

City of Escalon

Water Rate Study

A graphic of a water splash with bubbles, spanning the width of the page above the 'FINAL' text.

FINAL

November 5, 2019

HEC No. 190295

The following report was prepared by Hansford Economic Consulting LLC.

The analyses and findings contained within this report are based on primary data provided by the City of Escalon, as well as additional secondary sources of data available as of the date of this report. Updates to information used in this report could change or invalidate the findings contained herein. While it is believed that the primary and secondary sources of information are accurate, this is not guaranteed.

Every reasonable effort has been made in order that the data contained in this study reflect the most accurate and timely information possible. No responsibility is assumed for inaccuracies in reporting by the client, its consultants and representatives, or any other data source used in the preparation of this study. No warranty or representation is made that any of the projected values or results contained in this study will actually be achieved. There will usually be differences between forecasted or projected results and actual results due to changes in events and circumstances.

Changes in economic and social conditions due to events including, but not limited to, major recessions, droughts, major environmental problems or disasters that would negatively affect operations, expenses and revenues may affect the result of the findings in this study. In addition, other factors not considered in the study may influence actual results. Any applications for financing, or bond sales analyses, should re-evaluate the financial health and projection of revenues and expenses at the time of the application or preparation for bond sale.

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Section 1: INTRODUCTION AND SUMMARY OF FINDINGS

1.1 PURPOSE OF THE STUDY

The City of Escalon (City) provides water services to the residents and businesses of the City. The purpose of this study is to determine the level of funding required over the next five years to adequately fund the water system in a safe manner; providing clean and safe potable water that meets State and Federal regulatory requirements.

This report provides an explanation and justification of the calculated water rates for the next five years and it documents adherence to the law regarding setting of rates by a municipality. Per California Constitution Article 13D, water rates shall not be extended, imposed, or increased by any agency unless it meets all of the following requirements:

- (1) Revenues derived from the fee or charge shall not exceed the funds required to provide the property related service.
- (2) Revenues derived from the fee or charge shall not be used for any purpose other than that for which the fee or charge was imposed.
- (3) The amount of a fee or charge imposed upon any parcel or person as an incident of property ownership shall not exceed the proportional cost of the service attributable to the parcel.
- (4) No fee or charge may be imposed for a service unless that service is actually used by, or immediately available to, the owner of the property in question. Fees or charges based on potential or future use of a service are not permitted.
- (5) No fee or charge may be imposed for general governmental services including, but not limited to, police, fire, ambulance or library, services, where the service is available to the public at large in substantially the same manner as it is to property owners.

The water financial model projects revenues and expenses and calculates rates for the next ten years; however, the City is only proposing to adopt rates for the next five years with the Proposition 218 notification and hearing.

1.2 BACKGROUND

The City last conducted a water rate study in 2015. Water rates were last increased March 1, 2019. A water rate study is necessary at this time to a) ensure revenue sufficiency of the water system for the next five years, and b) demonstrate the City's ability to repay a State loan for funding of a new groundwater well.

Rate studies are typically conducted every three to five years to ensure revenue sufficiency. A cost of service analysis, which not only allows for revenue sufficiency, but also examines whether customers are paying for their share of system costs and adjusts rates and customer classifications

to achieve equity to the maximum extent practicable, is advisable whenever there has been a shift in the economic base of the community, and whenever proportional cost of service is in question. As part of the regular periodic review of the rates, best practices include maintaining a financially self-sustaining water utility, setting policies or guidelines on an appropriate reserve level, including depreciation in the rates, and continual customer outreach to educate on the value of water and need for water conservation.

This study incorporates all three major elements of cost-based rate making; revenue requirement analysis, cost of service analysis, and rate-design analysis. In determining an appropriate rate structure for Escalon that would meet the requirements of Proposition 218, the following key objectives were considered:

- Rates must be capable of generating sufficient revenues to meet all annual financial obligations of the water enterprise fund;
- Changes to the rate structure must be administratively feasible (compatible with the existing billing system and straightforward to explain to customers);
- The rate structure should be as reflective of local customer water use as possible; and
- Revised rates must be supportive of City goals, including meeting target reserve levels and keeping within affordability guidelines.

This report presents the result of the analysis and rate structure that best meets these objectives under current and projected conditions.

1.3 RATE SETTING PRINCIPLES AND ORGANIZATION OF THE REPORT

This report was prepared using the principles established by the American Water Works Association. The American Water Works Association “Principles of Water Rates, Fees, and Charges: Manual of Water Supply Practices M1 (the “M1 Manual”) establishes commonly accepted professional standards for cost of service studies. The M1 Manual general principles of rate structure design and the objectives of the study are described below.

According to the M1 Manual, the first step in the ratemaking analysis is to determine the adequate and appropriate funding of a utility. This is referred to as the “revenue requirements” analysis. This analysis considers the short-term and long-term service objectives of the utility over a given planning horizon, including capital facilities and system operations and maintenance, to determine the adequacy of a utility’s existing rates to recover its costs. A number of factors may affect these projections, including: the number of customers served, water-use trends, nonrecurring sales, weather, conservation, use restrictions, inflation, interest rates, wholesale contracts, capital finance needs, changes in tax laws, and other changes in operating and economic conditions.

After determining a utility’s revenue requirements, a utility’s next step is determining the cost of service. Utilizing a public agency’s approved budget, financial reports, operating data, and capital

improvement plans, a rate study generally categorizes (functionalizes) the costs, expenses, and assets of the water system among major operating functions to determine the cost of service.

After the assets and the costs of operating those assets are properly categorized by function, the rate study allocates those “functionalized costs” to the various customer classes (e.g., single-family residential, multi-family residential and commercial) by determining the characteristics of those classes and the contribution of each to incurred costs such as peaking factors or different delivery costs, service characteristics and demand patterns. Rate design is the final part of the M1 Manual’s rate-making procedure and generally uses the revenue requirement and cost of service analysis to determine appropriate rates for each customer class.

The study is presented in four sections.

Following this introduction and summary of findings, Section 2 provides information on the water system including the customer base, the water fund, and future infrastructure needs. Section 3 provides the water rate analysis, which starts with calculation of the revenue requirement. The methodology of the water rate analysis and detailed calculations of the water rates are also presented. Section 4 compares calculated water bills under the new rates with current Escalon water bills. Total water bill burden for a typical residential home is presented as a percentage of income to provide a test of affordability.

Appendix A includes support tables for the water rates analysis.

1.4 MAJOR ASSUMPTIONS

Several major assumptions influence the scope of the report and findings herein. They are summarized here:

- **The City’s Water Capital Improvement Projects (CIP) list will be funded through a combination of cash and debt.** The City already has a planning loan with the State Water Resources Control Board (SWRCB) for a new groundwater well. It is anticipated that a SWRCB construction loan will be secured to complete the project. All other capital improvement costs will be funded with cash and reserves with the exception of about 80% of the surface water connection project, which will need to be financed. Note, the City will seek the best financing sources for the surface water project at the time of need, including grant and/or principal forgiveness from government agencies.
- **System rehabilitation costs are included in the water rates.** The water rate model includes a calculated annual cost for replacement of facilities. Facilities include existing facilities and new facilities built in the next ten years. Rates should include depreciation of existing assets so that funds are accumulated and available for replacement of assets on a timely basis, and preferably paid for with cash. The money collected for system rehabilitation is put toward items on the CIP list.

- **The new rate structure will be implemented with the utility billing that begins March 1, 2020. The following next four rate increases are assumed to be implemented with the billing cycles starting March 1 of each year (March 2021, 2022, 2023, and 2024).** Given the City's meter read and billing cycles, each fiscal year six months will be billed at the 'old' rate, and six months will be billed at the 'new' rate.
- **New growth.** New development is assumed to increase at a rate of four one-inch meters each year. The growth rate was estimated based on discussion with City staff.
- **The bi-monthly rate structure removes tiered water rates.** Tiered water rates were removed for two reasons: 1) the drought of 2015-2017 proved how effective mandatory watering restrictions and education is on reducing water use, and 2) the tiered rates were intended to fit typical customer usage patterns and promote water efficiency and to proportionately allocate the cost of service to those who place the greatest demands on the system. In 2015, the San Juan Capistrano decision reaffirmed that water rates must be proportional to the costs of service received; however, tiered water rates should be based on higher costs at higher levels of water consumption. With an entirely groundwater system this is rarely the case; when the City has connected to surface water this should be re-evaluated.

Although tiers have been removed from the rate structure, the cost of service analysis demonstrates that it is more expensive for the City to provide water to certain customer groups than others. Currently, the price of water by tier is the same for all customer groups. Under the new rate structure, different use rates by customer category have been calculated. The cost of service provision to schools, industrial and irrigation metered customers is greater; therefore, the use rate per thousand gallons is greater for these customers.

1.5 CALCULATED RATES

The study provides a basis for adoption of a new rate schedule from 2020 through 2024. New rates are assumed to be effective the billing of March 1 of each year. By raising the rates, the City will generate sufficient revenue to fully fund water operations without using other City funds, meet loan repayment obligations, fund necessary capital improvements, and maintain a prudent cash reserve.

Table 1 on the next page shows current and calculated water rates for the next five years. In compliance with California SB-7, effective January 1, 2018, which requires all new multi-family residential development to be individually metered or sub-metered, any newly constructed units will pay the same base rate per unit as all current detached residential units unless the owner of the building(s) sub-meters each unit and performs its own internal water billing of each unit.

Table 1
Projected Five-Year Water Rates Schedule

Category	Current Rates	Calculated Rates				
		2019-20	2020-21	2021-22	2022-23	2023-24
Effective March 1st Bills						
All Flat Rate Customers Fixed Bi-Monthly Charges						
3/4" and 1" Pipes	\$126.49	\$151.66	\$164.32	\$178.04	\$192.91	\$209.02
Service Charge		Fixed Bi-Monthly Charges (\$ per Meter Size)				
5/8"	\$51.45	\$58.95	\$63.69	\$68.82	\$74.37	\$80.38
3/4"	\$51.45	\$58.95	\$63.69	\$68.82	\$74.37	\$80.38
1"	\$51.45	\$58.95	\$63.69	\$68.82	\$74.37	\$80.38
1.5"	\$110.34	\$117.98	\$127.46	\$137.73	\$148.84	\$160.86
2"	\$168.15	\$188.05	\$203.19	\$219.60	\$237.36	\$256.56
3"	\$366.65	\$409.46	\$442.53	\$478.35	\$517.13	\$559.08
4"	\$623.30	\$716.35	\$773.48	\$835.34	\$902.28	\$974.67
6"	\$1,256.53	\$1,473.82	\$1,592.28	\$1,720.57	\$1,859.44	\$2,009.65
8"	\$2,397.36	\$2,803.58	\$3,030.24	\$3,275.75	\$3,541.56	\$3,829.11
10"	\$3,765.66	\$4,395.92	\$4,753.50	\$5,140.89	\$5,560.38	\$6,014.25
Private Fire Protection		Fixed Bi-Monthly Charges (\$ per Fire Service Pipe Size)				
1"	\$1.57	\$1.73	\$1.88	\$2.04	\$2.21	\$2.40
1.5"	\$4.55	\$5.03	\$5.46	\$5.93	\$6.42	\$6.97
2"	\$9.70	\$10.71	\$11.64	\$12.63	\$13.68	\$14.86
3"	\$28.16	\$31.11	\$33.81	\$36.68	\$39.74	\$43.16
4"	\$60.02	\$66.29	\$72.04	\$78.17	\$84.69	\$91.97
6"	\$174.33	\$192.57	\$209.26	\$227.07	\$246.00	\$267.15
8"	\$371.51	\$410.37	\$445.95	\$483.90	\$524.23	\$569.30
10"	\$668.11	\$737.98	\$801.97	\$870.22	\$942.74	\$1,023.79
Use Charge		\$ per 1,000 gallons				
Residential	see below	\$1.44	\$1.56	\$1.69	\$1.83	\$1.98
Commercial	see below	\$1.44	\$1.56	\$1.69	\$1.83	\$1.98
Industrial	see below	\$1.62	\$1.76	\$1.91	\$2.07	\$2.24
Schools	see below	\$1.60	\$1.72	\$1.87	\$2.03	\$2.20
Irrigation	see below	\$2.27	\$2.43	\$2.64	\$2.86	\$3.11
Temporary Water	\$1.20	\$1.57	\$1.69	\$1.83	\$1.98	\$2.15

Source: HEC.

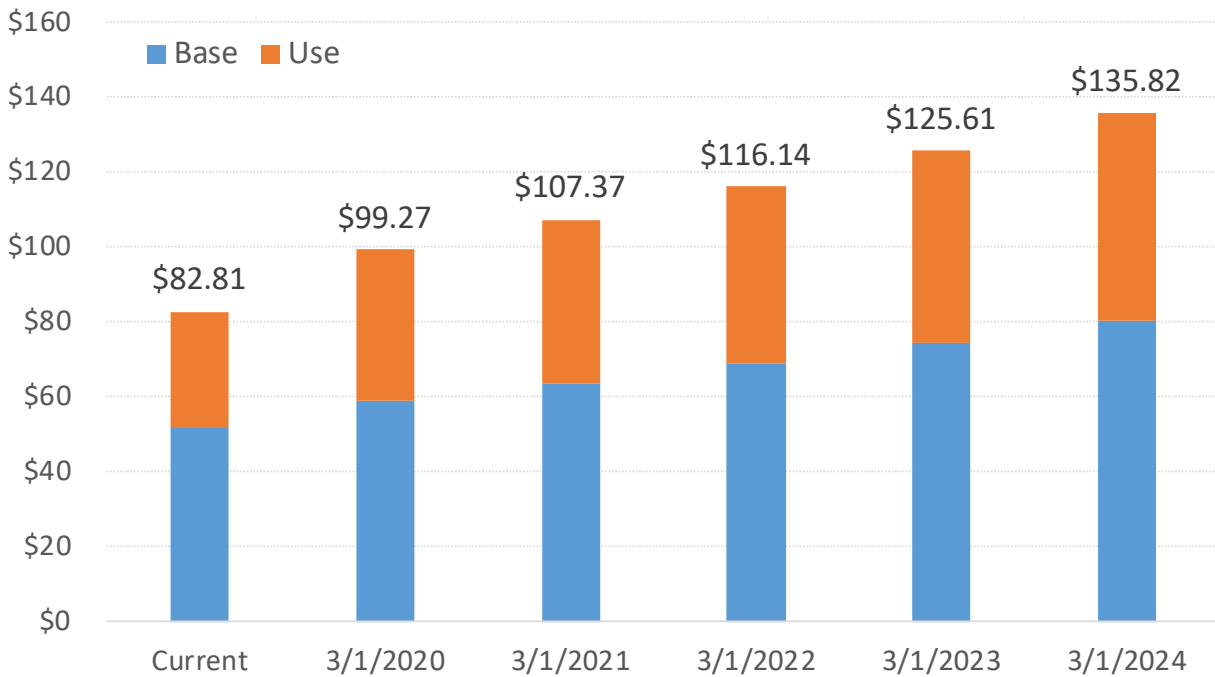
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	TIER 1	TIER 2	TIER 3
Rate per 1,000 gallons	\$1.12	\$1.29	\$1.46
	in 1,000 of gallons		
Residential Master Meter (per unit)	0-15	16-20	>20
Residential Single Family (per unit)	0-30	31-60	>60
Non-Residential 1" or less (per meter)	0-30	31-60	>60
Non-Residential >1" (per meter)	0-70	71-150	>150
Schools (per meter)	195	1200	>1,200
Irrigation (per meter)	5	500	>500

An illustration of water bills for single family residential customers in Escalon using 28,000 gallons bi-monthly is shown in **Figure 1**. This level of water consumption was used to illustrate bills because about half of bi-monthly water bills are less than 28,000 gallons, and about half are greater than 28,000 gallons.

The bi-monthly bill would increase from \$82.81 currently to \$99.27 next year, and \$135.82 in five years.

Figure 1
Bill Impact for a Home using 28,000 Gallons



The City's water bills are due the date they are issued. Residential customers will be shutoff after 60 days unless payment arrangements are made in accordance with the City's written policy on discontinuation of residential service for nonpayment.

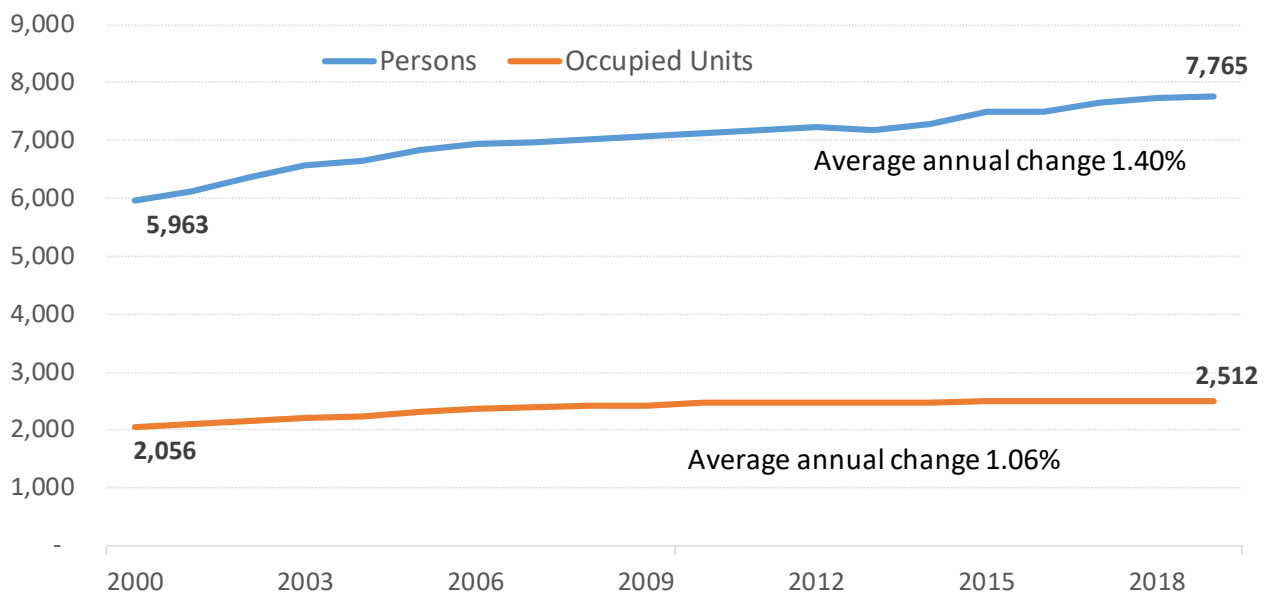
Section 2: THE WATER SYSTEM

This section describes the water system's customer base, the water fund, and water system capital improvement needs.

2.1 CUSTOMER BASE

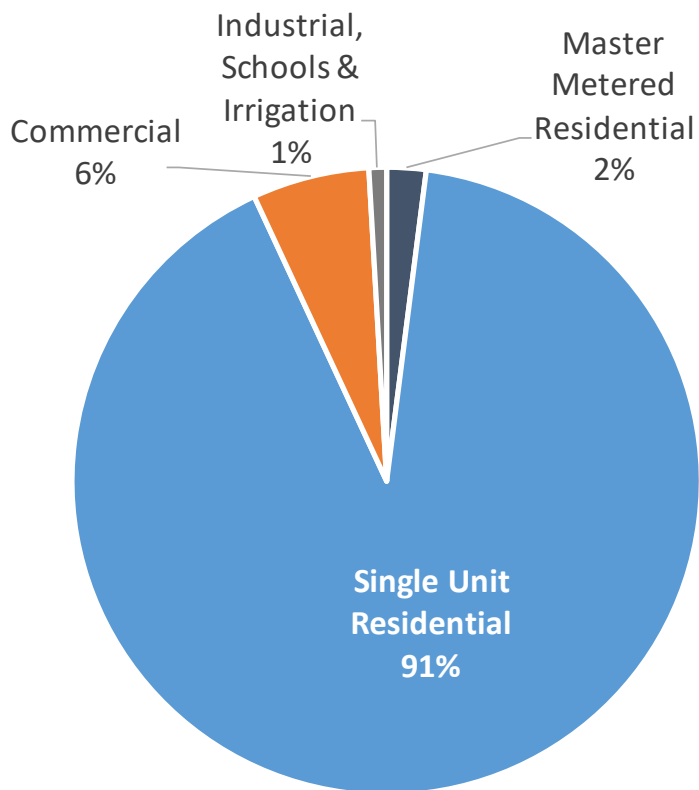
Per the California Department of Finance, Escalon has a population of approximately 7,765, and it has sustained an annual average population increase of 1.40% since 2000. The number of occupied housing units has grown at a lower rate of 1.06% since 2000. Historical population and housing estimates are shown in **Appendix Table A-1** and illustrated in **Figure 2** below.

Figure 2
Historical Growth in Population and Housing



The City serves water to about 2,200 households, as well as nearly 170 non-residential establishments, the Escalon Unified School District, and irrigation-only customers. A pie chart illustrating the customer base is provided in **Figure 3** on the next page. As the pie chart shows, the City's water customers are primarily (91%) single family residential.

Figure 3
Escalon City Water Customers



2.1.1. Customer Characteristics

Like most cities in the western U.S., Escalon experiences greater water demand in the summer than the winter due to outside applications of water. Single-family customers use three times the amount of water during summer months compared to winter months. All other customer groups also use more water during the summer by at least 20%.

Table 2 shows the number of accounts and water use per account using water consumption data for calendar year 2018. Calendar year 2018 is considered a 'normal' or average water use year.

Table 2
Customer Usage Characteristics

Customer Type	Number of Accounts	Median Bi-Monthly Use	Median Annual Use	Winter Average	Summer Average	Summer to Winter Ratio
		<i>gallons bi-monthly, figures in 1,000 gallons</i>				
Residential				[1]	[2]	
Master Metered	49	46	272	83	125	1.5
Single Unit	2,212	27	176	15	47	3.1
Non-Residential			<i>use per meter</i>			
Commercial	146	18	134	26	62	2.4
Industrial	5	83	515	93	114	1.2
Schools	5	n.a.	3,127	149	1,206	8.1
Irrigation	12	n.a.	842	24	506	21.2
Total	2,429					

Source: City of Escalon and HEC.

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[1] January and February consumption.

[2] July and August consumption.

2.1.2. Historical Water Sales

Figure 4 on the next page shows historical water sales from 2010 through 2018. Water sold was greater prior to the drought of 2014 through 2016. It has since rebounded, but not as high as between 2010 and 2014. For the water demand projection in this study, the average quantity of water sold between 2014 and 2018 is used (represented by the black line). The average includes some higher and some lower water use years.

Appendix Table A-2 shows the total water sold by customer category per year between 2010 and 2018.

Figure 5, also on the next page, illustrates average annual use by customer category. Although residential makes up 93% of the customer base (single family and multi-family residential combined), it uses 82% of the water; other customer categories comprise 7% of the customer base but use 18% of the water.

Figure 4
Historical Billable Water Consumption

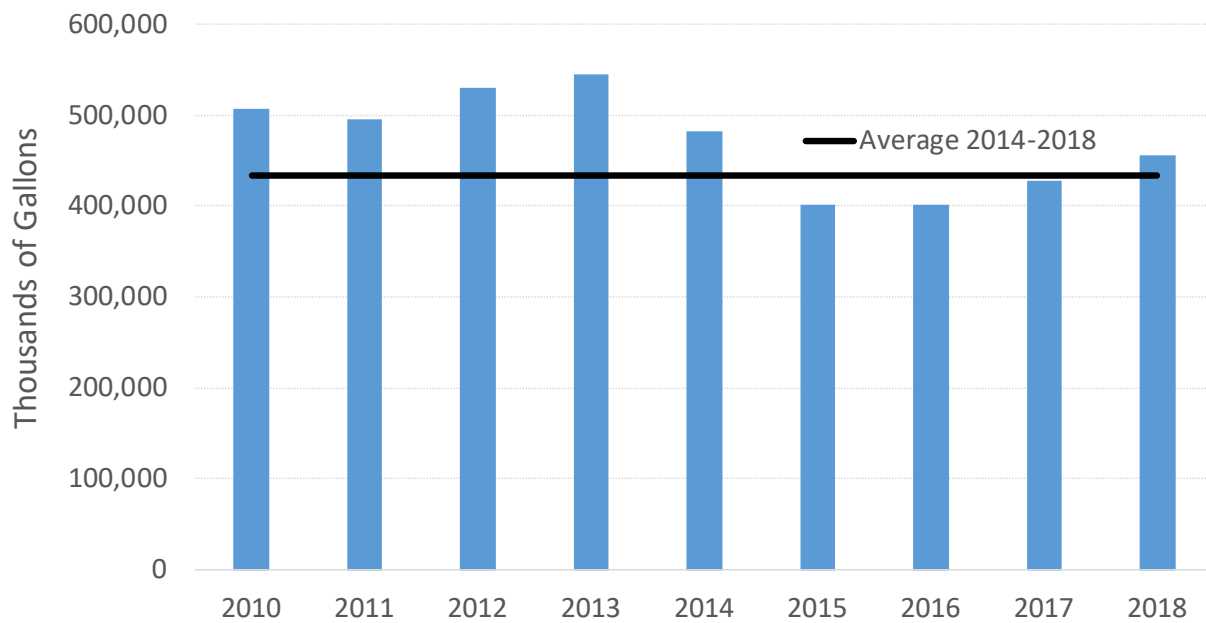
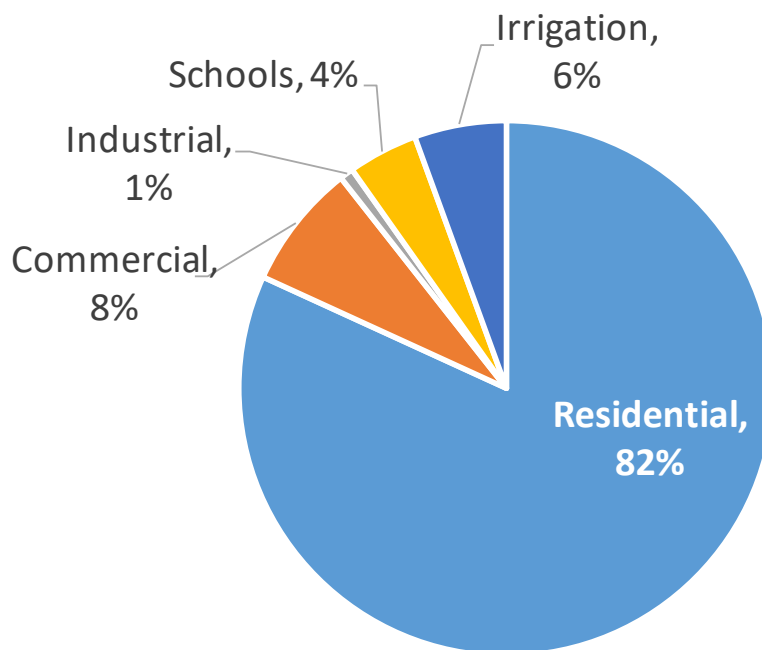


Figure 5
Water Customers Share of Consumption



2.2 THE WATER FUND

The City's water enterprise fund accounts for the revenues and expenses associated with provision of water service. An enterprise fund is a fund that is intended to recover its costs through user fees and charges for a specific service. Money collected for an enterprise fund cannot be spent on other services. Generally accepted accounting principles (GAAP) require state and local government to use the enterprise fund type to account for "business type activities". As a business type fund, enterprise funds must be self-sufficient. Enterprise funds also provide the repayment capacity for, and make debt service payments on, any debt incurred for capital projects; therefore, any water enterprise fund bond-funded projects do not diminish the City's general fund debt capacity.

It is important for enterprise funds to be self-sufficient, without subsidies from other funds, including the City's General Fund. General Fund cash should be used to protect against factors that could limit the City's ability to provide critical services. Decreasing General Fund reserves could leave the City financially vulnerable, reducing funds necessary to recover from a natural disaster, for example.

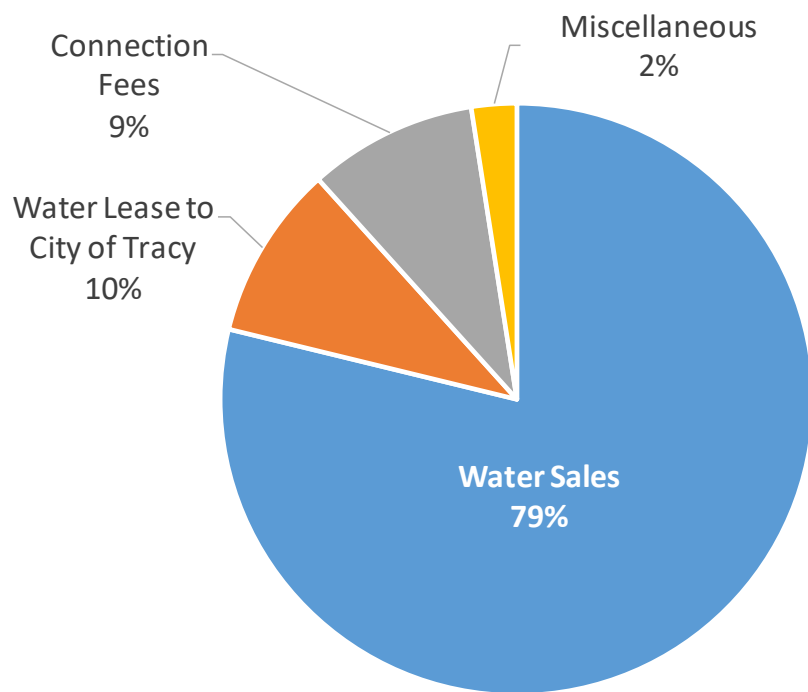
Appendix Table A-3 shows historical revenues and expenses for the water operating, depreciation, capital, and debt service funds for fiscal years 2009 through 2018. Net revenues have been positive every year.

2.2.1. Revenues

Water system operations are funded through rates, service charges, lease of surface water to the City of Tracy, interest earnings, late payment penalties, and other small miscellaneous revenues.

Figure 6 on the next page shows the historical share of revenues by source for the combined operating and capital funds. Rate revenue is generated by application of the water rates schedule shown in **Table 3** on page 13. Under the current rates schedule, all customers pay a service charge by meter size, and a use charge according to the quantity of water used bi-monthly. Water is measured in thousands of gallons.

Figure 6
Historical Water Fund Revenues



Currently, customer groups pay use charges in three tiers. The tiers are different for each of the customer groups but the price of water by tier is the same. For example, a single-family home pays \$1.12 per thousand gallons for the first 30,000 gallons consumed; whereas, a non-residential customer with a water meter larger than one-inch in size pays \$1.12 per thousand gallons for the first 70,000 gallons consumed.

Table 3
Current Water Rates Schedule

Customer	Rate Schedule		
METERED CUSTOMERS	<i>Bi-Monthly charges</i>		
Service Charge			
5/8"	\$51.45		
3/4"	\$51.45		
1"	\$51.45		
1.5"	\$110.34		
2"	\$168.15		
3"	\$366.65		
4"	\$623.30		
6"	\$1,256.53		
8"	\$2,397.36		
10"	\$3,765.66		
USE CHARGE	TIER 1	TIER 2	TIER 3
Rate per 1,000 gallons	\$1.12	\$1.29	\$1.46
	in 1,000 of gallons		
Residential Master Meter (per unit)	0-15	16-20	>20
Residential Single Family (per unit)	0-30	31-60	>60
Non-Residential 1" or less (per meter)	0-30	31-60	>60
Non-Residential >1" (per meter)	0-70	71-150	>150
Schools (per meter)	195	1,200	>1,200
Irrigation (per meter)	5	500	>500
Temporary Service per 1,000 gallons [1]		\$1.20	
FIRE PROTECTION CHARGE	<i>Bi-Monthly charges</i>		
1"	\$1.57		
1.5"	\$4.55		
2"	\$9.70		
3"	\$28.16		
4"	\$60.02		
6"	\$174.33		
8"	\$371.51		
10"	\$668.11		
FLAT RATE CUSTOMERS	<i>Bi-Monthly charges</i>		
No Meter, Pipe 3/4" or 1"	\$126.49		

Source: City of Escalon Resolutions 33-15 and 06-15.

curr rates

[1] Includes construction water, dust control and so forth.

2.2.2. Expenses

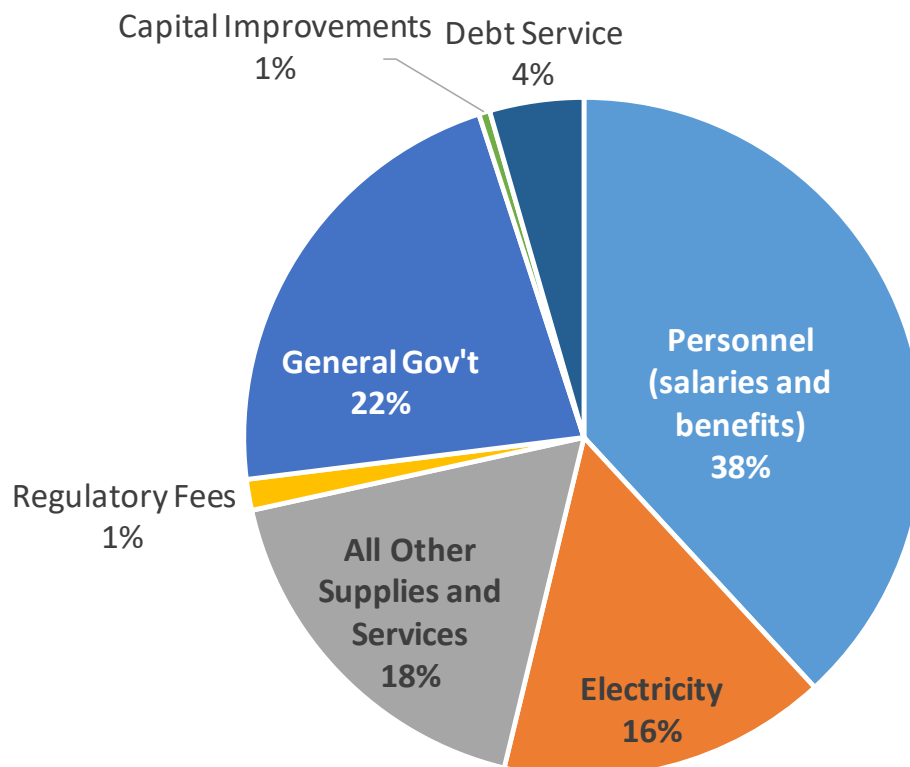
Annual operating costs include all water system operating expenses and capital outlay. Expenditures were grouped into seven categories:

- Personnel (Payroll and Benefits)
- Electricity
- All Other Supplies and Services
- Regulatory Fees
- General Government
- Debt Service
- Capital Improvements (System Rehabilitation and New Infrastructure)

As is typical of utility funds, personnel costs make up the largest single cost category at 38% of total costs. Personnel costs are followed by general government (22%), all other supplies and services (18%), and electricity (16%).

Percentage share of historical expenses by expense category is shown in **Figure 7**.

Figure 7
Historical Water Fund Expenditures

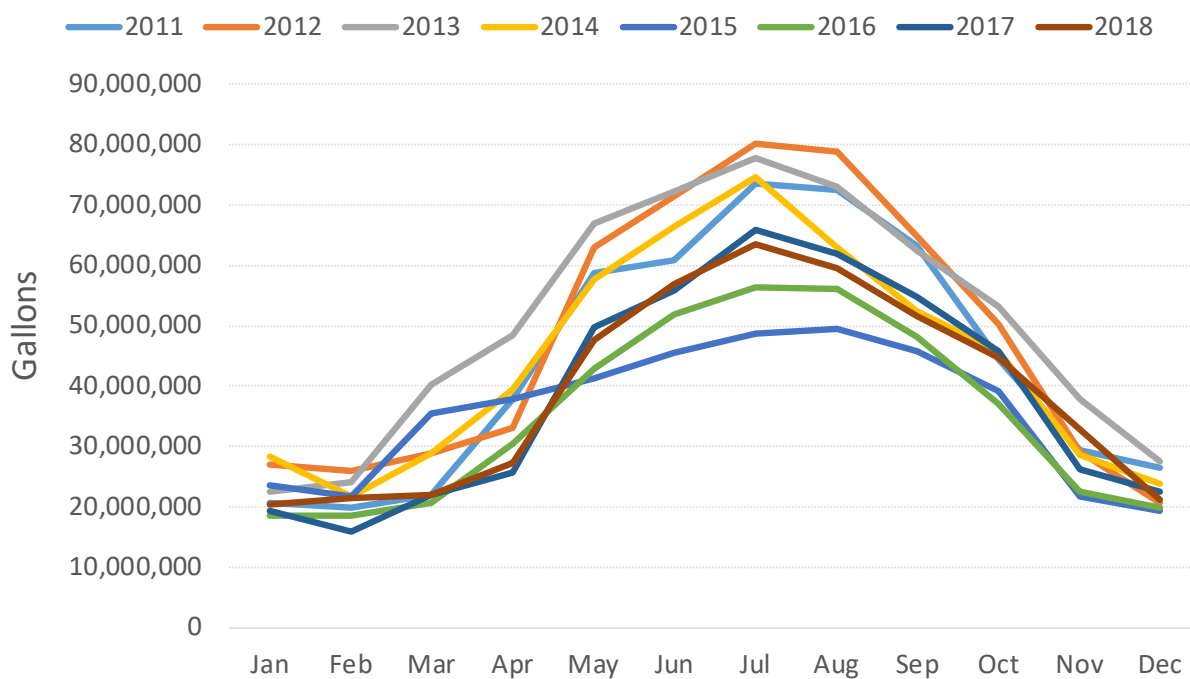


2.2.3. Water Production

Currently, the City's water supply is 100% groundwater. The City needs a new well that is planned to be connected to the system by mid-2020; however, the City also plans to bring treated surface water online by 2026.

Water production from the City's wells fluctuates from year to year depending on several factors including, but not limited to, growth, the weather, sustained drought, plumbing retrofits, and pricing of water. Historical water production by year and month is shown in **Appendix Table A-4**. System-wide annual water production by month is shown below in **Figure 8**. The effects of mandatory water conservation can be seen in 2015 and 2016 when summer usage dramatically decreased.

Figure 8
Seasonal Water Production



On average, approximately 70% of annual water production is for year-round water consumption, and approximately 30% of annual water production is additional water for increased demand during the summer months.

2.3 CAPITAL IMPROVEMENT PROJECTS

Over the next ten years, total water system capital improvement costs are estimated at \$19.4 million. Of this total, \$11.6 million is anticipated to be spent in the next five years. **Table 4** on the following page summarizes the total estimated groundwater and surface water supply project costs in future dollars.

Cost estimates were provided in 2019 dollars; the rate study inflates the cost estimates by 3.5% each year per the 30-year historical average increase in the Engineering News Record (ENR) Construction Cost Index (CCI)) rounded up.

Table 4
Summary of CIP Costs in Inflated Dollars

Water System	First 5 Yrs	Years 6 - 10	Total
Groundwater System	<i>All Figures in Inflated (future) Dollars</i>		
Well 1 Replacement	\$1,355,441	\$0	\$1,355,441
Well Generator Upgrades	\$968,605	\$0	\$968,605
Recoat Water Storage Tank	\$107,123	\$0	\$107,123
Mains Replacements	\$2,592,122	\$3,098,165	\$5,690,286
Well Security	\$110,303	\$131,837	\$242,140
Water Meters	\$297,818	\$355,959	\$653,778
Subtotal Groundwater	\$5,431,411	\$3,585,961	\$9,017,372
Surface Water System	\$6,137,078	\$4,272,898	\$10,409,976
Total	\$11,568,489	\$7,858,858	\$19,427,348

Source: City of Escalon July 2019.

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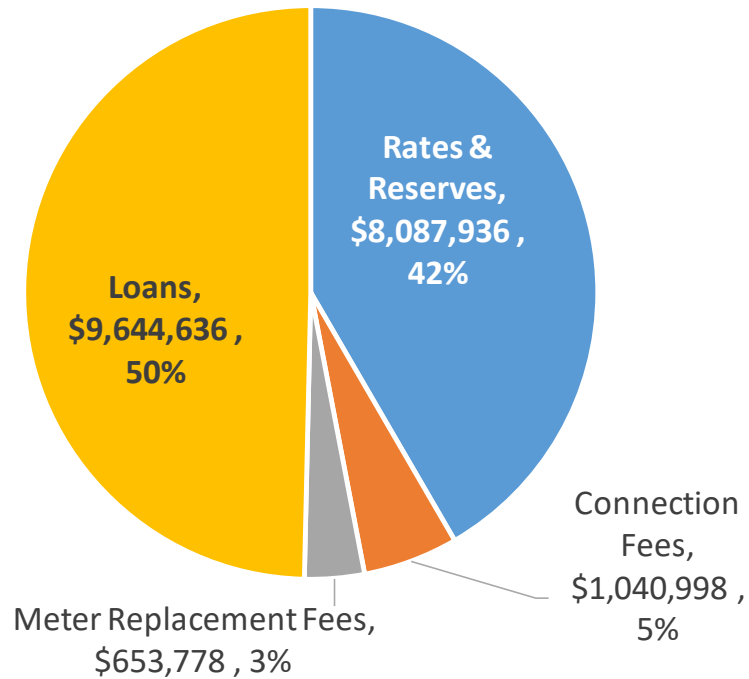
Appendix Table A-5 provides greater detail of the CIP items, estimated timing of construction, and costs. The largest costs to the groundwater system are replacement of water mains. The surface water system, which costs more than half of the total projected water system costs, is projected to be completed between 2021 and 2026.

All of the groundwater system improvements benefit existing customers. Of the surface water system improvements, the City has determined that approximately 10% will benefit future customers; therefore, 10% of these costs are allocated to future customers to be paid from connection fees.

Of immediate need is the construction of the well 1 replacement, "Well 1A". The City has applied to SWRCB for a construction loan to fund this project. The project is estimated to cost \$1.4 million. Detail of cost components for this project are provided in **Appendix Table A-6**.

Appendix Table A-5 also shows the estimated sources of funding for the CIP, which are summarized in **Figure 9** below. Half of the CIP will need to be funded with loans (86% of which for surface water project costs).

Figure 9
CIP Funding Sources



Section 3: WATER RATE ANALYSIS

3.1 REVENUE REQUIREMENT

The revenue requirement refers to the amount of money that must be raised for revenue sufficiency of the water fund through rates. The projection of the revenue requirement is the cornerstone for the calculation of rates. This section explains the derivation of revenue requirement for this study. Components of the revenue requirement include:

- Operating Expenses and Reserves
- System Rehabilitation
- Capital Improvements
- Debt Service

Non-water sales revenue projections are credited against projected operations costs. Non-water sales include water lease payments from the City of Tracy, water connection fees, a portion of water rate revenue that is specifically for water meter replacement, interest income, service fees, penalty (late) payment income, and other smaller miscellaneous revenues.

3.1.1. Operating Expenses and Reserves

Budgeted fiscal year 2020 expenses are the basis for projecting future year expenditures. For future year projections, personnel costs are increased 5.0% each year, regulatory fees and government costs are increased 3.5% per year, and supplies and services annual expenses are increased 2.5% each year. These cost increases were based on historical cost increases and HEC experience.

Historical cost increases by type of expense, and comparison with inflation price indices is shown in **Appendix Table A-7**. Overall, operating expenses have increased at an average rate of 2.8% per year, which is low, and demonstrates excellent cost containment by the City. It is very typical for water utility annual costs, and therefore water rates, to outstrip inflation. In May 2019, the American Water Works Association released an article, “Rate survey: water cost increases outpacing other U.S. goods and services” in which it documented that between 2016 and 2018 water rates increased 7.2% and wastewater rates 7.5% while the national consumer price index increased 4.6%.

In addition to historical types of costs incurred by the water fund, the City is adding new operations and maintenance costs for the new well and the surface water system in the next ten years. These costs are projected to increase 3.0% per year.

3.1.2. System Rehabilitation

Depreciation is used as the basis for which to collect rates to cover system rehabilitation costs. Inclusion of system rehabilitation costs demonstrates fiscal responsibility toward the assets to potential future investors and helps to establish good credit¹. Depreciation is calculated based on existing water facilities and new facilities built in the next 10-year period.

The water rates include 100% depreciation of the water system major infrastructure. System rehabilitation cost estimates are provided in **Appendix A Tables A-8** through **A-10**. System rehabilitation cost increases from about \$200,000 per year to about \$560,000 per year. Water rates also include costs to replace and upgrade the water meters and meter reading infrastructure.

3.1.3. Capital Improvements

Water system capital costs in any one year are dependent on the state of the current infrastructure to serve existing customers and necessary improvements to accommodate potential new customers. Capital improvement needs and costs were discussed in Section 2.

3.1.4. Debt Service

The City has existing debt service for a planning loan with the SWRCB. The planning loan has been financing the costs of planning the new well 1A project. Additional debt is anticipated by way of a construction loan with the SWRCB for well 1A.

It is likely that a large portion, or possibly all, of the surface water project will have to be financed. Since 2015, the City has been reserving revenues from the lease of surface water to the City of Tracy specifically for the surface water project. To date, there is about \$525,000 available cash for the project. With continuation of reserving revenues from the water lease, \$2.1 million should be available to cash-fund phases one and two of the surface water project. The remaining \$8.3 million would have to be financed, unless some portion of the cost can be funded with grants from government agencies (for example, grant funds or principal forgiveness may be available from the State for groundwater sustainability projects, Integrated Regional Water Management projects, and projects that are regional-serving). For the water rate study, it has been assumed that the City would obtain another SWRCB loan per the terms shown in **Table 5**. Actual terms may be better or worse than those assumed in this study.

The estimated annual debt service is shown in **Table 5**. The SWRCB loans require one year of debt service be held in reserve for debt payments. The City can either collect this up-front or increase debt service 10% for the first ten years of payments. The rate study assumes that for the well 1A construction loan, the City collects an additional 10% per year, but that for the surface water project, the reserve is put aside in the two years prior to completion of the project and the start of debt service payments so that there is some contingency in the event that costs are greater than currently anticipated, or borrowing terms are less favorable.

¹ Per Governmental Accounting Standards Board (GASB) 34, local governments must report on the value of their infrastructure assets and plan for asset maintenance (including collecting sufficient revenue) to obtain good credit when issuing bonds or procuring other forms of financing for long-term construction projects.

Table 5
Estimated Debt Service

Project		Safe Drinking Water SRF	
Well #1		<i>planning</i>	<i>construction</i>
Well #1 Replacement	2019	\$450,000	\$905,441
Annual Debt Service		\$94,600	\$56,400
Total Payments		\$473,000	\$1,128,000
Interest		\$23,000	\$222,559
Surface Water			
Estimated Facility Costs	2021 - 2025		\$10,409,976
less Cash Funding			(\$2,120,781)
Total Loan Amount			\$8,289,195
Annual Debt Service			\$516,800
Total Payments			\$10,336,000
Interest			\$2,046,805

Source: HEC.

new debt

[1] Funding source assumptions:

Interest Rate	1.70%	2.20%
Term (years)	5	20

3.1.5. Calculated Revenue Requirement

Table 6 provides the projection of annual costs and credits and the resulting revenue requirement through fiscal year 2029. One of the credits in the revenue requirement is revenue generated by the meter replacement fee. The cost to replace meters by size of meter was used to determine appropriate monthly collection of fees to support routine meter replacements in **Appendix Table A-11**. Projected meter replacement fee revenue is shown in **Appendix Table A-12**.

Over the next ten years, the revenue requirement is projected to continue to increase to account for inflation, to fund capital expenditures, and to account for new debt. Total revenue requirement is projected to increase from \$1.36 million in fiscal year 2020 to \$2.07 million in fiscal year 2024, to \$2.95 million in fiscal year 2029. The water rates are based on raising sufficient revenue to fund the revenue requirement with even percentage increases over time. The amount to be raised each year by water rates is the “estimated water sales” line underneath the revenue requirement line in **Table 6**.

Components of revenue requirement and projected water sales revenues are illustrated in **Figure 10** on page 22. Total revenue requirement decreases in 2025 and 2026 because of a decrease in cash spending on capital improvement projects during those years.

Table 6
Projected Revenue Requirement

Operating Expenses and Revenues		Fiscal Year									
		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
Annual Increase	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
budget											
Operating Expenses	Personnel (salaries and benefits)	\$405,516	\$425,792	\$447,081	\$469,435	\$492,907	\$517,553	\$543,430	\$570,602	\$599,132	\$629,088
	Supplies and Services										
	Electricity	\$123,000	\$126,075	\$129,227	\$132,458	\$135,769	\$139,163	\$142,642	\$146,208	\$149,864	\$153,610
	All Other Supplies and Services	\$157,750	\$161,694	\$165,736	\$169,879	\$174,126	\$178,480	\$182,942	\$187,515	\$192,203	\$197,008
	Subtotal Supplies and Services	\$280,750	\$287,769	\$294,963	\$302,337	\$309,895	\$317,643	\$325,584	\$333,724	\$342,067	\$350,618
	Regulatory Fees	\$26,000	\$26,910	\$27,852	\$28,827	\$29,836	\$30,880	\$31,961	\$33,079	\$34,237	\$35,435
	General Government and Cost Center	\$254,789	\$263,707	\$272,936	\$282,489	\$292,376	\$302,609	\$313,201	\$324,163	\$335,508	\$347,251
	New Well O&M		\$28,775	\$29,638	\$30,527	\$31,443	\$32,387	\$33,358	\$34,359	\$35,390	\$36,451
	Surface Water O&M								\$381,684	\$393,134	\$404,928
	Total Operating Expenses	\$967,055	\$1,032,952	\$1,072,471	\$1,113,616	\$1,156,458	\$1,201,071	\$1,247,534	\$1,677,610	\$1,739,468	\$1,803,773
Debt Service											
SRF Planning Loan		\$94,600	\$94,600	\$94,600	\$94,600	\$94,600	\$0	\$0	\$0	\$0	
New Well Debt [1]		\$0	\$62,040	\$62,040	\$62,040	\$62,040	\$62,040	\$62,040	\$62,040	\$62,040	
Surface Water Project Debt [2]		\$0	\$0	\$0	\$0	\$0	\$258,400	\$258,400	\$516,800	\$516,800	
Subtotal Debt Service		\$94,600	\$156,640	\$156,640	\$156,640	\$156,640	\$320,440	\$320,440	\$578,840	\$578,840	
Meter Replacement	Table A-5	\$54,000	\$57,846	\$59,871	\$61,966	\$64,135	\$66,380	\$68,703	\$71,108	\$73,596	
System Rehabilitation	Table A-8	\$219,100	\$241,000	\$292,900	\$346,600	\$402,200	\$491,900	\$520,200	\$534,000	\$548,300	
Capital Projects [3]	Table A-5	\$270,900	\$391,023	\$562,199	\$538,427	\$513,803	\$110,435	\$103,217	\$111,236	\$119,520	
Non-Operating Credits (Expenses)											
Water Lease - City of Tracy [4]		\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$78,525	\$78,525	
Connection Fees		\$72,955	\$39,739	\$39,739	\$39,739	\$39,739	\$39,739	\$39,739	\$39,739	\$39,739	
Miscellaneous Revenue	3.0%	\$14,100	\$14,523	\$14,959	\$15,407	\$15,870	\$16,346	\$16,836	\$17,341	\$17,861	
Meter Replacement Program	Table A-12	\$52,070	\$53,697	\$55,308	\$56,967	\$58,676	\$60,437	\$62,250	\$64,117	\$66,041	
Total Non-operating Credits (expenses)		\$243,824	\$212,659	\$214,705	\$216,813	\$218,984	\$221,221	\$223,524	\$199,722	\$202,166	
Total Revenue Requirement		\$1,361,831	\$1,666,802	\$1,929,375	\$2,000,436	\$2,074,251	\$1,969,005	\$2,036,569	\$2,773,072	\$2,857,558	
Estimated Water Sales [5]		\$1,500,000	\$1,627,500	\$1,765,838	\$1,915,934	\$2,078,788	\$2,255,485	\$2,447,201	\$2,655,213	\$2,880,907	
Annual Increase (Decrease)		\$377,298	\$127,500	\$138,338	\$150,096	\$162,854	\$176,697	\$191,716	\$208,012	\$225,693	
Source: City of Escalon and HEC.		rev req									

Source: City of Escalon and HEC.

[1] Annual debt service for the first ten years is 110% of the estimated amount to build up a one-year reserve.

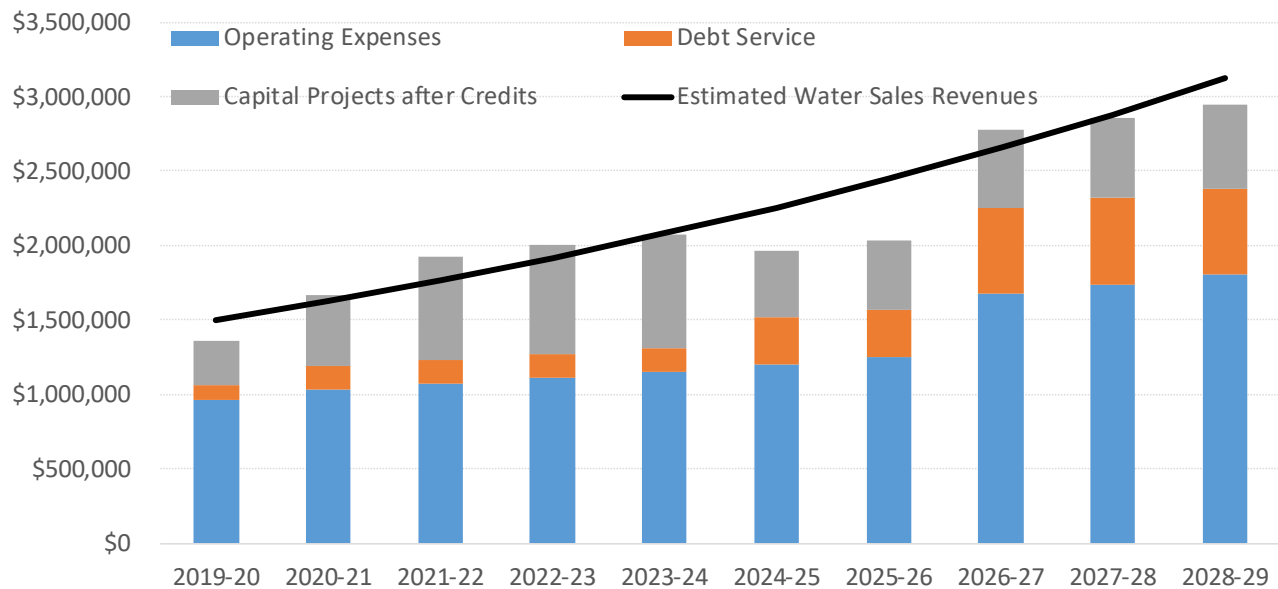
[2] One year of debt service collected in fiscal years 2025 and 2026 before the first year of annual debt service is estimated to be due.

[3] Capital project costs are for project costs greater than system rehabilitation costs.

[4] It is unknown whether the water lease to the City of Tracy will be reduced after Phase 2 of the surface water connection; the revenue has been reduced by 25%.

[5] The amount to be raised from water sales is increased annually 8.50% to smooth out the rate increases. Projected water sales revenue FY 2020 without a rate increase is \$1,122,702

Figure 10
Projected Revenue Requirement and Water Sales Revenues



3.2 COST CLASSIFICATION AND ALLOCATION

After determining a utility's revenue requirements, a utility's next step is determining the cost of service. Utilizing a public agency's approved budget, financial reports, operating data, and capital improvement plans, the rate study categorizes (functionalizes) the costs, expenses, and assets of the water system among major operating functions to determine the cost of service. Functional cost allocation is provided in **Appendix A Table A-13**. Fiscal year 2018 water fund expenditures were allocated to the different functions of water service based on one of five methodologies. These methodologies include:

1. **Plant in Service.** Plant in service allocation is shown in **Table A-14**. Plant in service costs include the original cost of current water system assets. Total cost is allocated to customer, capacity, fire capacity and use.
2. **Ratio of Average to Peak Month.** The calculation of peak to average month flows is shown in **Table A-4**. Expenses are allocated 69% to customer and 31% to use functions using this methodology.
3. **Utilities.** All utilities costs (electricity) are allocated 100% to use because they are directly affected by the amount of water delivered.
4. **Customers.** Costs such as office supplies, telephones, and water membership/dues are allocated 100% to customer costs. These costs are not affected by the amount of water delivered.

- 5. Average of Classified Costs.** Many expenses are allocated to multiple functions of water service because they do not directly relate to capacity of the water system, or quantity of water deliveries. These expenses are allocated among the customer, capacity, fire capacity and use functions based on the combined percentage allocation of all other classified costs. Examples of expenses allocated using this methodology include salaries and other personnel costs, and water regulatory costs.

The cost classification provides a *guideline* for the City in determining the portion of revenue requirement to collect through service charges versus usage charges. There is no set formula for determining exactly how much to collect in the service charge versus the use charge. For Escalon, fire services costs are about 2% of the functional allocation, customer costs 32%, capacity costs (which are split between services charges “fixed costs” and use charges “variable costs”) 31%, and use costs 35% of the functional allocation.

Fire capacity costs are fixed costs allocated only to fire protection services. Non-fire services water system costs were classified into two categories; fixed and variable costs. Fixed costs generally consist of costs that a utility incurs to serve customers irrespective of the amount or rate of water they use.² These typically include (1) the infrastructure (capacity-related facilities) required to provide service to customers, and (2) administrative and billing costs associated with meter reading, postage and billing. Variable costs are those that change in total as the volume of activity changes, as measured in a specific time period. These commonly include the costs of chemicals used in the treatment process, energy related to pumping for transmission and distribution, and purchased water.

- **Fixed Costs.** Included in this category are costs associated with customer-driven costs and the water system’s readiness to serve, which includes a portion of the water system’s capacity costs for typical non-peaking water use. Included in this category are costs associated with the water system’s capacity, including some fixed water system O&M and repair and replacement costs.

Fixed costs are allocated to customers based on the number of equivalent meter units, determined by the relative hydraulic capacity of the meter size relative to a one-inch meter. **Table A-15** shows the calculation of equivalent meter units.

- **Variable Costs.** These costs vary with the quantity of water consumed. They include the peaking portion of capacity costs and use (commodity) costs. Commodity costs are expenses that increase or decrease almost directly with the amount of water supplied. Operations and maintenance variable costs primarily include well pumping electricity costs, but also a portion of administrative costs, debt service and other costs as determined in the functional allocation. Variable costs are recovered through use charges applied per thousand gallons.

Table 7 shows allocation of the revenue requirement between fire services and non-fire services, and for non-fire services, between fixed charges and use charges.

² M1 Manual, pp. 137-138.

Table 7
Cost Allocation of Estimated Water Sales

Costs	Fiscal Year									
	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
Estimated Water Sales	\$1,500,000	\$1,627,500	\$1,765,838	\$1,915,934	\$2,078,788	\$2,255,485	\$2,447,201	\$2,655,213	\$2,880,907	\$3,125,784
	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Fire Services	\$30,287	\$32,861	\$35,654	\$38,685	\$41,973	\$45,541	\$49,412	\$53,612	\$58,169	\$63,113
Non-Fire Services										
FIXED CHARGES										
Fixed Charges	55%	55%	55%	55%	55%	55%	55%	55%	55%	55%
Allocated Fixed Charge:	\$825,000	\$895,125	\$971,211	\$1,053,764	\$1,143,333	\$1,240,517	\$1,345,961	\$1,460,367	\$1,584,499	\$1,719,181
Customer	\$478,861	\$519,564	\$563,727	\$611,644	\$663,634	\$720,043	\$781,246	\$847,652	\$919,702	\$997,877
Readiness-to-Serve	\$346,139	\$375,561	\$407,484	\$442,120	\$479,700	\$520,474	\$564,715	\$612,715	\$664,796	\$721,304
USE CHARGES										
Use Charges	43%	43%	43%	43%	43%	43%	43%	43%	43%	43%
Allocated Use Charges	\$644,713	\$699,514	\$758,972	\$823,485	\$893,481	\$969,427	\$1,051,829	\$1,141,234	\$1,238,239	\$1,343,489
Capacity Peaking	\$119,627	\$129,795	\$140,827	\$152,798	\$165,786	\$179,877	\$195,167	\$211,756	\$229,755	\$249,284
Commodity	\$525,087	\$569,719	\$618,145	\$670,687	\$727,696	\$789,550	\$856,662	\$929,478	\$1,008,484	\$1,094,205

Source: HEC.

cost alloc

3.3 RATE CALCULATIONS

3.3.1 Fire Services

The calculation of bi-monthly fire services charges by pipe size is shown in **Table 8** on the following page. The City imposes a fixed bi-monthly private fire protection charge on certain properties as a condition of service to private fire suppression facilities. The rates for the bi-monthly fire protection charges are based on the size of the service pipe through which water is delivered.

3.3.2 Service Charges

The calculation of bi-monthly service charges by meter size is shown in **Table 9** on page 27. The most common method for levying fixed charges is by meter size. Meter size is an indicator of potential capacity or demand requirement that each customer places on the water system. Although some customers have smaller meters, all one-inch and smaller meters are charged the same because of California Residential Code Section R313 fire sprinkler requirements. Almost all smaller than one-inch meters serve residential customers.

The ratio at which the meter charge increases is a function of the meter's safe operating capacity as established by the American Water Works Association. These meter ratios are used because a significant portion of a water system's design, and, in turn, the utility's operating and capital costs are related to meeting capacity needs. For example, a one-inch meter has a maximum flow rate of 50 gpm and a 1.5" meter has a maximum flow rate of 100 gpm. The flow rate of a 1.5" meter is twice that of a one-inch meter therefore the ratio for a 1.5" meter is 2.0.

Meter Replacement. Included in the bi-monthly service charge is a fee for meter replacement. The meter replacement portion of the fee is calculated in **Table 10**. The meter replacement fee is projected through the study period using an annual escalation factor of 3.0%.

Table 8
Bi-Monthly Fire Services Charges Calculation

Fire Services	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Fire Services Cost Allocation	\$30,287	\$32,861	\$35,654	\$38,685	\$41,973	\$45,541	\$49,412	\$53,612	\$58,169	\$63,113
Equivalent Fire Units	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917	2,917
Bi-Monthly Cost per Equivalent Fire Unit	\$1.73	\$1.88	\$2.04	\$2.21	\$2.40	\$2.60	\$2.82	\$3.06	\$3.32	\$3.61
Bi-Monthly Charge										
Pipe Size	Pipe Flow									
1" or less	1	\$1.73	\$1.88	\$2.04	\$2.21	\$2.40	\$2.60	\$2.82	\$3.06	\$3.32
1.5"	3	\$5.03	\$5.46	\$5.93	\$6.42	\$6.97	\$7.55	\$8.19	\$8.89	\$9.64
2"	6	\$10.71	\$11.64	\$12.63	\$13.68	\$14.86	\$16.09	\$17.46	\$18.94	\$20.55
3"	18	\$31.11	\$33.81	\$36.68	\$39.74	\$43.16	\$46.75	\$50.71	\$55.02	\$59.70
4"	38	\$66.29	\$72.04	\$78.17	\$84.69	\$91.97	\$99.63	\$108.06	\$117.26	\$127.22
6"	111	\$192.57	\$209.26	\$227.07	\$246.00	\$267.15	\$289.41	\$313.90	\$340.61	\$369.55
8"	237	\$410.37	\$445.95	\$483.90	\$524.23	\$569.30	\$616.74	\$668.92	\$725.85	\$787.53
10"	427	\$737.98	\$801.97	\$870.22	\$942.74	\$1,023.79	\$1,109.11	\$1,202.95	\$1,305.33	\$1,416.24
fire										

Source: HEC.

Table 9
Bi-Monthly Service Charges Calculation

		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Allocated Costs		\$825,000	\$895,125	\$971,211	\$1,053,764	\$1,143,333	\$1,240,517	\$1,345,961	\$1,460,367	\$1,584,499	\$1,719,181
Estimated Billable Meter Equivalents		2,485	2,488	2,491	2,494	2,497	2,500	2,503	2,506	2,509	2,512
		Bi-Monthly Service Charge per Meter									
Meter Size	Meter Ratio										
1" and smaller	1.0	\$55.34	\$59.97	\$64.99	\$70.43	\$76.32	\$82.71	\$89.63	\$97.13	\$105.26	\$114.07
1.5"	2.0	\$110.68	\$119.94	\$129.98	\$140.86	\$152.64	\$165.42	\$179.26	\$194.26	\$210.52	\$228.14
2"	3.2	\$177.09	\$191.90	\$207.97	\$225.38	\$244.22	\$264.67	\$286.82	\$310.82	\$336.83	\$365.02
3"	7.0	\$387.38	\$419.79	\$454.93	\$493.01	\$534.24	\$578.97	\$627.41	\$679.91	\$736.82	\$798.49
4"	12.0	\$664.08	\$719.64	\$779.88	\$845.16	\$915.84	\$992.52	\$1,075.56	\$1,165.56	\$1,263.12	\$1,368.84
6"	25.0	\$1,383.50	\$1,499.25	\$1,624.75	\$1,760.75	\$1,908.00	\$2,067.75	\$2,240.75	\$2,428.25	\$2,631.50	\$2,851.75
8"	48.0	\$2,656.32	\$2,878.56	\$3,119.52	\$3,380.64	\$3,663.36	\$3,970.08	\$4,302.24	\$4,662.24	\$5,052.48	\$5,475.36
10"	76.0	\$4,205.84	\$4,557.72	\$4,939.24	\$5,352.68	\$5,800.32	\$6,285.96	\$6,811.88	\$7,381.88	\$7,999.76	\$8,669.32

service charge

Source: American Water Work Association, M6 Water Meters - Fifth Edition, pages 63-65; City of Escalon and HEC.

Table 10
Bi-Monthly Meter Replacement Fees Calculation

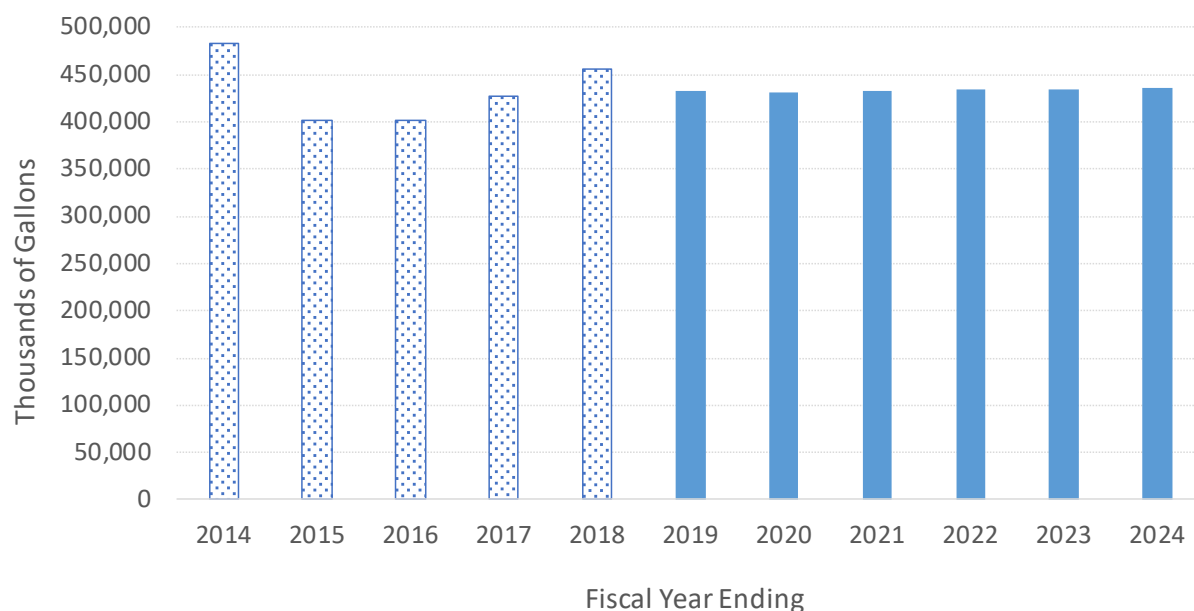
Meter Size	2019-20 Year 1	2020-21 Year 2	2021-22 Year 3	2022-23 Year 4	2023-24 Year 5	2024-25 Year 6	2025-26 Year 7	2026-27 Year 8	2027-28 Year 9	2028-29 Year 10
	<i>Annual escalator 3.0%</i>									
1" or less	\$3.61	\$3.72	\$3.83	\$3.94	\$4.06	\$4.18	\$4.31	\$4.44	\$4.57	\$4.71
1-1/2"	\$7.30	\$7.52	\$7.75	\$7.98	\$8.22	\$8.47	\$8.72	\$8.98	\$9.25	\$9.53
2"	\$10.96	\$11.29	\$11.63	\$11.98	\$12.34	\$12.71	\$13.09	\$13.48	\$13.88	\$14.30
3"	\$22.08	\$22.74	\$23.42	\$24.12	\$24.84	\$25.59	\$26.36	\$27.15	\$27.96	\$28.80
4"	\$52.27	\$53.84	\$55.46	\$57.12	\$58.83	\$60.59	\$62.41	\$64.28	\$66.21	\$68.20
6"	\$90.32	\$93.03	\$95.82	\$98.69	\$101.65	\$104.70	\$107.84	\$111.08	\$114.41	\$117.84
8"	\$147.26	\$151.68	\$156.23	\$160.92	\$165.75	\$170.72	\$175.84	\$181.12	\$186.55	\$192.15
10"	\$190.08	\$195.78	\$201.65	\$207.70	\$213.93	\$220.35	\$226.96	\$233.77	\$240.78	\$248.00
Source: HEC.										
										meter fee

3.3.3 Use Charges

The calculation of use charges is based on allocated cost and projected water demand for each customer category. Total projected water demand is shown in **Figure 11** and by customer category in **Appendix Table A-16**. The projection of water demand is based on average water use for the past four years plus the assumed growth of four new one-inch meter customers per year.

The projected water demand accounts for customers' reactions to price increases. The relationship between increased prices and decreased demand is referred to as price elasticity. Price elasticity varies by geography due to many micro-economic variables. HEC applied industry estimates to establish assumed price elasticity factors for the study. Price elasticity analysis is shown in **Tables A-17** and **A-18**.

Figure 11
Historical and Projected Annual Water Demand



The calculation of use charges is shown in **Table 11** on the next page. Costs are allocated to customer categories based on demand for the use (commodity) cost share and peak day water use for the peaking cost share. Cost allocation of use charges to customer groups is shown in **Appendix Table A-19**. Maximum day water use by customer category is calculated in **Appendix Table A-20**.

Temporary water service, which is available for activities such as dust control, and usually taken from fire hydrants with a meter attached, is not a property-related fee for service. Individuals wishing to take temporary service must apply for such water use with the City. The City bills these customers a use fee per thousand gallons taken.

Table 11
Use Charges per Thousand Gallons Calculation

Customer	2019-20 Year 1	2020-21 Year 2	2021-22 Year 3	2022-23 Year 4	2023-24 Year 5	2024-25 Year 6	2025-26 Year 7	2026-27 Year 8	2027-28 Year 9	2028-29 Year 10
Allocated Cost	\$644,713	\$699,514	\$758,972	\$823,485	\$893,481	\$969,427	\$1,051,829	\$1,141,234	\$1,238,239	\$1,343,489
Total Consumption	430,442	433,101	433,764	434,426	435,089	435,752	436,415	437,078	437,740	438,403
Cost per 1,000 Gallons	\$1.50	\$1.62	\$1.75	\$1.90	\$2.05	\$2.22	\$2.41	\$2.61	\$2.83	\$3.06
Cost by Customer Group										
Residential										
Cost	79.3%	\$511,070	\$554,511	\$601,644	\$652,784	\$708,270	\$768,473	\$833,794	\$904,666	\$981,563
Use		352,578	354,412	354,866	355,320	355,773	356,227	356,681	357,135	357,588
Cost per 1,000 Gallons		\$1.45	\$1.56	\$1.70	\$1.84	\$1.99	\$2.16	\$2.34	\$2.53	\$2.74
Commercial										
Cost	7.0%	\$45,099	\$48,933	\$53,092	\$57,605	\$62,501	\$67,814	\$73,578	\$79,832	\$86,618
Use		32,427	32,879	33,088	33,297	33,506	33,715	33,924	34,133	34,342
Cost per 1,000 Gallons		\$1.39	\$1.49	\$1.60	\$1.73	\$1.87	\$2.01	\$2.17	\$2.34	\$2.52
Industrial										
Cost	0.9%	\$5,775	\$6,266	\$6,799	\$7,377	\$8,004	\$8,684	\$9,423	\$10,223	\$11,092
Use		3,558	3,569	3,569	3,569	3,569	3,569	3,569	3,569	3,569
Cost per 1,000 Gallons		\$1.62	\$1.76	\$1.91	\$2.07	\$2.24	\$2.43	\$2.64	\$2.86	\$3.11
Schools										
Cost	4.5%	\$29,004	\$31,470	\$34,145	\$37,047	\$40,196	\$43,613	\$47,320	\$51,342	\$55,706
Use		18,179	18,264	18,264	18,264	18,264	18,264	18,264	18,264	18,264
Cost per 1,000 Gallons		\$1.60	\$1.72	\$1.87	\$2.03	\$2.20	\$2.39	\$2.59	\$2.81	\$3.05
Irrigation										
Cost	8.3%	\$53,764	\$58,334	\$63,293	\$68,672	\$74,510	\$80,843	\$87,715	\$95,170	\$103,260
Use		23,699	23,978	23,978	23,978	23,978	23,978	23,978	23,978	23,978
Cost per 1,000 Gallons		\$2.27	\$2.43	\$2.64	\$2.86	\$3.11	\$3.37	\$3.66	\$3.97	\$4.31
Rates by Customer Groupings										
Residential & Commercial		\$1.44	\$1.56	\$1.69	\$1.83	\$1.98	\$2.14	\$2.32	\$2.52	\$2.73
Industrial		\$1.62	\$1.76	\$1.91	\$2.07	\$2.24	\$2.43	\$2.64	\$2.86	\$3.11
Schools		\$1.60	\$1.72	\$1.87	\$2.03	\$2.20	\$2.39	\$2.59	\$2.81	\$3.05
Irrigation		\$2.27	\$2.43	\$2.64	\$2.86	\$3.11	\$3.37	\$3.66	\$3.97	\$4.31
Temporary Water Cost [1]		\$675,000	\$732,375	\$794,627	\$862,170	\$935,455	\$1,014,968	\$1,101,241	\$1,194,846	\$1,296,408
Temporary Service (Construction)		\$1.57	\$1.69	\$1.83	\$1.98	\$2.15	\$2.33	\$2.52	\$2.73	\$2.96

Source: City of Escalon and HEC July 2019.

[1] Fire service costs plus use costs.

use calc

Total calculated rates include the fixed bi-monthly monthly service charges (including the fixed bi-monthly meter replacement fees), and variable use charges per 1,000 gallons. The calculated water rates schedule for the next 10 years is provided in **Table 12** on the following page. The rates schedule includes temporary water service.

Table 12
Ten-Year Projection of Water Rates

Charges	Current	Rates Effective on March 1 Bills									
		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
All Flat Rate Customers Fixed Bi-Monthly Charges											
3/4" and 1" Pipes	\$126.49	\$151.66	\$164.32	\$178.04	\$192.91	\$209.02	\$226.47	\$245.38	\$265.87	\$288.07	\$312.12
Service Charge											
3/4" and smaller	\$51.45	\$58.95	\$63.69	\$68.82	\$74.37	\$80.38	\$86.89	\$93.94	\$101.57	\$109.83	\$118.78
1"	\$51.45	\$58.95	\$63.69	\$68.82	\$74.37	\$80.38	\$86.89	\$93.94	\$101.57	\$109.83	\$118.78
1.5"	\$110.34	\$117.98	\$127.46	\$137.73	\$148.84	\$160.86	\$173.89	\$187.98	\$203.24	\$219.77	\$237.67
2"	\$168.15	\$188.05	\$203.19	\$219.60	\$237.36	\$256.56	\$277.38	\$299.91	\$324.30	\$350.71	\$379.32
3"	\$366.65	\$409.46	\$442.53	\$478.35	\$517.13	\$559.08	\$604.56	\$653.77	\$707.06	\$764.78	\$827.29
4"	\$623.30	\$716.35	\$773.48	\$835.34	\$902.28	\$974.67	\$1,053.11	\$1,137.97	\$1,229.84	\$1,329.33	\$1,437.04
6"	\$1,256.53	\$1,473.82	\$1,592.28	\$1,720.57	\$1,859.44	\$2,009.65	\$2,172.45	\$2,348.59	\$2,539.33	\$2,745.91	\$2,969.59
8"	\$2,397.36	\$2,803.58	\$3,030.24	\$3,275.75	\$3,541.56	\$3,829.11	\$4,140.80	\$4,478.08	\$4,843.36	\$5,239.03	\$5,667.51
10"	\$3,765.66	\$4,395.92	\$4,753.50	\$5,140.89	\$5,560.38	\$6,014.25	\$6,506.31	\$7,038.84	\$7,615.65	\$8,240.54	\$8,917.32
Private Fire Protection											
Fixed Bi-Monthly Charges (\$ per Fire Service Pipe Size)											
1"	\$1.57	\$1.73	\$1.88	\$2.04	\$2.21	\$2.40	\$2.60	\$2.82	\$3.06	\$3.32	\$3.61
1.5"	\$4.55	\$5.03	\$5.46	\$5.93	\$6.42	\$6.97	\$7.55	\$8.19	\$8.89	\$9.64	\$10.49
2"	\$9.70	\$10.71	\$11.64	\$12.63	\$13.68	\$14.86	\$16.09	\$17.46	\$18.94	\$20.55	\$22.35
3"	\$28.16	\$31.11	\$33.81	\$36.68	\$39.74	\$43.16	\$46.75	\$50.71	\$55.02	\$59.70	\$64.91
4"	\$60.02	\$66.29	\$72.04	\$78.17	\$84.69	\$91.97	\$99.63	\$108.06	\$117.26	\$127.22	\$138.33
6"	\$174.33	\$192.57	\$209.26	\$227.07	\$246.00	\$267.15	\$289.41	\$313.90	\$340.61	\$369.55	\$401.83
8"	\$371.51	\$410.37	\$445.95	\$483.90	\$524.23	\$569.30	\$616.74	\$668.92	\$725.85	\$787.53	\$856.32
10"	\$668.11	\$737.98	\$801.97	\$870.22	\$942.74	\$1,023.79	\$1,109.11	\$1,202.95	\$1,305.33	\$1,416.24	\$1,539.95
Use Charge											
\$ per 1,000 gallons											
Residential	Table 3	\$1.44	\$1.56	\$1.69	\$1.83	\$1.98	\$2.14	\$2.32	\$2.52	\$2.73	\$2.95
Commercial	Table 3	\$1.44	\$1.56	\$1.69	\$1.83	\$1.98	\$2.14	\$2.32	\$2.52	\$2.73	\$2.95
Industrial	Table 3	\$1.62	\$1.76	\$1.91	\$2.07	\$2.24	\$2.43	\$2.64	\$2.86	\$3.11	\$3.37
Schools	Table 3	\$1.60	\$1.72	\$1.87	\$2.03	\$2.20	\$2.39	\$2.59	\$2.81	\$3.05	\$3.31
Irrigation	Table 3	\$2.27	\$2.43	\$2.64	\$2.86	\$3.11	\$3.37	\$3.66	\$3.97	\$4.31	\$4.67
Temporary Water	\$1.20	\$1.57	\$1.69	\$1.83	\$1.98	\$2.15	\$2.33	\$2.52	\$2.73	\$2.96	\$3.21
Source: HEC. proj rates											

proj rates

Source: HEC.

3.4 CASH FLOW AND FUND BALANCE

Table 13 on the following page shows the projected cash flow for the water enterprise fund through fiscal year 2029. With adoption of the calculated rates, it is anticipated that the City will be able to meet all water enterprise fund obligations, including existing and potential debt service coverage requirements, and achieve a target of about six months of operating expenses in cash reserves. Projected fund balances for the operating, depreciation, debt service, capital, and surface water connection funds are provided in **Appendix Table A-21**.

Figure 12 shows projected and target water fund cash balances, with all funds combined, through fiscal year ending 2029.

Figure 12
Projected Water Fund Cash Balance

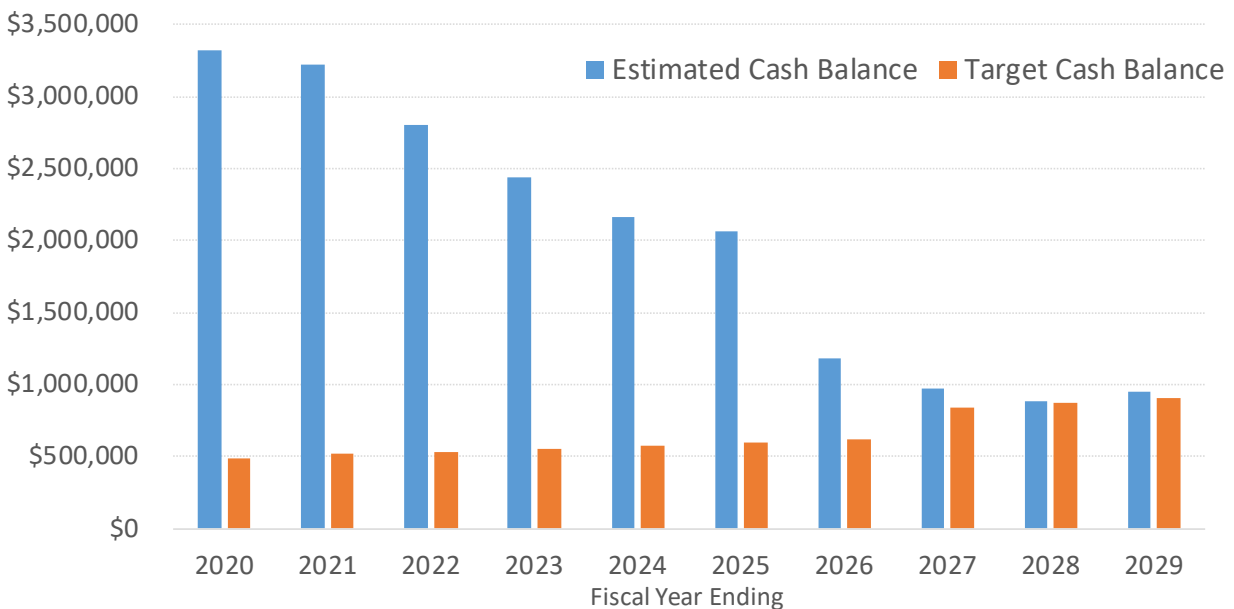


Table 13
Projected Water Fund Cash Flow

Revenues and Expenses	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
<i>Effective on March 1st Bills</i>										
Revenue										
Water Sales Fixed Charges	\$747,614	\$891,637	\$967,426	\$1,049,657	\$1,138,878	\$1,235,682	\$1,340,715	\$1,454,676	\$1,578,324	\$1,712,481
Water Sales Use Charges	\$563,737	\$672,113	\$729,243	\$791,229	\$858,483	\$931,454	\$1,010,628	\$1,096,531	\$1,189,736	\$1,290,864
Water Lease - City of Tracy	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$78,525	\$78,525	\$78,525
Miscellaneous Revenue	\$14,100	\$14,523	\$14,959	\$15,407	\$15,870	\$16,346	\$16,836	\$17,341	\$17,861	\$18,397
Meter Replacement Program [1]	\$25,499	\$51,797	\$53,384	\$54,986	\$56,635	\$58,334	\$60,084	\$61,887	\$63,744	\$65,656
Total Revenues	\$1,455,649	\$1,734,769	\$1,869,711	\$2,015,978	\$2,174,565	\$2,346,516	\$2,532,963	\$2,708,960	\$2,928,190	\$3,165,923
Operating Expenses	\$967,055	\$1,032,952	\$1,072,471	\$1,113,616	\$1,156,458	\$1,201,071	\$1,247,534	\$1,677,610	\$1,739,468	\$1,803,773
Net Revenue before Debt Service and System Rehabilitation	\$488,594	\$701,817	\$797,240	\$902,363	\$1,018,108	\$1,145,445	\$1,285,429	\$1,031,350	\$1,188,722	\$1,362,150
Debt Service	\$94,600	\$156,640	\$156,640	\$156,640	\$156,640	\$320,440	\$320,440	\$578,840	\$578,840	\$578,840
<i>Debt Service Coverage</i>	<i>5.16</i>	<i>4.48</i>	<i>5.09</i>	<i>5.76</i>	<i>6.50</i>	<i>3.57</i>	<i>4.01</i>	<i>1.78</i>	<i>2.05</i>	<i>2.35</i>
Meter Replacement	\$54,000	\$57,846	\$59,871	\$61,966	\$64,135	\$66,380	\$68,703	\$71,108	\$73,596	\$76,172
System Rehabilitation	\$219,100	\$241,000	\$292,900	\$346,600	\$402,200	\$491,900	\$520,200	\$534,000	\$548,300	\$563,100
Net Revenue	\$120,894	\$246,331	\$287,830	\$337,156	\$395,132	\$266,725	\$376,086	(\$152,597)	(\$12,015)	\$144,038
Beginning Balance [2]	\$3,487,239	\$3,317,290	\$3,222,250	\$2,799,959	\$2,443,852	\$2,163,187	\$2,061,816	\$1,184,578	\$970,396	\$888,513
Net Revenue	\$120,894	\$246,331	\$287,830	\$337,156	\$395,132	\$266,725	\$376,086	(\$152,597)	(\$12,015)	\$144,038
Capital Outlay	(\$10,000)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Final Payment '87 SRF Debt	(\$82,899)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Connection Fees	\$72,955	\$49,652	\$49,652	\$49,652	\$49,652	\$49,652	\$49,652	\$49,652	\$49,652	\$49,652
CIP Projects Cash-funded	(\$270,900)	(\$391,023)	(\$562,199)	(\$538,427)	(\$513,803)	(\$110,435)	(\$103,217)	(\$111,236)	(\$119,520)	(\$128,093)
Surface Water Loan Proceeds	\$0	\$0	\$1,778,162	\$1,840,397	\$1,904,811	\$2,765,824	\$0	\$0	\$0	\$0
Surface Project Costs	\$0	\$0	(\$1,975,735)	(\$2,044,886)	(\$2,116,457)	(\$3,073,138)	(\$1,199,759)	\$0	\$0	\$0
Ending Balance	\$3,317,290	\$3,222,250	\$2,799,959	\$2,443,852	\$2,163,187	\$2,061,816	\$1,184,578	\$970,396	\$888,513	\$954,110
Target Balance (six months expenses)	\$483,528	\$516,476	\$536,235	\$556,808	\$578,229	\$600,536	\$623,767	\$838,805	\$869,734	\$901,886

flow

Source: City of Escalon and HEC.

[1] In 2020 the meter replacement fees are collected in the fixed charged for the 6 months of 'old rates'.

[2] Beginning balance as of July 1, 2019.

Section 4: AFFORDABILITY

4.1 RESIDENTIAL BILL IMPACTS

Bill impacts arising from new rates beginning March 1, 2020 are illustrated for single family homes at different use levels in **Table 14**. During the winter, most homes would have an increase of \$12-\$13 bi-monthly. During the summer, most homes would have an increase of \$19-\$20 bi-monthly.

Table 14
Single Family Water Usage Bi-Monthly Bill Impacts

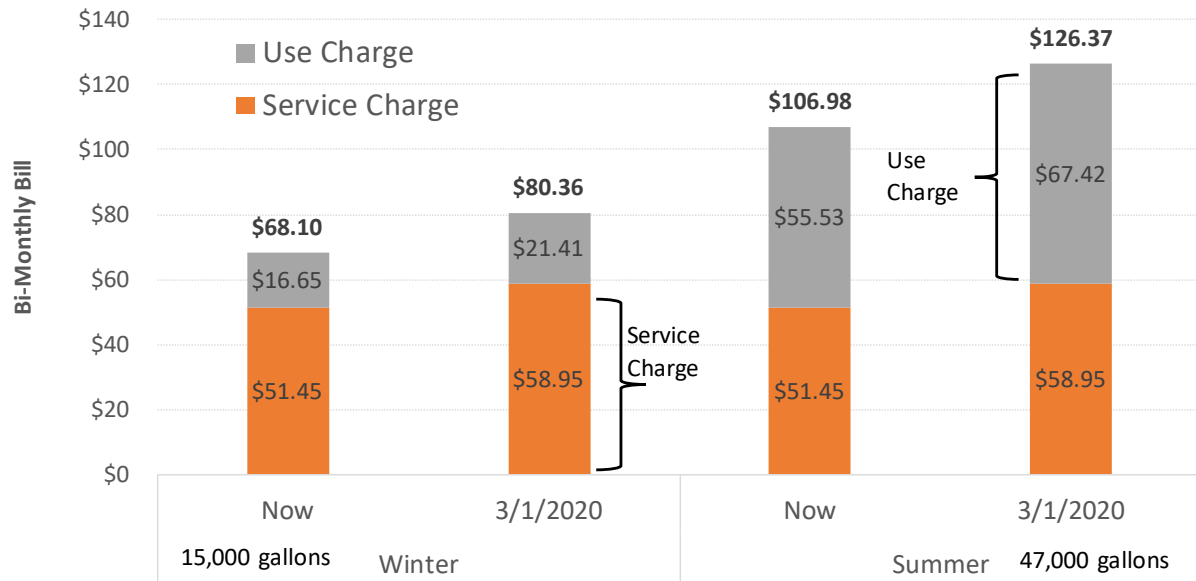
Use in Galls	Current				Total Bill	Effective March 1st Bills			Difference
	Service Fee 1" or less	Use Charge				Service Fee 1" or less	Use Charge All	Total Bill	New less Current
		0-30	31-60	>60					
<i>thousands</i>		<i>Rate per 1,000 gallons</i>				<i>Rate per 1,000 gallons</i>			
		<i>\$1.12</i>	<i>\$1.29</i>	<i>\$1.46</i>			<i>\$1.44</i>		
2	\$51.45	\$2.24	\$0.00	\$0.00	\$53.69	\$58.95	\$2.88	\$61.83	\$8.14
4	\$51.45	\$4.48	\$0.00	\$0.00	\$55.93	\$58.95	\$5.76	\$64.71	\$8.78
6	\$51.45	\$6.72	\$0.00	\$0.00	\$58.17	\$58.95	\$8.64	\$67.59	\$9.42
8	\$51.45	\$8.96	\$0.00	\$0.00	\$60.41	\$58.95	\$11.52	\$70.47	\$10.06
10	\$51.45	\$11.20	\$0.00	\$0.00	\$62.65	\$58.95	\$14.40	\$73.35	\$10.70
12	\$51.45	\$13.44	\$0.00	\$0.00	\$64.89	\$58.95	\$17.28	\$76.23	\$11.34
14	\$51.45	\$15.68	\$0.00	\$0.00	\$67.13	\$58.95	\$20.16	\$79.11	\$11.98
16	\$51.45	\$17.92	\$0.00	\$0.00	\$69.37	\$58.95	\$23.04	\$81.99	\$12.62
18	\$51.45	\$20.16	\$0.00	\$0.00	\$71.61	\$58.95	\$25.92	\$84.87	\$13.26
20	\$51.45	\$22.40	\$0.00	\$0.00	\$73.85	\$58.95	\$28.80	\$87.75	\$13.90
24	\$51.45	\$26.88	\$0.00	\$0.00	\$78.33	\$58.95	\$34.56	\$93.51	\$15.18
28	\$51.45	\$31.36	\$0.00	\$0.00	\$82.81	\$58.95	\$40.32	\$99.27	\$16.46
32	\$51.45	\$33.60	\$2.58	\$0.00	\$87.63	\$58.95	\$46.08	\$105.03	\$17.40
36	\$51.45	\$33.60	\$7.74	\$0.00	\$92.79	\$58.95	\$51.84	\$110.79	\$18.00
40	\$51.45	\$33.60	\$12.90	\$0.00	\$97.95	\$58.95	\$57.60	\$116.55	\$18.60
44	\$51.45	\$33.60	\$18.06	\$0.00	\$103.11	\$58.95	\$63.36	\$122.31	\$19.20
48	\$51.45	\$33.60	\$23.22	\$0.00	\$108.27	\$58.95	\$69.12	\$128.07	\$19.80
52	\$51.45	\$33.60	\$28.38	\$0.00	\$113.43	\$58.95	\$74.88	\$133.83	\$20.40
56	\$51.45	\$33.60	\$33.54	\$0.00	\$118.59	\$58.95	\$80.64	\$139.59	\$21.00
60	\$51.45	\$33.60	\$38.70	\$0.00	\$123.75	\$58.95	\$86.40	\$145.35	\$21.60
64	\$51.45	\$33.60	\$38.70	\$5.84	\$129.59	\$58.95	\$92.16	\$151.11	\$21.52
68	\$51.45	\$33.60	\$38.70	\$11.68	\$135.43	\$58.95	\$97.92	\$156.87	\$21.44
72	\$51.45	\$33.60	\$38.70	\$17.52	\$141.27	\$58.95	\$103.68	\$162.63	\$21.36
76	\$51.45	\$33.60	\$38.70	\$23.36	\$147.11	\$58.95	\$109.44	\$168.39	\$21.28
80	\$51.45	\$33.60	\$38.70	\$29.20	\$152.95	\$58.95	\$115.20	\$174.15	\$21.20

Source: HEC.

sf bill use

An illustration of bill impacts to a single-family home for winter and summer use is shown in **Figure 13** below.

Figure 13
First Year Seasonal Bill Impacts for Single Family Home



The projection of a bi-monthly bill for homes using 28,000 gallons is illustrated in **Figure 14** on the next page for the next five years.

Figure 14
Bill Impact for a Home using 28,000 Gallons

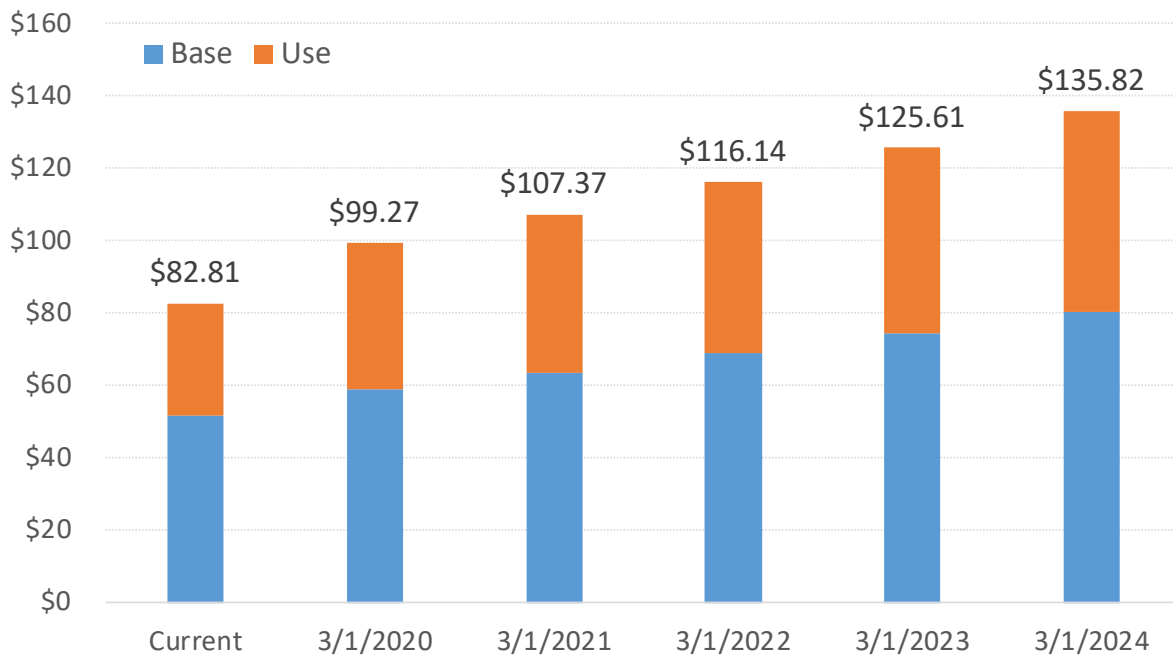
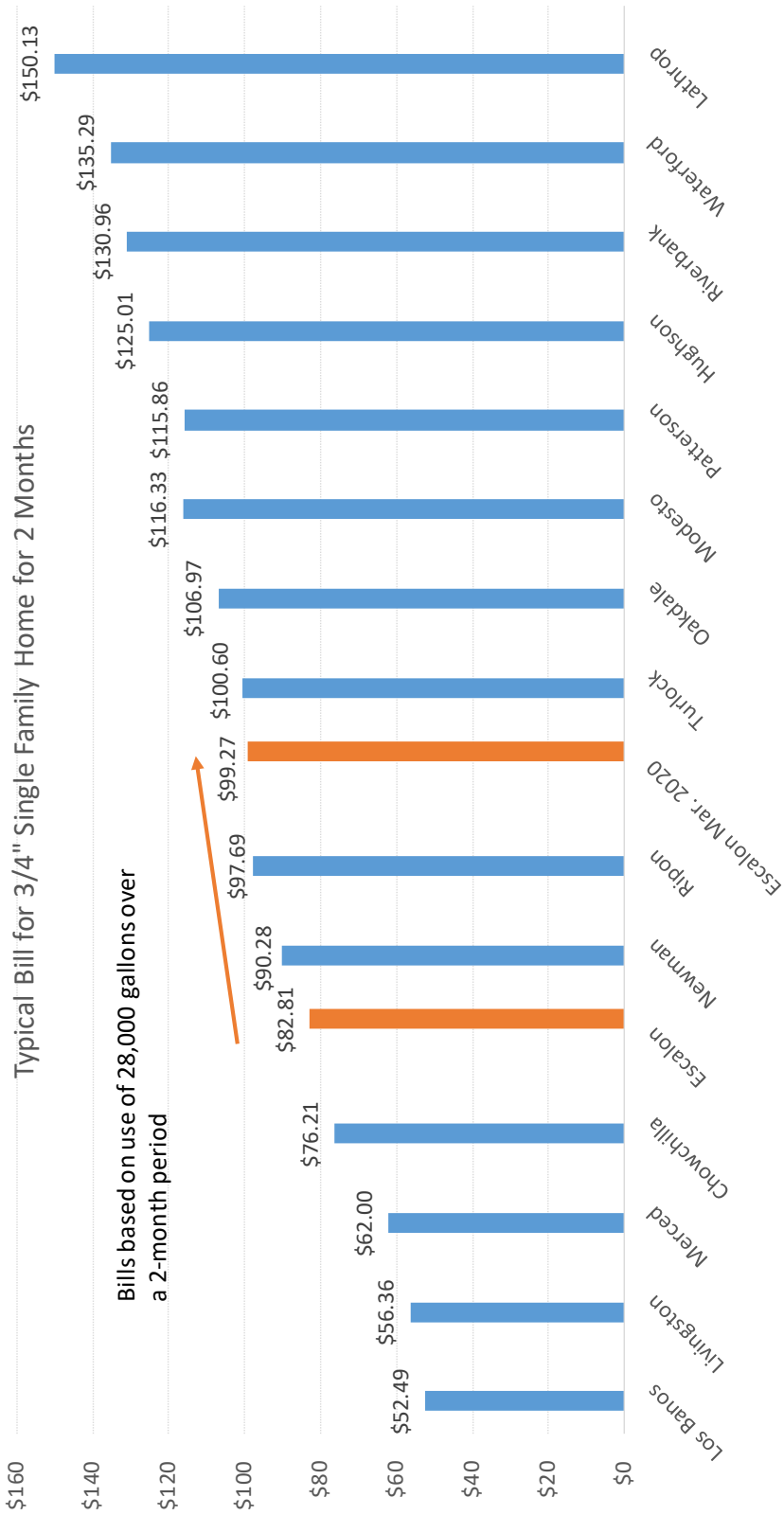


Figure 15 on the following page displays a comparison of regional water bills for a single-family home using 28,000 gallons bi-monthly. Note, however, that some of the comparison cities may be in the process of rate increases as well; this is a snapshot in time.

Figure 15
Comparison of Regional Water Bills



4.2 AFFORDABILITY TEST

The SWRCB program bases its evaluation of affordability of water rates on two criteria:

1. The MHI of the community compared to the State MHI, and
2. The percentage of MHI spent on water bills.

Generally, water rates are considered to be burdensome if they are greater than 2.0 percent of MHI. If a community's MHI is less than 80 percent of the State MHI, the community is considered "Disadvantaged", in which case a rate greater than 1.5 percent of MHI is considered burdensome. The City of Escalon does not meet the definition of Disadvantaged.

The affordability test is shown in **Table 15**. Under the calculated water rates for March 2020, a household using 28,000 gallons bi-monthly would pay \$99.27, which is 0.9% of the estimated MHI for Escalon. The proposed water rates are, per the SWRCB definitions, affordable.

Table 15
Test of Water Rates Affordability

Item	Current	3/1/2020
Bi-Monthly Water Bill		
Bi-Monthly Median Household Income (MHI)	\$11,213	\$11,213
Typical Bi-Monthly Water Bill (3/4" Residence)	\$82.81	\$99.27
Average Monthly Water Bill as Percentage of MHI [1]	0.7%	0.9%
Median Household Income (MHI)		
Statewide California [2]	\$67,169	
Estimated Escalon [3]	\$67,277	
Escalon MHI as a percentage of the State MHI [4]	100.2%	

Source: HEC, California State Water Resources Control Board, and US Census Bureau.

aff

[1] Water bills that are <1.5% of MHI are considered affordable, between 1.5% and 2.0% a concern, particularly if the community is disadvantaged, and not affordable if greater than 2.0%.

[2] Per the State Water Resources Control Board Drinking Water Program for 2019.

[3] 2017 5-year American Community Survey.

[4] Per the DWSRF program, a community with an MHI <80% of the Statewide MHI is Disadvantaged.

4.3 NON-RESIDENTIAL BILL IMPACTS

The effect of the calculated rate increase for the next five years is shown in **Table 16** for a church and a restaurant with ¾-inch meters. Bill impacts for a sample of non-residential customers with larger meter sizes (a retail establishment, an industrial customer, and a school) is shown in **Table 17** on the next page.

The bill impacts are shown for winter and summer water consumption; however, because bills for non-residential customers will vary by business type and through the year, the examples given are only illustrative.

Table 16
Sample Bill Impacts for Non-Residential Customers with Smaller Meters

Customer	Use 1,000s Galls	Current	Effective on March 1st Bills				
			2020	2021	2022	2023	2024
<hr/>							
Church	3/4" Meter						
Summer Bill (July & August)							
Base Charge		\$51.45	\$58.95	\$63.69	\$68.82	\$74.37	\$80.38
Use Charges	30	\$33.60	\$43.20	\$46.80	\$50.70	\$54.90	\$59.40
Total Charges		\$85.05	\$102.15	\$110.49	\$119.52	\$129.27	\$139.78
	Change		\$17.10	\$8.34	\$9.03	\$9.75	\$10.51
Winter Bill (January & February)							
Base Charge		\$51.45	\$58.95	\$63.69	\$68.82	\$74.37	\$80.38
Use Charges	2	\$2.24	\$2.88	\$3.12	\$3.38	\$3.66	\$3.96
Total Charges		\$53.69	\$61.83	\$66.81	\$72.20	\$78.03	\$84.34
	Change		\$8.14	\$4.98	\$5.39	\$5.83	\$6.31
<hr/>							
Restaurant	3/4" Meter						
Summer Bill (July & August)							
Base Charge		\$51.45	\$58.95	\$63.69	\$68.82	\$74.37	\$80.38
Use Charges	28	\$31.36	\$40.32	\$43.68	\$47.32	\$51.24	\$55.44
Total Charges		\$82.81	\$99.27	\$107.37	\$116.14	\$125.61	\$135.82
	Change		\$16.46	\$8.10	\$8.77	\$9.47	\$10.21
Winter Bill (January & February)							
Base Charge		\$51.45	\$58.95	\$63.69	\$68.82	\$74.37	\$80.38
Use Charges	17	\$19.04	\$24.48	\$26.52	\$28.73	\$31.11	\$33.66
Total Charges		\$70.49	\$83.43	\$90.21	\$97.55	\$105.48	\$114.04
	Change		\$12.94	\$6.78	\$7.34	\$7.93	\$8.56

Source: HEC.

Table 17
Sample Bill Impacts for Non-Residential Customers with Larger Meters

Customer	Use	Current	Effective on March 1st Bills				
	1,000s Galls		2020	2021	2022	2023	2024
<hr/>							
Retail / Commercial	1" Meter						
Summer Bill (July & August)	use						
Base Charge		\$51.45	\$58.95	\$63.69	\$68.82	\$74.37	\$80.38
Use Charges	7	\$7.84	\$10.08	\$10.92	\$11.83	\$12.81	\$13.86
Total Charges		\$59.29	\$69.03	\$74.61	\$80.65	\$87.18	\$94.24
	Change		\$9.74	\$5.58	\$6.04	\$6.53	\$7.06
Winter Bill (January & February)							
Base Charge		\$51.45	\$58.95	\$63.69	\$68.82	\$74.37	\$80.38
Use Charges	6	\$6.72	\$8.64	\$9.36	\$10.14	\$10.98	\$11.88
Total Charges		\$58.17	\$67.59	\$73.05	\$78.96	\$85.35	\$92.26
	Change		\$9.42	\$5.46	\$5.91	\$6.39	\$6.91
<hr/>							
Industrial	2" Meter						
Summer Bill (July & August)							
Base Charge		\$168.15	\$188.05	\$203.19	\$219.60	\$237.36	\$256.56
Use Charges	203	\$258.98	\$328.86	\$357.28	\$387.73	\$420.21	\$454.72
Total Charges		\$427.13	\$516.91	\$560.47	\$607.33	\$657.57	\$711.28
	Change		\$89.78	\$43.56	\$46.86	\$50.24	\$53.71
Winter Bill (January & February)							
Base Charge		\$168.15	\$188.05	\$203.19	\$219.60	\$237.36	\$256.56
Use Charges	308	\$412.28	\$498.96	\$542.08	\$588.28	\$637.56	\$689.92
Total Charges		\$580.43	\$687.01	\$745.27	\$807.88	\$874.92	\$946.48
	Change		\$106.58	\$58.26	\$62.61	\$67.04	\$71.56
<hr/>							
School	3" Meter						
Summer Bill (July & August)							
Base Charge		\$366.65	\$409.46	\$442.53	\$478.35	\$517.13	\$559.08
Use Charges	922	\$1,156.23	\$1,475.20	\$1,585.84	\$1,724.14	\$1,871.66	\$2,028.40
Total Charges		\$1,522.88	\$1,884.66	\$2,028.37	\$2,202.49	\$2,388.79	\$2,587.48
	Change		\$361.78	\$143.71	\$174.12	\$186.30	\$198.69
Winter Bill (January & February)							
Base Charge		\$366.65	\$409.46	\$442.53	\$478.35	\$517.13	\$559.08
Use Charges	475	\$579.60	\$760.00	\$817.00	\$888.25	\$964.25	\$1,045.00
Total Charges		\$946.25	\$1,169.46	\$1,259.53	\$1,366.60	\$1,481.38	\$1,604.08
	Change		\$223.21	\$90.07	\$107.07	\$114.78	\$122.70

Source: HEC.

APPENDIX A

WATER RATE STUDY SUPPORT TABLES

Table A-1
City of Escalon Water Study Update 2019
Escalon Historical Population and Housing Estimates

Year	Population			Housing Units			
	Persons	Annual		Occupied Units	Annual		
		Increase / Decrease	Annual % Change		Increase / Decrease	Persons per Unit	Annual % Change
	<i>as of January 1</i>			<i>as of January 1</i>		<i>Average</i>	
	[1]			[1]		2.95	
2000	5,963			2,056		2.90	
2001	6,134	171	2.9%	2,094	38	2.93	1.8%
2002	6,369	235	3.8%	2,162	68	2.95	3.2%
2003	6,581	212	3.3%	2,216	54	2.97	2.5%
2004	6,649	68	1.0%	2,235	19	2.97	0.9%
2005	6,842	193	2.9%	2,312	77	2.96	3.4%
2006	6,942	100	1.5%	2,369	57	2.93	2.5%
2007	6,964	22	0.3%	2,389	20	2.92	0.8%
2008	7,027	63	0.9%	2,413	24	2.91	1.0%
2009	7,086	59	0.8%	2,429	16	2.92	0.7%
2010	7,132	46	0.6%	2,476	47	2.88	1.9%
2011	7,187	55	0.8%	2,476	-	2.90	0.0%
2012	7,223	36	0.5%	2,474	(2)	2.92	-0.1%
2013	7,185	(38)	-0.5%	2,465	(9)	2.91	-0.4%
2014	7,294	109	1.5%	2,481	16	2.94	0.6%
2015	7,489	195	2.7%	2,512	31	2.98	1.2%
2016	7,488	(1)	0.0%	2,506	(6)	2.99	-0.2%
2017	7,656	168	2.2%	2,505	(1)	3.06	0.0%
2018	7,725	69	0.9%	2,508	3	3.08	0.1%
2019	7,765	40	0.5%	2,512	4	3.09	0.2%
Total Change	1,802			456			
Avg. Annual Change	95		1.40%	24			1.06%

Source: California Department of Finance schedule E-5.

stats

[1] Years 2000 and 2010 calibrated to the decennial Census.

Table A-2
City of Escalon Water Study Update 2019
Historical Water Use by Customer Category

Customer	Calendar Year									Average 2014-2018
	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Residential	Figures in 1,000 gallons									
Single Family	407,171	382,572	415,044	422,397	373,501	310,476	312,652	333,738	345,140	335,101
Multi-Family	28,210	30,360	31,385	29,654	26,460	17,952	16,518	18,161	18,091	19,436
Subtotal Residential	435,381	412,932	446,429	452,051	399,961	328,428	329,170	351,899	363,231	354,538
Non-Residential										
Commercial	33,686	34,735	37,701	38,448	31,451	30,645	29,808	30,850	30,353	30,621
Hotel	1,463	1,653	1,068	1,002	1,639	1,169	861	2,153	2,485	1,661
Laundry	394	435	423	365	356	520	534	525	509	489
Industrial	3,476	3,915	3,432	3,264	3,312	3,204	3,769	3,311	4,271	3,573
Schools	20,164	21,902	18,410	25,807	24,019	17,972	17,043	13,551	18,911	18,299
Irrigation	12,485	19,304	22,388	24,471	21,500	18,928	19,815	25,002	35,227	24,094
Construction	0	0	0	78	20	0	0	0	19	8
Subtotal Non-Residential	71,668	81,944	83,422	93,435	82,297	72,438	71,830	75,392	91,775	78,746
Total Billable Water	507,049	494,876	529,851	545,486	482,258	400,866	401,000	427,291	455,006	433,284

Source: City of Escalon

use

Table A-3
City of Escalon Water Study Update 2019
Historical Revenues and Expenditures

Revenues and Expenses	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
OPERATING FUND										
Revenues										
Services Charges	\$0	\$58,939	\$30,790	\$32,500	\$32,923	\$5,348	\$0	\$0	\$0	\$0
Miscellaneous Revenue	\$18,285	\$17,400	\$12,173	\$13,605	\$14,797	\$33,344	\$13,953	\$17,129	\$10,031	\$15,468
Water Lease to City of Tracy	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699
Water Sales	\$440,230	\$403,950	\$420,412	\$433,471	\$458,330	\$417,268	\$600,091	\$845,335	\$735,251	\$832,323
Total Operating Fund Revenues	\$563,215	\$584,988	\$568,075	\$584,276	\$610,750	\$560,659	\$718,743	\$967,163	\$849,981	\$952,490
Expenses										
Personnel (salaries and benefits)	\$276,349	\$256,514	\$232,094	\$249,124	\$222,570	\$233,005	\$247,457	\$233,859	\$346,321	\$423,894
Supplies and Services										
Electricity	\$118,857	\$103,652	\$99,136	\$111,840	\$128,618	\$125,861	\$110,993	\$103,364	\$99,749	\$113,239
All Other Supplies and Services	\$121,457	\$99,319	\$92,606	\$108,368	\$181,776	\$157,371	\$121,339	\$133,596	\$126,421	\$127,064
Subtotal Supplies and Services	\$240,314	\$202,972	\$191,743	\$220,208	\$310,394	\$283,232	\$232,332	\$236,960	\$226,170	\$240,303
Regulatory Fees	\$13,746	\$7,768	\$11,125	\$6,771	\$6,856	\$11,326	\$6,076	\$6,532	\$16,217	\$18,458
General Gov't & Cost Center	\$147,329	\$166,658	\$130,536	\$132,297	\$170,620	\$160,432	\$136,163	\$161,571	\$171,975	\$190,031
Capital Outlay	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$38,108)	\$0	\$0
Subtotal Expenses	\$677,738	\$633,912	\$565,498	\$608,400	\$710,440	\$687,995	\$622,028	\$600,814	\$760,683	\$872,686
Other Sources and Uses	\$884,806	\$530,402	\$467,976	\$68,280	\$0	\$253,194	\$0	(\$257,549)	\$26,433	\$203,665
Net Revenues	\$770,283	\$481,478	\$470,553	\$44,156	(\$99,690)	\$125,858	\$96,715	\$108,800	\$115,731	\$283,469
CAPITAL FUND										
Revenues										
Use of Money & Property	\$12,217	\$2,183	\$1,132	\$1,381	\$1,073	\$2,266	\$4,570	\$9,908	\$4,974	\$10,181
Other Revenue (Connection fees)	\$127,551	\$19,894	\$8,970	\$13,454	\$88,578	\$450,853	\$72,930	\$43,015	\$157,236	\$28,944
Total Revenues	\$139,768	\$22,077	\$10,102	\$14,835	\$89,652	\$453,119	\$77,500	\$52,923	\$162,210	\$39,125
Expenses										
Capital Improvements	\$33,349	\$0	\$0	\$0	\$0	\$0	\$4,000	\$0	\$0	\$0
Total Expenses	\$33,349	\$0	\$0	\$0	\$0	\$0	\$4,000	\$0	\$0	\$0
Other Sources and Uses	(\$175,949)	(\$421,808)	\$0	\$0	\$0	\$0	\$0	\$117,404	\$0	\$0
Net Revenues	(\$69,530)	(\$399,731)	\$10,102	\$14,835	\$89,652	\$453,119	\$73,500	\$170,327	\$162,210	\$39,125
DEPRECIATION FUND										
RTS Revenues	\$158,397	\$159,659	\$158,650	\$158,425	\$157,528	\$159,126	\$108,013	\$114,332	\$162,106	\$114,600
Other Revenues	\$28,855	\$5,181	\$2,232	\$1,621	\$1,553	\$2,265	\$3,105	\$7,317	\$3,490	\$7,533
Expenses	(\$1)	\$0	\$0	\$0	\$0	\$0	\$9,972	\$1,852	\$0	\$1
Other Sources and Uses	(\$884,806)	(\$188,420)	(\$543,920)	(\$68,280)	\$0	(\$253,194)	\$0	\$34,052	(\$26,433)	(\$203,665)
Net Revenues	(\$697,553)	(\$23,580)	(\$383,038)	\$91,765	\$159,081	(\$91,803)	\$101,146	\$153,849	\$139,163	(\$81,533)
DEBT SERVICE - 1984 SDWSRF										
RTS Revenues	\$79,198	\$79,830	\$79,325	\$79,212	\$78,764	\$79,563	\$54,006	\$0	\$0	\$0
Other Revenues	\$3,661	\$1,004	\$1,132	\$28,558	\$411	\$318	\$845	\$1,987	\$1,389	\$2,786
Expenses	\$33,253	\$25,890	\$19,403	\$9,576	\$8,592	\$1,746	\$0	\$0	\$0	\$0
Other Sources and Uses	\$175,949	\$79,827	\$175,944	\$0	\$0	\$0	\$0	\$156,906	\$0	\$0
Net Revenues	\$225,555	\$134,770	\$236,998	\$98,194	\$70,583	\$78,135	\$54,851	\$158,893	\$1,389	\$2,786
Debt Service - Other										
RTS Revenues	\$115,659	\$110,465	\$108,617	\$107,512	\$107,390	\$108,668	\$75,236	\$4,616	\$131,226	\$228,681
Expenses	\$33,143	\$30,564	\$22,348	\$27,518	\$24,543	\$22,063	\$19,432	\$16,719	\$13,809	\$10,858
Other Sources and Uses	\$0	\$0	(\$100,000)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Revenues	\$82,516	\$79,901	(\$13,731)	\$79,993	\$82,847	\$86,605	\$55,804	(\$12,103)	\$117,417	\$217,823
WATER FUND										
Revenues	\$1,088,753	\$963,204	\$928,133	\$974,438	\$1,046,049	\$1,363,718	\$1,037,448	\$1,148,338	\$1,310,402	\$1,345,215
Expenses	\$777,482	\$690,366	\$607,249	\$645,494	\$743,576	\$711,804	\$655,432	\$619,385	\$774,492	\$883,545
Other Sources and Uses	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$50,813	\$0	\$0
Net Revenues	\$311,271	\$272,838	\$320,884	\$328,944	\$302,473	\$651,914	\$382,016	\$579,766	\$535,910	\$461,670

Source: City of Escalon Financial Data.

rev exp

Table A-4
City of Escalon Water Study Update 2019
Annual Water Delivery

Month	2011	2012	2013	2014	2015	2016	2017	2018	Avg. Annual Water Delivery (gallons)	Percent of Delivery by Month
Jan	20,659,096	26,944,000	22,362,000	28,425,230	23,575,390	18,440,000	19,465,101	20,325,356	22,524,522	4%
Feb	19,866,916	25,845,000	23,932,274	22,208,017	21,810,000	18,500,000	15,823,672	21,512,409	21,187,286	4%
Mar	21,923,128	28,669,000	40,165,523	28,931,271	35,376,209	20,582,869	22,051,711	21,941,138	27,455,106	5%
Apr	37,757,677	33,197,996	48,556,372	39,322,502	38,220,791	30,473,911	25,695,142	27,297,599	35,065,249	7%
May	58,807,697	63,015,635	66,806,281	57,617,573	41,212,298	42,836,653	49,840,525	47,612,531	53,468,649	11%
Jun	60,900,118	71,513,424	72,939,783	66,423,105	45,374,622	51,865,490	55,745,665	56,812,018	60,196,778	12%
Jul	73,553,066	83,210,612	78,951,657	74,623,976	48,596,686	56,347,993	65,852,273	63,463,294	68,074,945	14%
Aug	72,513,219	78,870,000	74,623,976	62,987,015	49,534,499	56,079,259	62,023,419	59,520,099	64,518,936	13%
Sep	63,270,314	64,892,342	63,041,235	52,484,438	45,875,562	48,265,482	54,736,625	51,716,419	55,535,302	11%
Oct	44,507,507	50,192,565	53,275,083	45,681,778	39,262,045	36,935,566	45,762,207	44,715,150	45,041,488	9%
Nov	29,486,646	29,166,053	37,844,647	28,485,893	21,779,962	22,548,378	26,125,882	32,756,981	28,524,305	6%
Dec	26,573,693	20,490,000	27,572,355	23,731,764	19,429,861	19,756,212	22,515,893	21,156,239	22,653,252	4%
Total	529,819,077	576,006,627	610,071,186	530,922,562	430,047,925	422,631,813	465,638,115	468,829,233	A 504,245,817	100%
Peaking Period (May through September inclusive)									B 301,794,610	60%
Base Monthly Flow									C 28,921,601	
Base Annual Flow									D = C*12 347,059,213	69%
Additional Flow									E = A-D 157,186,604	31%

Source: City of Escalon.

delivery

Table A-5
City of Escalon Water Study Update 2019
Estimated Ten-Year Schedule of Water Capital Improvements

Project	Customer Cost Share		Funding Source	Total Cost	Fiscal Year										
					2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	
Groundwater System Costs (2019 \$'s)				Existing	Future										
Well 1 Replacement	100%	0%	SRF Loan	\$1,355,441	\$1,355,441	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Well 3 Generator Upgrade	100%	0%	Cash	\$281,250	\$0	\$0	\$281,250	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Well 9 Generator Upgrade	100%	0%	Cash	\$281,250	\$0	\$0	\$0	\$0	\$281,250	\$0	\$0	\$0	\$0	\$0	
Well 10 Generator Upgrade	100%	0%	Cash	\$281,250	\$0	\$0	\$0	\$281,250	\$0	\$0	\$0	\$0	\$0	\$0	
Recoat Water Storage Tank	100%	0%	Cash	\$100,000	\$0	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Steel Water Main Replacement	100%	0%	Cash	\$1,000,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	
AC (Transite) Water Main Replacement	100%	0%	Cash	\$3,700,000	\$370,000	\$370,000	\$370,000	\$370,000	\$370,000	\$370,000	\$370,000	\$370,000	\$370,000	\$370,000	
Well Security & Component Replacements	100%	0%	Cash	\$200,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	
Water Meter Replacement Program	100%	0%	Cash	\$540,000	\$54,000	\$54,000	\$54,000	\$54,000	\$54,000	\$54,000	\$54,000	\$54,000	\$54,000	\$54,000	
Total Estimated Project Costs Groundwater					\$7,739,191	\$1,899,441	\$644,000	\$825,250	\$825,250	\$825,250	\$544,000	\$544,000	\$544,000	\$544,000	
Surface Water System (2019 \$'s)															
Pipeline Extension Phase 1	90%	10%	New Loan	\$1,782,000	\$0	\$0	\$1,782,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Pipeline Extension Phase 2	90%	10%	New Loan	\$3,564,000	\$0	\$0	\$0	\$1,782,000	\$1,782,000	\$0	\$0	\$0	\$0	\$0	
Tank/Booster Pump Station	90%	10%	New Loan	\$2,500,000	\$0	\$0	\$0	\$0	\$0	\$2,500,000	\$0	\$0	\$0	\$0	
Pipeline Extension to Connect	90%	10%	Reserves	\$943,000	\$0	\$0	\$0	\$0	\$0	\$0	\$943,000	\$0	\$0	\$0	
Total Estimated Project Costs Surface Water					\$8,789,000	\$0	\$0	\$1,782,000	\$1,782,000	\$1,782,000	\$2,500,000	\$943,000	\$0	\$0	
TOTAL ESTIMATED COSTS (2019 \$'S)					\$16,528,191	\$1,899,441	\$644,000	\$2,607,250	\$2,607,250	\$2,607,250	\$3,044,000	\$1,487,000	\$544,000	\$544,000	
Estimated Project Costs (Future \$'s) [1]						Annual Increase 3.5%									
Well 1 Replacement	\$1,355,441	\$0	SRF Loan	\$1,355,441	\$1,355,441	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Well 3 Generator Upgrade	\$311,827	\$0	Cash	\$311,827	\$0	\$0	\$311,827	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Well 9 Generator Upgrade	\$334,037	\$0	Cash	\$334,037	\$0	\$0	\$0	\$0	\$334,037	\$0	\$0	\$0	\$0	\$0	
Well 10 Generator Upgrade	\$322,741	\$0	Cash	\$322,741	\$0	\$0	\$0	\$322,741	\$0	\$0	\$0	\$0	\$0	\$0	
Recoat Water Storage Tank	\$107,123	\$0	Cash	\$107,123	\$0	\$107,123	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Steel Water Main Replacement	\$1,210,699	\$0	Cash	\$1,210,699	\$100,000	\$107,123	\$110,872	\$114,752	\$118,769	\$122,926	\$127,228	\$131,681	\$136,290	\$141,060	
AC (Transite) Water Main Replacement	\$4,479,587	\$0	Cash	\$4,479,587	\$370,000	\$396,353	\$410,226	\$424,584	\$439,444	\$454,824	\$470,743	\$487,219	\$504,272	\$521,922	
Well Security & Component Replacements	\$242,140	\$0	Cash	\$242,140	\$20,000	\$21,425	\$22,174	\$22,950	\$23,754	\$24,585	\$25,446	\$26,336	\$27,258	\$28,212	
Water Meter Replacement Program	\$653,778	\$0	Cash	\$653,778	\$54,000	\$57,846	\$59,871	\$61,966	\$64,135	\$66,380	\$68,703	\$71,108	\$73,596	\$76,172	
Total Estimated Project Costs Groundwater				\$9,017,372	\$0	\$9,017,372	\$1,899,441	\$689,869	\$914,969	\$946,993	\$980,138	\$668,715	\$692,120	\$716,344	
Surface Water System															
Pipeline Extension Phase 1	\$1,778,162	\$197,574	New Loan	\$1,975,735	\$0	\$0	\$1,975,735	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Pipeline Extension Phase 2	\$3,745,209	\$416,134	New Loan	\$4,161,343	\$0	\$0	\$0	\$2,044,886	\$2,116,457	\$0	\$0	\$0	\$0	\$0	
Tank/Booster Pump Station	\$2,765,824	\$307,314	New Loan	\$3,073,138	\$0	\$0	\$0	\$0	\$0	\$3,073,138	\$0	\$0	\$0	\$0	
Pipeline Extension to Connect	\$1,079,783	\$119,976	Reserves	\$1,199,759	\$0	\$0	\$0	\$0	\$0	\$0	\$1,199,759	\$0	\$0	\$0	
Total Estimated Project Costs Surface Water				\$9,368,978	\$1,040,998	\$10,409,976	\$0	\$0	\$1,975,735	\$2,044,886	\$2,116,457	\$3,073,138	\$1,199,759	\$0	
Total Estimated Project Costs (Future \$'s)				\$18,386,350	\$1,040,998	\$19,427,348	\$1,899,441	\$689,869	\$2,890,705	\$2,991,879	\$3,096,595	\$3,741,853	\$1,891,879	\$716,344	
Existing Customers															
Cash				\$7,008,153	\$490,000	\$632,023	\$855,099	\$885,027	\$916,003	\$602,335	\$623,417	\$645,236	\$667,820	\$691,193	
Meter Replacement Fees (includes prior year collections)				\$653,778	\$54,000	\$57,846	\$59,871	\$61,966	\$64,135	\$66,380	\$68,703	\$71,108	\$73,596	\$76,172	
SRF Loans				\$1,355,441	\$1,355,441	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Reserves				\$1,079,783	\$0	\$0	\$0	\$0	\$0	\$0	\$1,079,783	\$0	\$0	\$0	
New Loan				\$8,289,195	\$0	\$0	\$1,778,162	\$1,840,397	\$1,904,811	\$2,765,824	\$0	\$0	\$0	\$0	
Total Existing Customers				\$18,386,350	\$1,899,441	\$689,869	\$2,693,131	\$2,787,391	\$2,884,949	\$3,434,539	\$1,771,903	\$716,344	\$741,416	\$767,366	
Future Customers (funded by reserves)					\$1,040,998	\$0	\$0	\$197,574	\$204,489	\$211,646	\$307,314	\$119,976	\$0	\$0	

Source: City of Escalon and HEC.

[1] Estimated costs increased by historical ENR construction cost index (rounded up).

cip

Table A-6
City of Escalon Water Study Update 2019
Engineer's Estimate of Well No. 1A Improvement Project

Infrastructure Components	Estimated Cost 2019 \$s
Production Well Drilling and Development	\$250,000
Well Site Improvements	
Vertical Turbine Pump and motor w/VFD	\$93,800
12" Air Release Valve	\$3,000
Sample Tap	\$1,000
12" Check Valve	\$5,000
12" Tee	\$3,000
12" Ball Valve	\$9,000
Pressure Gauge and Pressure Transducer	\$1,000
12" Magnetic Flow Meter	\$15,000
12" Reduced Pressure Backflow Preventer	\$20,000
12" Elbow	\$12,000
12" Water Main	\$7,200
12" Waste Discharge Pipe	\$7,440
Remove ex. Piping and Valves and Plug ex.	\$3,500
Connect to Ex. 12" Water Main	\$5,000
Connect to Ex. 12" Waste Discharge Pipe	\$5,000
Coupling and Pipe Support	\$10,000
Electrical and Controls	\$65,000
250 Kw Generator Set (Diesel)	\$150,000
Upgrade of Electrical Service	\$150,000
Site Grading	\$25,000
Site Gravel Base	\$350
Disinfection and Testing	\$10,000
Abandon Ex. Well	\$10,000
Subtotal Well Development & Equipping Cost	\$861,290
Add 15% Construction Contingency	\$129,194
Total Construction Cost Estimate	\$990,484
Soft Costs	
Design/Bid Documents/Rate Study	\$205,764
Consultant assistance during Bidding	\$15,000
Engineering Services during Construction	\$15,000
Construction Management and Project Closeout	\$129,194
Subtotal Soft Costs	\$364,958
Estimated Total Project Cost	\$1,355,441
Funding Source	
SRF Planning Loan	\$450,000
SRF Construction Loan	\$905,441

Source: Blackwater Consulting Engineers, Inc. May 2019.

well 1a

Table A-7
City of Escalon Water Study Update 2019
Comparison of Historical Operating Expenses to Standard Indices

Historical Water Operating Expenses	2008-09	2009-10	2010-11	2011-12	Fiscal Year		2014-15	2015-16	2016-17	2017-18	Change	
					2012-13	2013-14					Total	Avg. Annual
Personnel (salaries and benefits)	\$276,349	\$256,514	\$232,094	\$249,124	\$222,570	\$233,005	\$247,457	\$233,859	\$346,321	\$423,894	\$147,545	4.9%
Supplies and Services												
Electricity	\$118,857	\$103,652	\$99,136	\$111,840	\$128,618	\$125,861	\$110,993	\$103,364	\$99,749	\$113,239	(\$5,618)	-0.5%
All Other Supplies and Services	\$121,457	\$99,319	\$92,606	\$108,368	\$181,776	\$157,371	\$121,339	\$133,596	\$126,421	\$127,064	\$5,607	0.5%
Subtotal Supplies and Services	\$240,314	\$202,972	\$191,743	\$220,208	\$310,394	\$283,232	\$232,332	\$236,960	\$226,170	\$240,303	(\$11)	0.0%
Regulatory Fees	\$13,746	\$7,768	\$11,125	\$6,771	\$6,856	\$11,326	\$6,076	\$6,532	\$16,217	\$18,458	\$4,712	3.3%
General Gov't & Cost Center	\$147,329	\$166,658	\$130,536	\$132,297	\$170,620	\$160,432	\$136,163	\$161,571	\$171,975	\$190,031	\$42,702	2.9%
Subtotal Expenses	\$677,738	\$633,912	\$565,498	\$608,400	\$710,440	\$687,995	\$622,028	\$600,814	\$760,683	\$872,686	\$194,948	2.8%
Total Excl. Personnel	\$401,389	\$377,398	\$333,404	\$359,276	\$487,870	\$454,990	\$374,571	\$366,955	\$414,362	\$448,792	\$47,403	1.2%
Engineering News Record	<i>June 2009</i>	<i>June 2010</i>	<i>June 2011</i>	<i>June 2012</i>	<i>June 2013</i>	<i>June 2014</i>	<i>June 2015</i>	<i>June 2016</i>	<i>June 2017</i>	<i>June 2018</i>		
ENR Construction Cost Index 20-City [1]	8,578.00	8,805.00	9,053.00	9,291.00	9,542.00	9,800.00	10,039.00	10,337.05	10,702.81	11,068.57	2,490.57	2.9%
ENR Construction Cost Index San Francisc	9,735.67	9,902.67	10,167.29	10,385.54	10,388.84	10,899.84	11,155.07	11,548.40	11,722.15	12,014.72	2,279.05	2.4%
Bureau of Labor Statistics												
Consumer Price Index - California	225.00	227.10	233.30	237.80	241.90	247.23	250.40	255.58	262.29	272.46	47.46	2.1%
Consumer Price Index - San Francisco	225.69	228.11	233.65	239.81	245.94	253.32	259.12	266.04	275.30	286.06	60.37	2.7%

Source: City of Escalon, California Department of Finance, and the Engineering News Record.

indices

[1] Average annual increase for the past 29 years (June 1990-June 2019) is 3.04%

Table A-8
City of Escalon Water Study Update 2019
System Rehabilitation Annual Budget Estimate

Depreciation	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
Existing Assets Annual Depreciation	\$186,000	\$186,000	\$186,000	\$186,000	\$186,000	\$186,000	\$186,000	\$186,000	\$186,000	\$186,000
New Assets Annual Depreciation	\$33,066	\$54,999	\$106,901	\$160,619	\$216,218	\$305,923	\$334,247	\$348,040	\$362,317	\$377,093
Total Annual Depreciation	\$219,066	\$240,999	\$292,901	\$346,619	\$402,218	\$491,923	\$520,247	\$534,040	\$548,317	\$563,093
Percentage of Depreciation in Rates	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Estimated System Rehabilitation Cost	\$219,100	\$241,000	\$292,900	\$346,600	\$402,200	\$491,900	\$520,200	\$534,000	\$548,300	\$563,100

Source: HEC.

depr

Table A-9
City of Escalon Water Study Update 2019
Depreciation of Existing Assets

Asset Type	Cost Basis	Year Installed	Average Life Span	End of Life	Annual Depreciation
			<i>years</i>		
Infrastructure					
Water Lines	\$3,714,033	various	51	various	\$72,824
Roosevelt Pump Station	\$347,295	1999	65	2064	\$5,343
Roosevelt Reservoir	\$208,590	1998	67	2065	\$3,113
Surface Water Treatment Plant	\$1,833,520	2011	99	2110	\$18,520
Wells					
Well 1 Test Well Drilling	\$327,366	2019	10	2029	\$32,737
Well 3	\$133,204	1998 & 2018	30	2048	\$4,440
Well 6	\$88,338	1985	50	2035	\$1,767
Well 9	\$228,717	1987	50	2037	\$4,574
Well 10	\$542,379	1998	50	2048	\$10,848
Subtotal Infrastructure	\$7,423,442				\$154,166
Subtotal Machinery-Equipment	\$316,786	various	10	various	\$31,679
Subtotal Vehicles	\$46,852	various	10	various	\$0
Total	\$7,787,080				\$186,000

Source: City of Escalon Financial Data July 2019.

old dep

Table A-10
City of Escalon Water Study Update 2019
Estimated Depreciation of New Assets

New Asset	Asset Life	Fiscal Year									
		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
	years										
Groundwater System											
Well 1 Replacement	60	\$22,591	\$22,591	\$22,591	\$22,591	\$22,591	\$22,591	\$22,591	\$22,591	\$22,591	\$22,591
Well 3 Generator Upgrade	20	\$0	\$0	\$15,591	\$15,591	\$15,591	\$15,591	\$15,591	\$15,591	\$15,591	\$15,591
Well 9 Generator Upgrade	20	\$0	\$0	\$0	\$0	\$16,702	\$16,702	\$16,702	\$16,702	\$16,702	\$16,702
Well 10 Generator Upgrade	20	\$0	\$0	\$0	\$16,137	\$16,137	\$16,137	\$16,137	\$16,137	\$16,137	\$16,137
Recoat Water Storage Tank	10	\$0	\$10,712	\$10,712	\$10,712	\$10,712	\$10,712	\$10,712	\$10,712	\$10,712	\$10,712
Steel Water Main Replacement	80	\$1,250	\$2,589	\$3,975	\$5,409	\$6,894	\$8,431	\$10,021	\$11,667	\$13,370	\$15,134
AC (Transite) Water Main Replacement	80	\$4,625	\$9,579	\$14,707	\$20,015	\$25,508	\$31,193	\$37,077	\$43,167	\$49,471	\$55,995
Well Security & Component Replacements	20	\$1,000	\$2,071	\$3,180	\$4,327	\$5,515	\$6,744	\$8,017	\$9,333	\$10,696	\$12,107
Water Meter Replacement Program	15	\$3,600	\$7,456	\$11,448	\$15,579	\$19,855	\$24,280	\$28,860	\$33,601	\$38,507	\$43,585
Total Estimated Project Costs Groundwater		\$33,066	\$54,999	\$82,204	\$110,362	\$139,504	\$152,381	\$165,708	\$179,502	\$193,778	\$208,554
Surface Water System											
Pipeline Extension Phase 1	80	\$0	\$0	\$24,697	\$24,697	\$24,697	\$24,697	\$24,697	\$24,697	\$24,697	\$24,697
Pipeline Extension Phase 2	80	\$0	\$0	\$0	\$25,561	\$52,017	\$52,017	\$52,017	\$52,017	\$52,017	\$52,017
Tank/Booster Pump Station	40	\$0	\$0	\$0	\$0	\$0	\$76,828	\$76,828	\$76,828	\$76,828	\$76,828
Pipeline Extension to Connect	80	\$0	\$0	\$0	\$0	\$0	\$0	\$14,997	\$14,997	\$14,997	\$14,997
Total Estimated Project Costs Surface Water		\$0	\$0	\$24,697	\$50,258	\$76,713	\$153,542	\$168,539	\$168,539	\$168,539	\$168,539
Total Estimated Annual Depreciation		\$33,066	\$54,999	\$106,901	\$160,619	\$216,218	\$305,923	\$334,247	\$348,040	\$362,317	\$377,093

Source: City of Escalon and HEC.

new dep

Table A-11
City of Escalon Water Study Update 2019
Meter Replacement Fee Calculation

Item	Assumption / Total	Meter Size							
		1"	1-1/2"	2"	3"	4"	6"	8"	10"
New Meter [1]		\$238	\$480	\$721	\$1,452	\$3,438	\$5,940	\$9,686	\$12,502
Installation Costs [2]	25%	\$59	\$120	\$180	\$363	\$859	\$1,485	\$2,421	\$3,125
Administration Costs	5%	\$12	\$24	\$36	\$73	\$172	\$297	\$484	\$625
Total Cost per Meter	\$270	\$309	\$624	\$937	\$1,888	\$4,469	\$7,722	\$12,591	\$16,252
Replacement Interval (years)		15	15	15	15	15	15	15	15
Cost per Meter per Year		\$21	\$42	\$62	\$126	\$298	\$515	\$839	\$1,083
Monthly Cost per Meter		\$1.72	\$3.47	\$5.21	\$10.49	\$24.83	\$42.90	\$69.95	\$90.29
Monthly Cost per Billing Meter [3]		\$1.81	\$3.65	\$5.48	\$11.04	\$26.13	\$45.16	\$73.63	\$95.04

Source: City of Escalon and HEC.

meter prog

[1] Approximate prices based on HEC experience and recent City meter purchases.

[2] Actual installation costs vary by meter size as a percentage of meter cost.

[3] Accounts for vacancies at 5.0%.

Table A-12
City of Escalon Water Study Update 2019
Estimated Meter Replacement Fee Program Revenue

Item	Fiscal Year Ending									
	2019-20 Year 1	2020-21 Year 2	2021-22 Year 3	2022-23 Year 4	2023-24 Year 5	2024-25 Year 6	2025-26 Year 7	2026-27 Year 8	2027-28 Year 9	2028-29 Year 10
Projected New 1" or less Meters		3	3	3	3	3	3	3	3	3
Projected City Water Meters	2,486	2,489	2,492	2,495	2,498	2,501	2,504	2,507	2,510	2,513
Current Revenue Inflated	\$50,998	\$52,528	\$54,104	\$55,727	\$57,399	\$59,121	\$60,895	\$62,722	\$64,603	\$66,541
New Growth Revenue		\$67	\$69	\$71	\$73	\$75	\$78	\$80	\$82	\$85
Estimated Meter Replacement Fee Revenue	\$50,998	\$52,595	\$54,173	\$55,798	\$57,472	\$59,196	\$60,972	\$62,802	\$64,686	\$66,626

Source: City of Escalon and HEC.

meter cost

Table A-13
City of Escalon Water Study Update 2019
Functional Allocation of Revenue Requirement

Expenditures	ACTUAL 2017-18	Allocation Basis	Customer	Capacity	Fire Capacity	Use	Unclassified
600-6700-0100 WATER SALARIES	\$185,431	Avg. of Classified	0%	0%	0%	0%	100%
600-6700-0102 WATER SALARIES-OVERTI	\$2,989	Avg. of Classified	0%	0%	0%	0%	100%
600-6700-0110 WATER RET.-PERS-EMPLR	\$65,667	Avg. of Classified	0%	0%	0%	0%	100%
600-6700-0111 WATER RET.-SOC.SEC.	\$14,630	Avg. of Classified	0%	0%	0%	0%	100%
600-6700-0112 WATER RET.DEF.COMP	\$3,050	Avg. of Classified	0%	0%	0%	0%	100%
600-6700-0120 WATER INS.- HEALTH	\$42,178	Avg. of Classified	0%	0%	0%	0%	100%
600-6700-0122 WATER FITNESS PROGRAM	\$35	Avg. of Classified	0%	0%	0%	0%	100%
600-6700-0125 WATER LIFE INSURANCE	\$308	Avg. of Classified	0%	0%	0%	0%	100%
(6006700-0130) WATER INS WORKER COMP	\$16,135	Avg. of Classified	0%	0%	0%	0%	100%
(6006700-0131) WATER INS.-UNEMPLOYMT	\$1,586	Avg. of Classified	0%	0%	0%	0%	100%
(6006700-0140) WATER MISC.P/R EXP.	\$2,147	Avg. of Classified	0%	0%	0%	0%	100%
(6006700-0155) WATER - PENSION EXPENSE	\$89,738	Avg. of Classified	0%	0%	0%	0%	100%
600-6700-0200 WATER OFFICE SUPPLIES	\$4	Customers	100%	0%	0%	0%	0%
600-6700-0201 WATER POSTAGE	\$570	Customers	100%	0%	0%	0%	0%
600-6700-0205 WATER SPEC.DEPT.EXP.	\$3,202	Customers	100%	0%	0%	0%	0%
600-6700-0210 WATER WEED CONTROL	\$346	Customers	100%	0%	0%	0%	0%
600-6700-0212 WATER EQUIP.REPLACEMT	\$28,180	Plant In Service	12%	60%	4%	24%	0%
600-6700-0215 WATER ST.PATCH MAT.	\$9,541	Plant In Service	12%	60%	4%	24%	0%
600-6700-0217 WATER TESTING	\$11,266	Customers	100%	0%	0%	0%	0%
600-6700-0220 WATER SMALL TOOLS	\$929	Plant In Service	12%	60%	4%	24%	0%
600-6700-0221 WATER TREATMENT	\$15,003	Plant In Service	12%	60%	4%	24%	0%
600-6700-0223 WATER SWTP-O & M	\$13,229	Plant In Service	12%	60%	4%	24%	0%
600-6700-0235 WATER COMM.-TELEPHONE	\$3,309	Customers	100%	0%	0%	0%	0%
600-6700-0240 WATER ELECTRICITY	\$113,239	Utilities	0%	0%	0%	100%	0%
600-6700-0245 WATER RENTS & LEASES	\$967	Customers	100%	0%	0%	0%	0%
600-6700-0255 WATER M.E.-SPEC.DEPT.	\$14,504	Ratio Avg. to Peak Month	69%	0%	0%	31%	0%
600-6700-0256 WATER M.E.PUMPS	\$2,798	Ratio Avg. to Peak Month	69%	0%	0%	31%	0%
600-6700-0257 WATER M.E.OFFICE	\$1,847	Customers	100%	0%	0%	0%	0%
600-6700-0260 WATER M.V.-REPAIR	\$1,017	Ratio Avg. to Peak Month	69%	0%	0%	31%	0%
600-6700-0261 WATER M.V.-FUEL	\$2,446	Ratio Avg. to Peak Month	69%	0%	0%	31%	0%
600-6700-0264 WATER PRO.SERV.SPEC	\$991	Ratio Avg. to Peak Month	69%	0%	0%	31%	0%
600-6700-0265 WATER PRO.SERV.ENGIN.	\$2,548	Ratio Avg. to Peak Month	69%	0%	0%	31%	0%
600-6700-0276 WATER C.S. SPEC.DEPT.	\$11,113	Ratio Avg. to Peak Month	69%	0%	0%	31%	0%
600-6700-0290 WATER MEMBERSHIP/DUES	\$1,664	Customers	100%	0%	0%	0%	0%
600-6700-0295 WATER TRAVEL/CONF/MTG	\$1,590	Customers	100%	0%	0%	0%	0%
600-6700-0319 WATER REGULATORY FEES	\$18,458	Avg. of Classified	0%	0%	0%	0%	100%
600-6700-0390 WATER GEN.GOV.CHARGE	\$91,944	Customers	100%	0%	0%	0%	0%
600-6700-0391 WATER COST CENTER CHG	\$98,087	Plant In Service	12%	60%	4%	24%	0%
TOTAL OPERATING EXPENDITURES	\$872,686		\$160,756	\$99,423	\$6,465	\$163,690	\$442,352
Reallocate As All Others			\$165,245	\$102,199	\$6,646	\$168,262	
ALLOCATION OF OPERATING EXPENDITURES	\$872,686		\$326,001	\$201,622	\$13,111	\$331,952	
Existing Debt Service	\$82,898	Plant In Service	12%	60%	4%	24%	
Depreciation Expense	\$154,490	Plant In Service	12%	60%	4%	24%	
SUBTOTAL DEBT SERVICE AND DEPRECIATION			\$28,305	\$143,068	\$9,303	\$56,712	
TOTAL EXPENSES ALLOCATED	\$1,110,074		\$354,307	\$344,690	\$22,414	\$388,664	
Percentage of Allocation			32%	31%	2%	35%	

Source: HEC and City of Escalon.

func alloc

Table A-14
City of Escalon Water Study Update 2019
Functional Allocation of Plant In Service

Plant in Service	Customer	Capacity	Fire Capacity	Use	Total Cost	Customer	Capacity	Fire Capacity	Use
Water Lines	25%	70%	5%		\$3,714,033	\$928,508	\$2,599,823	\$185,702	\$0
Roosevelt Pump Station		85%	5%	10%	\$347,295	\$0	\$295,201	\$17,365	\$34,730
Roosevelt Reservoir			5%	95%	\$208,590	\$0	\$0	\$10,430	\$198,161
Surface Water Treatment Plant		75%	5%	20%	\$1,833,520	\$0	\$1,375,140	\$91,676	\$366,704
Well 1 Test Well Drilling		10%		90%	\$327,366	\$0	\$32,737	\$0	\$294,629
Well 3		10%		90%	\$133,204	\$0	\$13,320	\$0	\$119,884
Well 6		10%		90%	\$88,338	\$0	\$8,834	\$0	\$79,504
Well 9		10%		90%	\$228,717	\$0	\$22,872	\$0	\$205,845
Well 10		10%		90%	\$542,379	\$0	\$54,238	\$0	\$488,141
Machinery/Equip/Other		80%		20%	\$363,638	\$0	\$290,910	\$0	\$72,728
Total Plant in Service					\$7,787,080	\$928,508	\$4,693,075	\$305,172	\$1,860,325
Percentage of Plant in Service					100%	12%	60%	4%	24%

Source: City of Escalon September 2019 and HEC.

plant

Table A-15
City of Escalon Water Study
Estimated Meter and Fire Equivalent Units

Meter Size	Number of Billing Meters	Meter Flow (gpm)	Ratio to 1" Service	Equivalent Meter Units	Number of Fire Services	Pipe Flow	Equivalent Fire Units
	[1]	[2]				[3]	
1" or less	2,291	50	1.0	2,291	0	1	0
1.5"	19	100	2.0	38	0	3	0
2"	34	160	3.2	109	0	6	0
3"	5	350	7.0	35	1	18	18
4"	1	600	12.0	12	5	38	192
6"	0	1,250	25.0	0	6	111	668
8"	0	2,400	48.0	0	5	237	1,186
10"	0	3,800	76.0	0	2	427	853
Total	2,350			2,485	19		2,917

Source: American Water Works Association, City of Escalon, and HEC.

m equiv

[1] Total number of meters reduced 5% to account for vacancies.

[2] Maximum flow rates, American Water Work Association, M6 Water Meters - Fifth Edition, pages 63-65.

[3] Hazen-Williams equation for flow through pressure conduits is pipe diameter raised to the 2.63 power.

Table A-16
City of Escalon Water Study Update 2019
Projection of Water Demand

Customer	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Residential	Figures in 1,000 gallons									
Single Family	333,270	335,013	335,467	335,921	336,375	336,828	337,282	337,736	338,190	338,643
Multi-Family	19,309	19,399	19,399	19,399	19,399	19,399	19,399	19,399	19,399	19,399
Subtotal Residential	352,578	354,412	354,866	355,320	355,773	356,227	356,681	357,135	357,588	358,042
Non-Residential										
Commercial	30,287	30,731	30,941	31,150	31,359	31,568	31,777	31,986	32,195	32,404
Hotel	1,652	1,659	1,659	1,659	1,659	1,659	1,659	1,659	1,659	1,659
Laundry	488	489	489	489	489	489	489	489	489	489
Industrial	3,558	3,569	3,569	3,569	3,569	3,569	3,569	3,569	3,569	3,569
Schools	18,179	18,264	18,264	18,264	18,264	18,264	18,264	18,264	18,264	18,264
Irrigation	23,699	23,978	23,978	23,978	23,978	23,978	23,978	23,978	23,978	23,978
Construction	8	8	8	8	8	8	8	8	8	8
Subtotal Non-Residential	77,863	78,689	78,898	79,107	79,316	79,525	79,734	79,943	80,152	80,361
Total Billable Water	430,449	433,109	433,771	434,434	435,097	435,760	436,423	437,085	437,748	438,411

Source: City of Escalon and HEC.

demand

Table A-17
City of Escalon Water Study Update 2019
Projected Changes in Water Demand due to Price Changes

Customer Category	2019-20 Year 1	2020-21 Year 2	2021-22 Year 3	2022-23 Year 4	2023-24 Year 5	2024-25 Year 6	2025-26 Year 7	2026-27 Year 8	2027-28 Year 9	2028-29 Year 10
<i>Projected Growth each year is 3 single family units and 1 commercial account</i>										
Residential	Figures in 1,000 gallons									
Single Family	335,101	335,556	336,010	336,465	336,919	337,374	337,828	338,283	338,737	339,192
Multi-Family	19,436	19,436	19,436	19,436	19,436	19,436	19,436	19,436	19,436	19,436
Subtotal Residential	354,538	354,992	355,447	355,901	356,356	356,810	357,265	357,719	358,174	358,628
Non-Residential										
Commercial	30,621	30,831	31,041	31,251	31,460	31,670	31,880	32,090	32,299	32,509
Hotel	1,661	1,661	1,661	1,661	1,661	1,661	1,661	1,661	1,661	1,661
Laundry	489	489	489	489	489	489	489	489	489	489
Industrial	3,573	3,573	3,573	3,573	3,573	3,573	3,573	3,573	3,573	3,573
Schools	18,299	18,299	18,299	18,299	18,299	18,299	18,299	18,299	18,299	18,299
Irrigation	24,094	24,094	24,094	24,094	24,094	24,094	24,094	24,094	24,094	24,094
Construction	8	8	8	8	8	8	8	8	8	8
Subtotal Non-Residential	78,746	78,746	78,746	78,746	78,746	78,746	78,746	78,746	78,746	78,746
Total Billable Water	433,284	512,695	513,359	514,023	514,687	515,352	516,016	516,680	517,344	518,009
Change in Demand due to Price [1]										
Residential										
Single Family	-1,832	-542	-543	-544	-545	-545	-546	-547	-548	-548
Multi-Family	-128	-38	-38	-38	-38	-38	-38	-38	-38	-38
Subtotal Residential	-1,959	-580	-581	-582	-582	-583	-584	-585	-585	-586
Non-Residential										
Commercial	-335	-100	-100	-101	-102	-102	-103	-104	-104	-105
Hotel	-9	-3	-3	-3	-3	-3	-3	-3	-3	-3
Laundry	-1	0	0	0	0	0	0	0	0	0
Industrial	-16	-5	-5	-5	-5	-5	-5	-5	-5	-5
Schools	-120	-36	-36	-36	-36	-36	-36	-36	-36	-36
Irrigation	-395	-117	-117	-117	-117	-117	-117	-117	-117	-117
Construction	0	0	0	0	0	0	0	0	0	0
Subtotal Non-Residential	-875	-260	-260	-261	-262	-262	-263	-264	-264	-265
Total Billable Water	-2,835	-840	-841	-843	-844	-845	-847	-848	-850	-851

Source: HEC.

elas demand

[1] Change applied to summer months consumption only.

Percent of Year 33%

Table A-18
City of Escalon Water Study Update 2019
Assumptions for the Effect of Increasing Prices on Water Demand (Price Elasticity)

Customer Type	Estimated Elasticity	2019-20 Year 1	2020-21 Year 2	2021-22 Year 3	2022-23 Year 4	2023-24 Year 5	2024-25 Year 6	2025-26 Year 7	2026-27 Year 8	2027-28 Year 9	2028-29 Year 10
% Change in Price to Meet Revenue Requirement		19.9%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%
Assumption for Inflation		3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Price Increase Adjusted for Inflation		16.4%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%	4.9%
Residential											
Single Family	-0.10	-1.6%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%
Multi-Family	-0.12	-2.0%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%
Non-Residential											
Commercial	-0.20	-3.3%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%
Hotel	-0.10	-1.6%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%	-0.5%
Laundry	-0.03	-0.5%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%	-0.1%
Industrial	-0.08	-1.3%	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%	-0.4%
Schools	-0.12	-2.0%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%	-0.6%
Irrigation	-0.30	-4.9%	-1.5%	-1.5%	-1.5%	-1.5%	-1.5%	-1.5%	-1.5%	-1.5%	-1.5%

Source: HEC.

elasticity

Table A-19
City of Escalon Water Study Update 2019
Cost of Service Allocation of Use Charges to Customer Groups

		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
	Allocation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Capacity Peaking Costs	Table A-20	\$119,527	\$129,687	\$140,710	\$152,670	\$165,647	\$179,727	\$195,004	\$211,579	\$229,564	\$249,077
Residential											
Single Family	66.0%	\$78,871	\$85,575	\$92,849	\$100,741	\$109,304	\$118,595	\$128,676	\$139,613	\$151,481	\$164,356
Multi-Family	1.7%	\$2,014	\$2,185	\$2,370	\$2,572	\$2,791	\$3,028	\$3,285	\$3,564	\$3,867	\$4,196
Subtotal Residential	67.7%	\$80,885	\$87,760	\$95,220	\$103,313	\$112,095	\$121,623	\$131,961	\$143,178	\$155,348	\$168,553
Non-Residential											
Commercial	4.6%	\$5,535	\$6,005	\$6,516	\$7,070	\$7,671	\$8,323	\$9,030	\$9,798	\$10,630	\$11,534
Industrial	1.2%	\$1,435	\$1,557	\$1,689	\$1,832	\$1,988	\$2,157	\$2,341	\$2,539	\$2,755	\$2,990
Schools	5.7%	\$6,824	\$7,404	\$8,033	\$8,716	\$9,457	\$10,261	\$11,133	\$12,079	\$13,106	\$14,220
Irrigation	20.8%	\$24,849	\$26,961	\$29,252	\$31,739	\$34,437	\$37,364	\$40,540	\$43,985	\$47,724	\$51,781
Subtotal Non-Residential		\$38,642	\$41,926	\$45,490	\$49,357	\$53,552	\$58,104	\$63,043	\$68,402	\$74,216	\$80,524
Commodity Costs	Table A-16	\$525,186	\$569,827	\$618,262	\$670,815	\$727,834	\$789,700	\$856,824	\$929,655	\$1,008,675	\$1,094,413
Residential											
Single Family	77.4%	\$406,626	\$441,189	\$478,690	\$519,379	\$563,526	\$611,425	\$663,397	\$719,785	\$780,967	\$847,349
Multi-Family	4.5%	\$23,559	\$25,562	\$27,734	\$30,092	\$32,649	\$35,425	\$38,436	\$41,703	\$45,248	\$49,094
Subtotal Residential	81.9%	\$430,185	\$466,750	\$506,424	\$549,470	\$596,175	\$646,850	\$701,832	\$761,488	\$826,215	\$896,443
Non-Residential											
Commercial	7.5%	\$39,564	\$42,927	\$46,576	\$50,535	\$54,831	\$59,491	\$64,548	\$70,035	\$75,988	\$82,447
Industrial	0.8%	\$4,341	\$4,710	\$5,110	\$5,545	\$6,016	\$6,527	\$7,082	\$7,684	\$8,337	\$9,046
Schools	4.2%	\$22,181	\$24,066	\$26,112	\$28,331	\$30,739	\$33,352	\$36,187	\$39,263	\$42,600	\$46,221
Irrigation	5.5%	\$28,916	\$31,374	\$34,040	\$36,934	\$40,073	\$43,479	\$47,175	\$51,185	\$55,536	\$60,256
Subtotal Non-Residential		\$95,002	\$103,077	\$111,838	\$121,345	\$131,659	\$142,850	\$154,992	\$168,166	\$182,461	\$197,970
Total Costs to be Recovered through Use Charges											
Residential											
Single Family	75.3%	\$485,497	\$526,764	\$571,539	\$620,120	\$672,830	\$730,021	\$792,073	\$859,399	\$932,448	\$1,011,706
Multi-Family	4.0%	\$25,573	\$27,746	\$30,105	\$32,664	\$35,440	\$38,452	\$41,721	\$45,267	\$49,115	\$53,290
Subtotal Residential	79.3%	\$511,070	\$554,511	\$601,644	\$652,784	\$708,270	\$768,473	\$833,794	\$904,666	\$981,563	\$1,064,995
Non-Residential											
Commercial	7.0%	\$45,099	\$48,933	\$53,092	\$57,605	\$62,501	\$67,814	\$73,578	\$79,832	\$86,618	\$93,980
Industrial	0.9%	\$5,775	\$6,266	\$6,799	\$7,377	\$8,004	\$8,684	\$9,423	\$10,223	\$11,092	\$12,035
Schools	4.5%	\$29,004	\$31,470	\$34,145	\$37,047	\$40,196	\$43,613	\$47,320	\$51,342	\$55,706	\$60,441
Irrigation	8.3%	\$53,764	\$58,334	\$63,293	\$68,672	\$74,510	\$80,843	\$87,715	\$95,170	\$103,260	\$112,037
Subtotal Non-Residential		\$133,643	\$145,003	\$157,328	\$170,701	\$185,211	\$200,954	\$218,035	\$236,568	\$256,676	\$278,494
Total Use Charges		\$644,713	\$699,514	\$758,972	\$823,485	\$893,481	\$969,427	\$1,051,829	\$1,141,234	\$1,238,239	\$1,343,489

Source: HEC water rate study 2019.

peak alloc

Table A-20
City of Escalon Water Study Update 2019
Calculation of Share of Maximum Day Water Use by Customer Category

Customer Type	Average Bi-Month Use (AM)	Non-Coincident Maximum Bi-Month Use (MM)	MM/AM Ratio	MD Peak Ratio	Max Daily Use	% of Avg. Month	% of Peak Month	% of Max. Day
	<i>a</i> gallons	<i>b</i> gallons	<i>c = b/a</i>	<i>d (below)</i>	<i>e = d*(b/62)</i> gallons	<i>f = a/total a</i>	<i>g = b/total b</i>	<i>h = e/total e</i>
Residential								
Single Family	53,153	98,016	1.84	2.68	4,238	77%	76%	66%
Multi-Family	2,947	3,983	1.35	1.68	108	4%	3%	2%
Non-Residential								
Commercial	5,434	8,302	1.53	2.22	297	8%	6%	5%
Industrial	606	1,289	2.13	3.71	77	1%	1%	1%
Schools	2,812	6,053	2.15	3.76	367	4%	5%	6%
Irrigation	4,124	11,704	2.84	7.07	1,335	6%	9%	21%
Total	69,075	129,347			6,423	100%	100%	100%

Calculation of MD Peak Factor	Single Family	Multi-Family	Commercial	Industrial	Schools	Irrigation
MM/AD Factor	1.84	1.35	1.53	2.13	2.15	2.84
System MD/MM Production Ratio [1]	1.25	1.25	1.25	1.25	1.25	1.25
Weekly Usage Adjustment	1.17	1.00	1.17	1.40	1.40	2.00
Calculated MD Peak Factor	2.68	1.68	2.22	3.71	3.76	7.07

Source: City of Escalon, AWWA M1 Manual, and HEC.

peaks

[1] Calculation:	2013	2014	2015	2016	2017	2018	
Maximum Day (MG)	3.44	2.72	2.29	2.16	2.60	2.35	
Maximum Month (MG)	78.95	74.62	49.53	56.35	65.85	63.46	
Average MGD in the Max. Month (max. day / 31)	2.55	2.41	1.60	1.82	2.12	2.05	Average
Ratio of Max. Day to Avg. in Max. Month	1.35	1.13	1.43	1.19	1.22	1.15	1.25

Table A-21
City of Escalon Water Study Update 2019
Projected Water Fund Balances

Projected Cash Balances	2019-20 Year 1	2020-21 Year 2	2021-22 Year 3	2022-23 Year 4	2023-24 Year 5	2024-25 Year 6	2025-26 Year 7	2026-27 Year 8	2027-28 Year 9	2028-29 Year 10
Operating										
Beginning Balance	\$124,013	\$542,002	\$898,120	\$797,761	\$498,824	\$210,032	\$208,878	\$569,408	\$316,758	\$157,180
Revenues	\$1,131,850	\$1,389,070	\$1,472,112	\$1,564,679	\$1,667,666	\$1,749,917	\$1,908,064	\$2,096,436	\$2,301,365	\$2,524,298
Expenses	(\$967,055)	(\$1,032,952)	(\$1,072,471)	(\$1,113,616)	(\$1,156,458)	(\$1,201,071)	(\$1,247,534)	(\$1,677,610)	(\$1,739,468)	(\$1,803,773)
Transfer In	\$253,194	\$0	\$0	\$0	\$0	\$0	\$0	\$78,525	\$78,525	\$78,525
Transfer Out to Depreciation	\$0	\$0	(\$500,000)	(\$750,000)	(\$800,000)	(\$550,000)	(\$300,000)	(\$750,000)	(\$800,000)	(\$600,000)
Ending Operating Balance	\$542,002	\$898,120	\$797,761	\$498,824	\$210,032	\$208,878	\$569,408	\$316,758	\$157,180	\$356,230
Depreciation										
Beginning Balance	\$963,864	\$1,097,661	\$542,152	\$313,443	\$356,409	\$471,831	\$574,576	\$608,823	\$647,639	\$725,683
Base Charge Revenue	\$124,500	\$84,360	\$136,260	\$189,960	\$245,560	\$171,460	\$199,760	(\$44,840)	(\$30,540)	(\$15,740)
CIP Projects	(\$544,000)	(\$689,869)	(\$914,969)	(\$946,993)	(\$980,138)	(\$668,715)	(\$692,120)	(\$716,344)	(\$741,416)	(\$767,366)
Transfer In from Operating	\$0	\$0	\$500,000	\$750,000	\$800,000	\$550,000	\$300,000	\$750,000	\$800,000	\$600,000
Transfer In from Surface	\$0	\$0	\$0	\$0	\$0	\$0	\$176,607	\$0	\$0	\$0
Transfer In from Debt Service	\$756,491	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Transfer In from Capital	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000
Transfer Out	(\$253,194)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ending Depreciation Balance	\$1,097,661	\$542,152	\$313,443	\$356,409	\$471,831	\$574,576	\$608,823	\$647,639	\$725,683	\$592,577
Debt Service										
Beginning Balance	\$839,390	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Base Charge Revenues	\$94,600	\$156,640	\$156,640	\$156,640	\$156,640	\$320,440	\$320,440	\$578,840	\$578,840	\$578,840
Transfer Out to Depreciation	(\$756,491)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Loan Payments	(\$177,499)	(\$156,640)	(\$156,640)	(\$156,640)	(\$156,640)	(\$320,440)	(\$320,440)	(\$578,840)	(\$578,840)	(\$578,840)
Ending Debt Service Balance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ending Operations Balance	\$1,639,664	\$1,440,272	\$1,111,204	\$855,234	\$681,864	\$783,454	\$1,178,231	\$964,398	\$882,863	\$948,807
Surface Water Connection										
Beginning Balance	\$523,495	\$628,194	\$732,893	\$640,019	\$540,230	\$433,284	\$1,271,667	(\$0)	(\$0)	(\$0)
Revenues	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$104,699	\$78,525	\$78,525	\$78,525
Loan Proceeds	\$0	\$0	\$1,778,162	\$1,840,397	\$1,904,811	\$2,765,824	\$0	\$0	\$0	\$0
Expenses	\$0	\$0	(\$1,975,735)	(\$2,044,886)	(\$2,116,457)	(\$3,073,138)	(\$1,199,759)	\$0	\$0	\$0
Transfer Out to Depreciation	\$0	\$0	\$0	\$0	\$0	\$0	(\$176,607)	\$0	\$0	\$0
Transfer In from Capital	\$0	\$0	\$0	\$0	\$0	\$1,040,998	\$0	\$0	\$0	\$0
Transfer Out to Operating	\$0	\$0	\$0	\$0	\$0	\$0	\$0	(\$78,525)	(\$78,525)	(\$78,525)
Ending Surface Water Balance	\$628,194	\$732,893	\$640,019	\$540,230	\$433,284	\$1,271,667	(\$0)	(\$0)	(\$0)	(\$0)
Capital										
Beginning Balance	\$1,036,477	\$1,059,432	\$1,059,084	\$1,058,736	\$1,058,388	\$1,058,040	\$16,694	\$16,346	\$15,998	\$15,650
Add Connection Fees [1]	\$72,955	\$49,652	\$49,652	\$49,652	\$49,652	\$49,652	\$49,652	\$49,652	\$49,652	\$49,652
Transfer Out to Surface Water	\$0	\$0	\$0	\$0	\$0	(\$1,040,998)	\$0	\$0	\$0	\$0
Transfer Out to Depreciation	(\$50,000)	(\$50,000)	(\$50,000)	(\$50,000)	(\$50,000)	(\$50,000)	(\$50,000)	(\$50,000)	(\$50,000)	(\$50,000)
Ending Capital Balance	\$1,059,432	\$1,059,084	\$1,058,736	\$1,058,388	\$1,058,040	\$16,694	\$16,346	\$15,998	\$15,650	\$15,302
Water Fund Balance	\$3,327,290	\$3,232,250	\$2,809,959	\$2,453,852	\$2,173,187	\$2,071,816	\$1,194,578	\$980,396	\$898,513	\$964,110

Source: HEC.

bal

[1] Assumes addition of 3 new dwelling units and 1 new commercial customer per year multiplied by the current connection fee of \$9,913 for a one-inch meter.
Also includes \$10,000 per year for use of money and property.