HANSFORD ECONOMIC CONSULTING

Water Rate and Fee Study

Final Report

November 9, 2016

HEC Project #160191

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Section 1: Introduction and Summary of Findings

1.1 Purpose of the Study

The City of Waterford (City) provides water services to the residents and businesses of the City and the community of Hickman. The purpose of this Water Rate Study (Study) is to determine the level of funding required over the next five years to adequately fund the water systems 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 through fiscal year ending 2022 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

Prior to 2015 the City provided water service only to the River Pointe subdivision. In July 2015, the City purchased the Waterford and Hickman water systems from the City of Modesto. At that time, the City adopted Modesto's rate structure for the Waterford and Hickman water systems until a rate study could be completed.

The Waterford, River Pointe, and Hickman water systems have structural deficiencies which need to be addressed in the short-term and long-term. In 2016, the City completed a water master plan. The water master plan details the water system deficiencies and provides a plan for rectifying water

source, quantity, and capacity issues. The comprehensive master plan identifies a schedule of capital improvements that are necessary for all three water systems over the next 25 years. This water rate study uses the master plan identified capital improvements projects (CIP) (and associated costs), and subsequent refinements to that CIP based on consultations with the City's engineer and City staff, to determine a schedule of capital improvement projects over the next ten years.

In determining an appropriate rate structure for Waterford and Hickman that would meet the requirements of Proposition 218, HEC considered the following key objectives:

- Rates must be capable of generating sufficient revenues to meet all annual financial obligations of the water enterprise fund,
- The rate structure should encourage water efficiency,
- Change 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 representative of local customer water use patterns as possible, and
- Revised rates must be supportive of City goals, keeping within affordability guidelines.

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

1.3 Organization of the Report

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, current infrastructure, and future infrastructure needs. The water facility fee calculation is included in this section. 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 Waterford and Hickman water bills. Total water rate burden to 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:

- **All three water systems are consolidated into one.** Currently, the Waterford, River Pointe, and Hickman systems are all physically separate water systems. This rate study uses the City engineer's estimate of costs to consolidate all three water systems within the next two to

three years. Given that all systems will be consolidated within the next five years, the rates are calculated so that the same rate schedule applies to both communities of Waterford and Hickman. The rate study assumes that the consolidation is paid for with a 30 year, 0% interest loan from the Department of Water Resources State Revolving Fund (DWSRF). Consolidation of all three water systems may qualify for grant funding under the DWSRF program; however, until an application is made for funding there is no guarantee any grant funding will be received. The rate study assumes no grant funding.

- **Water CIP Projects will be funded through rates, water facility fees, and new debt.** Rates and Drinking Water State Revolving Fund (DWSRF) loans (or other loan and grant programs) will be used to finance capital improvements. Consolidation of all three water systems, replacement of Waterford wells W242 and W244, and miscellaneous other Waterford well improvements are assumed to be funded by new debt. Beyond the ten-year timeframe, it is also assumed that the storage/pumping facility and surface water project will be debt-funded. Rates (cash) and water facility fees will be used for all other capital improvement costs. Water facility fees will only be used for projects that are related to new growth.

- **System rehabilitation costs are gradually introduced in rates, and are fully funded by fiscal year ending 2022.** The water rate model includes a calculated annual cost for replacement of facilities. Facilities include existing and new facilities built in the next five 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 water rate study gradually integrates system rehabilitation into the rates going forward.

- **The new rate structure is assumed to be in effect January 1, 2017. The following five rate increases are assumed to be in effect July 1 of each year (July 2017, 2018, 2019, 2020, and 2021).** The rate increases go into effect as soon as possible to increase cash flow, and coincide with the new fiscal year thereafter. The new rates would be reflected on the City's January (and thereafter July) utility bills.

- **The flat service charge will be the same for all single family residential meters.** Due to CA Residential Code Section R313 (fire sprinklers), almost all new residential development is required to install 1" meters in order to have sufficient flow for sprinklers; however, most existing homes built prior to implementation of CA Residential Code Section R313, have a ¾" meter. Because the 1" residential customers utilize the same average amount of water as the ¾" and 5/8" customers, it is appropriate for them to pay the same rates, and not be penalized by the new CA requirement.

- **New growth.** New development for Waterford is assumed to increase at a rate of 2% per year, starting fiscal year 2020. This percentage growth equates to between 40 and 50 new units each year. In addition, 25 new units in River Pointe are anticipated in the next two years. The growth rate was estimated based on the City of Waterford Capital Facility Fee Update, October 2015 and discussion with City staff. There is no growth anticipated for Hickman.

- **Meter Ratios conform to industry standards.** Meter ratios are used to allocate costs collected in the service charge to customers based on their water meter size. The water meter size dictates each customer's potential use of the water system's total capacity. Water meter ratios are based on water flow through a water meter's size compared to water flow through a ¾" water meter. The water meter ratios in the water rate study are American Water Works Association industry standard ratios based on the type of meters that the City uses.

1.5 Summary of Findings

The Study provides a basis for adoption of a new rate schedule from 2017 through 2022. New rates are assumed to be effective July 1 of each year, after an initial increase in January 1, 2017. By raising the rates in 2017 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 start to build a cash reserve.

Table 1 shows current and new water rates for the next five years.

Table 1
Projected Water Rate Schedule

New Rates Effective	Current	*1/1/2017*	*7/1/2017*	*7/1/2018*	*7/1/2019*	*7/1/2020*	*7/1/2021*
	[1]						
Monthly Service Charge				All Water Systems [2]			
3/4"	$15.03	$26.94	$31.47	$33.29	$33.54	$33.63	$34.14
1"	$21.33	$42.83	$50.07	$52.98	$53.36	$53.50	$54.30
1.5"	$36.90	$105.33	$123.35	$130.56	$131.46	$131.73	$133.66
2"	$55.68	$167.55	$196.36	$207.86	$209.25	$209.65	$212.71
3"	$105.80	$366.34	$429.36	$454.51	$457.55	$458.41	$465.09
4"	$162.13	$631.96	$740.13	$783.39	$788.74	$790.37	$801.99
6"	$318.47	$1,303.99	$1,528.91	$1,618.58	$1,629.26	$1,632.16	$1,655.86
Use Charge per HCF	$1.40	$1.54	$1.79	$1.88	$1.89	$1.89	$1.92

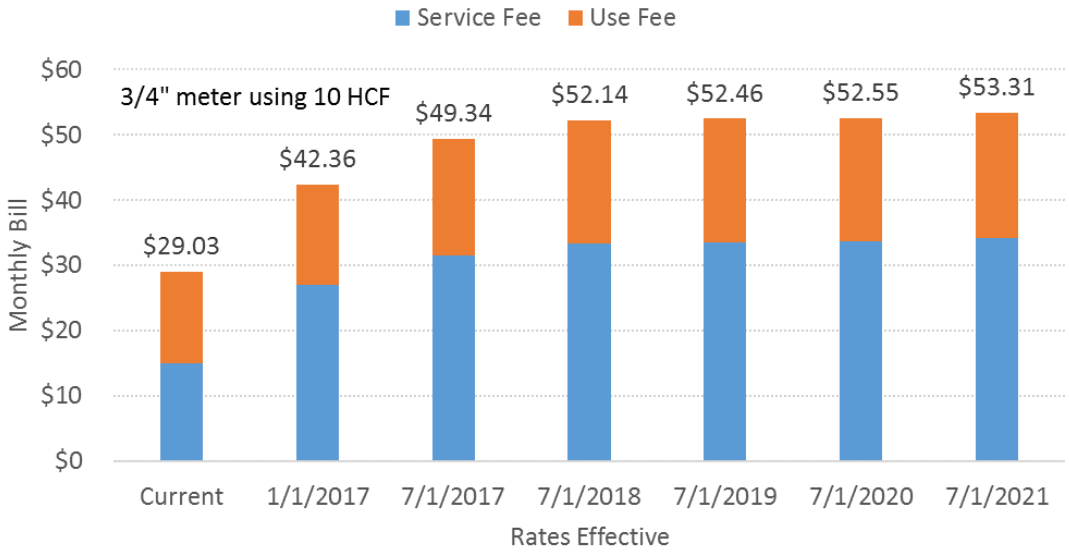
Source: HEC.

[1] Current rates are for Waterford and Hickman. River Pointe current charges are $13.40 per residential unit per month and $1.43 per hundred cubic feet.

[2] Waterford, River Pointe, and Hickman water rates.

An illustration of typical bills for single family residential customers using 10 hundred cubic feet (HCF) of water with ¾" meters in Waterford is provided in **Figure 1.**

Figure 1
Calculated Typical Single Family Residential Bills through FY 2026



The revised water facility fee schedule is shown in **Table 2**. Water facility fees would be reduced for meters 1" and smaller under the revised schedule but greater for larger meter sizes because the rate study uses industry standard meter ratios. The facility fee would automatically increase 3% every January 1.

Table 2
Calculated Water Facility Fee

New Water User	Existing	New (1/1/2017) [1]
Fees for Existing (Pre-2007) City Limits		
Any meter size	$0	$0
Meter Size		
3/4" Meter	$7,052	$6,260
1" Meter	$11,777	$10,020
1.5" Meter	$23,483	$25,040
2" Meter	$37,587	$40,060
3" Meter	$75,174	$87,640
4" Meter	$117,416	$150,240
6" Meter	n.a.	$313,000

Source: City of Waterford and HEC. new fee

[1] Connection fees will increase an automatic 3% each January 1.

Section 2: THE WATER SYSTEMS

This section describes the water systems' customer base and capital improvement needs as well as the calculation of water facility fees. Support tables are provided in **Appendix A.**

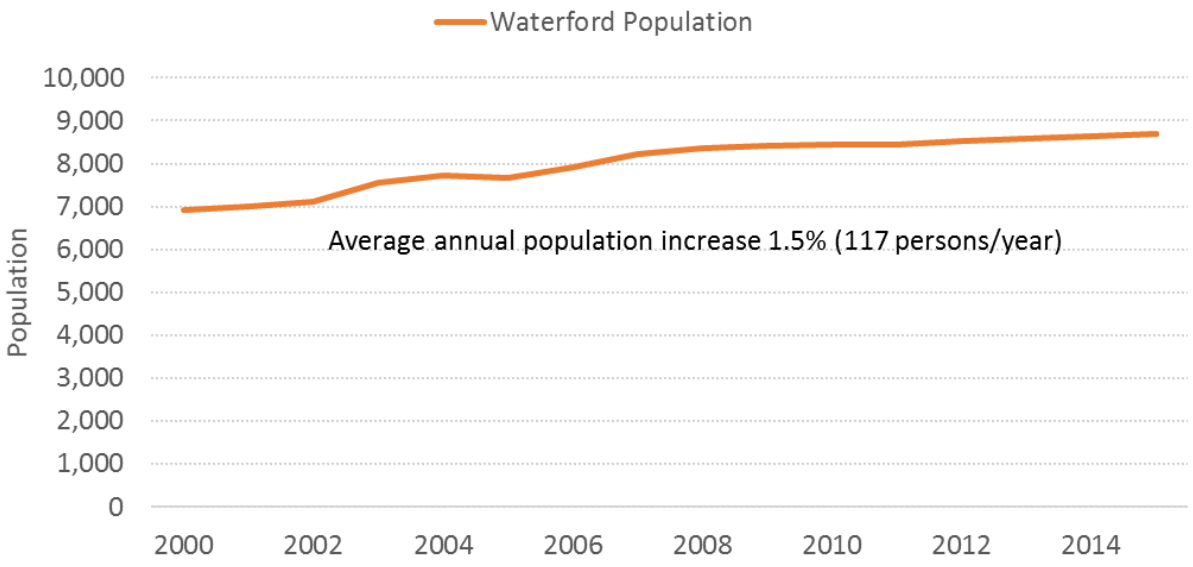
2.1 CUSTOMER BASE

The City services the River Pointe subdivision, the remainder of the City of Waterford, and the community of Hickman.

Waterford (which includes River Pointe) has a population of approximately 8,700, and it has sustained an annual average population increase of 1.5% since 2000. The number of occupied housing units has grown at a slightly slower rate of 1.4%. According to the US Census Bureau there are 3.53 persons per occupied housing unit.

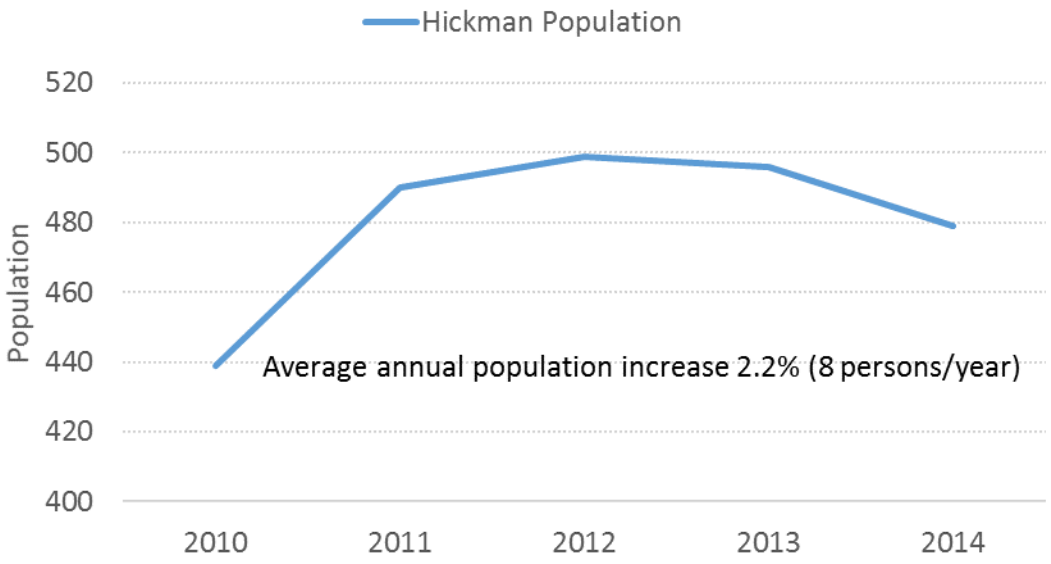
As of 2014, the community of Hickman had a population of approximately 480. According to the US Census Bureau, there are 2.82 persons per occupied housing unit in Hickman. Historical population for the City and community of Hickman are shown in **Figures 2** and **3**.

Figure 2
Waterford Historical Population



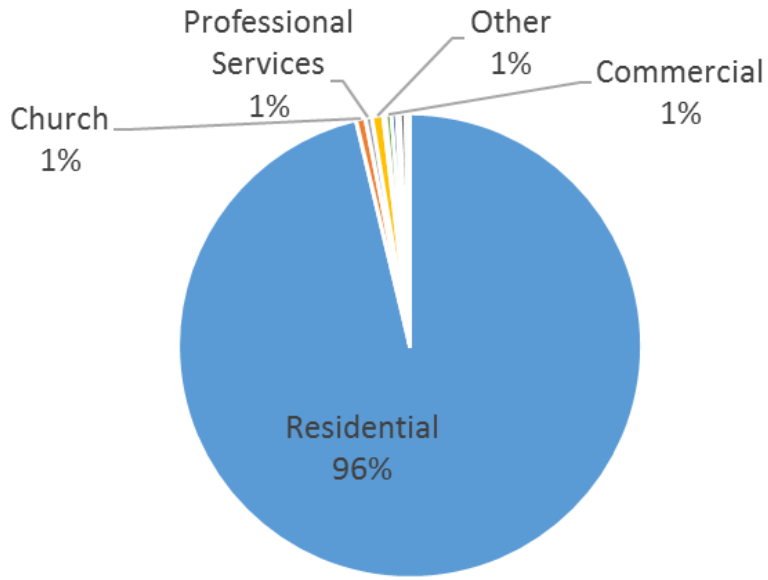
Waterford and Hickman historical population and housing estimates are shown in **Table A-1**.

Figure 3
Hickman Historical Population



The City serves water to about 2,300 households, more than 80 non-residential establishments, the Waterford and Hickman School Districts, and several irrigation-only customers. A pie chart illustrating the customer base is provided in **Figure 4**. As the pie chart shows, the City's water customers are primarily (96%) residential.

Figure 4
Water Customers



2.1.1. Customer Characteristics

Like most cities in the western U.S., Waterford experiences greater water demand in the summer than the winter due to outside applications of water. **Table 3** shows median residential annual use, winter use, and summer use by water system. Across all water systems, detached single family residential customers use more than two times as much water during the summer than the winter.

Table 3
Residential Usage Characteristics

Customer Type	Number of Accounts	Number of Units	Median Monthly Use	Winter Median	Summer Median	Summer to Winter Ratio
			figures in hcf based on 2015 metered use			
All Service Areas			*use per unit*	[1]	[2]	
Detached Units	2,286	2,286	10.0	7.0	16.5	2.4
Attached Units	57	164	8.0	6.8	10.1	1.5
Total	**2,343**	**2,450**	**10.0**	**7.0**	**16.0**	**2.3**
River Pointe						
Detached Units	313	313	11.2	6.6	18.5	2.8
Attached Units	0	0				
Total	**313**	**313**				
Waterford						
Detached Units	1,795	1,795	10.0	7.0	16.0	2.3
Attached Units	57	164	8.0	6.8	10.1	1.5
Total	**1,852**	**1,959**				
Hickman						
Detached Units	178	178	11.0	7.0	21.0	3.0
Attached Units	0	0				
Total	**178**	**178**				

Source: City of Waterford and HEC. char

[1] December, January, and February consumption.

[2] August and September 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. 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.

Table A-2 shows comprehensive audited financial report data for the water fund from 2011 through 2015. The data is for the River Pointe water system only because the City did not acquire the

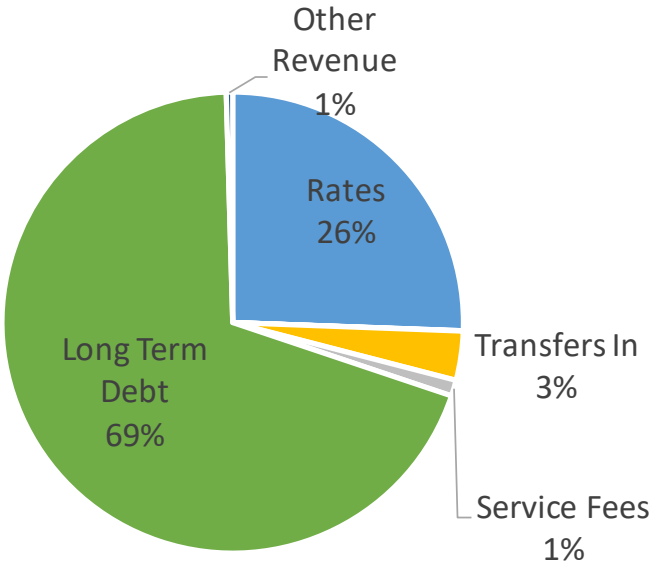
Waterford and Hickman water systems until July 2015. Utility system costs typically increase at a greater rate than inflation. River Pointe suffered net operating losses every year as operating income did not keep pace with operating expenses. The water system was supported by transfers of money from other City funds. The inter-fund loans to the River Pointe water system need to be repaid.

Detailed historical revenues and expenses for the first fiscal year with all three water systems, fiscal year ending 2016, are shown in **Table A-3.** Supporting data for **Table A-3** is provided in **Tables A-4** and **A-5**. Long-term debt for acquisition of the Waterford and Hickman systems of $3.1 million is shown in the capital fund. The fiscal year 2016 figures in the analysis were estimates for the year-end. Since that time the fiscal year 2016 actual figures have been calculated. Per the actual figures, both the River Pointe and Hickman water systems ended fiscal year 2016 with a negative balance. In addition, the Waterford system net revenue was 25% less than anticipated. The actual fiscal year 2016 figures are incorporated in the cash flow (see page 35).

2.2.1. Revenues

Water system operations are funded through rates, service fees, interest earnings, proceeds from long term debt, other miscellaneous revenues, and (historically) transfers in from other funds. **Figure 5** below shows the anticipated fiscal year (FY) 2016 share of revenues by source for the combined operating and capital funds. The largest source of revenue in fiscal year 2016 was proceeds from long term debt. This will decrease in future years and rates will constitute the majority of revenues.

Figure 5
FY 2016 Water Fund Revenue



Currently, rate revenue is generated by application of the water rate schedule shown in **Table 4.** Under the current rate schedule all customers pay a service charge (or base charge) and a use charge by meter size. Waterford and Hickman water system customers pay the City of Modesto rates that were in place when the City acquired the systems. River Pointe customers pay rates set by City Council in Resolution 2005-08.

Customers who were receiving a 25% senior/disabled low income utility discount with the City of Modesto kept their discount.

Table 4
Current Water Rate Schedule

Customer	Base Charge	Use Charge (per hcf)
Waterford-Hickman		
5/8" - 3/4"	$15.03	$1.40
1"	$21.33	$1.40
1 1/2"	$36.90	$1.40
2"	$55.68	$1.40
3"	$105.80	$1.40
4"	$162.13	$1.40
6"	$318.47	$1.40
8"	$506.20	$1.40
10"	$725.56	$1.40
12"	$1,350.92	$1.40
Senior/Disabled Low Income receive a 25% discount		
River Pointe Subdivision	$13.40	$1.43

Source: City of Waterford. rates

Rate Discounts

One of the tenets of Proposition 218 is that customers pay for their proportional use of the water system and that there is no cross-subsidization between customer groups. Low-income and senior discounts and subsidies are prohibited unless the subsidy is:

a) Funded by a discretionary revenue source (General Fund),
b) Funded by voluntary donations of other customers, or
c) Paid for with a special tax approved by two-thirds of the customers

The low-income and senior discounts are discontinued in the rate study.

Water Facility Fees

The City of Waterford collects water facility fees from new development occurring outside the post 2007 City limits. The current schedule of fees is shown in **Table 5.**

Table 5
Current Water Facility Fees

Meter Size	Ratio	Fee
Fees for Existing (Pre-2007) City Limits		
3/4" Meter	1	$0.00
1" Meter	1.67	$0.00
1.5" Meter	3.33	$0.00
2" Meter	5.33	$0.00
3" Meter	10.66	$0.00
4" Meter	16.65	$0.00
Fees for New Annexation Areas		
3/4" Meter	1	$7,052.00
1" Meter	1.67	$11,776.84
1.5" Meter	3.33	$23,483.16
2" Meter	5.33	$37,587.16
3" Meter	10.66	$75,174.32
4" Meter	16.65	$117,415.80

Source: City of Waterford. curr cfee

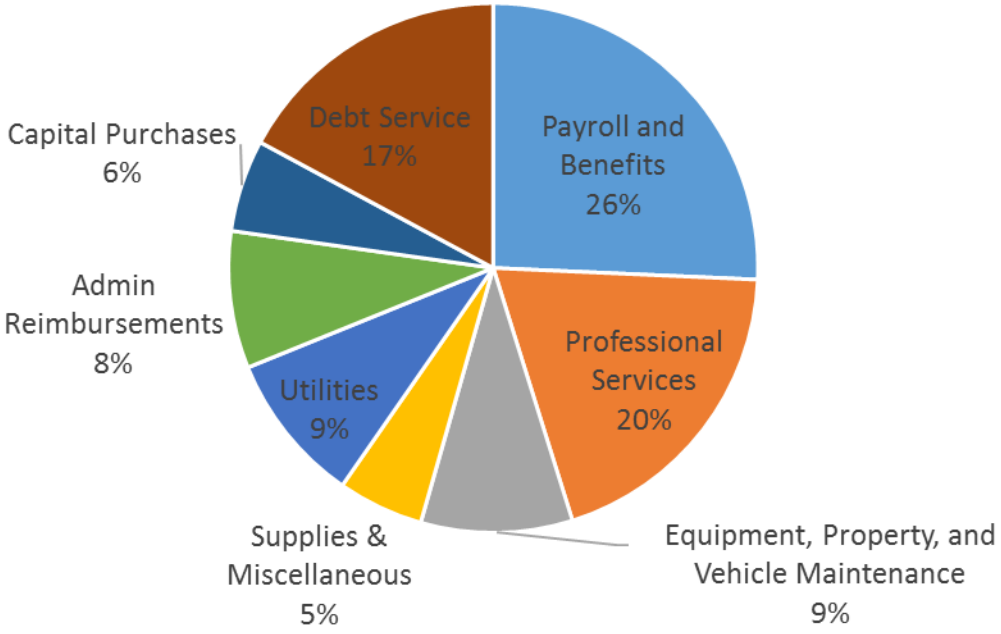
2.2.2. Expenses

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

- Payroll and Benefits
- Professional Services
- Equipment, Property, and Vehicle Maintenance
- Supplies & Miscellaneous
- Utilities
- Administrative Reimbursements
- Capital Purchases
- Debt Service

Payroll and benefits, professional services, and debt service are the largest expenditure items. These three expense categories comprise approximately 63% of annual costs. Percentage share of FY 2016 anticipated expenses by expense category is shown in **Figure 6.**

Figure 6
FY 2016 Water Fund Expenses



2.2.3. Water Use

The City's water supply is 100% groundwater. Water use fluctuates year to year depending on several factors including, but not limited to, growth, the weather, sustained drought, plumbing retrofits, and pricing of water. Historical average water use by customer category is used as the basis on which to project water use over the next five years in the rate study.

System-wide annual water production is shown in **Figure 7.** The effects of mandatory water conservation can be seen in 2014 and 2015 when summer usage dramatically decreased. Supporting data can be found in **Tables A-6** and **A-7**. 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.

Figure 8 depicts annual water production by service area. Waterford is the largest water system. Decreased water consumption in 2014 and 2015 is also evident in the figure.

Figure 7
Annual Water Production – Seasonal Trend

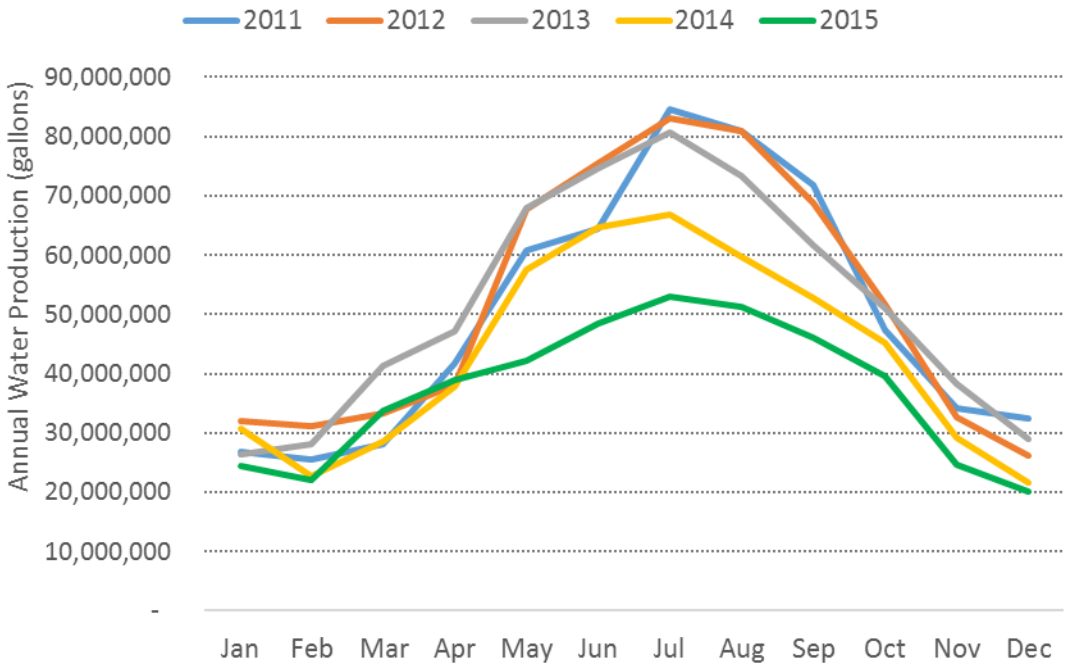
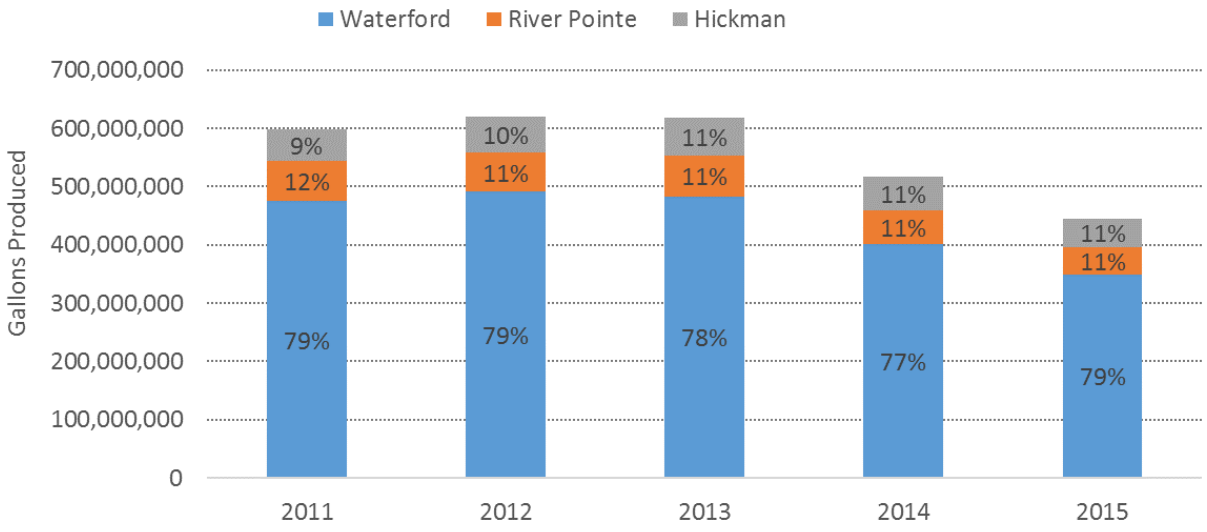


Figure 8
Water Production by Service Area (Gallons)



2.3 CAPITAL IMPROVEMENT PROJECTS

As described in detail in the 2016 water master plan, the water systems face resource, quantity, and water quality issues over the next 25 years. Based on the findings of the water master plan and subsequent changes in direction for water service, primarily consolidating all three water systems rather than just Waterford and River Pointe, an updated capital improvement project (CIP) list was created for this study.

Table 6 summarizes the total estimated costs in future dollars (cost estimates were provided in 2016 dollars; the rate study inflates the cost estimates by 3% each year per the 10-year historical average increase in the Engineering News Record (ENR) Construction Cost Index (CCI)).

Over the next ten years, total capital improvement costs are estimated at $14.1 million. Of this total, $9.5 million of improvements costs benefit existing customers and $4.6 million benefit future customers. Total costs through fiscal year ending 2022 are estimated at $9.2 million. Of this total, $6.8 million of improvements costs benefit existing customers and $2.4 million benefit future customers.

Table 6
Capital Improvements Costs by Customer Share

	Total Estimated Costs		
Customer	**Through FY 2022**	**Remaining Years**	**Total 10 Yrs**
	All Costs in Future $'s		
Existing Customer Share	$6,849,781	$2,621,490	$9,471,270
Future Customer Share	$2,382,792	$2,248,928	$4,631,721
Total Costs	**$9,232,573**	**$4,870,418**	**$14,102,991**

Source: HEC. cip share

A detailed listing of capital improvement projects in 2016 and future dollars is provided in Appendix **Table A-8**. Projects with the greatest cost include consolidation of all three water systems, estimated at $3.5 million in future dollars, downtown pipe replacement at $3.4 million, replacement of Waterford wells W242 and W244 at $1.6 million in future dollars, supply strategy/surface water project at $1.5 million, and new equipment/supplies at $1.2 million in future dollars. Although the downtown pipe replacement project is a large total cost project over the next ten years, only $1.0 million of the total $3.4 million is anticipated to be spent by fiscal year 2022 and included in rates for the next five years.

Table 7 shows the funding sources assumed in the rate study. Of the total $14.1 million it is estimated that $5.5 million will be debt-financed, and $8.6 million will be cash-funded.

Table 7
Existing Customers Costs in Rates

Project	Total Cost	Fiscal Year Ending 2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 Year 8	2025 Year 9	2026 Year 10
	Future $'s										
Cash - Capital Fund	$6,191,770	$345,050	$532,572	$330,004	$440,074	$434,728	$567,175	$799,418	$855,070	$913,341	$974,339
Cash - Operations Fund	$2,388,079	$36,050	$127,308	$131,127	$247,612	$255,040	$262,692	$368,962	$310,359	$319,669	$329,260
Debt - Capital Fund	$5,523,142	$386,250	$1,060,900	$2,458,636	$1,617,356	$0	$0	$0	$0	$0	$0
Total CIP	**$14,102,991**	**$767,350**	**$1,720,780**	**$2,919,767**	**$2,305,042**	**$689,768**	**$829,866**	**$1,168,380**	**$1,165,428**	**$1,233,011**	**$1,303,599**

Source: City of Waterford and HEC. exis rates

2.4 FACILITY FEE CALCULATION

The water facility fee is calculated using the City Engineer's current estimates of costs allocated to future users and an estimate of other additional costs (such as for recurring master plans and rate studies) over the next 30 years. The 30-year timeframe is consistent with the timeframe for all other City capital facility fees. Estimated costs (in 2016 dollars) included in the calculation are shown in **Table 8.** The total estimated future users' costs are $14.2 million.

In addition to the total estimated costs there are financing costs associated with debt-financing of the surface water supply project, well replacements and improvements, water systems consolidation, and the storage/pumping facility. Total financing costs are estimated at $2.8 million, bringing the total costs included in the fee calculation to $17.0 million. The total estimated costs are divided by the number of additional equivalent dwelling units (EDUs) estimated to be annexed to the City in the next 30 years. Total annexed EDUs is estimated at 2,713. The calculated fee per EDU of $6,260 is shown in **Table 9**.

Table 8
Future Users Share of Capital Projects over the Next 30 Years

Projects	Total Estimated Cost	Soft Costs & Contingency (15%)	Total Estimated Costs	Future Users Cost Share	Estimated Future Users Cost
Estimated Project Costs		[1]		[2]	
Well Replacement #1 *	$1,250,000	$188,000	$1,438,000	0%	$0
Well Replacement #2 *	$1,250,000	$188,000	$1,438,000	100%	$1,438,000
Groundwater Exploration [3]	$522,000	$78,000	$600,000	50%	$300,000
Water Conservation	$930,000	$140,000	$1,070,000	100%	$1,070,000
Water Systems Consolidation [4]*	$2,826,000	$424,000	$3,250,000	25%	$812,500
Storage/Pumping Facility *	$4,700,000	$705,000	$5,405,000	70%	$3,783,500
Downtown Pipe Replacement	$2,370,000	$356,000	$2,725,000	20%	$545,000
Surface Water Project *	$1,200,000	$180,000	$1,380,000	70%	$966,000
Transmission Mains	$2,700,000	$405,000	$3,105,000	85%	$2,639,250
Various Well Improvements *	$500,000	$75,000	$575,000	0%	$0
SCADA Improvements	$348,000	$52,000	$400,000	0%	$0
New Equipment / Supplies [5]	$2,609,000	$391,000	$3,000,000	50%	$1,500,000
Water Supply Strategy [6]	$1,043,000	$156,000	$1,200,000	70%	$840,000
Master Plan and Rate Study [7]	$522,000	$78,000	$600,000	50%	$300,000
Total Costs	**$22,770,000**	**$3,416,000**	**$26,186,000**	**54%**	**$14,194,250**

Source: City of Waterford, Shoreline Environmental Engineering, and HEC. impact cip

*Assumed debt-financed project.

[1] Includes 10% soft costs and 5% contingency. For the water supply strategy, master plans and rate study 5% contingency only.

[2] Provided by Shoreline Environmental Engineering May 2016.

[3] Groundwater exploration costs are $300,000 over the next 10 years. This amount is multiplied by three for the 30-year planning perioc

[4] Costs to consolidate Waterford, River Pointe, and Hickman.

[5] The City estimates spending $1,000,000 over the next 10 years. This amount is multiplied by three for the 30-year planning period.

[6] As included in the rate study, $1,200,000 is collected in the first ten years for a long-term water supply strategy.

[7] The City estimates spending $200,000 over the next 10 years. This amount is multiplied by three for the 30-year planning period.

One EDU is equivalent to a ¾" meter connection. The facility fee is paid according to the meter size of the new connection. The facility fee by meter size is also shown in **Table 9**.

Table 9
Calculated Water Facility Fee

Item		Estimated Cost
Total Estimated Future Users Cost	Table 8	$14,194,250
Estimated Financing Cost for Debt-Financed Facilities [1]		$2,800,000
Total Estimated Future Users Cost		**$16,994,250**
Estimated Addditional EDUs [2]		2,713
Calculated Fee per EDU (3/4" meter) - rounded		**$6,260**
Calculated Fee by Meter Size		
3/4" Meter		$6,260
1" Meter		$10,020
1.5" Meter		$25,040
2" Meter		$40,060
3" Meter		$87,640
4" Meter		$150,240
6" Meter		$313,000

Source: City of Waterford and HEC. edu fee

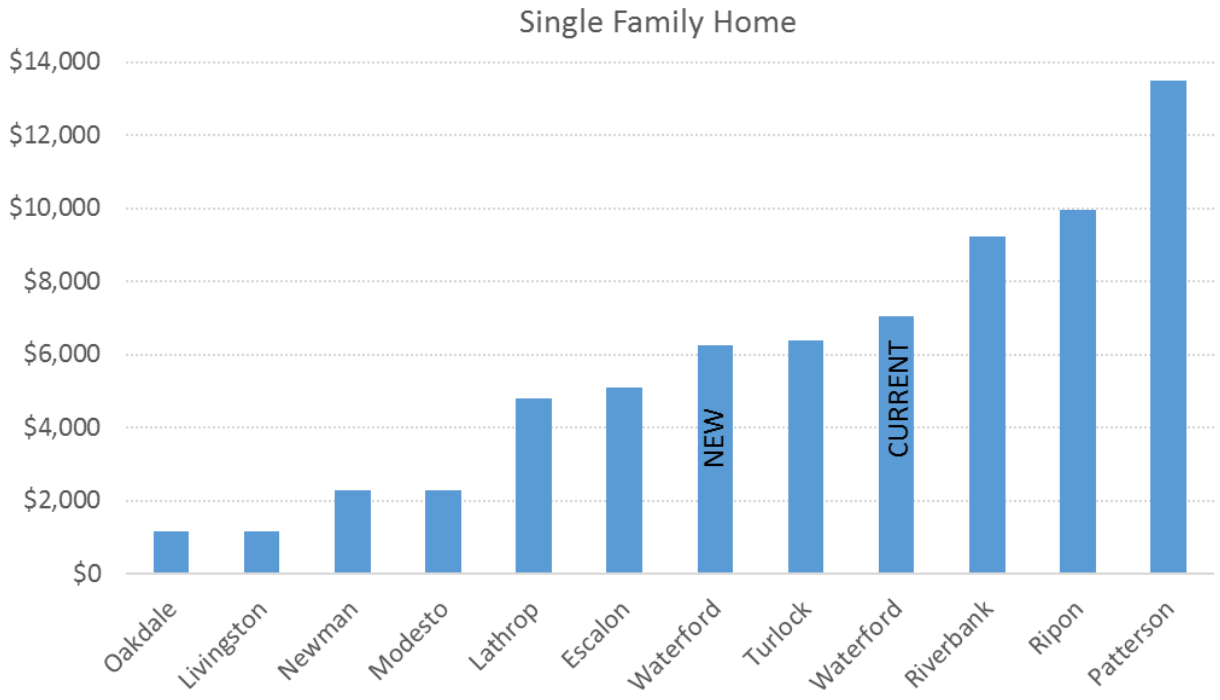
[1] Based on financing costs adding 40% to total project costs.

[2] Per the Capital Facilities Fee Update - Final Report Oct 2, 2015, an additional 3,617 units are projected; HEC has assumed that 25% will be in City limits and not subject to an impact fee.

2.5 Comparison of Water Facility Fees

The water facility fee would decrease from $7,052 to $6,260 for a ¾" meter. **Figure 9** compares the facility fee with that of other cities in the region. The new water facility fee would be in the mid-range of comparable cities fees, very similar to Turlock.

Figure 9
Comparison of Regional Water Facility Fees



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:

- Capital Improvements
- Debt Service
- Meter Replacement Program
- Operations Expenses and Reserves
- System Rehabilitation

Non-water sales revenue projections are credited against projected operations costs. Non-water sales include interest earnings, service fees, water facility fees, meter replacement fees, and other miscellaneous revenues.

3.1.1. 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. Projected facility fee revenue is shown in **Table 10**.

3.1.2. Debt Service

The City has existing debt service for a water loan through Umpqua Bank that will be paid off by the end of fiscal year 2030, as well as inter-fund loans from other City accounts for operating losses of the River Pointe system that are assumed to be paid back over the next five years. Yearly debt service payments are shown in **Tables A-9** and **A-10.**

New debt service is assumed to be incurred, financed by the State Drinking Water Revolving Fund (DWSRF), to finance the water systems consolidation ($3.9 million), and Waterford well replacements and improvements ($2.2 million). Due to the size of the projects a 10% contingency factor was added to the estimated City costs. The estimated annual new debt service for water systems consolidation is provided in **Table 11.** The estimated annual new debt service for Waterford well replacement and improvements is provided in **Table 12**. Debt service in the revenue requirement is 10% higher than shown in **Tables 11** and **12** because, per the DWSRF program, one year of debt service must be accrued over the first 10 years of the loan.

Table 10
Projected Facility Fee Revenues

New Growth	Assumption	Fiscal Year Ending 2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Projected Growth (3/4" meters)		**12**	**13**	**0**	**42**	**43**	**44**	**45**	**46**	**47**	**48**
Estimated Growth in City [1]	25%	12	13	0	11	11	11	11	11	12	12
Estimated Annexations	75%	0	0	0	31	32	33	34	35	35	36
Projected Facility Fee Revenues											
Inside City Fee per Unit		$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Annexations Fee per Unit [2]		$6,260	$6,450	$6,650	$6,850	$7,060	$7,280	$7,500	$7,730	$7,970	$8,210
Projected Facility Fee Revenues		**$0**	**$0**	**$0**	**$214,131**	**$226,663**	**$240,002**	**$253,850**	**$268,568**	**$276,228**	**$292,207**

Source: City of Waterford and HEC.

proj fees

[1] The remaining 25 lots in River Pointe are estimated to be built in fiscal years 2017 and 2018. Growth in Waterford customers is split between inside city and annexation areas.

[2] Uses the calculated new impact fee inflated each year 3.0%.

Table 11
SRF Loan for Consolidation of All Systems

Item	Construction Complete in 2019
Project Serving a Disadvantaged Community	
Consolidation of Water Systems	$3,519,536
Contingency (10%)	$351,954
Total Estimated Cost	**$3,871,489**
less Principal Forgiveness	$0
Total Estimated Cost Financed	**$3,871,489**
Estimated Annual Debt Service [1]	**$129,050**
Estimated Total Financing Costs	$0

Source: State Water Resources Control Board and HEC. cons debt

[1] DWSRF loan assumptions:

Interest Rate (2016 rate is 1.6%)	0.0%
Term (years)	30

Table 12
New Debt - State Drinking Water Revolving Fund

Item	Construction Fiscal Year
Waterford Well Improvements	**2018**
Estimated Cost (inflated dollars)	$386,250
Contingency (10%)	$38,625
Total	**$424,875**
Estimated Annual Debt Service [1]	**$18,971**
Estimated Total Financing Costs	$144,244
Waterford Well Replacement #1	**2020**
Estimated Cost (inflated dollars)	$1,617,356
Contingency (10%)	$161,736
Total	**$1,779,092**
Estimated Annual Debt Service [1]	**$79,436**
Estimated Total Financing Costs	$603,998
Total Debt-Financed Infrastructure Cost	**$2,203,967**
Estimated Total Financing Costs	$748,242

Source: State Water Resources Control Board and HEC. new debt

[1] DWSRF loan assumptions:

Interest Rate (2016 rate is 1.6%)	2.0%
Term (years)	30

3.1.3. Meter Replacement Program

City crews replace older water meters that are near the end of their useful life, or which are inaccurately measuring water flow. This rate study includes calculation of annual costs to replace meters. The cost to replace meters by size of meter was used to determine the annual cost of a meter replacement program. Meter replacement program costs will increase as the number of City water meters increases and as the cost of installation increases. It is estimated that the meter replacement program will increase from approximately $47,000 in fiscal year 2017 to $59,000 in fiscal year 2022, and $73,000 in fiscal year 2026 as shown in **Table 13**. Meter replacement fees and assumptions are calculated in **Tables A-11** and **A-12**.

Table 13
Meter Replacement Fee Program Cost

Item	Assumption	Fiscal Year Ending 2016 Current	2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 Year 8	2025 Year 9	2026 Year 10
Projected Growth in Water Meters [1]			*0.00%*	*0.00%*	*0.00%*	*2.00%*	*2.00%*	*2.00%*	*2.00%*	*2.00%*	*2.00%*	*2.00%*
Waterford		2,113	2,113	2,113	2,113	2,155	2,198	2,242	2,287	2,333	2,380	2,427
River Pointe		134	146	159	159	159	159	159	159	159	159	159
Hickman		179	179	179	179	179	179	179	179	179	179	179
Projected Water Meters		**2,426**	**2,438**	**2,451**	**2,451**	**2,493**	**2,536**	**2,580**	**2,625**	**2,671**	**2,718**	**2,765**
Estimated Replacement Cost per Meter [2]	3.5%	$372	$385	$399	$413	$427	$442	$458	$474	$490	$508	$525
Percentage of Meters Replaced	20-yr cycle	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Program Cost												
Waterford		$39,348	$40,725	$42,150	$43,626	$46,056	$48,621	$51,329	$54,188	$57,206	$60,393	$63,757
River Pointe		$2,495	$2,814	$3,172	$3,283	$3,398	$3,517	$3,640	$3,767	$3,899	$4,035	$4,177
Hickman		$3,333	$3,450	$3,571	$3,696	$3,825	$3,959	$4,097	$4,241	$4,389	$4,543	$4,702
Total Meter Replacement Program Cost		**$45,176**	**$46,989**	**$48,893**	**$50,604**	**$53,278**	**$56,096**	**$59,066**	**$62,196**	**$65,495**	**$68,971**	**$72,635**

Source: City of Waterford and HEC.

meter cost

[1] Applied only to Waterford.

[2] Weighted average cost of meters.

3.1.4. Operations Expenses and Reserves

Estimated year-end expenses for fiscal year 2016 are used to project future year expenditures. All operating expenses (including payroll and benefits, professional services, utilities, equipment, property, and vehicle maintenance, as well as planning studies and collection for future surface water supply) are increased 3.5% each year based on HEC experience of cost increases in the region.

The City has a goal of having a minimum of three months operating expenses in reserve, and a target of at least four months in reserve. The revenue requirement includes additional money to build up reserves.

3.1.5. 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 credit[1]. Depreciation is calculated based on existing water facilities and new facilities built in the next 10-year period.

Table 14 shows the total annual amount included in the rates for system rehabilitation. The estimated cost includes replacement of existing assets and assets that are estimated to be constructed during the Study time period (see **Tables A-13** and **A-14**). A fully-funded system would fund 100% of system rehabilitation in its rates; however, this is rarely the case. This rate model gradually increases system rehabilitation costs in rates from 0% to 100% of costs over a 5-year period to minimize rate impacts to customers, reaching 100% of system rehabilitation costs in rates by fiscal year 2022.

[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 14
System Rehabilitation Annual Budget Estimate

Depreciation	Fiscal Year Ending									
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Existing Assets Annual Depreciation	$273,067	$273,067	$273,067	$273,067	$273,067	$273,067	$273,067	$273,067	$273,067	$273,067
New Assets Annual Depreciation	$21,973	$56,559	$101,971	$143,310	$155,023	$168,581	$185,235	$202,785	$221,269	$240,728
Total Annual Depreciation	**$295,040**	**$329,625**	**$375,037**	**$416,376**	**$428,090**	**$441,647**	**$458,302**	**$475,852**	**$494,336**	**$513,795**
Percentage of Depreciation in Rates	0%	20%	40%	60%	80%	100%	100%	100%	100%	100%
Estimated System Rehabilitation Cost	**$0**	**$65,900**	**$150,000**	**$249,800**	**$342,500**	**$441,600**	**$458,300**	**$475,900**	**$494,300**	**$513,800**

Source: HEC.

depr

3.1.6. Calculated Revenue Requirement

Table 15 provides the projection of annual costs and revenues and the resulting revenue requirement through fiscal year 2026. 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 $1.6 million in fiscal year 2017 to $2.7 million in fiscal year 2026. The financial model assumes that existing customers will pay for all of the debt service for facilities serving new customers. As water facility fees are collected they should be applied to the debt service. Water facility fees should be used to either retire the debt or pay back existing customers, potentially lessening future rate increases. Components of revenue requirement are illustrated in **Figure 10**.

Figure 10
Components of Revenue Requirement

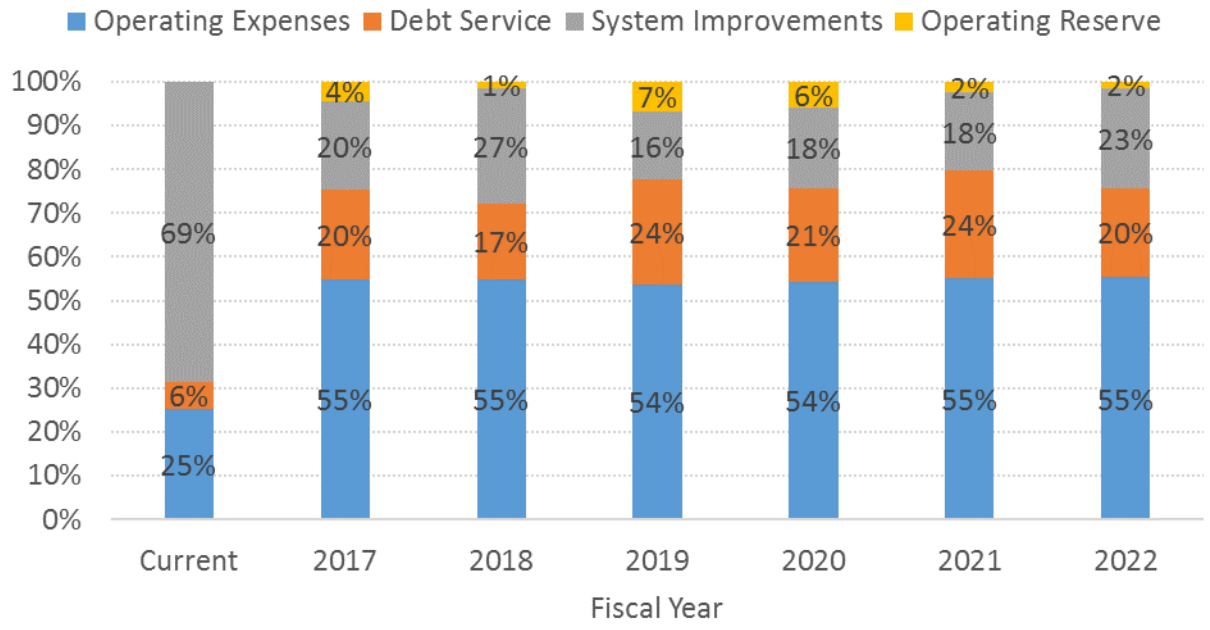


Table 15
Projected Revenue Requirement for All Water Systems

Operating Expenses and Revenues	Annual Increase	2016 Estimated	Fiscal Year Ending 2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 Year 8	2025 Year 9	2026 Year 10
Operating Expenses												
Payroll and Benefits	*3.5%*	$356,802	$369,290	$382,215	$395,593	$409,439	$423,769	$438,601	$453,952	$469,840	$486,285	$503,304
Professional Services	*3.5%*	$55,166	$57,097	$59,095	$61,164	$63,304	$65,520	$67,813	$70,187	$72,643	$75,186	$77,817
Equipment, Property, and Vehicle Maintenance	*3.5%*	$128,496	$132,993	$137,648	$142,466	$147,452	$152,613	$157,954	$163,483	$169,205	$175,127	$181,256
Supplies & Miscellaneous	*3.5%*	$72,800	$75,348	$77,985	$80,715	$83,540	$86,464	$89,490	$92,622	$95,864	$99,219	$102,692
Utilities	*3.5%*	$127,800	$132,273	$136,903	$141,694	$146,653	$151,786	$157,099	$162,597	$168,288	$174,178	$180,275
Admin Reimbursements	*3.5%*	$116,311	$120,382	$124,595	$128,956	$133,470	$138,141	$142,976	$147,980	$153,159	$158,520	$164,068
Transfer Out to General Fund - Police	*3.5%*	$128,345	$7,763	$8,034	$8,315	$8,606	$8,908	$9,219	$9,542	$9,876	$10,222	$10,579
Supply Strategy / Surface Water	*3.5%*	$0	$0	$53,045	$54,636	$112,551	$115,927	$119,405	$245,975	$253,354	$260,955	$268,783
Water Conservation	*3.5%*	$0	$15,450	$53,045	$54,636	$112,551	$115,927	$119,405	$98,390	$31,669	$32,619	$33,598
Planning Studies [1]	*3.5%*	$0	$20,600	$21,218	$21,855	$22,510	$23,185	$23,881	$24,597	$25,335	$26,095	$26,878
Meter Replacement Program	*3.5%*	$0	$0	$48,893	$50,604	$53,278	$56,096	$59,066	$62,196	$65,495	$68,971	$72,635
Total Operating Expenses		**$985,720**	**$931,196**	**$1,102,677**	**$1,140,634**	**$1,293,354**	**$1,338,337**	**$1,384,910**	**$1,531,521**	**$1,514,728**	**$1,567,376**	**$1,621,886**
Debt Service												
Umpqua Bank Loan	Table A-9	$244,673	$261,282	$261,302	$261,360	$261,344	$261,458	$261,486	$261,530	$261,682	$261,730	$261,776
Interfund Loans	Table A-10	$0	$83,046	$83,046	$83,046	$83,046	$83,046	$0	$0	$0	$0	$0
Waterford Well #1 Replacement [2]	Table 12	$0	$0	$0	$0	$0	$87,380	$87,380	$87,380	$87,380	$87,380	$87,380
Waterford Well Improvements [2]	Table 12	$0	$0	$0	$20,868	$20,868	$20,868	$20,868	$20,868	$20,868	$20,868	$20,868
Consolidation of Water Systems [2]	Table 12	$0	$0	$0	$141,955	$141,955	$141,955	$141,955	$141,955	$141,955	$141,955	$141,955
Subtotal Debt Service		**$244,673**	**$344,328**	**$344,348**	**$507,228**	**$507,212**	**$594,706**	**$511,688**	**$511,732**	**$511,884**	**$511,932**	**$511,978**
Capital Projects [3]	Table A-8	$2,678,137	$345,050	$466,672	$180,004	$190,274	$92,228	$125,575	$341,118	$379,170	$419,041	$460,539
System Rehabilitation	Table 14	$0	$0	$65,900	$150,000	$249,800	$342,500	$441,600	$458,300	$475,900	$494,300	$513,800
Operating Reserve		$0	$75,000	$30,000	$145,000	$140,000	$60,000	$40,000	$0	$45,000	$5,000	$5,000
Non-Operating Credits (Expenses)												
Allocated Interest Earnings	*Constant*	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250
Other Water Revenue	*Constant*	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119
Service Fees	*Constant*	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000
Connection Fees		$0	$0	$0	$0	$214,131	$226,663	$240,002	$253,850	$268,568	$276,228	$292,207
Meter Replacement Program	*3.5%*	$0	$23,494	$48,893	$50,604	$53,278	$56,096	$59,066	$62,196	$65,495	$68,971	$72,635
Total Non-operating Credits (Expenses)			**$94,863**	**$120,262**	**$121,973**	**$338,778**	**$354,128**	**$370,437**	**$387,415**	**$405,431**	**$416,568**	**$436,211**
Total Revenue Requirement		**n.a.**	**$1,600,710**	**$1,889,334**	**$2,000,892**	**$2,041,862**	**$2,073,642**	**$2,133,336**	**$2,455,256**	**$2,521,251**	**$2,581,082**	**$2,676,993**

Source: City of Waterford and HEC.

rev req

[1] Collections for updates to the Water Master Plan and water rate studies.

[2] For SRF loans, debt service is multiplied by 10% to build up reserve over the first 10 years of the loan.

[3] Shows cash funding above the amount collected for system rehabilitation.

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 calculated in Appendix A, **Tables A-15** and **A-16**. 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.

City water system costs were classified into two categories; fixed (service) and variable (use) costs.

- **Fixed Costs.** 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. Seventy-four percent of annual costs were determined to be fixed costs after performing a functional allocation of the 2015-16 water fund expenses.

  Fixed costs are allocated to customers based on the number of equivalent meters, determined by the relative hydraulic capacity of the meter size relative to a ¾-inch meter. **Table A-17** shows the calculation of equivalent meters. Note that the number of equivalent meters is calculated using current number of meters on the water system (**Table A-18**).

- **Variable Costs.** These costs vary with the quantity of water consumed. Operations and maintenance consumption costs primarily include well pumping electricity and chemical costs, but also a portion of administrative costs, debt service and other costs as determined in the functional allocation. Consumption-related costs are recovered through use charges.

Table 16 shows allocation of the revenue requirement between service and use charges in the rate model. Although the functional allocation determined that up to 74% of costs could be included in the service charge, the rate model collects 57% in the service charge. The reason for this difference is that the City is juggling multiple objectives with its rate structure, as discussed in the following paragraph. Since the rate structure is not currently the same in each water system, and typical monthly use is not the same (it is 10 HCF in Waterford but 11 HCF in River Pointe and Hickman), arriving at a percentage allocation for the service charge versus use charge was additionally complex.

The City wants to encourage conservation but lessons learned from the recent drought is that pricing is not such an effective tool to encourage conservation as was once believed – rebate programs and education are far more effective. It is typical for water systems to have a 65%-80% fixed cost structure but the California Urban Water Conservation Council encourages rate structures with 30% of revenue requirement collected in service charges. While ideally the rate model would capture the fixed costs in the service charge, and the City does not want the water fund to be very susceptible to reduced revenues due to water conservation/drought conditions, it is necessary to be cognizant of the impact of a large shift (increasing service charge) on low income/fixed income

households, and it is an objective of having water meters that people pay for what they use to improve equity in payment for the water system.

Table 16
Allocation of Revenue Requirement to Service and Use Charges

Costs		Fiscal Year Ending										
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	
Customer Charges	41%	$658,038	$776,689	$822,550	$839,392	$852,457	$876,996	$1,009,335	$1,036,465	$1,061,061	$1,100,489	
Capacity - in Service Charge	16%	$248,120	$292,858	$310,150	$316,501	$321,427	$330,680	$380,579	$390,809	$400,083	$414,950	
Capacity - in Use Charge	17%	$272,121	$321,187	$340,152	$347,116	$352,519	$362,667	$417,394	$428,613	$438,784	$455,089	
Use Charges	26%	$422,432	$498,600	$528,041	$538,853	$547,240	$562,993	$647,949	$665,365	$681,154	$706,465	
Total Revenue Requirement		**$1,600,710**	**$1,889,334**	**$2,000,892**	**$2,041,862**	**$2,073,642**	**$2,133,336**	**$2,455,256**	**$2,521,251**	**$2,581,082**	**$2,676,993**	

Source: HEC. cost alloc

3.3 RATE CALCULATIONS

The calculation of monthly service charges is shown in **Table 17**. Monthly service charges are applied to customers based on the size of their meter. Customers that were required to install a meter size that is larger than necessary for actual flow needs may request a review of their meter size for billing purposes. The Public Works Director, in consultation with the City's water engineer, will review the customer's request. If a finding is made, based on historical water use and other factors pertinent to the request, that a smaller meter would provide sufficient flow to the customer's property, the City may, at its discretion, apply a smaller meter size to the customer's account for billing purposes.

The calculation of use charges is shown in **Table 18**. The calculation of use charges is based on allocated cost and projected water demand. Projected water demand is shown in **Figure 11** and in **Table A-19** in Appendix A. The projection of water demand incorporates the assumed growth previously discussed. 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 knowledge to establish assumed price elasticity factors for the Study. Price elasticity analysis is shown in **Tables A-20** and **A-21**.

Table 17
Calculation of Monthly Service Charges

		Fiscal Year Ending									
		2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
		Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
New Rates Effective		*1/1/2017*	*7/1/2017*	*7/1/2018*	*7/1/2019*	*7/1/2020*	*7/1/2021*	*7/1/2022*	*7/1/2023*	*7/1/2024*	*7/1/2025*
Consolidated System											
Allocated Costs		$906,158	$1,069,547	$1,132,700	$1,155,892	$1,173,883	$1,207,676	$1,389,914	$1,427,274	$1,461,144	$1,515,438
Estimated Billable Meter Equivalents		2,951	2,964	2,964	3,006	3,050	3,094	3,138	3,184	3,231	3,278
Meter Size	**Meter Ratio**	**Monthly Service Charge per Meter**									
3/4"	1.0	$25.59	$30.07	$31.84	$32.04	$32.08	$32.53	$36.91	$37.35	$37.69	$38.52
1"	1.6	$40.94	$48.11	$50.95	$51.26	$51.32	$52.05	$59.05	$59.77	$60.30	$61.63
1.5"	4.0	$102.35	$120.27	$127.38	$128.16	$128.31	$130.13	$147.63	$149.42	$150.75	$154.08
2"	6.4	$163.76	$192.44	$203.80	$205.05	$205.30	$208.21	$236.20	$239.07	$241.20	$246.54
3"	14.0	$358.22	$420.96	$445.81	$448.55	$449.09	$455.45	$516.69	$522.95	$527.63	$539.30
4"	24.0	$614.09	$721.64	$764.25	$768.94	$769.87	$780.77	$885.75	$896.49	$904.51	$924.51
6"	50.0	$1,279.36	$1,503.42	$1,592.19	$1,601.96	$1,603.89	$1,626.61	$1,845.32	$1,867.70	$1,884.40	$1,926.06

Source: City of Waterford and HEC.

cons service charge

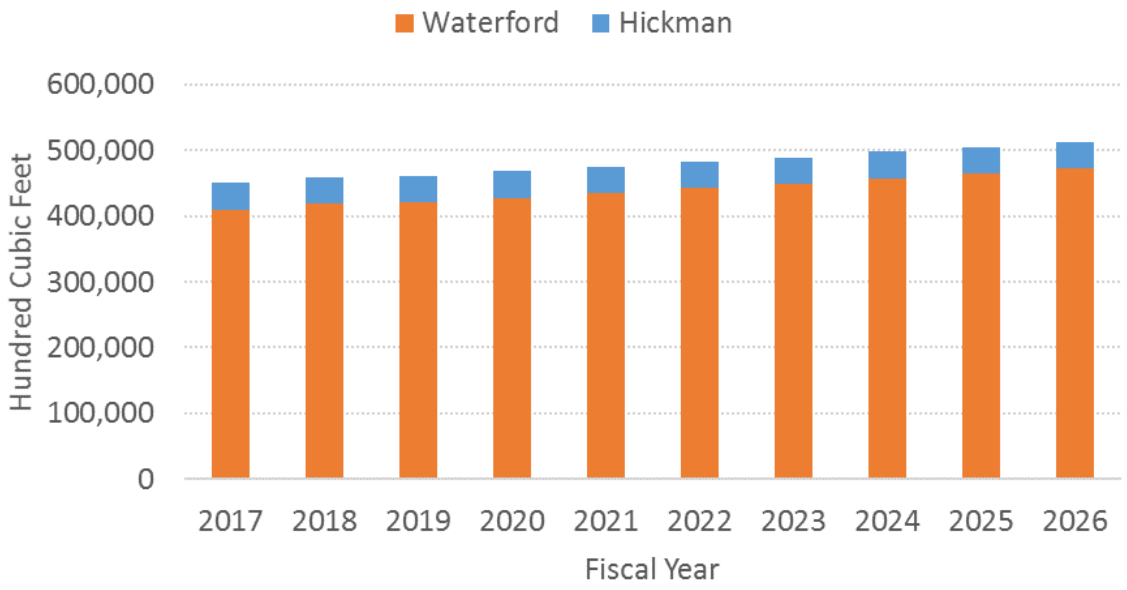
Table 18
Calculation of Consumption Charges per HCF

Water System	Fiscal Year Ending 2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 Year 8	2025 Year 9	2026 Year 10
New Rates Effective	*1/1/2017*	*7/1/2017*	*7/1/2018*	*7/1/2019*	*7/1/2020*	*7/1/2021*	*7/1/2022*	*7/1/2023*	*7/1/2024*	*7/1/2025*
Consolidated System										
Allocated Cost	$694,552	$819,787	$868,192	$885,969	$899,759	$925,660	$1,065,342	$1,093,977	$1,119,938	$1,161,554
Estimated Consumption (HCF)	450,475	458,843	460,707	468,358	475,634	482,764	488,256	497,920	505,763	513,479
Cost per HCF	**$1.54**	**$1.79**	**$1.88**	**$1.89**	**$1.89**	**$1.92**	**$2.18**	**$2.20**	**$2.21**	**$2.26**

Source: HEC.

cons use charge

Figure 11
Projected Water Demand



Calculated rates include the fixed monthly service charges, including meter replacement fees as shown in **Table 13**, as well as consumption charges. The calculated water rate schedule is provided in **Table 19. Table 20** shows the projected 5-year water rate schedule.

Table 19
Calculated Water Rate Schedule

		Fiscal Year Ending									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Charges	**Current**	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
New Rates Effective		*1/1/2017*	*7/1/2017*	*7/1/2018*	*7/1/2019*	*7/1/2020*	*7/1/2021*	*7/1/2022*	*7/1/2023*	*7/1/2024*	*7/1/2025*
Meter Replacement Charge						**Monthly Charges per Meter**					
3/4"	n.a.	$1.35	$1.40	$1.45	$1.50	$1.55	$1.61	$1.66	$1.72	$1.78	$1.84
1"	n.a.	$1.89	$1.96	$2.03	$2.10	$2.17	$2.25	$2.33	$2.41	$2.49	$2.58
1.5"	n.a.	$2.98	$3.08	$3.19	$3.30	$3.42	$3.54	$3.66	$3.79	$3.92	$4.06
2"	n.a.	$3.79	$3.92	$4.06	$4.20	$4.35	$4.50	$4.66	$4.82	$4.99	$5.16
3"	n.a.	$8.12	$8.40	$8.70	$9.00	$9.32	$9.64	$9.98	$10.33	$10.69	$11.07
4"	n.a.	$17.86	$18.49	$19.13	$19.80	$20.50	$21.21	$21.96	$22.73	$23.52	$24.34
6"	n.a.	$24.63	$25.49	$26.38	$27.30	$28.26	$29.25	$30.27	$31.33	$32.43	$33.56
Service Charge	**[1]**					**Monthly Charges per Meter**					
3/4"	$15.03	$25.59	$30.07	$31.84	$32.04	$32.08	$32.53	$36.91	$37.35	$37.69	$38.52
1"	$21.33	$40.94	$48.11	$50.95	$51.26	$51.32	$52.05	$59.05	$59.77	$60.30	$61.63
1.5"	$36.90	$102.35	$120.27	$127.38	$128.16	$128.31	$130.13	$147.63	$149.42	$150.75	$154.08
2"	$55.68	$163.76	$192.44	$203.80	$205.05	$205.30	$208.21	$236.20	$239.07	$241.20	$246.54
3"	$105.80	$358.22	$420.96	$445.81	$448.55	$449.09	$455.45	$516.69	$522.95	$527.63	$539.30
4"	$162.13	$614.09	$721.64	$764.25	$768.94	$769.87	$780.77	$885.75	$896.49	$904.51	$924.51
6"	$318.47	$1,279.36	$1,503.42	$1,592.19	$1,601.96	$1,603.89	$1,626.61	$1,845.32	$1,867.70	$1,884.40	$1,926.06
Use Charge per HCF	$1.40	$1.54	$1.79	$1.88	$1.89	$1.89	$1.92	$2.18	$2.20	$2.21	$2.26

Source: HEC. cons proj rates

[1] Current rates shown are for Waterford and Hickman. River Pointe charges are $13.40 per residential unit per month and $1.43 per hundred cubic feet.

Table 20
5-year Schedule of Water Rates

Rate Area	Fiscal Year Ending						
	2016	2017	2018	2019	2020	2021	2022
	Current	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
New Rates Effective		*1/1/2017*	*7/1/2017*	*7/1/2018*	*7/1/2019*	*7/1/2020*	*7/1/2021*
WATERFORD-RIVER POINTE	**[1]**						
Service Charge							
3/4"	$15.03	$26.94	$31.47	$33.29	$33.54	$33.63	$34.14
1"	$21.33	$42.83	$50.07	$52.98	$53.36	$53.50	$54.30
1.5"	$36.90	$105.33	$123.35	$130.56	$131.46	$131.73	$133.66
2"	$55.68	$167.55	$196.36	$207.86	$209.25	$209.65	$212.71
3"	$105.80	$366.34	$429.36	$454.51	$457.55	$458.41	$465.09
4"	$162.13	$631.96	$740.13	$783.39	$788.74	$790.37	$801.99
6"	$318.47	$1,303.99	$1,528.91	$1,618.58	$1,629.26	$1,632.16	$1,655.86
Use Charge per HCF	$1.40	$1.54	$1.79	$1.88	$1.89	$1.89	$1.92
HICKMAN							
Service Charge							
3/4"	$15.03	$26.94	$31.47	$33.29	$33.54	$33.63	$34.14
1"	$21.33	$42.83	$50.07	$52.98	$53.36	$53.50	$54.30
1.5"	$36.90	$105.33	$123.35	$130.56	$131.46	$131.73	$133.66
2"	$55.68	$167.55	$196.36	$207.86	$209.25	$209.65	$212.71
3"	$105.80	$366.34	$429.36	$454.51	$457.55	$458.41	$465.09
4"	$162.13	$631.96	$740.13	$783.39	$788.74	$790.37	$801.99
6"	$318.47	$1,303.99	$1,528.91	$1,618.58	$1,629.26	$1,632.16	$1,655.86
Use Charge per HCF	$1.40	$1.54	$1.79	$1.88	$1.89	$1.89	$1.92

Source: HEC. 5 summ

[1] River Pointe charges are $13.40 per residential unit per month and $1.43 per hundred cubic feet.

3.4 CASH FLOW AND FUND BALANCE

Table 21 on the following page shows the projected cash flow of the water enterprise fund through fiscal year 2026. 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 four months of operating expenses in cash reserves in the next five years. Fiscal year 2016 includes a reconciliation between anticipated and actual financials. The water fund had $87,787 less cash than anticipated.

Projected cash flows for the Waterford-River Pointe and Hickman systems are shown separately in **Tables A-22**. The City may continue to track revenues and expenses of each system separately even after they have consolidated.

Figure 12 shows projected and target water fund balances, with operations and capital funds combined through fiscal year ending 2022 (the five-year rate adoption period). The total cash balance is greater than the minimum target because approximately $450,000 will be set aside in a designated (or restricted) fund for surface water supply costs. By the end of fiscal year 2022 it is estimated there will be 4 months of operating expenses in undesignated (or unrestricted) cash.

Figure 12
Projected Water Fund Cash Balance

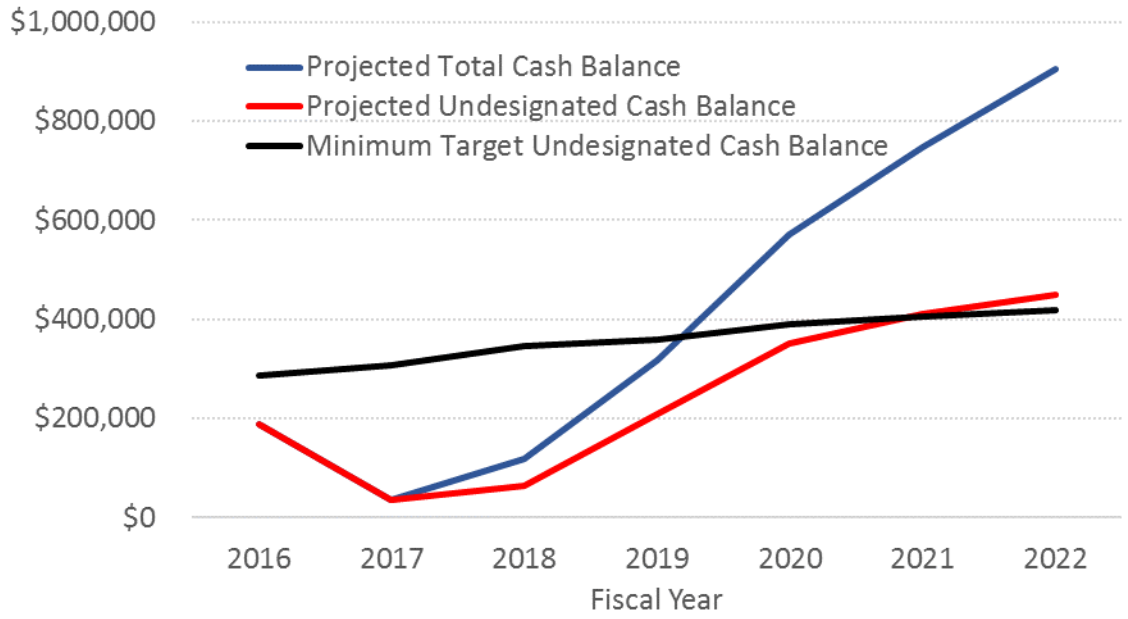


Table 21
Projected Cash Flow

Revenues and Expenses	2016 Estimated	2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 Year 8	2025 Year 9	2026 Year 10
					Fiscal Year Ending						
	New Rates Effective	*1/1/2017*	*7/1/2017*	*7/1/2018*	*7/1/2019*	*7/1/2020*	*7/1/2021*	*7/1/2022*	*7/1/2023*	*7/1/2024*	*7/1/2025*
Revenue											
Service Charges (Rates)	$1,141,944	$1,371,327	$1,889,334	$2,000,892	$2,041,862	$2,073,642	$2,133,336	$2,455,256	$2,521,251	$2,581,082	$2,676,993
Allocated Interest Earnings	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250
Other Water Revenue	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119
Service Fees	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000
Connection Fees	$0	$0	$0	$0	$214,131	$226,663	$240,002	$253,850	$268,568	$276,228	$292,207
Meter Replacement Program	$0	$23,494	$48,893	$50,604	$53,278	$56,096	$59,066	$62,196	$65,495	$68,971	$72,635
Total Revenues	**$1,213,313**	**$1,466,190**	**$2,009,596**	**$2,122,865**	**$2,380,640**	**$2,427,770**	**$2,503,773**	**$2,842,671**	**$2,926,683**	**$2,997,650**	**$3,113,204**
Operating Expenses	$985,720	$931,196	$1,102,677	$1,140,634	$1,293,354	$1,338,337	$1,384,910	$1,531,521	$1,514,728	$1,567,376	$1,621,886
Payroll and Benefits	$356,802	$369,290	$382,215	$395,593	$409,439	$423,769	$438,601	$453,952	$469,840	$486,285	$503,304
Professional Services	$55,166	$57,097	$59,095	$61,164	$63,304	$65,520	$67,813	$70,187	$72,643	$75,186	$77,817
Equipment, Property, and Vehicle Maintenance	$128,496	$132,993	$137,648	$142,466	$147,452	$152,613	$157,954	$163,483	$169,205	$175,127	$181,256
Supplies & Miscellaneous	$72,800	$75,348	$77,985	$80,715	$83,540	$86,464	$89,490	$92,622	$95,864	$99,219	$102,692
Utilities	$127,800	$132,273	$136,903	$141,694	$146,653	$151,786	$157,099	$162,597	$168,288	$174,178	$180,275
Admin Reimbursements	$116,311	$120,382	$124,595	$128,956	$133,470	$138,141	$142,976	$147,980	$153,159	$158,520	$164,068
Water Conservation	$0	$15,450	$53,045	$54,636	$112,551	$115,927	$119,405	$98,390	$31,669	$32,619	$33,598
Planning Studies	$0	$20,600	$21,218	$21,855	$22,510	$23,185	$23,881	$24,597	$25,335	$26,095	$26,878
Meter Replacement Program	$0	$0	$48,893	$50,604	$53,278	$56,096	$59,066	$62,196	$65,495	$68,971	$72,635
Total Operating Expenses	**$857,375**	**$923,433**	**$1,041,597**	**$1,077,682**	**$1,172,197**	**$1,213,502**	**$1,256,285**	**$1,276,004**	**$1,251,498**	**$1,296,200**	**$1,342,524**
Net Revenue before Debt Service and System Rehabilitation	**$355,938**	**$542,757**	**$967,998**	**$1,045,183**	**$1,208,443**	**$1,214,269**	**$1,247,488**	**$1,566,667**	**$1,675,184**	**$1,701,450**	**$1,770,680**
Debt Service	**$237,740**	**$344,328**	**$344,348**	**$507,228**	**$507,212**	**$594,706**	**$511,688**	**$511,732**	**$511,884**	**$511,932**	**$511,978**
Debt Service Coverage	*1.50*	*1.58*	*2.81*	*2.06*	*2.38*	*2.04*	*2.44*	*3.06*	*3.27*	*3.32*	*3.46*
Existing Customers CIP PAYG	$0	$345,050	$466,672	$180,004	$190,274	$92,228	$125,575	$341,118	$379,170	$419,041	$460,539
System Rehabilitation	$0	$0	$65,900	$150,000	$249,800	$342,500	$441,600	$458,300	$475,900	$494,300	$513,800
Net Revenue	**$118,198**	**($146,620)**	**$91,079**	**$207,952**	**$261,157**	**$184,835**	**$168,625**	**$255,517**	**$308,230**	**$276,176**	**$284,363**
Cash Balance [1]	$3,420	$189,821	$35,438	$118,483	$318,120	$570,670	$746,598	$906,003	$1,151,978	$1,450,332	$1,716,286
Net Revenue	$118,198	($146,620)	$91,079	$207,952	$261,157	$184,835	$168,625	$255,517	$308,230	$276,176	$284,363
Add Back System Depreciation Net of CIP	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transfer Out (Police)	($7,500)	($7,763)	($8,034)	($8,315)	($8,606)	($8,908)	($9,219)	($9,542)	($9,876)	($10,222)	($10,579)
Transfer In (WPFA)	$27,828	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Meter Costs 2016	($31,517)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Inter-tie CIP 2016	($39,684)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Bond Proceeds	$3,100,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital Fund Expenses	($2,893,137)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
FY 2016 Reconciliation	($87,787)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Ending Balance	**$189,821**	**$35,438**	**$118,483**	**$318,120**	**$570,670**	**$746,598**	**$906,003**	**$1,151,978**	**$1,450,332**	**$1,716,286**	**$1,990,070**
Designated for Supply Strategy Fund		$0	($53,045)	($107,681)	($220,232)	($336,160)	($455,565)	($701,540)	($954,894)	($1,215,848)	($1,484,632)
UNDESIGNATED ENDING BALANCE		**$35,438**	**$65,438**	**$210,438**	**$350,438**	**$410,438**	**$450,438**	**$450,438**	**$495,438**	**$500,438**	**$505,438**
Months in Reserve		*0*	*1*	*2*	*4*	*4*	*4*	*4*	*5*	*5*	*5*
Minimum Target Balance (4 months expenses) [2]	$285,792	$307,811	$347,199	$359,227	$390,732	$404,501	$418,762	$425,335	$417,166	$432,067	$447,508

Source: City of Waterford and HEC.

flow

[1] Beginning cash balance as of July 1, 2015.

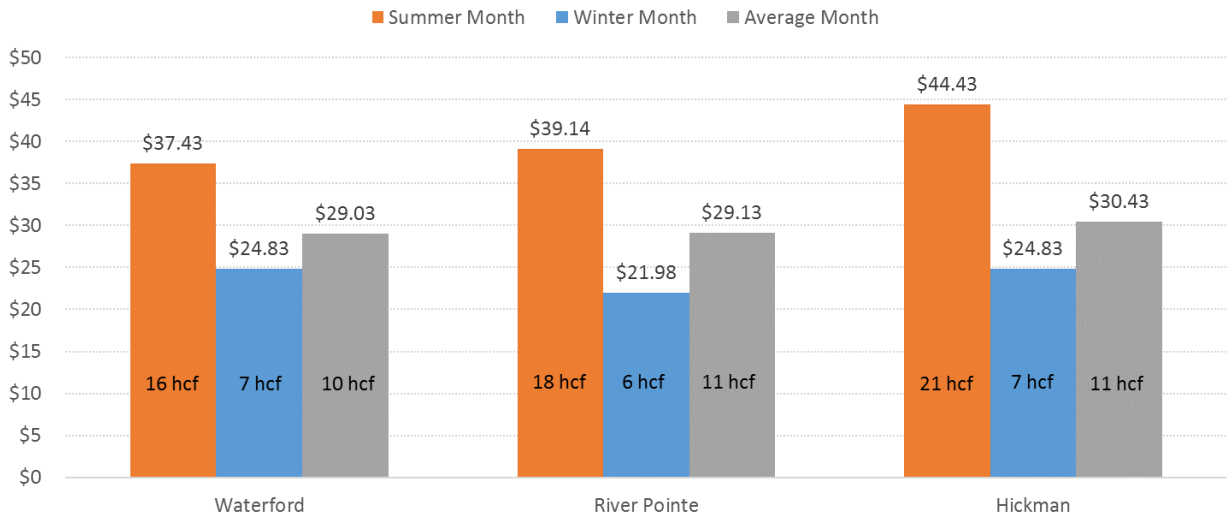
[2] Typical target cash balance goal is 3 months to 12 months of operating expenses.

Section 4: AFFORDABILITY

4.1 RESIDENTIAL BILL IMPACTS

Figure 13 shows a typical bill during summer, winter, and average annual months for single family homes in Waterford, River Pointe, and Hickman. The graph shows that during summer months Hickman and River Pointe customers typical use approximately three times as much water as they do during winter months. Waterford customers typically use approximately two and a half times as much water in the summer as winter.

Figure 13
Comparison of Typical Current Bills for a Single Family Home



The comparison of a monthly bill using the current rate and new rates effective January 1, 2017 are shown in **Figure 14**. River Pointe and Hickman rates are calculated using average monthly use of 11 HCF, while Waterford is calculated based on average monthly use of 10 HCF.

Figure 14
Comparison of Current and Projected Rates based on Average Annual Monthly Use

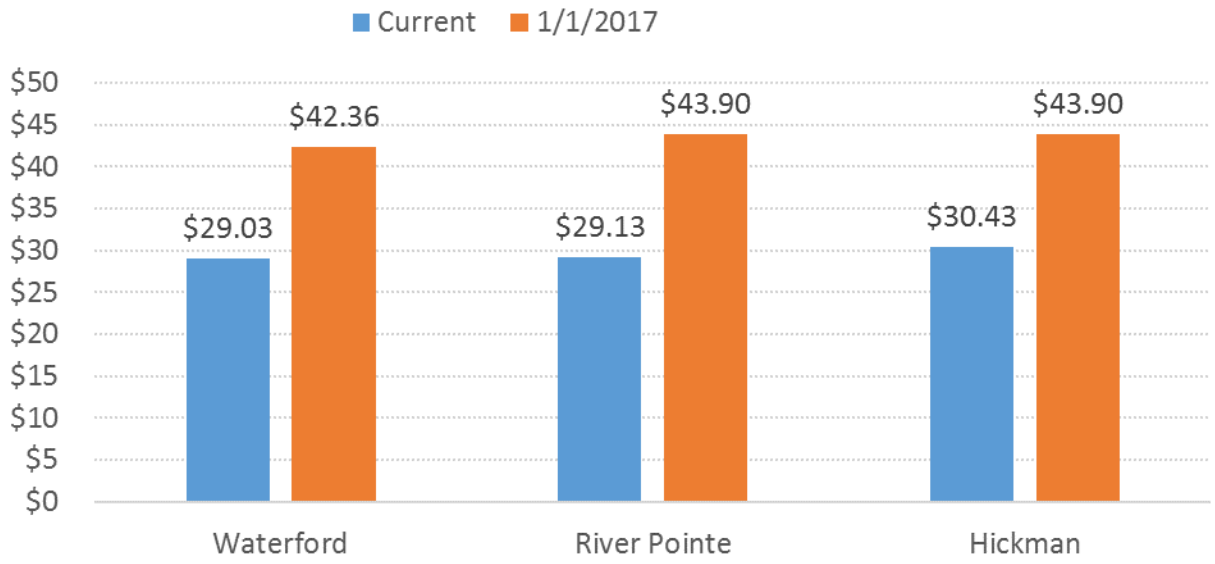
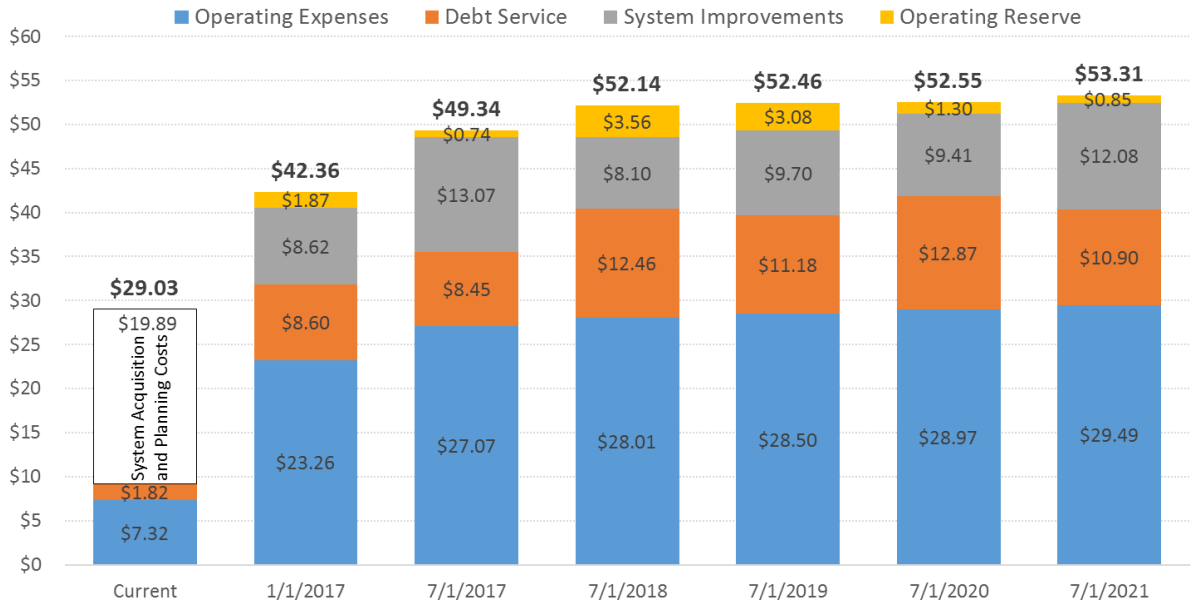


Figure 15 shows the components of a single family water bill with consumption of 10 HCF.

Figure 15
Components of a Single Family Water Bill



Figures 16 displays a comparison of regional water bills for a single family home using 10 HCF in a month. Current rates for all three systems are in the mid to low range of the comparison cities. The

January 1, 2017 rates are in the higher end of comparison cities. Note, however, that the comparison cities utilized may be in the process of rate increases as well; this is a snapshot in time.

Figure 16
Comparison of Regional Water Rates

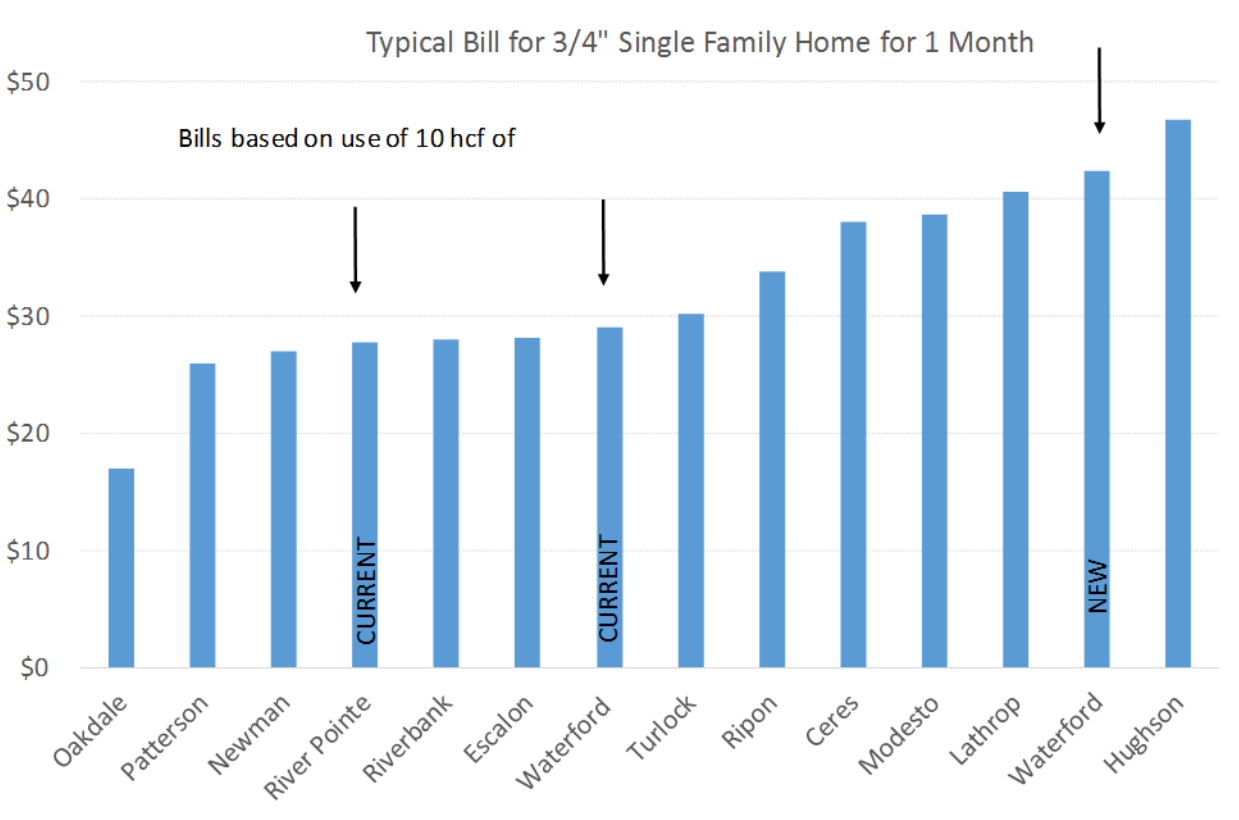


Figure 17 shows combined water and sewer bills for the comparison cities. Waterford's combined utility bill for a typical home is very similar to Modesto, Oakdale, Patterson and Turlock. Note that Hickman does not have municipal wastewater service.

Table 22 shows projected single family water bills for Waterford, River Pointe, and Hickman through fiscal year 2022.

Figure 17
Comparison of Water and Sewer Bills Combined

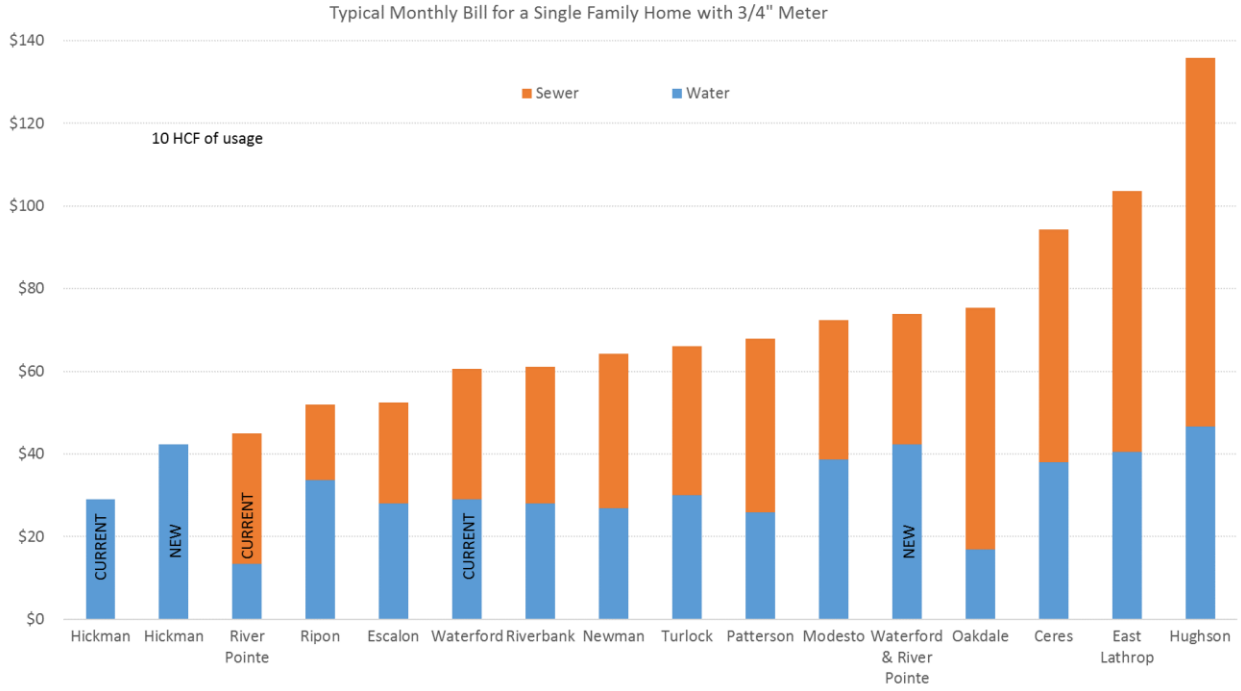


Table 22
Projected Typical Single Family Home Bill

Water System	Current	Fiscal Year Ending 2017 1/1/2017	2018 7/1/2017	2019 7/1/2018	2020 7/1/2019	2021 7/1/2020	2022 7/1/2021
Waterford			*Assumes a 3/4" meter with use of 10 HCF*				
Service Fee	$15.03	$26.94	$31.47	$33.29	$33.54	$33.63	$34.14
Use Fee	$14.00	$15.42	$17.87	$18.84	$18.92	$18.92	$19.17
Total Monthly Bill Waterford	**$29.03**	**$42.36**	**$49.34**	**$52.14**	**$52.46**	**$52.55**	**$53.31**
Percentage Increase		*46%*	*16%*	*6%*	*1%*	*0%*	*1%*
River Pointe			*Assumes a 3/4" meter with use of 11 HCF*				
Service Fee	$13.40	$26.94	$31.47	$33.29	$33.54	$33.63	$34.14
Use Fee	$15.40	$16.96	$19.65	$20.73	$20.81	$20.81	$21.09
Total Monthly Bill River Pointe	**$28.80**	**$43.90**	**$51.12**	**$54.02**	**$54.35**	**$54.44**	**$55.23**
Percentage Increase		*52%*	*16%*	*6%*	*1%*	*0%*	*1%*
Hickman			*Assumes a 3/4" meter with use of 11 HCF*				
Service Fee	$15.03	$26.94	$31.47	$33.29	$33.54	$33.63	$34.14
Use Fee	$15.40	$16.96	$19.65	$20.73	$20.81	$20.81	$21.09
Total Monthly Bill Hickman	**$30.43**	**$43.90**	**$51.12**	**$54.02**	**$54.35**	**$54.44**	**$55.23**
Percentage Increase		*44%*	*16%*	*6%*	*1%*	*0%*	*1%*

Source: HEC. sf comp

4.2 AFFORDABILITY TEST

The DWSRF 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 Waterford and the community of Hickman meet the definition of Disadvantaged since MHI is lower than 80 percent of the State MHI. Rates are currently 0.7% to 0.8% of MHI.

The DWSRF program may offer better loan terms than its standard loan terms when affordability is an issue. The program provides 30-year financing for Disadvantaged communities, but only reduces the interest rate and/or offers principal forgiveness (grant) for projects of Disadvantaged communities if the water rate of the community is at least 1.5%. **Table 23** shows that the water rate would have to be at least $56.42 for the water systems to qualify for principal forgiveness.

The affordability test is shown in **Table 24**. Under the calculated water rates for 2017, a household using 10 HCF in a month would pay $42.36, which is 1.1% of the estimated MHI for the consolidated water systems service area. The proposed water rates are, per the DWSRF definitions, affordable.

The DWSRF program will not, under current regulations, provide better terms than a 30-year repayment period with the exception of the consolidation of water systems project. Because the consolidation project extends water service from a public water system to a Disadvantaged water system the project is assumed to receive 0% interest. The project may qualify for grant funding, particularly if it is found to be a project of regional benefit; however, no grant funding is assumed in the rate study.

Table 23
Current Water Rates as Percentage of Median Household Income

Item	Water Service Area			
	Waterford	River Pointe	Hickman	Weighted Average
State Required Minimum Water Rate to Receive Principal Forgiveness for Construction Projects [1]	***$56.20***	***$56.20***	***$60.40***	***$56.42***
Number of Water Connections	**2,113**	**134**	**179**	**2,426**
2014 Population [2]	**8,639**	**8,639**	**479**	
Population Percentage	**95%**	**95%**	**5%**	
Monthly Water Bill [3]				
Monthly Median Household Income (MHI)	$3,722	$3,722	$4,000	$3,736
CURRENT Typical Monthly Water Bill (Single Family)	$29.03	$27.70	$30.43	
Average Monthly Water Bill as Percentage of MHI [4]	**0.8%**	**0.7%**	**0.8%**	
Median Household Income (MHI)				
Estimated California [5]	$61,489	$61,489	$61,489	$61,489
Estimated Water Service Area [5]	$44,660	$44,660	$48,000	$44,835
MHI as Percentage of the State MHI [6]	**72.6%**	**72.6%**	**78.1%**	**72.9%**

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

[1] Disadvantaged communities can ONLY receive these terms if the monthly water bill is at least 1.5% of MHI.

[2] 2014 5-year American Community Survey. For Waterford and River Pointe the City of Waterford population was used. For Hickman, the Hickman CDP.

[3] 10 hcf is used for the average monthly water bill consumption. 10 hcf is the median water consumption of customers, which is shown in Table 3.

[4] Per the DWSRF program, water bills that are <1.5% of MHI are considered affordable, between 1.5% and 2.0% a concern, and not affordable if greater than 2.0%.

[5] 2014 5-year American Community Survey. For Waterford and River Pointe the City of Waterford MHI. For Hickman, the Hickman CDP MHI.

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

Table 24
Test of Water Rates Affordability

Item	Water Service Area		
	Waterford	River Pointe	Hickman
Current			
Bill using 10 HCF	$29.03	$27.70	$30.43
MHI of Service Area	$3,722	$3,722	$4,000
Bill as % of MHI	**0.8%**	**0.7%**	**0.8%**
January 1, 2017			
Bill using 10 HCF	$42.36	$42.36	$42.36
MHI of Service Area [1]	$3,736	$3,736	$3,736
Bill as % of MHI	**1.1%**	**1.1%**	**1.1%**

Source: HEC and US Census Bureau. bill aff

[1] Weighted average MHI for Waterford and Hickman.

4.3 Non-Residential Bill Impacts

The effect of the January 1, 2017 rate increase for a sample of non-residential customer types is shown in **Figures 18** and **19**. The impact is shown on an average monthly basis. Because bills for non-residential customers will vary by business type and through the year, the examples given are only illustrative.

Figure 18
Estimated Non-Residential Bill Impacts

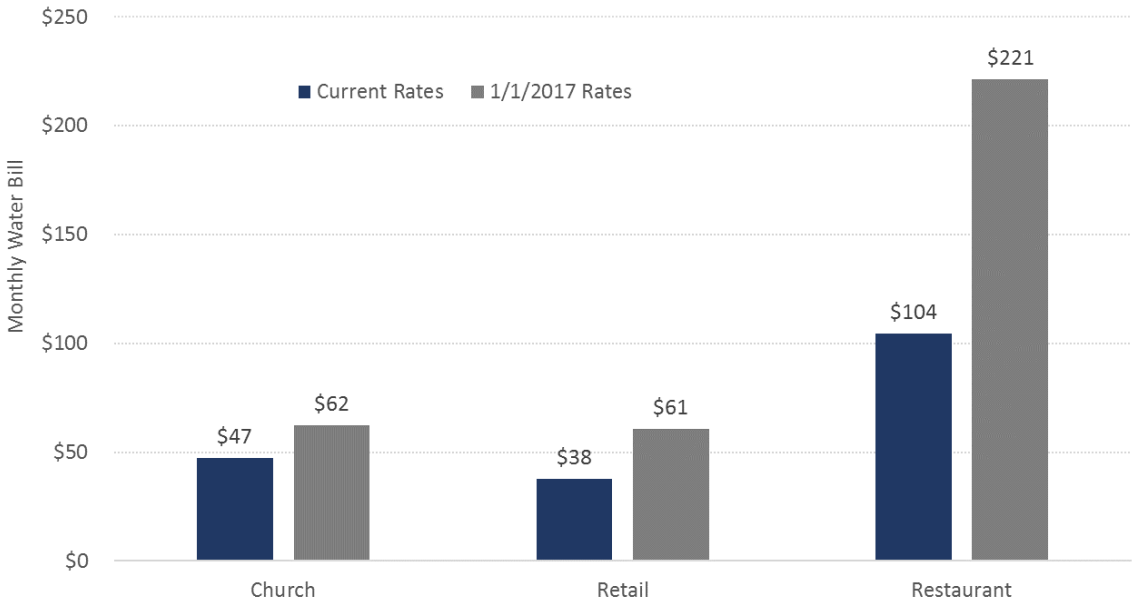
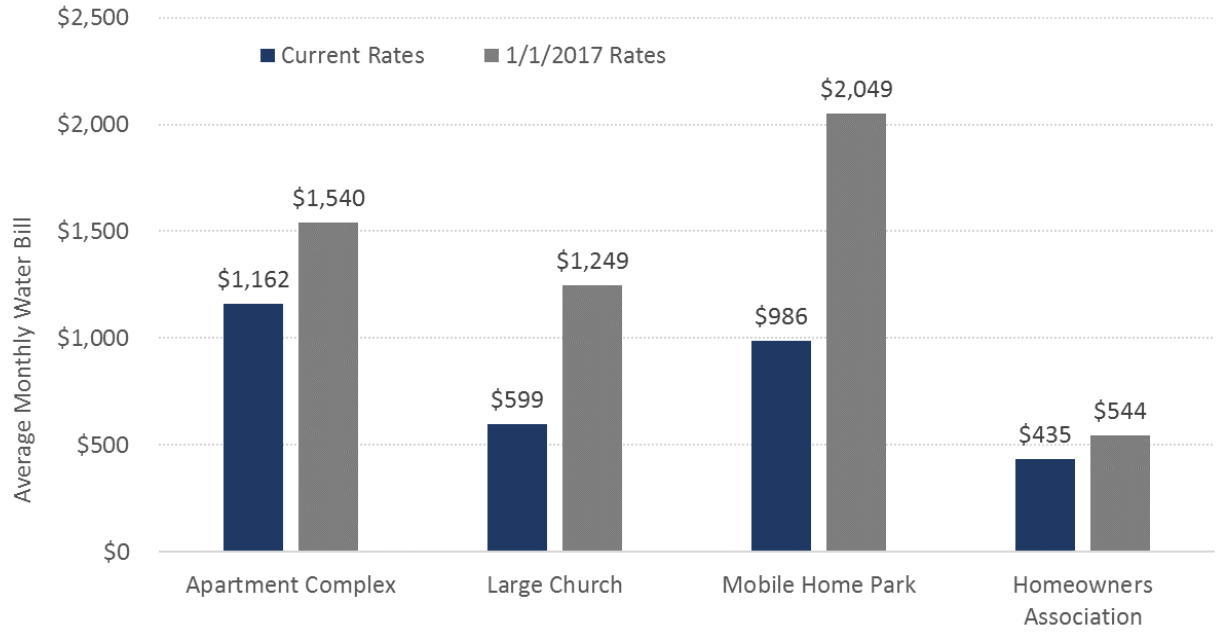
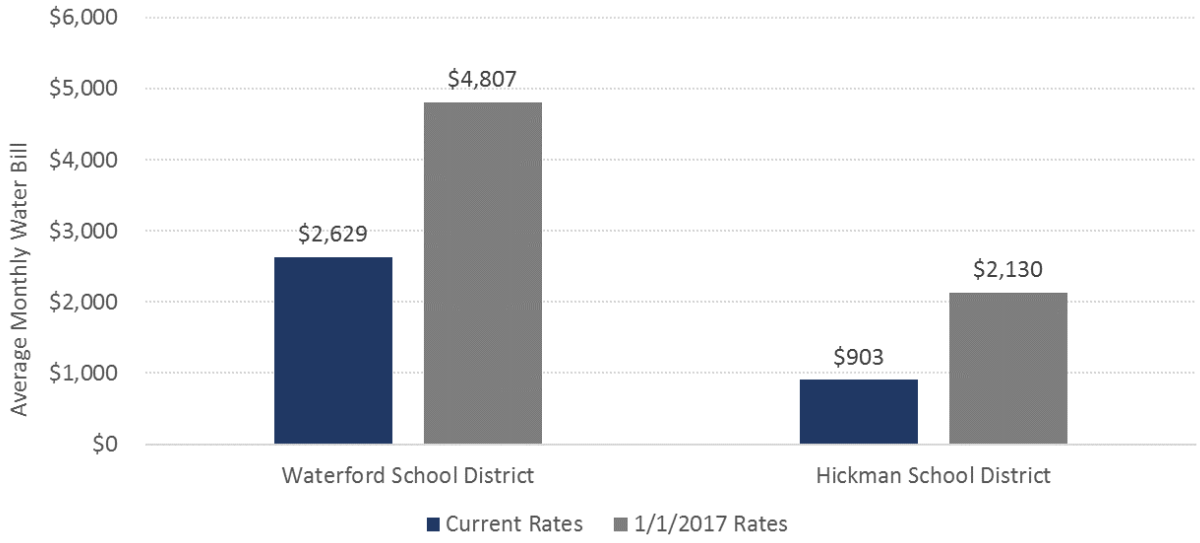


Figure 19
Estimated Bill Impacts for Large Water Users



The impact to the school districts, which are the largest water users, was calculated separately. **Figure 20** shows the average annual monthly bill impact to the Waterford and Hickman school districts.

Figure 20
Estimated Bill Impacts to Waterford and Hickman School Districts



APPENDIX A

WATER RATE AND

FEE STUDY

SUPPORT TABLES

Table A-1
City of Waterford Water Rate Study
Historical Population and Housing Estimates

	Waterford [1]							Hickman [2]						
	Population			Housing Units				Population			Housing Units			
Year	Persons	Annual Increase / Decrease	Annual % Change	Occupied Units	Annual Increase / Decrease	Persons per Unit	Annual % Change	Persons	Annual Increase / Decrease	Annual % Change	Occupied Units	Annual Increase / Decrease	Persons per Unit	Annual % Change
	as of January 1			*as of January 1*				*as of January 1*			*as of January 1*			
	[3]			[3]										
2000	6,924			1,990		3.48								
2001	6,993	69	1.0%	1,996	6	3.50	0.3%							
2002	7,105	112	1.6%	2,019	23	3.52	1.2%							
2003	7,560	455	6.4%	2,139	120	3.53	5.9%							
2004	7,711	151	2.0%	2,185	46	3.53	2.2%							
2005	7,657	(54)	-0.7%	2,191	6	3.49	0.3%							
2006	7,905	248	3.2%	2,295	104	3.44	4.7%							
2007	8,228	323	4.1%	2,408	113	3.42	4.9%							
2008	8,368	140	1.7%	2,447	39	3.42	1.6%							
2009	8,428	60	0.7%	2,465	18	3.42	0.7%							
2010	8,456	28	0.3%	2,458	-7	3.44	-0.3%	439			144	144		
2011	8,456	-	0.0%	2,458	-	3.44	0.0%	490	51	11.6%	149	5	3.29	3.5%
2012	8,515	59	0.7%	2,458	-	3.46	0.0%	499	9	1.8%	160	11	3.12	7.4%
2013	8,582	67	0.8%	2,458	-	3.49	0.0%	496	-3	-0.6%	152	-8	3.26	-5.0%
2014	8,639	57	0.7%	2,458	-	3.51	0.0%	479	-17	-3.4%	170	18	2.82	11.8%
2015	8,686	47	0.5%	2,458	-	3.53	0.0%							
Total Change [4]	1,762			468				40			26			
Avg. Annual Change	117		**1.5%**	31			**1.4%**	**8**		**2.2%**	**5**			**4.2%**

Source: California Department of Finance and US Census Bureau. stats

[1] California Department of Finance.

[2] 2014 5-year American Community Survey.

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

[4] Change for City of Waterford is years 2000 to 2015. Change for Hickman CDP is years 2010 to 2014.

Table A-2
City of Waterford Water Rate Study
Historical Financial Performance **River Pointe System Only**

Revenues and Expenses	Fiscal Year Ending 2011	2012	2013	2014	2015
Operating Revenues					
Charges for Services	$193,414	$192,067	$159,193	$164,051	$148,559
Total Operating Revenues	**$193,414**	**$192,067**	**$159,193**	**$164,051**	**$148,559**
Operating Expenses					
Salaries and Benefits	$92,898	$107,084	$134,446	$146,691	$143,320
Maintenance and Operations	$83,079	$91,959	$110,569	$109,260	$112,348
Professional Fees	$9,097	$5,421	$23,703	$6,423	$28,145
Depreciation	$109,999	$104,737	$104,013	$102,156	$99,529
Total Operating Expenses	**$295,073**	**$309,201**	**$372,731**	**$364,530**	**$383,342**
Operating Income (Loss)	**($101,659)**	**($117,134)**	**($213,538)**	**($200,479)**	**($234,783)**
Nonoperating Revenues (Expenses)					
Interest Income	$0	$0	$382	$44	$234
Interest Expense	$0	$0	$0	$0	$0
Other	$0	$26,888	$0	$0	$0
Total Nonoperating Income	**($101,659)**	**($90,246)**	**($213,156)**	**($200,435)**	**($234,549)**
Change in Net Assets	**($101,659)**	**($90,246)**	**($213,156)**	**($200,435)**	**($234,549)**
Total Net Assets Beginning	**$3,111,788**	**$3,010,129**	**$2,919,883**	**$2,706,727**	**$2,506,292**
Total Net Assets Ending	**$3,010,129**	**$2,919,883**	**$2,706,727**	**$2,506,292**	**$2,271,743**

Source: City of Waterford Audited Financial Statements. cafr

Table A-3
City of Waterford Water Rate Study
Water Operations Funds and Capital Funds Revenues and Expenses

Operating Revenues and Expenses	**2016 City Estimate**
OPERATIONS FUNDS	*All 3 water systems*
Revenues	
Allocated Interest Earnings	$1,250
Water Monthly Service Charges	$1,141,944
Other Water Revenue	$20,119
Energy Efficient Block Grant	$0
Transfers In	$27,828
Total Revenues	**$1,191,141**
Expenses	
Payroll and Benefits	$356,802
Professional Services	$55,166
Equipment, Property, and Vehicle Maintenance	$128,496
Supplies & Miscellaneous	$72,800
Utilities	$127,800
Admin Reimbursements	$116,311
Transfers Out	$128,345
Total Expenses	**$985,720**
Operations Fund Net Revenues	**$205,421**
CAPITAL FUNDS	*All 3 water systems*
Revenues	
Allocated Interest Earnings	$0
Water Connection/Disconnection Fees	$50,000
Transfers In	$125,845
Proceeds From Long Term Debt	$3,100,000
Total Revenues	**$3,275,845**
Expenses	
Equipment Maintenance	$0
Professional Services	$215,000
Capital Purchases - Furniture/Equipment	$78,137
Capital Purchases - System Acquisition	$2,600,000
Debt Service - Principal	$165,100
Debt Service - Interest	$72,640
Transfers Out	$5,000
Total Expenses	**$3,135,877**
Capital Funds Net Revenues	**$139,968**

Source: City of Waterford. rev exp

Table A-4
City of Waterford Water Rate Study
2016 Water Funds Operations Budget

Operating Revenues and Expenses	2016 City Estimate
RIVER POINTE WATER SYSTEM OPERATIONS	
Revenues	
Allocated Interest Earnings	$0
Water Monthly Service Charges	$134,666
Other Water Revenue	$0
Energy Efficient Block Grant	$0
Transfers In	$27,828
Total Revenues	**$162,494**
Expenses	
Payroll and Benefits	$65,469
Professional Services	$12,500
Equipment, Property, and Vehicle Maintenance	$2,909
Supplies & Miscellaneous	$20,500
Utilities	$30,000
Admin Reimbursements	$21,141
Transfers Out	$3,750
Total Expenses	**$156,269**
River Pointe Water Operations Net Revenues	**$6,225**
WATERFORD WATER SYSTEM OPERATIONS	
Revenues	
Allocated Interest Earnings	$1,250
Water Monthly Service Charges	$915,639
Other Water Revenue	$20,119
Energy Efficient Block Grant	$0
Transfers In	$0
Total Revenues	**$937,008**
Expenses	
Payroll and Benefits	$252,901
Professional Services	$35,767
Equipment, Property, and Vehicle Maintenance	$118,125
Supplies & Miscellaneous	$37,800
Utilities	$81,500
Admin Reimbursements	$82,170
Transfers Out	$124,595
Total Expenses	**$732,858**
Waterford Water System Operations Net Revenues	**$204,150**
HICKMAN WATER SYSTEM OPERATIONS	
Revenues	
Allocated Interest Earnings	$0
Water Monthly Service Charges	$91,639
Other Water Revenue	$0
Energy Efficient Block Grant	$0
Transfers In	$0
Total Revenues	**$91,639**
Expenses	
Payroll and Benefits	$38,432
Professional Services	$6,899
Equipment, Property, and Vehicle Maintenance	$7,462
Supplies & Miscellaneous	$14,500
Utilities	$16,300
Admin Reimbursements	$13,000
Transfers Out	$0
Total Expenses	**$96,593**
Hickman Water System Operations Net Revenues	**($4,954)**

Source: City of Waterford. op rev exp

Table A-5
City of Waterford Water Rate Study
2016 Water Funds Capital Budget

Operating Revenues and Expenses	2016 City Estimate
WATERFORD WATER SYSTEM CAPITAL	
Revenues	
Allocated Interest Earnings	$0
Water Connection/Disconnection Fees	$50,000
Transfers In	$120,845
Proceeds From Long Term Debt	$2,666,000
Total Revenues	**$2,836,845**
Expenses	
Equipment Maintenance	$0
Professional Services	$188,400
Capital Purchases - Furniture/Equipment	$69,140
Capital Purchases - System Acquisition	$2,236,000
Debt Service - Principal	$141,986
Debt Service - Interest	$62,470
Transfers Out	$5,000
Total Expenses	**$2,702,996**
Waterford Water System Capital Fund Net Revenues	**$133,849**
HICKMAN WATER SYSTEM CAPITAL	
Revenues	
Allocated Interest Earnings	$0
Water Connection/Disconnection Fees	$0
Transfers In	$5,000
Proceeds From Long Term Debt	$434,000
Total Revenues	**$439,000**
Expenses	
Equipment Maintenance	$0
Professional Services	$26,600
Capital Purchases - Furniture/Equipment	$8,997
Capital Purchases - System Acquisition	$364,000
Debt Service - Principal	$23,114
Debt Service - Interest	$10,170
Transfers Out	$0
Total Expenses	**$432,881**
Hickman Water System Capital Fund Net Revenues	**$6,119**

Source: City of Waterford. cap rev exp

Table A-6
City of Waterford Water Rate Study
Historical Average Daily Use and Total Water Production for All Water Systems

	2011		2012		2013		2014		2015	
Month	Average Daily Use	Total Monthly Production	Average Daily Use	Total Monthly Production	Average Daily Use	Total Monthly Production	Average Daily Use	Total Monthly Production	Average Daily Use	Total Monthly Production
January	866,550	26,850,058	1,029,138	31,904,278	853,157	26,444,853	987,223	30,597,905	785,278	24,342,610
February	912,270	25,529,568	1,107,893	31,168,997	1,000,030	27,998,851	812,779	22,766,826	789,260	22,096,281
March	905,520	28,086,140	1,075,559	33,347,339	1,329,255	41,207,884	921,155	28,548,809	1,085,391	33,647,317
April	1,393,079	41,805,377	1,266,132	37,974,984	1,574,778	47,245,314	1,261,655	37,841,636	1,297,054	38,915,622
May	1,959,083	60,726,582	2,187,950	67,812,443	2,189,746	67,884,111	1,857,953	57,609,567	1,359,975	42,151,224
June	2,146,517	64,404,533	2,513,272	75,391,145	2,484,884	74,549,546	2,155,720	64,663,592	1,614,178	48,410,342
July	2,731,332	84,669,306	2,677,387	83,003,996	2,602,632	80,670,591	2,157,874	66,895,102	1,710,475	53,020,717
August	2,606,160	80,805,970	2,612,564	80,993,474	2,362,819	73,233,387	1,924,949	59,687,410	1,653,784	51,267,314
September	2,390,442	71,727,264	2,291,811	68,762,329	2,052,158	61,566,722	1,762,088	52,872,632	1,538,446	46,166,384
October	1,530,991	47,451,717	1,669,066	51,727,029	1,648,747	51,118,137	1,455,266	45,123,252	1,275,231	39,523,153
November	1,140,030	34,199,924	1,087,129	32,600,884	1,277,757	38,323,688	972,095	29,153,850	821,200	24,647,000
December	1,042,631	32,327,572	842,301	26,103,319	936,037	29,002,149	698,744	21,669,044	645,272	19,996,450
Yearly Total		**598,584,011**		**620,790,217**		**619,245,233**		**517,429,625**		**444,184,414**

Source: City of Waterford

prod

Table A-7
City of Waterford Water Rate Study
Annual Water Production for All Water Systems

Month	2011	2012	2013	2014	2015		Avg. Annual Water Production (gallons)	Percent of Production by Month
Jan	26,850,058	31,904,278	26,444,853	30,597,905	24,342,610		28,027,941	5%
Feb	25,529,568	31,168,997	27,998,851	22,766,826	22,096,281		25,912,105	5%
Mar	28,086,140	33,347,339	41,207,884	28,548,809	33,647,317		32,967,498	6%
Apr	41,805,377	37,974,984	47,245,314	37,841,636	38,915,622		40,756,587	7%
May	**60,726,582**	**67,812,443**	**67,884,111**	**57,609,567**	**42,151,224**		**59,236,785**	**11%**
Jun	**64,404,533**	**75,391,145**	**74,549,546**	**64,663,592**	**48,410,342**		**65,483,832**	**12%**
Jul	**84,669,306**	**83,003,996**	**80,670,591**	**66,895,102**	**53,020,717**		**73,651,942**	**13%**
Aug	**80,805,970**	**80,993,474**	**73,233,387**	**59,687,410**	**51,267,314**		**69,197,511**	**12%**
Sep	**71,727,264**	**68,762,329**	**61,566,722**	**52,872,632**	**46,166,384**		**60,219,066**	**11%**
Oct	47,451,717	51,727,029	51,118,137	45,123,252	39,523,153		46,988,658	8%
Nov	34,199,924	32,600,884	38,323,688	29,153,850	24,647,000		31,785,069	6%
Dec	32,327,572	26,103,319	29,002,149	21,669,044	19,996,450		25,819,707	5%
Total	**598,584,011**	**620,790,217**	**619,245,233**	**517,429,625**	**444,184,414**	***A***	**560,046,700**	**100%**
Peaking Period (May through September inclusive)						***B***	327,789,137	59%
Base Monthly Flow						***C***	33,179,652	
Base Annual Flow						***D = C*12***	**398,155,823**	**71%**
Additional Flow						***E = A-D***	**161,890,877**	**29%**

Source: City of Waterford.

delivery

Table A-8
City of Waterford Water Rate Study
Estimated Ten-Year Schedule of Water Capital Improvements

Project	Water System	Total Cost (2016 $'s)	Fiscal Year Ending 2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 Year 8	2025 Year 9	2026 Year 10
Estimated Project Costs												
Waterford Wells W242 and W244	Waterf-RiverP	$1,437,000	$0	$0	$0	$1,437,000	$0	$0	$0	$0	$0	$0
Groundwater Exploration [1]	All	$200,000	$0	$67,000	$67,000	$66,000	$0	$0	$0	$0	$0	$0
Water Conservation [2]	Waterf-RiverP	$570,000	$15,000	$50,000	$50,000	$100,000	$100,000	$100,000	$80,000	$25,000	$25,000	$25,000
Consolidation of Water Systems [3]	All	$3,250,000	$0	$1,000,000	$2,250,000	$0	$0	$0	$0	$0	$0	$0
Downtown Pipe Replacement	Waterf-RiverP	$2,725,000	$0	$0	$0	$225,000	$275,000	$375,000	$425,000	$450,000	$475,000	$500,000
Supply Strategy / Surface Water Project [4]	All	$1,200,000	$0	$50,000	$50,000	$100,000	$100,000	$100,000	$200,000	$200,000	$200,000	$200,000
Transmission Mains	Waterf-RiverP	$500,000	$0	$0	$0	$0	$0	$0	$125,000	$125,000	$125,000	$125,000
Misc. Well Improvements	Waterf-RiverP	$375,000	$375,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
Misc. Well Improvements	Hickman	$200,000	$0	$100,000	$100,000	$0	$0	$0	$0	$0	$0	$0
River Pointe Meter Replacement	Waterf-RiverP	$105,000	$35,000	$35,000	$35,000	$0	$0	$0	$0	$0	$0	$0
SCADA Improvements [5]	Waterf-RiverP	$320,000	$160,000	$160,000	$0	$0	$0	$0	$0	$0	$0	$0
SCADA Improvements [5]	Hickman	$80,000	$40,000	$40,000	$0	$0	$0	$0	$0	$0	$0	$0
New Equipment / Supplies	All	$1,000,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000
Master Plan and Rate Study	All	$200,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000	$20,000
Total Estimated Project Costs		**$12,162,000**	**$745,000**	**$1,622,000**	**$2,672,000**	**$2,048,000**	**$595,000**	**$695,000**	**$950,000**	**$920,000**	**$945,000**	**$970,000**
Estimated Project Costs (Future $'s) [6]			***Annual Increase***		***3.0%***							
Waterford Wells W242 and W244	Waterf-RiverP	**$1,617,356**	$0	$0	$0	$1,617,356	$0	$0	$0	$0	$0	$0
Groundwater Exploration [1]	All	**$218,577**	$0	$71,080	$73,213	$74,284	$0	$0	$0	$0	$0	$0
Water Conservation [2]	Waterf-RiverP	**$667,291**	$15,450	$53,045	$54,636	$112,551	$115,927	$119,405	$98,390	$31,669	$32,619	$33,598
Consolidation of Water Systems [3]	All	**$3,519,536**	$0	$1,060,900	$2,458,636	$0	$0	$0	$0	$0	$0	$0
Downtown Pipe Replacement	Waterf-RiverP	**$3,404,278**	$0	$0	$0	$253,239	$318,800	$447,770	$522,696	$570,047	$619,767	$671,958
Supply Strategy / Surface Water Project [4]	All	**$1,484,632**	$0	$53,045	$54,636	$112,551	$115,927	$119,405	$245,975	$253,354	$260,955	$268,783
Transmission Mains	Waterf-RiverP	**$643,167**	$0	$0	$0	$0	$0	$0	$153,734	$158,346	$163,097	$167,990
Misc. Well Improvements	Waterf-RiverP	**$386,250**	$386,250	$0	$0	$0	$0	$0	$0	$0	$0	$0
Misc. Well Improvements	Hickman	**$215,363**	$0	$106,090	$109,273	$0	$0	$0	$0	$0	$0	$0
River Pointe Meter Replacement	Waterf-RiverP	**$111,427**	$36,050	$37,132	$38,245	$0	$0	$0	$0	$0	$0	$0
SCADA Improvements [5]	Waterf-RiverP	**$334,544**	$164,800	$169,744	$0	$0	$0	$0	$0	$0	$0	$0
SCADA Improvements [5]	Hickman	**$83,636**	$41,200	$42,436	$0	$0	$0	$0	$0	$0	$0	$0
New Equipment / Supplies	All	**$1,180,780**	$103,000	$106,090	$109,273	$112,551	$115,927	$119,405	$122,987	$126,677	$130,477	$134,392
Master Plan and Rate Study	All	**$236,156**	$20,600	$21,218	$21,855	$22,510	$23,185	$23,881	$24,597	$25,335	$26,095	$26,878
Total Estimated Project Costs (Future $'s)		**$14,102,991**	**$767,350**	**$1,720,780**	**$2,919,767**	**$2,305,042**	**$689,768**	**$829,866**	**$1,168,380**	**$1,165,428**	**$1,233,011**	**$1,303,599**

Source: City of Waterford and HEC.

cip

[1] Groundwater exploration costs reduced from $300k to $200k.

[2] Includes hard costs and program management costs at $15,000 in 2017 and $25,000 each year thereafter.

[3] Total estimated consolidation costs for all water systems including Hickman to benefit entire consolidated system.

[4] Not in the Water Master Plan until 2030. Includes costs for studies and securing water rights/options for surface water and possibly some hard costs.

[5] $400k added for SCADA.

[6] Increased by ENR CCI 10-year average annual increase of 3.0%.

Table A-9
City of Waterford Water Rate Study
Umpqua Bank Water Loan

Fiscal Year Ending	Principal	Interest	Total	Remaining Principal
2015				$3,100,000
2016	$165,100	$79,573	$244,673	$2,934,900
2017	$170,300	$90,982	$261,282	$2,764,600
2018	$175,600	$85,702	$261,302	$2,589,000
2019	$181,100	$80,260	$261,360	$2,407,900
2020	$186,700	$74,644	$261,344	$2,221,200
2021	$192,600	$68,858	$261,458	$2,028,600
2022	$198,600	$62,886	$261,486	$1,830,000
2023	$204,800	$56,730	$261,530	$1,625,200
2024	$211,300	$50,382	$261,682	$1,413,900
2025	$217,900	$43,830	$261,730	$1,196,000
2026	$224,700	$37,076	$261,776	$971,300
2027	$231,700	$30,110	$261,810	$739,600
2028	$239,000	$22,928	$261,928	$500,600
2029	$246,400	$15,518	$261,918	$254,200
2030	$254,200	$7,880	$262,080	$0

Source: City of Waterford. loan

Table A-10
City of Waterford Water Rate Study
Summary of Interfund Loans

	Loan to the River Pointe System Fund 5070					
	Wastewater Improvement Fund	**General Fund**	**General Fund**	**General Fund**	**WPFA**	**Total**
Date of Loan	Apr-13	Oct-12	Jun-14	Jun-15	Jun-16 estimate	
Amount	$100,000	$100,000	$51,598	$131,595	$20,000	$403,193
Terms	*Interest due each year 6/30, deferred until River Pointe able to pay; principal repayment as soon as able*	*Interest deferred until June 2016; principal repayment as soon as able*	*Interest deferred until June 2016; principal repayment as soon as able*	*Interest deferred until June 2016; principal repayment as soon as able*	*Interest deferred until June 2016; principal repayment as soon as able*	
Est. Accrued Interest 6/30/2016	$4,278	$4,707	$1,340	$1,711	$0	$12,035
Est. Total Due as of 6/30/2016	$104,278	$104,707	$52,938	$133,305	$20,000	$415,228
Fiscal Year Ending		Estimate of Annual Repayment Amounts				
2017	$20,856	$20,941	$10,588	$26,661	$4,000	$83,046
2018	$20,856	$20,941	$10,588	$26,661	$4,000	$83,046
2019	$20,856	$20,941	$10,588	$26,661	$4,000	$83,046
2020	$20,856	$20,941	$10,588	$26,661	$4,000	$83,046
2021	$20,856	$20,941	$10,588	$26,661	$4,000	$83,046

Source: City of Waterford. interf

Table A-11
City of Waterford Water Rate Study
Meter Replacement Fee Calculation

Item	Assumption / Total	Meter Size 3/4"	1"	1-1/2"	2"	3"	4"	6"
New Meter with Transponder [1]		$250	$350	$550	$700	$1,500	$3,300	$4,550
Installation Costs [2]	20%	$50	$70	$110	$140	$300	$660	$910
Administration Costs	3%	$8	$11	$17	$21	$45	$99	$137
Total Cost per Meter	**$372**	**$308**	**$431**	**$677**	**$861**	**$1,845**	**$4,059**	**$5,597**
Replacement Interval (years)		20	20	20	20	20	20	20
Cost per Meter per Year		$15	$22	$34	$43	$92	$203	$280
Monthly Cost per Meter / Meter Replacement Fee		**$1.28**	**$1.79**	**$2.82**	**$3.59**	**$7.69**	**$16.91**	**$23.32**
Monthly Cost per Billing Meter [3]		**$1.31**	**$1.83**	**$2.88**	**$3.66**	**$7.84**	**$17.26**	**$23.79**

Source: City of Waterford and HEC. meter prog

[1] Approximate prices based on HEC experience.

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

[3] Accounts for an estimated vacancy rate of 2%

Table A-12
City of Waterford Water Rate Study
Calculated Meter Replacement Fees

Meter Size	2016 Current	2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 Year 8	2025 Year 9	2026 Year 10
New Rates Effective		*1/1/2017*	*7/1/2017*	*7/1/2018*	*7/1/2019*	*7/1/2020*	*7/1/2021*	*7/1/2022*	*7/1/2023*	*7/1/2024*	*7/1/2025*
			Annual escalator	*3.5%*							
3/4"	$1.31	$1.35	$1.40	$1.45	$1.50	$1.55	$1.61	$1.66	$1.72	$1.78	$1.84
1"	$1.83	$1.89	$1.96	$2.03	$2.10	$2.17	$2.25	$2.33	$2.41	$2.49	$2.58
1-1/2"	$2.88	$2.98	$3.08	$3.19	$3.30	$3.42	$3.54	$3.66	$3.79	$3.92	$4.06
2"	$3.66	$3.79	$3.92	$4.06	$4.20	$4.35	$4.50	$4.66	$4.82	$4.99	$5.16
3"	$7.84	$8.12	$8.40	$8.70	$9.00	$9.32	$9.64	$9.98	$10.33	$10.69	$11.07
4"	$17.26	$17.86	$18.49	$19.13	$19.80	$20.50	$21.21	$21.96	$22.73	$23.52	$24.34
6"	$23.79	$24.63	$25.49	$26.38	$27.30	$28.26	$29.25	$30.27	$31.33	$32.43	$33.56

Source: HEC.

meter fee

Table A-13
City of Waterford Water Rate Study
Depreciation of Existing Assets

Asset Type	10-Year Average per Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Waterford System												
Hydrants	$2,396	$5,133	$5,063	$4,578	$4,578	$4,578	$2,341	$87	$0	$0	$0	$0
Services	$40,176	$43,164	$43,164	$43,164	$42,672	$42,217	$41,085	$40,256	$38,167	$37,530	$36,138	$34,380
Pipe Steel	$266	$266	$266	$266	$266	$266	$266	$266	$266	$266	$266	$266
Pipe PVC	$61,468	$61,468	$61,468	$61,468	$61,468	$61,468	$61,468	$61,468	$61,468	$61,468	$61,468	$61,468
Well #242	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Well #244	$2,270	$6,242	$6,242	$6,242	$6,242	$0	$0	$0	$0	$0	$0	$0
Well #245	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Well #286	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Well #302	$3,626	$5,636	$5,636	$5,636	$5,636	$5,636	$3,902	$3,902	$3,902	$0	$0	$0
Well #303	$14,337	$18,120	$18,120	$18,120	$14,219	$14,219	$12,485	$12,485	$12,485	$12,485	$12,485	$12,485
Subtotal Waterford System Depreciation	**$124,539**	**$140,029**	**$139,959**	**$139,474**	**$135,081**	**$128,383**	**$121,547**	**$118,463**	**$116,288**	**$111,749**	**$110,357**	**$108,599**
Hickman System												
Hydrants	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Services	$3,570	$3,570	$3,570	$3,570	$3,570	$3,570	$3,570	$3,570	$3,570	$3,570	$3,570	$3,570
Pipe Steel	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pipe PVC	$3,444	$3,444	$3,444	$3,444	$3,444	$3,444	$3,444	$3,444	$3,444	$3,444	$3,444	$3,444
Well #272	$709	$3,902	$3,902	$0	$0	$0	$0	$0	$0	$0	$0	$0
Well #309	$10,726	$19,664	$19,664	$19,664	$19,664	$19,664	$19,664	$0	$0	$0	$0	$0
Subtotal Hickman System	**$18,449**	**$30,579**	**$30,579**	**$26,678**	**$26,678**	**$26,678**	**$26,678**	**$7,014**	**$7,014**	**$7,014**	**$7,014**	**$7,014**
River Pointe System												
Buildings	$11,452	$11,452	$11,452	$11,452	$11,452	$11,452	$11,452	$11,452	$11,452	$11,452	$11,452	$11,452
Wells	$10,133	$10,133	$10,133	$10,133	$10,133	$10,133	$10,133	$10,133	$10,133	$10,133	$10,133	$10,133
Meter Radio Reader	$10,376	$10,376	$10,376	$10,376	$10,376	$10,376	$10,376	$10,376	$10,376	$10,376	$10,376	$10,376
Chemical Feed Systems	$3,950	$3,950	$3,950	$3,950	$3,950	$3,950	$3,950	$3,950	$3,950	$3,950	$3,950	$3,950
Distribution Piping	$10,880	$10,880	$10,880	$10,880	$10,880	$10,880	$10,880	$10,880	$10,880	$10,880	$10,880	$10,880
Distribution Valves	$3,609	$3,609	$3,609	$3,609	$3,609	$3,609	$3,609	$3,609	$3,609	$3,609	$3,609	$3,609
Electrical and Instrumentation	$21,791	$21,791	$21,791	$21,791	$21,791	$21,791	$21,791	$21,791	$21,791	$21,791	$21,791	$21,791
Filter and associated Controls	$9,005	$9,005	$9,005	$9,005	$9,005	$9,005	$9,005	$9,005	$9,005	$9,005	$9,005	$9,005
Generators	$3,300	$3,300	$3,300	$3,300	$3,300	$3,300	$3,300	$3,300	$3,300	$3,300	$3,300	$3,300
Hydrants	$2,057	$2,057	$2,057	$2,057	$2,057	$2,057	$2,057	$2,057	$2,057	$2,057	$2,057	$2,057
Mechanical Piping	$9,103	$9,103	$9,103	$9,103	$9,103	$9,103	$9,103	$9,103	$9,103	$9,103	$9,103	$9,103
Meters	$8,417	$8,417	$8,417	$8,417	$8,417	$8,417	$8,417	$8,417	$8,417	$8,417	$8,417	$8,417
Pumps	$10,735	$10,735	$10,735	$10,735	$10,735	$10,735	$10,735	$10,735	$10,735	$10,735	$10,735	$10,735
Tanks and Equipment	$13,604	$13,604	$13,604	$13,604	$13,604	$13,604	$13,604	$13,604	$13,604	$13,604	$13,604	$13,604
VFD Retrofit	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Pickup	$298	$298	$298	$298	$298	$298	$298	$298	$298	$298	$298	$298
Truck	$1,366	$1,366	$1,366	$1,366	$1,366	$1,366	$1,366	$1,366	$1,366	$1,366	$1,366	$1,366
Subtotal River Pointe System	**$130,079**	**$130,079**	**$130,079**	**$130,079**	**$130,079**	**$130,079**	**$130,079**	**$130,079**	**$130,079**	**$130,079**	**$130,079**	**$130,079**
Total Depreciation	**$273,067**	**$300,687**	**$300,617**	**$296,230**	**$291,837**	**$285,140**	**$278,303**	**$255,556**	**$253,380**	**$248,842**	**$247,450**	**$245,692**

Source: City of Waterford.

old dep

Table A-14
City of Waterford Water Rate Study
Estimated Depreciation of New Assets

New Asset	System	Asset Life	2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 Year 8	2025 Year 9	2026 Year 10
		years										
Waterford Wells W242 and W244	Waterf-RiverP	60	$0	$0	$0	$26,956	$26,956	$26,956	$26,956	$26,956	$26,956	$26,956
Groundwater Exploration	Waterf-RiverP	20	$0	$3,554	$7,215	$10,929	$10,929	$10,929	$10,929	$10,929	$10,929	$10,929
Water Conservation	Waterf-RiverP	n.a.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Consolidation of Water Systems	Waterf-RiverP	80	$0	$13,261	$43,994	$43,994	$43,994	$43,994	$43,994	$43,994	$43,994	$43,994
Downtown Pipe Replacement	Waterf-RiverP	80	$0	$0	$0	$3,165	$7,150	$12,748	$19,281	$26,407	$34,154	$42,553
Supply Strategy / Surface Water Project	Waterf-RiverP	n.a.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transmission Mains	Waterf-RiverP	80	$0	$0	$0	$0	$0	$0	$1,922	$3,901	$5,940	$8,040
Misc. Well Improvements	Waterf-RiverP	60	$6,438	$8,206	$10,027	$10,027	$10,027	$10,027	$10,027	$10,027	$10,027	$10,027
River Pointe Meter Replacement	Waterf-RiverP	20	$1,803	$3,659	$5,571	$5,571	$5,571	$5,571	$5,571	$5,571	$5,571	$5,571
SCADA Improvements	Waterf-RiverP	30	$5,493	$11,151	$11,151	$11,151	$11,151	$11,151	$11,151	$11,151	$11,151	$11,151
SCADA Improvements	Hickman	30	$1,373	$2,788	$2,788	$2,788	$2,788	$2,788	$2,788	$2,788	$2,788	$2,788
New Equipment / Supplies	Waterf-RiverP	15	$6,867	$13,939	$21,224	$28,728	$36,456	$44,416	$52,616	$61,061	$69,759	$78,719
Master Plan and Rate Study	Waterf-RiverP	n.a.	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Estimated Annual Depreciation			**$21,973**	**$56,559**	**$101,971**	**$143,310**	**$155,023**	**$168,581**	**$185,235**	**$202,785**	**$221,269**	**$240,728**

Source: City of Waterford and HEC.

new dep

Table A-15
City of Waterford Water Rate Study
Functional Allocation of Plant In Service

Plant in Service	Customer	Capacity	Use	Total Cost	Customer	Capacity	Use
Waterford System							
Hydrants	25%	75%		$5,133	$1,283	$3,849	$0
Services	25%	75%		$43,164	$10,791	$32,373	$0
Pipe Steel		100%		$266	$0	$266	$0
Pipe PVC		100%		$61,468	$0	$61,468	$0
Well #242		10%	90%	$0	$0	$0	$0
Well #244		10%	90%	$6,242	$0	$624	$5,618
Well #245		10%	90%	$0	$0	$0	$0
Well #286		10%	90%	$0	$0	$0	$0
Well #302		10%	90%	$5,636	$0	$564	$5,072
Well #303		10%	90%	$18,120	$0	$1,812	$16,308
Total				**$140,029**	**$12,074**	**$100,956**	**$26,998**
Percent of Plant in Service Waterford				**100%**	**9%**	**72%**	**19%**
River Pointe							
Buildings		100%		$11,452	$0	$11,452	$0
Wells		10%	90%	$10,133	$0	$1,013	$9,120
Meter Radio Reader	100%			$10,376	$10,376	$0	$0
Chemical Feed Systems		10%	90%	$3,950	$0	$395	$3,555
Distribution Piping		100%		$10,880	$0	$10,880	$0
Distribution Valves		100%		$3,609	$0	$3,609	$0
Electrical and Instrumentation		100%		$21,791	$0	$21,791	$0
Filter and associated Controls		100%		$9,005	$0	$9,005	$0
Generators			100%	$3,300	$0	$0	$3,300
Hydrants	25%	75%		$2,057	$514	$1,543	$0
Mechanical Piping		50%	50%	$9,103	$0	$4,551	$4,551
Meters		100%		$8,417	$0	$8,417	$0
Pumps		10%	90%	$10,735	$0	$1,074	$9,662
Tanks and Equipment		100%		$13,604	$0	$13,604	$0
VFD Retrofit		10%	90%	$0	$0	$0	$0
Pickup	34%	33%	33%	$298	$101	$98	$98
Truck	34%	33%	33%	$1,366	$465	$451	$451
Total				**$130,079**	**$11,457**	**$87,885**	**$30,737**
Percent of Plant in Service River Pointe				**100%**	**9%**	**68%**	**24%**
Total Waterford - River Pointe				**$270,107**	**$23,531**	**$188,841**	**$57,736**
Percent of Plant in Service Waterford-River Pointe				**100%**	**9%**	**70%**	**21%**
Hickman System							
Hydrants	25%	75%		$0	$0	$0	$0
Services	25%	75%		$3,570	$892	$2,677	$0
Pipe Steel		100%		$0	$0	$0	$0
Pipe PVC		100%		$3,444	$0	$3,444	$0
Well #272		10%	90%	$3,902	$0	$390	$3,511
Well #309		10%	90%	$19,664	$0	$1,966	$17,697
Total				**$30,579**	**$892**	**$8,478**	**$21,209**
Percent of Plant in Service Hickman				**100%**	**3%**	**28%**	**69%**
All Water Service Areas							
Total Plant in Service				$182,060	$12,967	$120,887	$48,207
Percentage of Plant in Service All Water Service Areas				**100%**	**7%**	**66%**	**26%**

Source: HEC.

plant

Table A-16
City of Waterford Water Rate Study
Functional Allocation of Revenue Requirement - All Water Systems

Expenditures	2016 City Estimate	Allocation Basis	Customer	Capacity	Use	Unclassified
Payroll - Salary	$229,107	Avg. of Classified	0%	0%	0%	100%
Payroll Overtime	$16,865	Avg. of Classified	0%	0%	0%	100%
Payroll Part-time	$8,410	Avg. of Classified	0%	0%	0%	100%
PERS Cost	$32,306	Avg. of Classified	0%	0%	0%	100%
Insurance-Dental/Medical/Vision	$64,954	Avg. of Classified	0%	0%	0%	100%
Payroll Taxes	$5,160	Avg. of Classified	0%	0%	0%	100%
Professional Services - Other	$40,500	Avg. of Classified	0%	0%	0%	100%
Professional Services - Legal	$5,500	Avg. of Classified	0%	0%	0%	100%
Professional Services - Engineer	$42,000	Avg. of Classified	0%	0%	0%	100%
Professional Services - Water System	$0	Avg. of Classified	0%	0%	0%	100%
Bank Fees and Service Charges	$2,250	Avg. of Classified	0%	0%	0%	100%
Other Contracts/Services	$4,600	Avg. of Classified	0%	0%	0%	100%
Property Maintenance	$2,500	Plant In Service	9%	68%	24%	0%
Equipment Maintenance	$137,000	Avg. of Classified	0%	0%	0%	100%
Vehicle Maintenance	$1,550	Peaking Month Use	71%	0%	29%	0%
Operating Supplies	$216,000	Peaking Month Use	71%	0%	29%	0%
Fuel	$46,500	Peaking Month Use	71%	0%	29%	0%
Postage & Mailing	$4,500	Customers	100%	0%	0%	0%
Small Tools/Special Supplies	$5,500	Peaking Month Use	71%	0%	29%	0%
Uniforms & Protective Clothing	$9,700	Plant In Service	9%	68%	24%	0%
Advertising & Legal Notices	$750	Customers	100%	0%	0%	0%
Dues & Publications	$750	Avg. of Classified	0%	0%	0%	100%
Other Miscellaneous Services	$1,500	Avg. of Classified	0%	0%	0%	100%
Training and Development	$3,800	Avg. of Classified	0%	0%	0%	100%
Travel, Meeting, Etc.	$2,000	Avg. of Classified	0%	0%	0%	100%
Communications/Telephone	$0	Customers	100%	0%	0%	0%
Electric, Gas, & Water	$2,300	Utilities	0%	0%	100%	0%
Capital Purchases - Equip/Furniture	$123,300	Avg. of Classified	0%	0%	0%	100%
Admin Reimbursement	$4,000	Avg. of Classified	0%	0%	0%	100%
Existing Debt Service	$116,311	Plant In Service	9%	68%	24%	0%
Capital Projects	$128,345	Plant In Service	9%	68%	24%	0%
TOTAL OPERATING EXPENDITURES	**$1,257,958**		**$219,505**	**$173,539**	**$140,912**	**$724,002**
Reallocate As All Others			$297,631	$235,305	$191,066	
ALLOCATION OF OPERATING EXPENDITURES	**$1,257,958**		**$517,136**	**$408,844**	**$331,978**	
Percentage of Allocation			**41%**	**33%**	**26%**	

Source: HEC and City of Waterford.

func alloc

Table A-17
City of Waterford Water Rate Study
Estimated Meter Equivalent Units for All Water Systems

Meter Size	Number of Meters	Meter Flow (gpm) [1]	Ratio to 3/4" Service	Equivalent Meter Units
3/4"	2,340	25	1.00	2,340
1"	44	40	1.60	70
1.5"	7	100	4.00	28
2"	22	160	6.40	141
3"	3	350	14.00	42
4"	7	600	24.00	168
6"	3	1,250	50.00	150
Total	**2,426**			**2,939**

Source: American Water Works Association (AWWA), City of Waterford, and HEC.

m equiv

[1] Intermittent maximum flow rates, AWWA, M6 Water Meters - Fifth Edition, pages 63-65.

Table A-18
City of Waterford Water Rate Study
Number of Meters for All Water Systems

		Customer Type			
Meter Size	**TOTAL**	**Residential**	**School**	**Landscape**	**Non-Residential**
3/4"	1,949	1,904	2	0	43
1"	435	415	0	0	20
1.5"	7	3	0	0	4
2"	22	10	1	0	11
3"	3	1	1	1	0
4"	7	2	3	2	0
6"	3	0	0	1	2
Total	**2,426**	**2,335**	**7**	**4**	**80**

Source: City of Waterford. meters

Table A-19
City of Waterford Water Rate Study
Projection of Water Demand

Water System	Fiscal Year Ending									
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Waterford-River Pointe	*All Figures in Hundreds of Cubic Feet*									
Waterford	352,803	350,976	352,402	359,913	367,171	374,350	380,282	389,498	397,330	405,095
River Pointe	57,650	68,052	68,328	68,416	68,428	68,397	68,119	68,402	68,409	68,378
Total Waterford-River Pointe	**410,453**	**419,028**	**420,731**	**428,330**	**435,599**	**442,747**	**448,401**	**457,900**	**465,739**	**473,474**
Hickman	40,022	39,815	39,977	40,028	40,035	40,017	39,854	40,020	40,024	40,006
Estimated Total Water Use	**450,475**	**458,843**	**460,707**	**468,358**	**475,634**	**482,764**	**488,256**	**497,920**	**505,763**	**513,479**

Source: City of Waterford and HEC.

demand

Table A-20
City of Waterford Water Rate Study
Price Elasticity Assumptions

Customer Type	Estimated Elasticity	2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 Year 8	2025 Year 9	2026 Year 10
% Change in Price to Meet Revenue Requirement			18.0%	5.9%	2.0%	1.6%	2.9%	15.1%	2.7%	2.4%	3.7%
Assumption for Inflation			2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Price Increase Adjusted for Inflation		**0.0%**	**15.5%**	**3.4%**	**-0.5%**	**-0.9%**	**0.4%**	**12.6%**	**0.2%**	**-0.1%**	**1.2%**
Waterford - River Pointe											
Waterford	-0.10	0.0%	-1.6%	-0.3%	0.0%	0.1%	0.0%	-1.3%	0.0%	0.0%	-0.1%
River Pointe	-0.10	0.0%	-1.6%	-0.3%	0.0%	0.1%	0.0%	-1.3%	0.0%	0.0%	-0.1%
Hickman	-0.10	0.0%	-1.6%	-0.3%	0.0%	0.1%	0.0%	-1.3%	0.0%	0.0%	-0.1%

Source: HEC.

elasticity

Table A-21
City of Waterford Water Rate Study
Projected Changes in Water Demand due to Price Changes

	2017 Year 1	2018 Year 2	2019 Year 3	2020 Year 4	2021 Year 5	2022 Year 6	2023 Year 7	2024 Year 8	2025 Year 9	2026 Year 10
Projected Growth for Waterford		*0.00%*	*0.00%*	*2.00%*	*2.00%*	*2.00%*	*2.00%*	*2.00%*	*2.00%*	*2.00%*
Waterford-River Pointe										
Waterford	352,803	352,803	352,803	359,859	367,056	374,397	381,885	389,523	397,313	405,259
River Pointe [1]	62,813	68,406	68,406	68,406	68,406	68,406	68,406	68,406	68,406	68,406
Total Waterford-River Pointe	**415,616**	**421,209**	**421,209**	**428,265**	**435,462**	**442,803**	**450,291**	**457,929**	**465,719**	**473,666**
Projected Growth for Hickman		*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*	*0.00%*
Hickman	40,022	40,022	40,022	40,022	40,022	40,022	40,022	40,022	40,022	40,022
Total Billable Water	**455,638**	**461,231**	**461,231**	**468,287**	**475,484**	**482,825**	**490,313**	**497,951**	**505,741**	**513,688**
Change in Demand due to Price [2]										
Waterford-River Pointe										
Waterford	0	-1,826	-400	54	115	-47	-1,603	-24	17	-164
River Pointe [1]	0	-354	-78	10	22	-9	-287	-4	3	-28
Total Waterford-River Pointe	**0**	**-2,181**	**-478**	**65**	**137**	**-56**	**-1,890**	**-29**	**20**	**-192**
Hickman	0	-207	-45	6	13	-5	-168	-3	2	-16
Total Billable Water	**0**	**-2,388**	**-523**	**71**	**150**	**-61**	**-2,058**	**-31**	**21**	**-208**

Source: HEC. elas demand

[1] River Pointe is built out in fiscal year 2018.

[2] Change applied to summer months consumption only.

Percent of Year	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%

Table A-22
City of Waterford Water Rate Study
Projected Water Fund Balances

	Fiscal Year Ending										
Projected Cash Balances	**2016 Estimated**	**2017 Year 1**	**2018 Year 2**	**2019 Year 3**	**2020 Year 4**	**2021 Year 5**	**2022 Year 6**	**2023 Year 7**	**2024 Year 8**	**2025 Year 9**	**2026 Year 10**
WATERFORD-RIVER POINTE											
Operating	**$3,420**	$165,396	$61,690	($37,471)	$181	$96,866	$60,643	($21,820)	$23,545	$99,351	$65,168
Rate Revenue	$1,050,305	$1,199,763	$1,553,433	$1,694,937	$1,821,673	$1,873,883	$1,923,620	$2,232,932	$2,293,305	$2,347,349	$2,437,277
Other Water Revenue	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119	$20,119
Interest Earnings	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250	$1,250
Meter Program Fees	$0	$21,769	$45,322	$46,908	$49,453	$52,137	$54,969	$57,955	$61,105	$64,428	$67,933
Operating Expenses	($760,782)	($820,799)	($929,074)	($961,248)	($1,047,564)	($1,084,556)	($1,122,878)	($1,139,795)	($1,115,709)	($1,155,678)	($1,197,105)
Meter Costs 2016	($10,666)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Intertie Engineering	($37,733)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Debt Service	$0	($83,046)	($83,046)	($235,394)	($235,394)	($322,774)	($239,728)	($239,728)	($239,728)	($239,728)	($239,728)
Transfer In from WPFA	$27,828	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transfer Out to Capital Fund	($120,845)	($400,000)	($650,000)	($470,000)	($400,000)	($460,000)	($600,000)	($650,000)	($700,000)	($820,000)	($860,000)
Transfer Out to Hickman Capital Fund	$0	($35,000)	$0	$0	$0	$0	$0	$0	$0	$0	$0
Transfer Out to Police	($7,500)	($7,763)	($8,034)	($8,315)	($8,606)	($8,908)	($9,219)	($9,542)	($9,876)	($10,222)	($10,579)
Transfer Out to Supply Strategy Fund	$0	$0	($49,131)	($50,605)	($104,246)	($107,374)	($110,595)	($227,826)	($234,661)	($241,700)	($248,951)
Ending Operating Balance	**$165,396**	**$61,690**	**($37,471)**	**$181**	**$96,866**	**$60,643**	**($21,820)**	**$23,545**	**$99,351**	**$65,168**	**$35,383**
Capital	**$0**	$124,774	$54,021	$153,183	$235,531	$248,846	$345,069	$467,532	$422,167	$386,361	$420,544
Umpqua Bank Proceeds	$2,666,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Annexation Impact Fees	$0	$0	$0	$0	$214,131	$226,663	$240,002	$253,850	$268,568	$276,228	$292,207
Service Fees	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000	$50,000
Capital Purchases	($2,493,540)	($296,050)	($376,119)	($212,882)	($426,060)	($415,586)	($542,661)	($774,299)	($829,328)	($886,957)	($947,294)
Meter Costs 2016	($9,075)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Add Back System Depreciation Net of CIP	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Umpqua Bank Repayment	($204,456)	($224,703)	($224,720)	($224,770)	($224,756)	($224,854)	($224,878)	($224,916)	($225,047)	($225,088)	($225,127)
Transfer In from Operating Fund	$115,845	$400,000	$650,000	$470,000	$400,000	$460,000	$600,000	$650,000	$700,000	$820,000	$860,000
Ending Capital Balance	**$124,774**	**$54,021**	**$153,183**	**$235,531**	**$248,846**	**$345,069**	**$467,532**	**$422,167**	**$386,361**	**$420,544**	**$450,329**
Ending Waterford-River Pointe Balance	**$290,170**	**$115,712**	**$115,712**	**$235,712**	**$345,712**	**$405,712**	**$445,712**	**$445,712**	**$485,712**	**$485,712**	**$485,712**
HICKMAN											
Operating	**$0**	($12,793)	$2,862	$140,897	$264,609	$290,211	$290,956	$297,079	$303,812	$306,189	$309,216
Rate Revenue	$91,639	$171,564	$335,901	$305,955	$220,189	$199,760	$209,716	$222,324	$227,946	$233,733	$239,716
Meter Program Fees	$0	$1,725	$3,571	$3,696	$3,825	$3,959	$4,097	$4,241	$4,389	$4,543	$4,702
Operating Expenses	($96,593)	($102,634)	($112,523)	($116,434)	($124,633)	($128,945)	($133,407)	($136,209)	($135,790)	($140,522)	($145,418)
Meter Costs 2016	($5,888)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Intertie Engineering	($1,951)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Debt Service	$0	$0	$0	($10,474)	($10,474)	($10,474)	($10,474)	($10,474)	($10,474)	($10,474)	($10,474)
Transfer Out to Capital Fund	$0	($55,000)	($85,000)	($55,000)	($55,000)	($55,000)	($55,000)	($55,000)	($65,000)	($65,000)	($65,000)
Transfer Out to Supply Strategy Fund	$0	$0	($3,914)	($4,031)	($8,304)	($8,554)	($8,810)	($18,149)	($18,693)	($19,254)	($19,832)
Ending Operating Balance	**($12,793)**	**$2,862**	**$140,897**	**$264,609**	**$290,211**	**$290,956**	**$297,079**	**$303,812**	**$306,189**	**$309,216**	**$312,909**
Capital	**$0**	**$231**	**$4,652**	**($103,384)**	**($202,095)**	**($197,697)**	**($198,443)**	**($204,565)**	**($211,298)**	**($208,676)**	**($206,702)**
Umpqua Bank Proceeds	$434,000	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital Purchases	($399,597)	($49,000)	($156,453)	($117,121)	($14,014)	($19,141)	($24,514)	($25,119)	($25,742)	($26,384)	($27,045)
Meter Costs 2016	($5,888)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Umpqua Bank Repayment	($33,284)	($36,579)	($36,582)	($36,590)	($36,588)	($36,604)	($36,608)	($36,614)	($36,635)	($36,642)	($36,649)
Transfer In from Operating Fund	$0	$55,000	$85,000	$55,000	$55,000	$55,000	$55,000	$55,000	$65,000	$65,000	$65,000
Transfer In from Waterford Operating Fund	$5,000	$35,000	$0	$0	$0	$0	$0	$0	$0	$0	$0
Ending Capital Balance	**$231**	**$4,652**	**($103,384)**	**($202,095)**	**($197,697)**	**($198,443)**	**($204,565)**	**($211,298)**	**($208,676)**	**($206,702)**	**($205,396)**
Ending Hickman Balance	**($12,562)**	**$7,513**	**$37,513**	**$62,513**	**$92,513**	**$92,513**	**$92,513**	**$92,513**	**$97,513**	**$102,513**	**$107,513**
UNDESIGNATED FUND BALANCE	**$277,608**	**$123,225**	**$153,225**	**$298,225**	**$438,225**	**$498,225**	**$538,225**	**$538,225**	**$583,225**	**$588,225**	**$593,225**
SUPPLY STRATEGY FUND (NEW - DESIGNATED)											
Beginning Balance	**$0**	**$0**	**$0**	**$53,045**	**$107,681**	**$220,232**	**$336,160**	**$455,565**	**$701,540**	**$954,894**	**$1,215,848**
Transfers In	$0	$0	$53,045	$54,636	$112,551	$115,927	$119,405	$245,975	$253,354	$260,955	$268,783
Ending Balance (Designated)	**$0**	**$0**	**$53,045**	**$107,681**	**$220,232**	**$336,160**	**$455,565**	**$701,540**	**$954,894**	**$1,215,848**	**$1,484,632**
TOTAL Fund Balance	**$277,608**	**$123,225**	**$206,270**	**$405,907**	**$658,457**	**$834,385**	**$993,790**	**$1,239,765**	**$1,538,119**	**$1,804,073**	**$2,077,857**

Source: HEC.

reserves

Table A-23
City of Waterford Water Rate Study
Sample Bill Impacts Non-Residential Users (Waterford)

Customer	Typical Use HCF	Current 2016	Fiscal Year Ending 2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Church		**3/4" Meter**					*Typical Monthly Water Bill*					
Service Fee		$15.03	$26.94	$31.47	$33.29	$33.54	$33.63	$34.14	$38.57	$39.08	$39.47	$40.37
Use Fee	23	$32.13	$35.38	$41.00	$43.25	$43.41	$43.41	$44.00	$50.07	$50.42	$50.82	$51.91
Total Monthly Bill Waterford		**$47.16**	**$62.32**	**$72.47**	**$76.54**	**$76.95**	**$77.04**	**$78.14**	**$88.64**	**$89.50**	**$90.29**	**$92.28**
		% increase	*32%*	*16%*	*6%*	*1%*	*0%*	*1%*	*13%*	*1%*	*1%*	*2%*
Restaurant		**2" Meter**										
Service Fee		$55.68	$167.55	$196.36	$207.86	$209.25	$209.65	$212.71	$240.86	$243.89	$246.19	$251.70
Use Fee	35	$48.65	$53.58	$62.09	$65.49	$65.73	$65.74	$66.63	$75.82	$76.35	$76.95	$78.61
Total Monthly Bill Waterford		**$104.33**	**$221.13**	**$258.45**	**$273.35**	**$274.99**	**$275.38**	**$279.34**	**$316.68**	**$320.23**	**$323.14**	**$330.31**
		% increase	*112%*	*17%*	*6%*	*1%*	*0%*	*1%*	*13%*	*1%*	*1%*	*2%*
Retail		**1" Meter**										
Service Fee		$21.33	$42.83	$50.07	$52.98	$53.36	$53.50	$54.30	$61.38	$62.18	$62.80	$64.22
Use Fee	12	$16.30	$17.95	$20.80	$21.94	$22.02	$22.02	$22.32	$25.40	$25.58	$25.78	$26.34
Total Monthly Bill Waterford		**$37.63**	**$60.79**	**$70.87**	**$74.92**	**$75.39**	**$75.52**	**$76.63**	**$86.78**	**$87.76**	**$88.58**	**$90.55**
		% increase	*62%*	*17%*	*6%*	*1%*	*0%*	*1%*	*13%*	*1%*	*1%*	*2%*

Source: HEC.

nonres comp

Table A-24
City of Waterford Water Rate Study
Estimated Bill Impact Summary for Large Water Users

Customer	Waterford School District	Hickman School District	Apartment Complex	Large Church	Mobile Home Park	Homeowners Association
			Water Charges based on 7 Months of Usage			
Total Current Rates	$18,401.18	$6,318.20	$8,132.81	$4,194.19	$6,901.30	$3,042.25
Total January 1, 2017 Rates	$33,647.77	$14,908.45	$10,778.15	$8,744.59	$14,345.94	$3,804.83
Difference	**$15,246.59**	**$8,590.25**	**$2,645.34**	**$4,550.40**	**$7,444.64**	**$762.58**
Average Per Month Increase	**$2,178.08**	**$1,227.18**	**$377.91**	**$650.06**	**$1,063.52**	**$108.94**
Percentage Increase	83%	136%	33%	108%	108%	25%

Source: City of Waterford and HEC.

bill summ