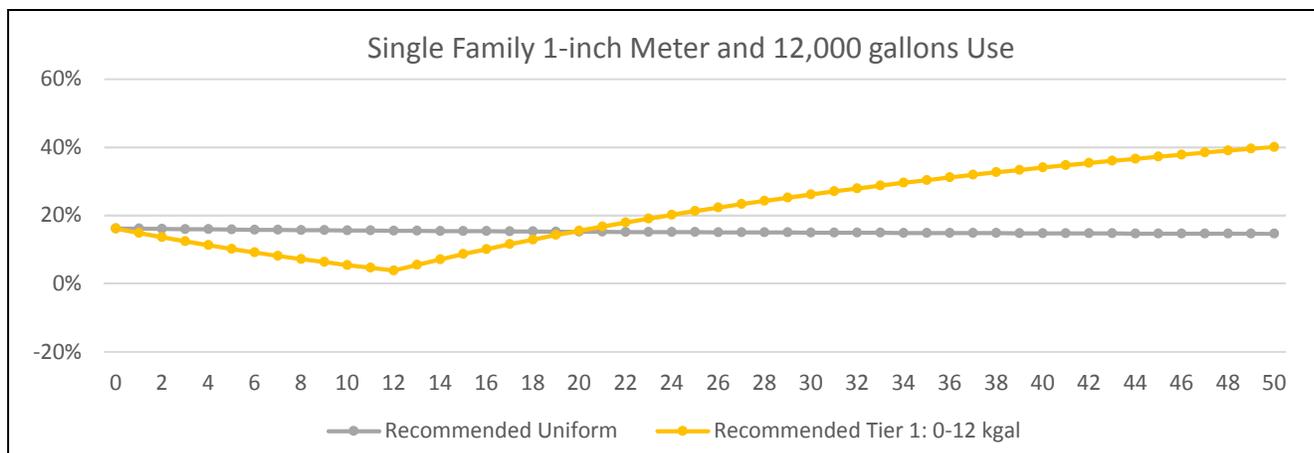


Figure 5-2. Percent Change in Monthly Single Family Water Bills, Current vs Recommended Rates

5.3 Single Family Monthly Water Bills Surveys

Monthly water bills for Single Family users were compared to those for other agencies. The comparison was for a user with the smallest meter size using approximately 12,000 gallons of water per month. Results of the survey are shown in the figures below.

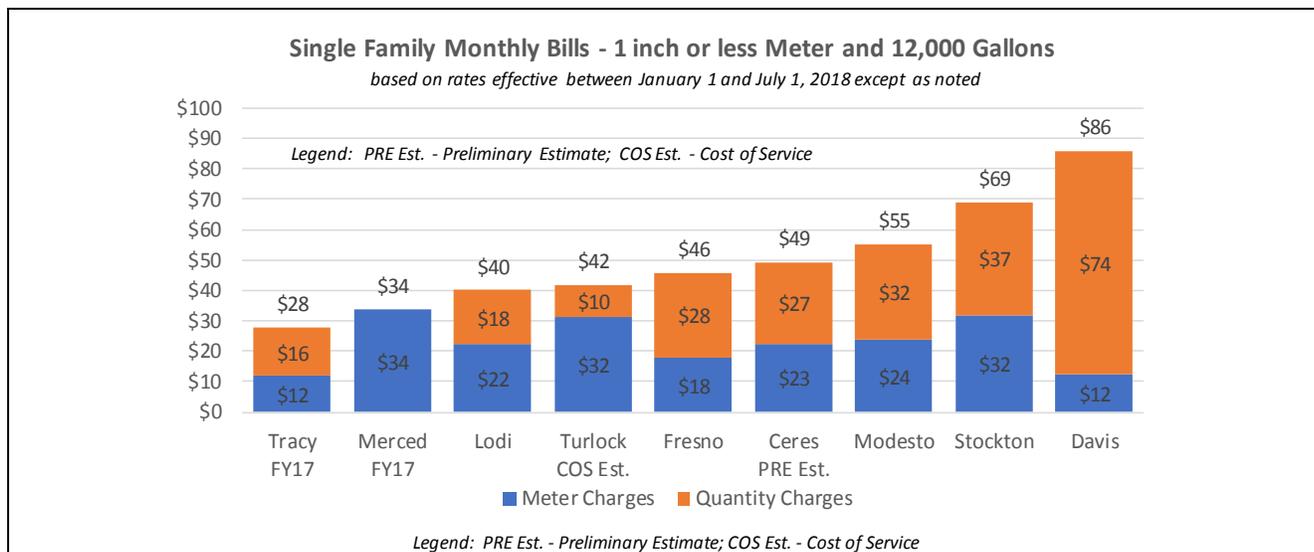


Figure 5-3. Single Family Monthly Water Bills Survey of Nearby Cities

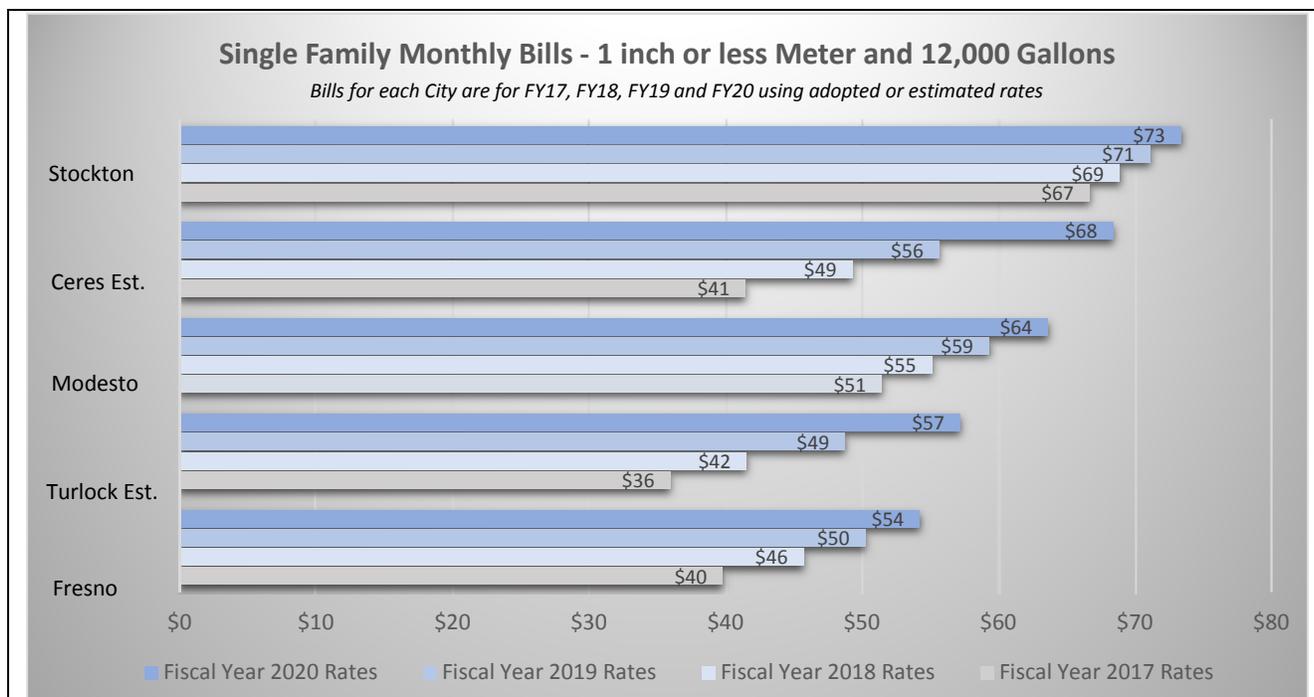


Figure 5-4. Single Family Monthly Water Bills Survey of Cities with Surface Water Supply

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Section 6

Limitations

This document was prepared solely for the City of Turlock in accordance with professional standards at the time the services were performed and in accordance with the agreement between the City of Turlock and Municipal Financial Services. This document is governed by the specific scope of work authorized by the City of Turlock in the Municipal Financial Services proposal dated June 27, 2017; it is not intended to be relied upon by any other party. We have relied on information or instructions provided by the City of Turlock and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

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Appendix A: Water Use Data

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Table A-1
Fiscal Year 2016-2017 Water Use by Customer Class and Month

Water Use, Gallons														
Class	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Total	% of Tot
Single	335,309,733	321,005,295	280,937,557	227,031,434	145,891,313	118,937,421	105,501,270	94,076,179	135,286,652	162,580,099	283,529,257	305,144,453	2,515,230,663	50%
Multi	59,818,609	59,528,192	54,632,473	51,720,804	39,241,428	36,337,221	35,669,789	30,869,714	38,471,423	38,001,953	51,933,981	55,480,091	551,705,678	11%
Com	41,778,999	42,520,145	41,574,959	37,221,670	31,385,050	29,985,152	29,350,869	25,897,542	31,673,845	31,723,397	38,889,124	40,452,468	422,453,220	8%
Ind	103,903,501	104,514,279	92,648,525	102,309,839	94,530,862	86,187,797	84,440,812	87,457,918	98,377,085	95,566,139	85,979,675	110,641,720	1,146,558,152	23%
Inst	14,732,919	14,031,354	13,400,051	11,632,582	7,264,876	5,288,711	5,192,231	4,950,209	6,695,386	7,188,679	12,438,882	16,856,762	119,652,642	2%
Lscp	42,462,215	43,128,358	35,952,621	30,210,425	10,443,425	4,109,792	3,404,327	3,012,573	10,156,335	17,912,022	31,717,523	44,753,225	277,262,841	6%
Total	598,005,976	584,727,623	519,146,186	460,126,754	328,756,954	280,826,094	263,559,298	246,264,135	320,660,726	352,972,289	504,488,442	573,328,719	5,032,863,196	
MGD	19.29	18.86	17.30	14.84	10.96	9.06	8.50	8.80	10.34	11.77	16.27	19.11	13.79	
Acre Feet	1,835	1,794	1,593	1,412	1,009	862	809	756	984	1,083	1,548	1,759	15,445	
% of Total	12%	12%	10%	9%	7%	6%	5%	5%	6%	7%	10%	11%		

Number of Accounts														
Class	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Average	% of Total
Single	16,002	15,998	16,018	16,021	16,044	16,050	16,036	16,057	16,054	16,062	16,033	16,043	16,035	86%
Multi	1,104	1,106	1,106	1,108	1,109	1,109	1,109	1,108	1,108	1,107	1,107	1,106	1,107	6%
Com	1,087	1,084	1,091	1,088	1,092	1,094	1,091	1,096	1,099	1,100	1,105	1,106	1,094	6%
Ind	21	21	21	21	21	21	21	21	21	21	21	21	21	0.1%
Inst	95	96	95	95	95	95	95	95	95	93	95	94	95	0.5%
Lscp	265	265	264	264	265	265	265	265	265	264	265	265	265	1.4%
Total	18,574	18,570	18,595	18,597	18,626	18,634	18,617	18,642	18,642	18,647	18,626	18,635	18,617	

Average Use per Account (gallons)													
Class	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Average
Single	20,954	20,065	17,539	14,171	9,093	7,410	6,579	5,859	8,427	10,122	17,684	19,020	13,072
Multi	54,184	53,823	49,396	46,679	35,385	32,766	32,164	27,861	34,722	34,329	46,914	50,163	41,522
Com	38,435	39,225	38,107	34,211	28,741	27,409	26,903	23,629	28,821	28,839	35,194	36,575	32,167
Ind	4,947,786	4,976,870	4,411,835	4,871,897	4,501,470	4,104,181	4,020,991	4,164,663	4,684,623	4,550,769	4,094,270	5,268,653	4,549,834
Inst	155,083	146,160	141,053	122,448	76,472	55,460	54,655	52,107	70,478	77,298	130,936	179,327	105,143
Lscp	160,235	162,749	136,184	114,433	39,409	15,509	12,847	11,368	38,326	67,849	119,689	168,880	87,272
Total	32,196	31,488	27,919	24,742	17,650	15,071	14,157	13,210	17,201	18,929	27,085	30,766	22,528

Single Family Average Use													
Class	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Total/Average
Single	335,309,733	321,005,295	280,937,557	227,031,434	145,891,313	118,937,421	105,501,270	94,076,179	135,286,652	162,580,099	283,529,257	305,144,453	2,515,230,663
Accounts	16,002	15,998	16,018	16,021	16,044	16,050	16,036	16,057	16,054	16,062	16,033	16,043	16,035
Days	31	31	30	31	30	31	31	28	31	30	31	30	365
Average													
Kgal	21	20	18	14	9	7	7	6	8	10	18	19	13
Bpd	676	647	585	457	303	239	212	209	272	337	570	634	430
HCF	28	27	23	19	12	10	9	8	11	14	24	25	17

Source: City of Turlock Billing System Data

Table A-2
Water Use (Million Gallons), FY14 - FY27

	Projected [1]													
	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Single	3,285	2,804	2,384	2,515	2,415	2,367	2,320	2,273	2,228	2,205	2,182	2,160	2,137	2,115
Multi	639	600	526	552	541	530	519	509	499	489	479	469	460	451
Com	482	429	403	422	418	414	410	406	402	398	394	390	386	382
Ind	1,023	1,114	1,044	1,147	1,135	1,124	1,113	1,101	1,090	1,079	1,069	1,058	1,047	1,037
Inst	198	143	100	120	118	117	116	115	114	113	112	110	109	108
Lscp	458	377	245	277	269	261	253	245	238	231	224	217	211	204
Total MG	6,085	5,466	4,702	5,033	4,896	4,813	4,731	4,650	4,570	4,514	4,459	4,405	4,351	4,297
MGD	16.7	15.0	12.9	13.8	13.4	13.2	13.0	12.7	12.5	12.4	12.2	12.1	11.9	11.8
Change in Use														
MG		-619	-764	331	-137	-83	-82	-81	-80	-56	-55	-55	-54	-53
%		-10%	-14%	7%	-3%	-2%	-2%	-2%	-2%	-1%	-1%	-1%	-1%	-1%

1 Projections are based on the following assumptions:

Customer Class	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27
Single Family Accounts	15,970	15,986	15,969	16,035	16,205	16,375	16,545	16,715	16,885	17,055	17,225	17,395	17,565	17,735
	<i>Projected annual increase in accounts ></i>													
Avg, kgal/mo.	17.1	14.6	12.4	13.1	12.4	12.0	11.7	11.3	11.0	10.8	10.6	10.3	10.1	9.9
	<i>Projected % reduction in Average Use ></i>													
Use, MG					5.0%	3.0%	3.0%	3.0%	3.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Multiple Residential					2,415	2,367	2,320	2,273	2,228	2,205	2,182	2,160	2,137	2,115
	<i>Projected % reduction in Total Use ></i>													
Commercial					2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
	<i>Projected % reduction in Total Use ></i>													
Industrial					1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
	<i>Projected % reduction in Total Use ></i>													
Institutional					1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
	<i>Projected % reduction in Total Use ></i>													
Landscape					3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
	<i>Projected % reduction in Total Use ></i>													

Table A-3
Fiscal Year 2016-2017 Water Use by Customer Class, Tier and Month

FY17 Tier 1

Note: Tiered Rates (Inclining Block Commodity Rates) will be applicable only to the Single Family customer class.

Class	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Total	% in T1
Single	173,516,491	172,178,788	166,993,000	152,612,936	116,635,467	100,986,202	91,004,611	83,859,469	113,624,005	127,997,623	167,689,710	171,658,321	1,638,756,623	65%
Multi	12,388,415	12,331,531	12,256,664	12,035,754	11,222,565	10,868,673	10,693,181	10,255,144	11,201,559	11,351,627	12,287,471	12,334,444	139,227,028	25%
Com	8,533,028	8,508,625	8,523,726	8,223,432	7,761,495	7,404,723	7,298,812	6,934,232	7,639,551	7,604,377	8,335,642	8,503,864	95,271,507	23%
Ind	216,430	228,330	235,720	235,890	240,000	225,600	221,990	223,540	219,510	216,110	217,800	216,700	2,697,620	0%
Inst	800,989	879,008	846,285	828,053	750,880	686,369	712,438	685,883	760,060	718,900	822,300	781,903	9,273,068	8%
Lscp	2,844,200	2,871,695	2,877,745	2,835,856	2,118,734	1,250,076	870,828	845,441	2,040,545	2,435,185	2,732,659	2,802,999	26,525,964	10%
Total	198,299,553	196,997,977	191,733,140	176,771,921	138,729,141	121,421,643	110,801,861	102,803,709	135,485,230	150,323,822	192,085,582	196,298,231	1,911,171,810	100%
% of Total	10%	10%	10%	9%	7%	6%	6%	6%	5%	7%	8%	10%	10%	% of All Tiers >
Cumulative %	10%	21%	31%	40%	47%	54%	59%	65%	72%	80%	88%	90%	100%	100%

FY17 Tier 2

Note: Tiered Rates (Inclining Block Commodity Rates) will be applicable only to the Single Family customer class.

Class	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Total	% in T1
Single	161,793,242	148,826,507	113,944,557	74,418,498	29,255,846	17,951,219	14,496,659	10,216,710	21,662,647	34,582,476	115,839,547	133,486,132	876,474,040	35%
Multi	47,430,194	47,196,661	42,375,809	39,685,050	28,018,863	25,468,548	24,976,608	20,614,570	27,269,864	26,650,326	39,646,510	43,145,647	412,478,650	75%
Com	33,245,971	34,011,520	33,051,233	28,998,238	23,623,555	22,580,429	22,052,057	18,963,310	24,034,294	24,119,020	30,553,482	31,948,604	327,181,713	77%
Ind	103,687,071	104,285,949	92,412,805	102,073,949	94,290,862	85,962,197	84,218,822	87,234,378	98,157,575	95,350,029	85,761,875	110,425,020	1,143,860,532	100%
Inst	13,931,930	13,152,346	12,553,766	10,804,529	6,513,996	4,582,342	4,479,793	4,264,326	5,935,326	6,469,779	11,616,582	16,074,859	110,379,574	92%
Lscp	39,618,015	40,256,663	33,074,876	27,374,569	8,324,691	2,859,716	2,533,498	2,167,132	8,115,790	15,476,837	28,984,864	41,950,226	250,736,877	90%
Total	399,706,423	387,729,646	327,413,046	283,354,833	190,027,813	159,404,451	152,757,437	143,460,426	185,175,496	202,648,467	312,402,860	377,030,488	3,121,111,386	100%
% of Total	13%	12%	10%	10%	9%	6%	5%	5%	6%	6%	6%	10%	12%	% of All Tiers >
Cumulative %	13%	25%	36%	45%	51%	56%	61%	65%	71%	78%	88%	100%	100%	100%

FY17 All Use

Note: Tiered Rates (Inclining Block Commodity Rates) will be applicable only to the Single Family customer class.

Class	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17	Total	% in T1
Single	335,309,733	321,005,295	280,937,557	227,031,434	145,891,313	118,937,421	105,501,270	94,076,179	135,286,652	162,580,099	283,529,257	305,144,453	2,515,230,663	50%
Multi	59,818,609	59,528,192	54,632,473	51,720,804	39,241,428	36,337,221	35,669,789	30,869,714	38,471,423	38,001,953	51,933,981	55,480,091	551,705,678	11%
Com	41,778,999	42,520,145	41,574,959	37,221,670	31,385,050	29,985,152	29,350,869	25,897,542	31,673,845	31,723,397	38,889,124	40,452,468	422,453,220	8%
Ind	103,903,501	104,514,279	92,648,525	102,309,839	94,530,862	86,187,797	84,440,812	87,457,918	98,377,085	95,566,139	85,979,675	110,641,720	1,146,558,152	23%
Inst	14,732,919	14,031,354	13,400,051	11,632,582	7,264,876	5,268,711	5,192,231	4,950,209	6,695,386	7,188,679	12,438,882	16,856,762	119,652,642	2%
Lscp	42,462,215	43,128,358	35,952,621	30,210,425	10,443,425	4,109,792	3,404,327	3,012,573	10,156,335	17,912,022	31,717,523	44,753,225	277,262,841	6%
Total	598,005,976	584,727,623	519,146,186	460,126,754	328,756,954	280,826,094	263,559,298	246,264,135	320,660,726	352,972,289	504,488,442	573,328,719	5,032,863,196	100%
% of Total	12%	12%	10%	9%	7%	6%	6%	6%	6%	7%	7%	10%	11%	% of All Tiers >
Cumulative %	12%	24%	34%	43%	49%	55%	60%	65%	72%	79%	89%	100%	100%	100%

Source: City of Turlock Billing System Data

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Appendix B: Surface Water Supply Project Operating and Capital Costs and SRF Loan Assumptions

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Table B-1
 SWSP Data Provided by West Yost Associates on 9/1/2017 - "Rates_Cost Backup for MFS_Train 1_15mgd_278M_20170901.xlsx"

Cost Category	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25	FY26	FY27	FY28	Total
Estimated Wet Well Construction Costs (a Regional Facility)														
Ceres	\$0	\$852,333	\$1,704,667	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,557,000
Turlock	\$0	\$1,705,000	\$3,410,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$5,115,000
TID	\$0	\$639,000	\$1,278,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,917,000
Local Facilities Design & Construction Costs														
Ceres	\$34,521	\$59,178	\$2,175,943	\$5,139,413	\$5,139,413	\$2,175,943	\$29,589	\$0	\$0	\$0	\$0	\$0	\$0	\$14,754,000
Turlock *	\$44,205	\$75,781	\$1,193,296	\$6,780,872	\$6,780,872	\$3,987,084	\$37,890	\$0	\$0	\$0	\$0	\$0	\$0	\$18,900,000
TID	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
All Other Estimated Annual Capital Expenditures (including Design and Construction of all other Regional Facilities)														
Ceres	\$2,016,135	\$2,052,834	\$1,860,379	\$13,968,821	\$31,778,597	\$26,564,216	\$4,656,517	\$0	\$0	\$0	\$0	\$0	\$0	\$82,897,499
Turlock	\$2,173,300	\$2,322,259	\$2,129,803	\$24,901,488	\$58,948,801	\$48,980,363	\$8,089,486	\$0	\$0	\$0	\$0	\$0	\$0	\$147,545,500
TID	\$14,288	\$24,493	\$24,493	\$710,397	\$1,754,863	\$1,449,062	\$224,404	\$0	\$0	\$0	\$0	\$0	\$0	\$4,202,000
Estimated Annual O&M Expenditures for Regional Facilities														
Ceres	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$1,504,333	\$1,534,333	\$1,564,667	\$1,595,667	\$1,628,000	\$1,660,667	\$9,487,667
Turlock	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$3,008,667	\$3,068,667	\$3,129,333	\$3,191,333	\$3,256,000	\$3,321,333	\$18,975,333
TID	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$4,282,449	\$7,730,878	\$13,776,581	\$51,500,991	\$104,402,546	\$83,156,668	\$17,550,886	\$4,603,000	\$4,694,000	\$4,787,000	\$4,884,000	\$4,982,000	\$4,982,000	\$306,350,999

Table B-2
 SWSP CIP State Revolving Fund (SRF) Loan Assumptions

	CIP Escalated	Issuance		Debt Svc		Interest Rate	Number of Years	Annual Payments	Payments		Debt Reserve	
		Costs 0.0%	Rsv Fund 0.0%	Issuance Amount	Interest Rate				Total Payments	Cumulative Annual	Interest Rate	
SRF Loan (\$ Thousands)												
State Maximum Loan	\$146,322											
Adjustments	\$0											
Projected Funding Parameters	\$146,322	\$0	\$0	\$146,322	2.000%	30	\$6,510					0.20%
Cash Flow (\$ Thousands)												
		<u>FY17</u>	<u>FY18</u>	<u>FY19</u>	<u>FY20</u>	<u>FY21</u>	<u>FY22</u>	<u>FY23</u>	<u>FY24</u>	<u>FY25</u>	<u>FY26</u>	<u>FY27</u>
Capital Costs		\$2,218	\$4,103	\$6,733	\$31,682	\$65,730	\$52,967	\$8,127	\$0	\$0	\$0	\$0
Percent Funded by SRF		100%	100%	100%	100%	80%	80%	80%	0%	0%	0%	0%
Dollars Funded by SRF		\$2,218	\$4,103	\$6,733	\$31,682	\$52,649	\$42,427	\$6,510	\$0	\$0	\$0	\$0
Annual Disbursement					\$44,736	\$52,649	\$42,427	\$6,510	\$0	\$0	\$0	\$0
Cumulative Disbursement		\$0	\$0	\$0	\$44,736	\$97,385	\$139,812	\$146,322				
Interest rate		2.000%	2.000%	2.000%	2.000%	2.000%	2.000%	2.000%				
Interest Only Payments		\$0	\$0	\$0	\$895	\$1,948	\$2,796	\$2,926				
Principal & Interest Payment Year Number									<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Principal & Interest Payments									\$6,510	\$6,510	\$6,510	\$6,510
Debt reserve contribution												
Annual Accumulation %									10%	20%	30%	40%
Annual Accumulation \$									\$651	\$651	\$651	\$651
Cumulative Accumulation \$									\$651	\$1,302	\$1,953	\$2,604
Debt reserve interest rate									0.20%	0.20%	0.20%	0.20%
Debt reserve interest earnings									\$1	\$3	\$4	\$5
Summary (\$146,322)												
Interest Only Payments		\$0	\$0	\$0	\$895	\$1,948	\$2,796	\$2,926	\$0	\$0	\$0	\$0
Principal & Interest Payments		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$6,510	\$6,510	\$6,510	\$6,510
Reserve Fund Accumulation		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$651	\$651	\$651	\$651
<i>Less: Reserve Fund Interest Earnings</i>		\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$1)	(\$3)	(\$4)	(\$5)
SRF Loan Totals		\$0	\$0	\$0	\$895	\$1,948	\$2,796	\$2,926	\$7,159	\$7,158	\$7,157	\$7,155
<i>Less: Reserve Fund Accumulation</i>		\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$651)	(\$651)	(\$651)	(\$651)
SRF Loan P&I Only		\$0	\$0	\$0	\$895	\$1,948	\$2,796	\$2,926	\$6,508	\$6,507	\$6,506	\$6,505
Summary (\$146,322.425 Loan)												
		<u>FY17 - FY27</u>		<u>FY28 Onward</u>	<u>Full Term</u>							
Interest Only Payments		\$8,565		\$0	\$8,565							
Principal & Interest Payments		\$26,039		\$169,253	\$195,292							
Reserve Fund Accumulation		\$2,604		\$3,906	\$6,510							
<i>Less: Reserve Fund Interest Earnings</i>		(\$13)		(\$39)	(\$52)							
SRF Loan Totals		\$37,195		\$173,120	\$210,314							
<i>Less: Reserve Fund Accumulation</i>		(\$2,604)		(\$3,906)	(\$6,510)							
SRF Loan P&I Only		\$34,591		\$169,214	\$203,805							

Appendix C: Water “Plant in Service Factors” and Allocation of Costs Tables

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Table C-1
 "Plant in Service" Factors

All Values in \$000 Plant in Service	Valuation [1] Dollars	Useful Life, Years	Capital Recovery Expense [2] Dollars	Extra Capacity		Fire Protection (FP)	Trans./ Dist. Capacity (CAP)	Admin. Billing & Collection (CUS)	Basis of Allocation [3,4,5]				
				Base (BAS)	Day Maximum (XMD)				(BAS)	(XMD)	(FP)	(CAP)	(CUS)
SWTF	\$175,000	50	\$9,586	\$4,125	\$5,269	\$192	\$0	\$0	43%	55%	2%	0%	0%
Wells	\$24,000	30	\$1,561	\$672	\$858	\$31	\$0	\$0	43%	55%	2%	0%	0%
Pumps	\$36,000	20	\$2,889	\$0	\$0	\$1,620	\$1,268	\$0	0%	0%	56%	44%	0%
Storage	\$10,000	50	\$548	\$0	\$0	\$307	\$241	\$0	0%	0%	56%	44%	0%
Transmission Mains	\$89,430	80	\$4,564	\$0	\$0	\$2,560	\$2,004	\$0	0%	0%	56%	44%	0%
Distribution Lines	\$157,385	80	\$8,031	\$0	\$0	\$4,505	\$3,527	\$0	0%	0%	56%	44%	0%
Hydrants	\$17,532	30	\$1,140	\$0	\$0	\$1,140	\$0	\$0	0%	0%	100%	0%	0%
Total	\$509,348		\$28,319	\$4,797	\$6,127	\$10,355	\$7,040	\$0					
% of Total			100%	17%	22%	37%	25%	0%					

Notes:

- The list of Plant Assets, estimated valuations and useful lives were provided by the City
- The capital recovery expense is the capital recovery factor times the present value of the asset
 The capital recovery factor is the ratio of a constant annuity to the present value of receiving that annuity for the useful life of the asset using the estimated real interest rate. The capital recovery expense is calculated using an interest rate of : 5.0%
- The Fire Protection allocation for the Treatment Plant and Reservoir is based on the volume of water used for public and private fire protection
- Fire Protection allocation for Booster Pump Station, PRVs, Transmission Lines and Distribution Lines is based on concepts presented in the American Water Works Association, Manual of Water Supply Practices, M1 Principles of Water Rates, Fees, and Charges, 2012 Sixth Edition, page 14:
 The allocation is calculated using a formula developed by the Insurance Services Office that relates the percentage of total revenue allocated at fire protection costs based on the population served.

$$\text{Fire Demand} = 1,020 x^{1/2} (1 - 0.01x^{1/2})$$
 in gallons per minute (gpm) where x = population in thousands; x = 73 for the Turlock Service Area
 Fire Demand = 7,970 gpm
 Maximum Day Demand = 29.5 mgd < from Table 2-5
 Maximum Day Demand = 20,496 gpm
 Fire Protection Allocation = $7,970 / (7,970 + 20,496)$
 Fire Protection Allocation = 28%
- Base (BAS) and Maximum Day (XMD) allocations for Water Treatment facilities are calculated as shown below

$$\text{Average Day Demand} = 13.0 \text{ mgd}$$

$$\text{Maximum Day Demand} = 29.5 \text{ mgd}$$

$$\text{Peak Day Factor} = 2.28$$

$$\text{Base Allocation} = \frac{13.0}{29.5} = 44\%$$

$$\text{Maximum Day Allocation} = \frac{29.5 - 13.0}{29.5} = 56\%$$

Table C-1
FY23 Cost Allocation

All Values in \$000 Expense Category	Projected 2022-23	Base Supply (BAS)	Peak Supply Maximum Day (XMD)	Fire Protection (FP)	Trans./ Dist. Capacity (CAP)	Admin. Billing & Collection (CUS)	Basis of Allocation [see footnotes]
Operating Expenses (Division 550)							
Salaries	\$2,214	\$375	\$479	\$810	\$550	\$0	"Plant in Service"
Benefits and Insurance	\$1,656	\$281	\$358	\$606	\$412	\$0	"Plant in Service"
Contractual-Regional Mgmt	\$579	\$98	\$125	\$212	\$144	\$0	"Plant in Service"
Contractual-Other	\$702	\$0	\$0	\$0	\$0	\$702	"Customer"
Supplies and maintenance	\$425	\$0	\$0	\$0	\$425	\$0	"Capacity"
Utilities (TID)	\$1,838	\$311	\$398	\$672	\$457	\$0	"Plant in Service"
Fleet expense	\$110	\$0	\$0	\$0	\$0	\$110	"Customer"
Miscellaneous Expenses	\$134	\$0	\$0	\$0	\$0	\$134	"Customer"
Capital Outlay	\$0	\$0	\$0	\$0	\$0	\$0	"Customer"
Net Transfers	\$712	\$0	\$0	\$0	\$0	\$712	"Customer"
SWSP O&M	\$3,069	\$520	\$664	\$1,122	\$763	\$0	"Plant in Service"
Add'l Regulatory Compliance O&M	\$1,458	\$0	\$0	\$0	\$1,458	\$0	"Capacity"
Total Operating Expenses	\$12,897	\$1,585	\$2,024	\$3,421	\$4,209	\$1,658	
Debt Service							
2017 Water Revenue (Refunding) Bonds	\$1,636	\$0	\$0	\$0	\$1,636	\$0	"Capacity"
SRF Loan Interest Only Payments	\$0	\$0	\$0	\$0	\$0	\$0	"Plant in Service"
SRF Loan Principal & Interest	\$6,510	\$1,103	\$1,408	\$2,380	\$1,618	\$0	"Plant in Service"
SRF Loan Net Reserve Fund Contr.	\$650	\$110	\$141	\$238	\$161	\$0	"Plant in Service"
Total Debt Service	\$8,795	\$1,213	\$1,549	\$2,618	\$3,416	\$0	
Total Operating and Debt Expenses	\$21,692	\$2,798	\$3,573	\$6,039	\$7,624	\$1,658	
Capital Expenses							
Capital, SWSP	\$0	\$0	\$0	\$0	\$0	\$0	"Composite"
Capital, R/R and Other	\$4,120	\$575	\$735	\$1,242	\$1,568	\$0	"Composite"
Total Capital Expenses	\$4,120	\$575	\$735	\$1,242	\$1,568	\$0	"Composite"
Total All Expenditures	\$25,812	\$3,373	\$4,308	\$7,281	\$9,192	\$1,658	
		13%	17%	28%	36%	6%	

Notes:

1 The "Plant in Service" factors are shown below.

<u>(BAS)</u>	<u>(XMD)</u>	<u>(FP)</u>	<u>(CAP)</u>	<u>(CUS)</u>
17%	22%	37%	25%	0%

2 The "Customer" factors are based on allocation solely to CUS.

<u>(BAS)</u>	<u>(XMD)</u>	<u>(FP)</u>	<u>(CAP)</u>	<u>(CUS)</u>
0%	0%	0%	0%	100%

3 The "Capacity" factors are based on allocation solely to CAP.

<u>(BAS)</u>	<u>(XMD)</u>	<u>(FP)</u>	<u>(CAP)</u>	<u>(CUS)</u>
0%	0%	0%	100%	0%

4 The "Composite" factors are applicable to Capital Expenses.

<u>(BAS)</u>	<u>(XMD)</u>	<u>(FP)</u>	<u>(CAP)</u>	<u>(CUS)</u>
14%	18%	30%	38%	0%

Appendix D: Monthly Water Bills Tables

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Table D-1
 FY18 Single Family Bills

		Recommended March 1, 2018									Recommended March 1, 2018						
		Current				\$3.50 \$28.00 \$0.84 < Uniform				\$0.49 < Tier 1							
kgal	gpd	\$3.00 /acct	\$24.10 /meter	\$0.74 /kgal	Total	\$3.50 /acct	\$28.00 /meter	\$0.84 /kgal	Total	Difference	\$3.50 /acct	\$28.00 /meter	\$1.38 < Tier 2 /kgal	Total	Difference		
0	0	\$3.00	\$24.10	\$0.00	\$27.10	\$3.50	\$28.00	\$0.00	\$31.50	\$4.40	16%	\$3.50	\$28.00	\$0.00	\$31.50	\$4.40	16%
1	30	\$3.00	\$24.10	\$0.74	\$27.84	\$3.50	\$28.00	\$0.84	\$32.34	\$4.50	16%	\$3.50	\$28.00	\$0.49	\$31.99	\$4.15	15%
2	61	\$3.00	\$24.10	\$1.48	\$28.58	\$3.50	\$28.00	\$1.68	\$33.18	\$4.60	16%	\$3.50	\$28.00	\$0.98	\$32.48	\$3.90	14%
3	91	\$3.00	\$24.10	\$2.22	\$29.32	\$3.50	\$28.00	\$2.52	\$34.02	\$4.70	16%	\$3.50	\$28.00	\$1.47	\$32.97	\$3.65	12%
4	122	\$3.00	\$24.10	\$2.96	\$30.06	\$3.50	\$28.00	\$3.36	\$34.86	\$4.80	16%	\$3.50	\$28.00	\$1.96	\$33.46	\$3.40	11%
5	152	\$3.00	\$24.10	\$3.70	\$30.80	\$3.50	\$28.00	\$4.20	\$35.70	\$4.90	16%	\$3.50	\$28.00	\$2.45	\$33.95	\$3.15	10%
6	183	\$3.00	\$24.10	\$4.44	\$31.54	\$3.50	\$28.00	\$5.04	\$36.54	\$5.00	16%	\$3.50	\$28.00	\$2.94	\$34.44	\$2.90	9%
7	213	\$3.00	\$24.10	\$5.18	\$32.28	\$3.50	\$28.00	\$5.88	\$37.38	\$5.10	16%	\$3.50	\$28.00	\$3.43	\$34.93	\$2.65	8%
8	243	\$3.00	\$24.10	\$5.92	\$33.02	\$3.50	\$28.00	\$6.72	\$38.22	\$5.20	16%	\$3.50	\$28.00	\$3.92	\$35.42	\$2.40	7%
9	274	\$3.00	\$24.10	\$6.66	\$33.76	\$3.50	\$28.00	\$7.56	\$39.06	\$5.30	16%	\$3.50	\$28.00	\$4.41	\$35.91	\$2.15	6%
10	304	\$3.00	\$24.10	\$7.40	\$34.50	\$3.50	\$28.00	\$8.40	\$39.90	\$5.40	16%	\$3.50	\$28.00	\$4.90	\$36.40	\$1.90	6%
11	335	\$3.00	\$24.10	\$8.14	\$35.24	\$3.50	\$28.00	\$9.24	\$40.74	\$5.50	16%	\$3.50	\$28.00	\$5.39	\$36.89	\$1.65	5%
12	365	\$3.00	\$24.10	\$8.88	\$35.98	\$3.50	\$28.00	\$10.08	\$41.58	\$5.60	16%	\$3.50	\$28.00	\$5.88	\$37.38	\$1.40	4%
13	395	\$3.00	\$24.10	\$9.62	\$36.72	\$3.50	\$28.00	\$10.92	\$42.42	\$5.70	16%	\$3.50	\$28.00	\$7.26	\$38.76	\$2.04	6%
14	426	\$3.00	\$24.10	\$10.36	\$37.46	\$3.50	\$28.00	\$11.76	\$43.26	\$5.80	15%	\$3.50	\$28.00	\$8.64	\$40.14	\$2.68	7%
15	456	\$3.00	\$24.10	\$11.10	\$38.20	\$3.50	\$28.00	\$12.60	\$44.10	\$5.90	15%	\$3.50	\$28.00	\$10.02	\$41.52	\$3.32	9%
16	487	\$3.00	\$24.10	\$11.84	\$38.94	\$3.50	\$28.00	\$13.44	\$44.94	\$6.00	15%	\$3.50	\$28.00	\$11.40	\$42.90	\$3.96	10%
17	517	\$3.00	\$24.10	\$12.58	\$39.68	\$3.50	\$28.00	\$14.28	\$45.78	\$6.10	15%	\$3.50	\$28.00	\$12.78	\$44.28	\$4.60	12%
18	548	\$3.00	\$24.10	\$13.32	\$40.42	\$3.50	\$28.00	\$15.12	\$46.62	\$6.20	15%	\$3.50	\$28.00	\$14.16	\$45.66	\$5.24	13%
19	578	\$3.00	\$24.10	\$14.06	\$41.16	\$3.50	\$28.00	\$15.96	\$47.46	\$6.30	15%	\$3.50	\$28.00	\$15.54	\$47.04	\$5.88	14%
20	608	\$3.00	\$24.10	\$14.80	\$41.90	\$3.50	\$28.00	\$16.80	\$48.30	\$6.40	15%	\$3.50	\$28.00	\$16.92	\$48.42	\$6.52	16%
21	639	\$3.00	\$24.10	\$15.54	\$42.64	\$3.50	\$28.00	\$17.64	\$49.14	\$6.50	15%	\$3.50	\$28.00	\$18.30	\$49.80	\$7.16	17%
22	669	\$3.00	\$24.10	\$16.28	\$43.38	\$3.50	\$28.00	\$18.48	\$49.98	\$6.60	15%	\$3.50	\$28.00	\$19.68	\$51.18	\$7.80	18%
23	700	\$3.00	\$24.10	\$17.02	\$44.12	\$3.50	\$28.00	\$19.32	\$50.82	\$6.70	15%	\$3.50	\$28.00	\$21.06	\$52.56	\$8.44	19%
24	730	\$3.00	\$24.10	\$17.76	\$44.86	\$3.50	\$28.00	\$20.16	\$51.66	\$6.80	15%	\$3.50	\$28.00	\$22.44	\$53.94	\$9.08	20%
25	760	\$3.00	\$24.10	\$18.50	\$45.60	\$3.50	\$28.00	\$21.00	\$52.50	\$6.90	15%	\$3.50	\$28.00	\$23.82	\$55.32	\$9.72	21%
26	791	\$3.00	\$24.10	\$19.24	\$46.34	\$3.50	\$28.00	\$21.84	\$53.34	\$7.00	15%	\$3.50	\$28.00	\$25.20	\$56.70	\$10.36	22%
27	821	\$3.00	\$24.10	\$19.98	\$47.08	\$3.50	\$28.00	\$22.68	\$54.18	\$7.10	15%	\$3.50	\$28.00	\$26.58	\$58.08	\$11.00	23%
28	852	\$3.00	\$24.10	\$20.72	\$47.82	\$3.50	\$28.00	\$23.52	\$55.02	\$7.20	15%	\$3.50	\$28.00	\$27.96	\$59.46	\$11.64	24%
29	882	\$3.00	\$24.10	\$21.46	\$48.56	\$3.50	\$28.00	\$24.36	\$55.86	\$7.30	15%	\$3.50	\$28.00	\$29.34	\$60.84	\$12.28	25%
30	913	\$3.00	\$24.10	\$22.20	\$49.30	\$3.50	\$28.00	\$25.20	\$56.70	\$7.40	15%	\$3.50	\$28.00	\$30.72	\$62.22	\$12.92	26%
31	943	\$3.00	\$24.10	\$22.94	\$50.04	\$3.50	\$28.00	\$26.04	\$57.54	\$7.50	15%	\$3.50	\$28.00	\$32.10	\$63.60	\$13.56	27%
32	973	\$3.00	\$24.10	\$23.68	\$50.78	\$3.50	\$28.00	\$26.88	\$58.38	\$7.60	15%	\$3.50	\$28.00	\$33.48	\$64.98	\$14.20	28%
33	1,004	\$3.00	\$24.10	\$24.42	\$51.52	\$3.50	\$28.00	\$27.72	\$59.22	\$7.70	15%	\$3.50	\$28.00	\$34.86	\$66.36	\$14.84	29%
34	1,034	\$3.00	\$24.10	\$25.16	\$52.26	\$3.50	\$28.00	\$28.56	\$60.06	\$7.80	15%	\$3.50	\$28.00	\$36.24	\$67.74	\$15.48	30%
35	1,065	\$3.00	\$24.10	\$25.90	\$53.00	\$3.50	\$28.00	\$29.40	\$60.90	\$7.90	15%	\$3.50	\$28.00	\$37.62	\$69.12	\$16.12	30%
36	1,095	\$3.00	\$24.10	\$26.64	\$53.74	\$3.50	\$28.00	\$30.24	\$61.74	\$8.00	15%	\$3.50	\$28.00	\$39.00	\$70.50	\$16.76	31%
37	1,125	\$3.00	\$24.10	\$27.38	\$54.48	\$3.50	\$28.00	\$31.08	\$62.58	\$8.10	15%	\$3.50	\$28.00	\$40.38	\$71.88	\$17.40	32%
38	1,156	\$3.00	\$24.10	\$28.12	\$55.22	\$3.50	\$28.00	\$31.92	\$63.42	\$8.20	15%	\$3.50	\$28.00	\$41.76	\$73.26	\$18.04	33%
39	1,186	\$3.00	\$24.10	\$28.86	\$55.96	\$3.50	\$28.00	\$32.76	\$64.26	\$8.30	15%	\$3.50	\$28.00	\$43.14	\$74.64	\$18.68	33%
40	1,217	\$3.00	\$24.10	\$29.60	\$56.70	\$3.50	\$28.00	\$33.60	\$65.10	\$8.40	15%	\$3.50	\$28.00	\$44.52	\$76.02	\$19.32	34%
41	1,247	\$3.00	\$24.10	\$30.34	\$57.44	\$3.50	\$28.00	\$34.44	\$65.94	\$8.50	15%	\$3.50	\$28.00	\$45.90	\$77.40	\$19.96	35%
42	1,278	\$3.00	\$24.10	\$31.08	\$58.18	\$3.50	\$28.00	\$35.28	\$66.78	\$8.60	15%	\$3.50	\$28.00	\$47.28	\$78.78	\$20.60	35%
43	1,308	\$3.00	\$24.10	\$31.82	\$58.92	\$3.50	\$28.00	\$36.12	\$67.62	\$8.70	15%	\$3.50	\$28.00	\$48.66	\$80.16	\$21.24	36%
44	1,338	\$3.00	\$24.10	\$32.56	\$59.66	\$3.50	\$28.00	\$36.96	\$68.46	\$8.80	15%	\$3.50	\$28.00	\$50.04	\$81.54	\$21.88	37%
45	1,369	\$3.00	\$24.10	\$33.30	\$60.40	\$3.50	\$28.00	\$37.80	\$69.30	\$8.90	15%	\$3.50	\$28.00	\$51.42	\$82.92	\$22.52	37%
46	1,399	\$3.00	\$24.10	\$34.04	\$61.14	\$3.50	\$28.00	\$38.64	\$70.14	\$9.00	15%	\$3.50	\$28.00	\$52.80	\$84.30	\$23.16	38%
47	1,430	\$3.00	\$24.10	\$34.78	\$61.88	\$3.50	\$28.00	\$39.48	\$70.98	\$9.10	15%	\$3.50	\$28.00	\$54.18	\$85.68	\$23.80	38%
48	1,460	\$3.00	\$24.10	\$35.52	\$62.62	\$3.50	\$28.00	\$40.32	\$71.82	\$9.20	15%	\$3.50	\$28.00	\$55.56	\$87.06	\$24.44	39%
49	1,490	\$3.00	\$24.10	\$36.26	\$63.36	\$3.50	\$28.00	\$41.16	\$72.66	\$9.30	15%	\$3.50	\$28.00	\$56.94	\$88.44	\$25.08	40%
50	1,521	\$3.00	\$24.10	\$37.00	\$64.10	\$3.50	\$28.00	\$42.00	\$73.50	\$9.40	15%	\$3.50	\$28.00	\$58.32	\$89.82	\$25.72	40%
51	1,551	\$3.00	\$24.10	\$37.74	\$64.84	\$3.50	\$28.00	\$42.84	\$74.34	\$9.50	15%	\$3.50	\$28.00	\$59.70	\$91.20	\$26.36	41%

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