



Report to the City Council
Council Meeting of September 27, 2016

Agenda Section: New Business

Subject: Consideration and proposed adoption of a resolution accepting the Water and Wastewater Rate Study and to proceed with the Proposition 218 requirements for a Water and Wastewater Rate Increase

CEQA Status: Not a CEQA project

Prepared By: Jennifer Tuell, Water Conservation Coordinator *JT*
Steven Palmer, PE, Director of Public Works/City Engineer *SP*

Approved By: *SP*
Jennifer Phillips, City Manager

BACKGROUND

Current water and wastewater rates were last reviewed in 2011. The 2011 rate changes implemented annual rate increases for five years based on the Consumer Price Index (CPI). It is considered a best practice to evaluate water and wastewater (utility) rates every three to five years. The current water and wastewater rates do not provide adequate funding for the water and wastewater systems.

The City contracted with Hansford Economic Consulting to perform a Water and Wastewater Rate Study (November 10, 2015 - Resolution No. 2015-136, and amended the agreement September 13, 2016 - Resolution No. 2016-125). The purpose of this study is to determine the level of funding required to adequately fund the water and wastewater systems while providing the residents and businesses with safe and reliable water and wastewater systems that meet State and Federal requirements. Hansford Economic Consulting along with City Staff comprise the Rate Study Team.

The Study provides an explanation and justification of the calculated water and wastewater rates through June 30, 2022, and it documents adherence to the law regarding setting of rates by a municipality.

In November 1996, California voters approved Proposition 218 requiring compliance with certain procedures and standards with regard to "property-related" fee increases imposed by local governmental agencies. Per California Constitution Article XIID,

Section 6, water and wastewater 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 related service to the property.
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 Study calculates water and wastewater rates by customer type for the next ten years the City can only adopt rates for five years with the proposition 218 notification and hearing process.

DISCUSSION

On May 24, 2016 City Council authorized the re-establishment of the Ad Hoc Revenue Source Task Force (Task Force) to review and provide input on the draft rate study (Resolution No. 2016-66). Two meetings were held, one on August 4, 2016 and the other on September 13, 2016. The Rate Study Team requested feedback on policy decisions related to the Rate Study. These meetings were open to the public and recorded, in the hope of increasing transparency and public participation, as well as providing a place for members of the public to ask questions and receive additional information.

Staff has brought the Rate Study Report to Council to accept and to proceed with the Proposition 218 process. If Council accepts the report and directs staff to proceed with the Proposition 218 notices, the following will be the remaining steps;

1. Develop a Notice of Public Hearing on Proposed Increases to Water and Wastewater Rates, citing the proposed maximum rates, how the property owner can calculate their bill, how the revenues will be utilized, general information about the scheduled public hearing and instructions on how to protest the proposed rates;
2. Mail the notices to property owners and tenants, if any, at least 45 days before the scheduled public hearing (November 29, 2016); and

3. Collect and maintain a count of all written protest votes received. The City cannot impose the new rates if 50% plus one unique parcel protests are submitted to, and validated by, the City Clerk. Immediately after the close of the public hearing, the City Clerk will make a determination if a majority protest exists and report the results to the City Council.
4. If a majority protest does not exist, the City Council may adopt proposed rates by ordinance. If a majority protest does exist, the City Council could - at its discretion - place the matter on the ballot for voter approval.

The draft resolution, if adopted, will facilitate the Proposition 218 proceedings. New water and wastewater rates can be adopted after the Public Hearing scheduled for November 29, 2016 @ 6:00 pm.

FISCAL IMPACT

The fiscal impact of this item is the cost to print and mail Proposition 218 Notices. Water and wastewater rates will not be impacted by this resolution.

RECOMMENDED ACTION

Approve a resolution authorizing the City Manager to begin the Proposition 218 requirements for water and wastewater rate increases; and accept the Draft 2016 Water and Wastewater Rate Study prepared by Hansford Economic Consulting.

ATTACHMENTS

1. Resolution
2. DRAFT - Proposition 218 Notice
3. DRAFT - 2016 Water and Wastewater Rate Study prepared by Hansford Economic Consulting

CITY OF ST. HELENA

RESOLUTION NO. 2016-_____

**Acceptance of Water and Wastewater
Rate Study and Adoption of a
Resolution to Proceed with the
Proposition 218 Requirements for a
Water and Wastewater Rate Increase**

RECITALS

- A. Current water and wastewater rates were last reviewed in 2011. The 2011 rate changes implemented annual rate increases for five years based on the Consumer Price Index (CPI); and
- B. The current water and wastewater rates do not provide adequate funding for the water and wastewater systems; and
- C. The City contracted with Hansford Economic Consulting to perform a Water and Wastewater Rate Study (November 10, 2015 - Resolution No. 2015-136, and amended the agreement September 13, 2016 - Resolution No. 2016-125). The purpose of this study was to determine the level of funding required to adequately fund the water and wastewater systems, providing the residents and businesses with safe and reliable water and wastewater systems that meets State and Federal requirements; and
- D. In November 1996, California voters approved Proposition 218 requiring compliance with certain procedures and standards with regard to "property-related" fee increases imposed by local governmental agencies; and
- E. On May 24, 2016 City Council authorized the re-establishment of the Ad Hoc Revenue Source Task Force (Task Force) to review and provide input on the Rate Study (Resolution No. 2016-66). Two meetings were held, one on August 4, 2016 and the other on September 13, 2016, these meetings were open to the public and recorded; and
- F. Per California Constitution Article XIID, Section 6, water and wastewater 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 related service to the property,
 - 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, and
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.

RESOLUTION

The City Council of the City of St. Helena hereby resolves as follows:

1. Acknowledges acceptance of the Draft 2016 Water and Wastewater Rate Study completed by Hansford Economic Consulting.
2. Directs the City Manager to proceed with the Proposition 218 process, including:
 - Develop a Notice of Public Hearing on proposed increases to water and wastewater rates, citing the proposed maximum rates, how the property owner can calculate their bill, how the revenues will be utilized, general information about the scheduled public hearing and instructions on how to protest the proposed rates;
 - Mail the notices to property owners and/or tenants at least 45 days before the scheduled public hearing (tentatively scheduled for November 29, 2016 at 6:00 pm); and
 - Collect and maintain a count of all written protest votes received. The City cannot impose the new rates if 50% plus one unique parcel protests are submitted to, and validated by, the City Clerk. Immediately after the close of the public hearing, the City Clerk will make a determination if a majority protest exists and report the results to the City Council.
 - If a majority protest does not exist, the City Council may adopt proposed rates by ordinance. If a majority protest does exist, the City Council could - at its discretion - place the matter on the ballot for voter approval.

Approved at a Regular Meeting of the St. Helena City Council on September 27, 2016
by the following vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

APPROVED:

ATTEST:

Alan Galbraith
Mayor

Cindy Black
City Clerk



NOTICE OF PUBLIC HEARING PROPOSED WATER AND WASTEWATER RATE INCREASES

«Customer Name»
«Mailing Address»
«Mailing City»«Zip»

PUBLIC HEARING
November 29, 2016 @ 6:00 p.m.
Vintage Hall Board Room – Second Floor
465 Main Street, St. Helena

PROPOSITION 218 NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that the City of St. Helena will hold a Public Hearing on Tuesday, November 29, 2016 at 6:00 p.m. at the location stated above to consider the adoption of increases to the rates for its water and wastewater services.

WHY ARE WATER AND WASTEWATER RATE INCREASES NEEDED?

The City has not performed an analysis of its rates for water and wastewater services since 2011. The City's water and wastewater utilities rely on rates to fund operating and capital needs. It is considered a best practice to analyze rate structures every three to five years.

Currently, the water fund is using reserves to fund general operations, and has less than a 25% reserve. The wastewater fund has no reserves. A reserve account is needed in order to fund emergencies and unforeseen costs. In 2011, the City adopted a target of reaching an operating reserve of 25% of the annual budget in each of the water and wastewater funds.

The City makes every effort to provide its customers with the most efficient and cost effective water and wastewater services possible. Rates need to be raised to: (1) adequately fund the water and wastewater systems so they can be operated safely and provide residents and businesses with reliable service; (2) maintain the operational and financial stability of the utilities; (3) comply with state and federal regulatory water and wastewater treatment and disposal requirements; (4) fund water and wastewater infrastructure needs; (5) provide timely maintenance of existing facilities; and (6) provide operating reserves of 25% of the annual water and wastewater budgets for emergencies and unforeseen costs.

The City engaged an independent consultant to examine current and projected water and wastewater utility system revenue needs. The consultant's analysis demonstrates a need to raise water and wastewater rates over the next five years to achieve funding needs. The proposed rate structures will provide revenues that (1) recover costs reasonably borne in providing the services; (2) are equitable to all customer classes; and (3) are proportionate to the cost of the service attributable to the parcels within each customer class.

The September 20, 2016, Water and Wastewater Rate Study and cost data used to calculate the proposed rate increases in the water and wastewater service charges are available online (www.cityofstheleena.org/ratestudy) or in person at the locations identified on Page 6. City staff is also available to answer questions.

Questions?

Contact Jennifer Tuell @
jtuell@cityofsthelena.org
707.968.2635

¿Preguntas?

Contacte a Carlos Uribe
curibe@cityofsthelena.org
707.486.6144

YOUR RIGHTS

If you are the record owner of a property subject to the proposed rates or a tenant directly liable for the payment of water and wastewater service fees (i.e., a customer of record), you may submit a written protest against the proposed rate changes. Written protests may be submitted in person or by mail to the City Clerk, City of St. Helena, 1480 Main Street, St. Helena, CA 94574, or in person at the Public Hearing (date, time and location noted above), so long as they are **received** prior to the conclusion of public testimony at the Public Hearing. Protests that are postmarked but not received prior to the Public Hearing will not be counted. Please identify on the front of the envelope “Water and Wastewater Rate Protest” for any protest, whether mailed or submitted in person to the City Clerk. Protests submitted verbally, by e-mail, facsimile, or other electronic means will not be accepted.

Each protest **must**: (1) be in writing; (2) state that the protest is being submitted in opposition to the proposed water and wastewater rate increases; (3) provide the location of the identified parcel or parcels for which the protest is submitted (by assessor’s parcel number or street address); and (4) include the name and original signature of the property owner or customer of record submitting the protest. Only one written protest per parcel will be counted.

The City Council will consider all written protests timely submitted and consider all public comments made at the Public Hearing. Oral comments at the Public Hearing will not qualify as formal protests unless accompanied by a written protest. At the conclusion of the Public Hearing, the City Council will consider adopting the proposed rate increases. If, at the close of the Public Hearing, complete written protests are submitted by the record owners or customers of record for the majority of the parcels served by the City’s water and/or wastewater utilities (50% plus one) (a “majority protest”), the City will not approve the proposed rates. If, at the close of the Public Hearing, a majority protest does not exist, the City Council may impose rate increases up to the maximum amounts proposed. If adopted, the new water and wastewater rates will be effective for the February 2017 billing cycle (inclusive of service provided in January 2017) and thereafter the approved schedule of rate increases will go into effect for each November billing cycle (inclusive of service provided in October) of 2017, 2018, 2019, 2020, and 2021.

MAJOR CAPITAL PROJECTS:

- York Creek Upper Dam Removal/Mitigation- \$6.5M
- Wastewater Treatment Plant Upgrades Phase I - \$7.2M
- Dwyer Road Booster - \$2.6M
- Bell Canyon Intake Tower Replacement - \$2.0M
- Holmes Tank Upgrade - \$1.4M
- Bell Canyon Creek Inflow Measurement - \$0.9M

PROPOSED WATER RATES

The City is proposing to adopt a five-year water rate schedule shown in the table on the Page 3. The rate schedule increases rates to keep in line with funding needs. The City remains committed to operating as efficiently as possible and will only increase rates as needed based on an regular review of utility finances.

Under the current rate structure, customers are charged a monthly fixed service charge and a variable use rate for metered water use. Under the current rate structure, the variable use rate differs depending on the amount of metered water used by customer type. To more accurately represent the cost of delivering water, customer use, and promote water conservation, the City is proposing to implement a seasonal water rate structure, with higher use rates per hundred cubic feet (HCF) in the peak season, May through October, and lower use rates per HCF in

the off-peak season, November through April. In addition, the proposed rate structure includes a drought surcharge. The drought surcharge would be applied when the City determines it is in Phase 1 water restrictions, as will be defined in the city municipal code.

Customers wanting to utilize raw water available at the lower creek reservoir, per St. Helena Municipal Code, Section 13.12.030, must obtain a permit through the City on a quarterly basis. The permit and instructions are available on the City website: <http://www.cityofsthenelena.org/resource>.

Proposed Five-Year Water Rate Schedule

Charges	Current	Billing Period Beginning *					
		2/8/2017	11/8/2017	11/8/2018	11/8/2019	11/8/2020	11/8/2021
Service Charge		Monthly Charges per Meter					
5/8", 3/4" & SF 1"	\$27.52	\$43.22	\$51.71	\$60.59	\$64.78	\$68.91	\$73.27
1"	\$63.80	\$80.08	\$96.76	\$114.44	\$123.35	\$132.22	\$141.61
1.5"	\$124.12	\$141.67	\$172.02	\$204.36	\$221.14	\$237.94	\$255.72
2"	\$196.50	\$215.12	\$261.84	\$311.76	\$337.99	\$364.27	\$392.10
3"	\$365.51	\$413.06	\$503.54	\$600.40	\$651.86	\$703.51	\$758.21
4"	\$607.01	\$640.46	\$780.29	\$930.11	\$1,010.10	\$1,090.44	\$1,175.54
6"	\$1,210.18	\$1,252.50	\$1,528.85	\$1,825.17	\$1,983.80	\$2,143.19	\$2,312.05
Private Fire Protection		Monthly Charges per Fire Service Pipe					
4"	\$4.00	\$16.93	\$19.84	\$22.75	\$23.77	\$24.72	\$25.71
6"	\$6.00	\$49.19	\$57.62	\$66.10	\$69.05	\$71.81	\$74.69
8"	\$8.00	\$104.82	\$122.79	\$140.85	\$147.15	\$153.03	\$159.16
Raw Water <i>per Gallon</i>	\$0.00267	\$0.00471	\$0.00552	\$0.00633	\$0.00661	\$0.00688	\$0.00715
TREATED WATER USE CHARGES PER HCF							
NON-DROUGHT PERIOD	[1]						
Off-Peak (Nov-Apr)		\$5.50	\$6.37	\$7.19	\$7.37	\$7.54	\$7.71
Peak (May-Oct)		\$6.11	\$7.09	\$8.00	\$8.20	\$8.38	\$8.58
DROUGHT PERIOD	[1]						
Off-Peak (Nov-Apr)		\$5.81	\$6.73	\$7.60	\$7.79	\$7.97	\$8.15
Peak (May-Oct)		\$6.46	\$7.49	\$8.45	\$8.66	\$8.86	\$9.06

Source: HEC.

* Dates reflect the current billing cycle; if the billing cycle date changes so will these effective dates.

[1] Current Rate Structure rates as follows:

Tiers by customer category (in hcf):	<u>Tier 1</u>	<u>Tier 2</u>	<u>Tier 1</u>	<u>Tier 2</u>
Single family	0-14	15+	Non-residential <=1"	0-36 37+
Multi-family	0-5	6+	Non-residential 1.5"	0-120 121+
			Non-residential 2"	0-192 193+
<i>Price per HCF</i>	\$4.48	\$6.74	Non-residential 3"	0-360 361+
<i>Price per HCF - Landscape Irrigation</i>	\$5.22		Non-residential 4"	0-600 601+
			Non-residential 6"	0-1,250 1,251+
			Non-residential 8"	0-1,920 1,921+

PROPOSED WASTEWATER RATES

Existing wastewater rates are shown in the table below.

Existing Wastewater Rate Schedule

Land Use	Base Monthly Rate (2016)	Usage Rate (\$ per hcf of Winter Water Use)
Residential		[1]
Single Family	\$47.35	\$3.94
Multi-family	[2]	\$3.94
Non-Residential Base Rates		
5/8" & 3/4" Meter	\$42.12	
1" Meter	\$102.42	
1 1/2" Meter	\$202.92	
2" Meter	\$323.53	
3" Meter	\$604.94	
4" Meter	\$1,006.96	
6" Meter	\$2,012.00	
Non-Residential Usage Rates (per hcf)		
Car Wash		\$2.85
Schools		\$3.17
Laundry/Laundromat		\$3.34
Churches		\$3.64
City Buildings		\$3.64
Commercial (General)		\$3.64
Winery (Sutter Home)		\$4.27
Motels without Food		\$4.35
Service Stations/Auto Repair		\$4.70
Mixed Retail with Food		\$6.79
Motels with Food		\$8.75
Restaurant		\$11.68
Grocery		\$11.87
Mortuary		\$11.87
Winery (Merryvale)		\$20.94
Winery (Spottswoode)		\$20.94

Source: City of St. Helena.

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[1] Single family usage charge based on average winter water use, determined as average monthly usage for billing cycles with read dates from January through March. Months with zero usage are to be excluded from the averaging. Usage charge to be adjusted annually in April, based on the newest winter average.

[2] Multi-family pays same base charges based on meter size as non-residential.

[3] Multi-Units (2 unit dwellings) currently charged same rate as Single Family. For this rate study, we include them in the Multi-Family rate

The City is proposing to adopt the five-year wastewater rate schedule shown in the table on Page 5. The table indicates the proposed maximum rates and effective dates for the wastewater rates. The rate schedule increases rates to keep in line with funding needs. The City remains committed to operating as efficiently as possible and will only increase wastewater rates as needed based on regular review of wastewater utility finances.

Proposed Five-Year Wastewater Rate Schedule

Customer Category		Fiscal Year Ending					
		2017	2018	2019	2020	2021	2022
	<i>Billing Period Beginning * -----></i>	2/8/2017	11/8/2017	11/8/2018	11/8/2019	11/8/2020	11/8/2021
Residential							
Single Family	monthly per unit	\$48.04	\$55.24	\$70.13	\$73.03	\$74.18	\$75.23
Multi-Family	monthly per unit	\$29.07	\$33.42	\$42.43	\$44.18	\$44.88	\$45.52
Mobile Homes	monthly per unit	\$43.11	\$49.57	\$62.93	\$65.53	\$66.56	\$67.51
<i>Residential Rate per HCF</i>	<i>per HCF</i>	<i>\$4.69</i>	<i>\$5.39</i>	<i>\$6.84</i>	<i>\$7.12</i>	<i>\$7.23</i>	<i>\$7.34</i>
Schools Flat Rate per Student	monthly per student	\$1.40	\$1.62	\$2.15	\$2.21	\$2.26	\$2.28
Non-Residential							
Car Wash	monthly per account	\$209.93	\$243.25	\$328.36	\$336.45	\$343.13	\$346.45
Religious Places/Community Centers	monthly per account	\$35.34	\$40.85	\$54.06	\$55.68	\$56.71	\$57.34
Commercial [1]	monthly per account	\$62.70	\$72.20	\$92.64	\$96.19	\$97.78	\$99.09
Groceries and Mortuaries	monthly per account	\$433.93	\$492.12	\$552.00	\$595.15	\$599.41	\$613.71
Laundry	monthly per account	\$970.94	\$1,121.45	\$1,475.85	\$1,522.21	\$1,549.87	\$1,567.76
Mixed Retail w/ Food	monthly per account	\$541.20	\$617.30	\$730.21	\$775.32	\$783.78	\$799.17
Motel with Food	monthly per account	\$2,617.64	\$2,978.36	\$3,444.90	\$3,681.23	\$3,715.59	\$3,795.12
Motel without Food	monthly per account	\$642.15	\$738.08	\$933.28	\$972.87	\$987.93	\$1,002.28
Restaurant	monthly per account	\$840.03	\$952.80	\$1,070.03	\$1,153.27	\$1,161.63	\$1,189.23
Napa Valley College	monthly per account	\$2,889.93	\$3,341.62	\$4,436.77	\$4,565.57	\$4,651.20	\$4,701.87
Service Station	monthly per account	\$93.25	\$107.06	\$134.07	\$140.12	\$142.20	\$144.37
Winery Production (Merryvale/Spottswode)	monthly per account	\$989.21	\$1,116.93	\$1,199.98	\$1,310.53	\$1,315.85	\$1,351.87
Sutter Home Winery	monthly per account	\$876.04	\$1,007.39	\$1,278.85	\$1,331.67	\$1,352.66	\$1,371.89
<i>Car Wash</i>	<i>per HCF</i>	<i>\$3.43</i>	<i>\$3.97</i>	<i>\$5.36</i>	<i>\$5.49</i>	<i>\$5.60</i>	<i>\$5.65</i>
<i>Religious Places/Community Centers</i>	<i>per HCF</i>	<i>\$3.72</i>	<i>\$4.30</i>	<i>\$5.69</i>	<i>\$5.86</i>	<i>\$5.97</i>	<i>\$6.03</i>
<i>Commercial [1]</i>	<i>per HCF</i>	<i>\$4.27</i>	<i>\$4.92</i>	<i>\$6.31</i>	<i>\$6.55</i>	<i>\$6.66</i>	<i>\$6.75</i>
<i>Groceries and Mortuaries</i>	<i>per HCF</i>	<i>\$10.30</i>	<i>\$11.68</i>	<i>\$13.10</i>	<i>\$14.12</i>	<i>\$14.22</i>	<i>\$14.56</i>
<i>Laundry</i>	<i>per HCF</i>	<i>\$3.81</i>	<i>\$4.40</i>	<i>\$5.79</i>	<i>\$5.97</i>	<i>\$6.08</i>	<i>\$6.15</i>
<i>Mixed Retail w/ Food</i>	<i>per HCF</i>	<i>\$6.73</i>	<i>\$7.68</i>	<i>\$9.08</i>	<i>\$9.64</i>	<i>\$9.75</i>	<i>\$9.94</i>
<i>Motel with Food</i>	<i>per HCF</i>	<i>\$7.91</i>	<i>\$9.00</i>	<i>\$10.41</i>	<i>\$11.12</i>	<i>\$11.23</i>	<i>\$11.47</i>
<i>Motel without Food</i>	<i>per HCF</i>	<i>\$4.59</i>	<i>\$5.27</i>	<i>\$6.67</i>	<i>\$6.95</i>	<i>\$7.06</i>	<i>\$7.16</i>
<i>Restaurant</i>	<i>per HCF</i>	<i>\$10.18</i>	<i>\$11.54</i>	<i>\$12.96</i>	<i>\$13.97</i>	<i>\$14.07</i>	<i>\$14.41</i>
<i>Napa Valley College</i>	<i>per HCF</i>	<i>\$3.67</i>	<i>\$4.24</i>	<i>\$5.63</i>	<i>\$5.79</i>	<i>\$5.90</i>	<i>\$5.97</i>
<i>Service Station</i>	<i>per HCF</i>	<i>\$4.82</i>	<i>\$5.53</i>	<i>\$6.93</i>	<i>\$7.24</i>	<i>\$7.35</i>	<i>\$7.46</i>
<i>Winery Production (Merryvale/Spottswode)</i>	<i>per HCF</i>	<i>\$17.31</i>	<i>\$19.55</i>	<i>\$21.00</i>	<i>\$22.93</i>	<i>\$23.03</i>	<i>\$23.66</i>
<i>Sutter Home Winery</i>	<i>per HCF</i>	<i>\$4.50</i>	<i>\$5.17</i>	<i>\$6.57</i>	<i>\$6.84</i>	<i>\$6.95</i>	<i>\$7.04</i>

Source: HEC.

* Dates reflect the current billing cycle; if the billing cycle date changes so will these effective dates.

[1] Commercial includes City buildings.

Under the current rate schedule residential only includes single family residential. Multi-family and mobile home parks are categorized as non-residential. The proposed rate schedule includes all types of residential under the residential category (single family, multi-family, mobile home and so forth), and each dwelling unit will be charged a fixed monthly service charge plus a variable charge based on monthly winter average water use per dwelling unit. Monthly winter average water use is calculated on the months of January through March, excluding any months with zero usage. The average winter water use represents the monthly water consumption that is returned to the wastewater treatment plant.

The current wastewater rates for non-residential customers, including multi-family residential customers, include a fixed monthly service charge per the size of the meter serving the property, and a variable charge based on

monthly winter average water use per account. Changes to the current rate structure include billing schools fixed monthly service charges on a per student basis and billing all other non-residential accounts a fixed monthly service charge per account. As under the current rate structure, under the proposed rate structure non-residential customers (with the exception of schools) will have a variable use charge that reflects the strength of the wastewater discharged by the non-residential customer type. The greater the strength of the wastewater discharged, the more it costs the City to treat the wastewater. Under the proposed rate structure, the rates for all customers are based on flow and wastewater strength. The non-residential variable use charge will be applied to the average winter water used in the months January through March. The City Public Works Director will determine the non-residential customer's strength category for each non-residential customer. When multiple uses are served through one water meter, the City will apply the rate for the dominant use. The proposed modifications are intended to more accurately reflect actual customer usage patterns, and the strength of customer wastewater.

SAVING WATER

Making small changes in our daily habits saves water. Things like finding and fixing leaks, repairing worn out toilet flappers, or adjusting your sprinkler timers to avoid runoff all help. The City is here to help save water in lots of ways! Check out the following rebate programs on the City website: <http://www.cityofsthelena.org/water>.

- Toilet Retrofit
- Clothes Washer
- Smart Irrigation Controller
- Cash for Grass
- Laundry to Landscape (Greywater)
- Rainwater Harvesting
- Recirculating Hot Water Pump
- Water Neutrality Program

To view a copy of the Rate Study please visit:

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**HANSFORD ECONOMIC
CONSULTING**



**City of St. Helena (2016)
Water and Wastewater
Rate Study**

DRAFT

September 20, 2016

TABLE OF CONTENTS

SECTION	PAGE
1. Introduction	1
1.1 Purpose of Study	1
1.2 Background on the Utility Systems	2
1.3 Financial Health of the Utility Funds	3
1.4 Customer Base	5
1.5 Major Assumptions	8
1.6 Rate Structures	10
2. Water Rate Study Summary	12
2.1 Key Findings	12
2.2 Methodology	13
2.3 New Rate Impacts	14
3. Wastewater Rate Study Summary	18
3.1 Key Findings	18
3.2 Methodology	19
3.3 New Rate Impacts	19
4. Combined Utilities Impact	22
4.1 Residential Impacts	22
4.2 Affordability	23
4.3 Large Water Users Impacts	25

LIST OF TABLES

TABLE		PAGE
1	Calculated Water Rates through Fiscal Year Ending 2022	13
2	Calculated Wastewater Rate Schedule	19
3	Affordability of Water Utility Costs for Residents	24

LIST OF FIGURES

FIGURE		PAGE
1	Projected Water Cash Balances	4
2	Projected Wastewater Cash Balances	5
3	Historical Population Growth	6
4	Water Customers	6
5	Water Use by Customer Type	7
6	Typical Annual Wastewater Flows by Customer Type	7
7	Components of Water Revenue Requirement	14
8	Typical Monthly Bill for the Off-Peak Season	15
9	Typical Monthly Bill for the Peak Season	15
10	Non-Residential Water Rate Impact	16
11	Average Monthly Water Charges for Large Water Users	17
12	Components of Wastewater Revenue Requirement	20
13	Bill Impacts for Single Family Homes	20
14	Average Monthly Bill Impact for Sample Non-Residential Users	21
15	Average Monthly Bill Impact for Large Water Users	21
16	Single Family Home Utility Costs in Off-Peak Months, based on 7 HCF	22
17	Single Family Home Utility Costs in Peak Months, based on 17 HCF	22
18	Impact of Combined Utility Bill Increases	23
19	Combined Utilities Impact on Large Water Users	25

Section 1: INTRODUCTION

1.1 PURPOSE OF STUDY

The City's responsibility as a water and wastewater system operator is to first and foremost provide the residents and businesses of the City with clean, safe potable water and a reliable wastewater system that meets State and Federal regulatory requirements; second, to protect its water resources, third to manage and maintain the utility systems infrastructure (assets) to be fiscally responsible to current and future residents, and fourth to support public safety (primarily fire defense).

The purpose of this Water and Wastewater Rate Study (Study) is to determine the level of funding required over the next five years to adequately fund the water and wastewater utility systems. This report provides an explanation and justification of the calculated water and wastewater rates through fiscal year 2022 and it documents adherence to the law regarding setting of rates by a municipality. Per California Constitution Article 13D, water and wastewater 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 Study includes two accompanying documents, 'City of St. Helena Water Rate Study Technical Memorandum' and 'City of St. Helena Wastewater Rate Study Technical Memorandum'. These documents provide the detailed calculations for each utility rate study.

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.

On May 24, 2016 St. Helena City Council authorized the re-establishment of the Ad Hoc Revenue Source Task Force (Task Force) to review and provide input on the rate study (Resolution No. 2016-

66). Two meetings were held: one on August 4, 2016 and the other on September 13, 2016. The Rate Study Team, consisting of Hansford Economic Consulting and City staff members, requested feedback on policy decisions related to the Rate Study. These meetings were open to the public and recorded, in the hope of increasing transparency and public participation, as well as providing a place for members of the public to ask questions and receive additional information.

Key acronyms used regularly throughout the report are the following:

City = City of St. Helena
 HCF = Hundred Cubic Feet
 MGD = Million Gallons a Day
 CIP = Capital Improvement Project(s)
 SF = Single Family
 SRF = State Revolving Fund
 MHI = Median Household Income

1.2 BACKGROUND ON THE UTILITY SYSTEMS

The City of St. Helena (City) provides water and wastewater services to residents and businesses inside and outside of the City. The City's water sources include surface water from Bell Canyon Reservoir, groundwater from Stonebridge Wells, and purchased treated water from the City of Napa. The Louis Stralla Water Treatment Plant (water treatment plant), which treats surface water stored in Bell Canyon Reservoir, has a capacity of 4.3 million gallons a day (MGD); however, there are flow limitations in the inlet piping which restricts use of the plant to less than its capacity. Stonebridge Wells includes two active groundwater wells and a filtration facility, including filtration tanks, chlorination facilities, and a backwash return system. The filter removes iron and manganese. Treated water from the City's water sources is distributed via six storage tanks and four pump stations.

The City first entered into an agreement with the City of Napa for delivery of treated water in September 2006. The third amendment to that agreement, entered into in December 2011, increases the minimum annual delivery to 600 acre-feet with optional delivery up to 800 acre-feet. Optional additional delivery of 200 acre-feet may be delivered provided the City of Napa has sufficient water supply. If Napa does not have sufficient supply it will attempt to acquire supplemental dry-year water on a single year basis from an outside source. Price and payment terms of the optional supply will differ from the base supply, as detailed in the agreement.

The City currently distributes over 550 million gallons of clean drinking water each year. Water use fluctuates year to year depending on several factors including, but not limited to, growth, weather, sustained drought, plumbing retrofits, and pricing of water. Untreated water suitable for construction water purposes only is also available for purchase from the Lower Reservoir adjacent to York Creek.

The City's wastewater system consists of a collection system of more than 22 miles of pipe. Effluent is treated at the 0.5 million gallons a day (average daily dry weather flow) treatment plant. The wastewater treatment plant was built in 1967. The secondary level treatment plant discharges to the Napa River or land (City-owned grass fields, redwood/willow trees, and mosquito fish ponds).

The City's National Pollutant Discharge Elimination System (NPDES) permit was renewed in March 2016; at the same time a Cease and Desist Order (CDO) No. R2-2016-0004 was issued because the City is unable to meet the more stringent effluent requirements of the renewed NPDES permit. A draft feasibility study was prepared for the City in August 2016 which recommends improvements at the wastewater treatment plant so that the City can be in compliance and the CDO lifted.

Separate water and wastewater enterprise funds account for the revenues and expenses associated with each of these services. An enterprise fund is a fund that is intended to recover its costs through user fees and charges. Enterprise funds provide the repayment capacity for, and make debt service payments on, any debt incurred for capital projects; therefore, enterprise fund bond-funded projects do not diminish the City's general fund debt capacity.

Enterprise funds need to be managed in a fiscally responsible manner so that users are paying for their current use of the system. Both utility systems need constant maintenance to prolong the life of the assets. If there is insufficient collection of money for system maintenance future users have to pay for repairs when they become critical and costs are more expensive.

1.3 FINANCIAL HEALTH OF THE UTILITY FUNDS

Currently both utility funds are financially at risk. The City continues to use available reserves for both operating expenses and capital improvement projects (projects are funded on a pay-as-you-go basis). The water operating fund currently has \$525,000 of unrestricted cash; the wastewater operating fund has no cash reserves. Total cash balances for operating and capital funds combined as of July 1, 2016 were \$6.1 million in the water fund and \$1.1 million in the wastewater fund.

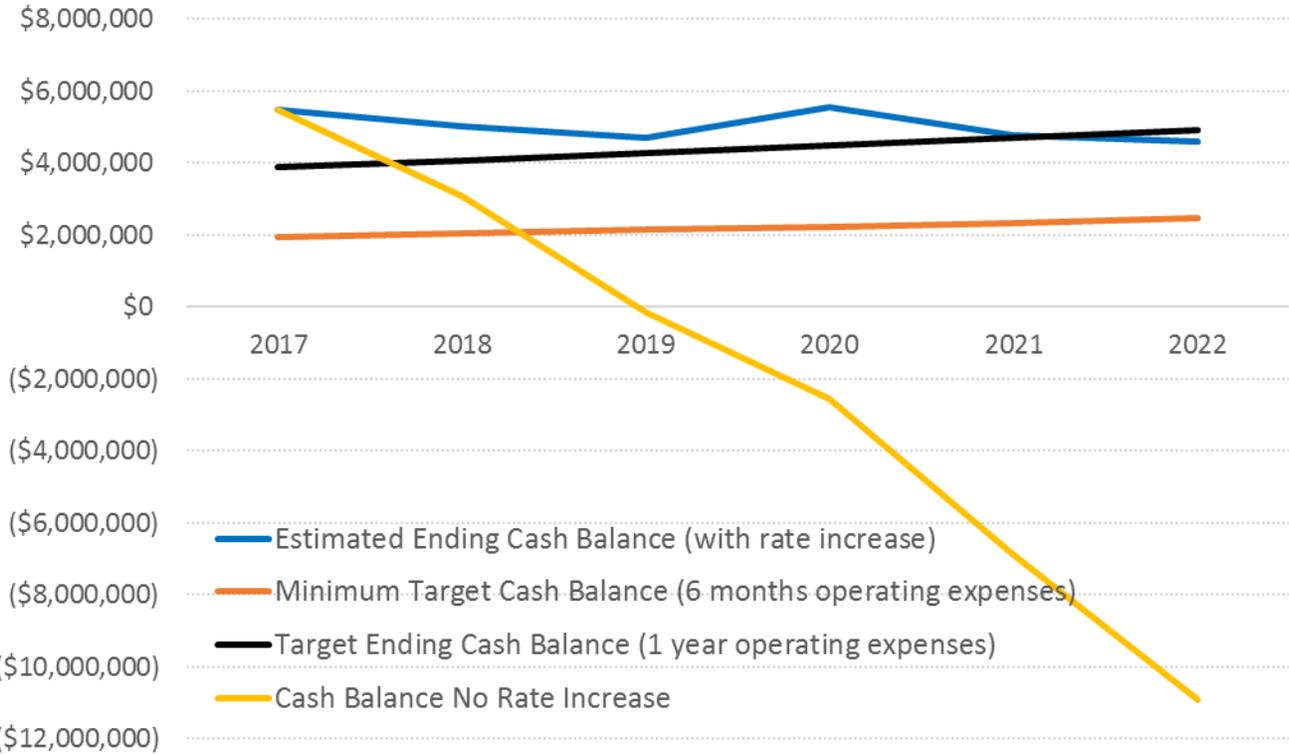
Utility system costs typically increase at a greater rate than inflation and while City rates have increased in recent years they have not kept pace with the fiscal needs of the water and wastewater enterprise funds. In addition, the current rates do not collect for system rehabilitation of either system which has resulted in the City having to use reserves and delay necessary capital improvements. The lack of improvements to major infrastructure has resulted in heavy fines to the City. If rates are not increased to pay for these items, the City's General Fund will need to be utilized. These are unsustainable actions that will negatively impact other City services such as parks, streets, and library if not corrected.

The revenue requirement is the amount that must be raised from rates or other charges for service net of other income such as investment earnings, area surcharges, finance charges, and other miscellaneous revenues. The revenue requirement for the water fund is projected to increase from \$5.5 million to \$8.3 million over the next 5 years. The revenue requirement for the wastewater fund is projected to increase from \$3.0 million to \$4.6 million over the next 5 years.

Including the operating and capital funds for each utility, both the water and wastewater enterprise funds will have negative cash balances within two years without rate increases.

Figure 1 shows the projected cash balances (operating and capital funds combined) for water and **Figure 2** shows the projected cash balances for wastewater (operating and capital funds combined) through fiscal year 2022.

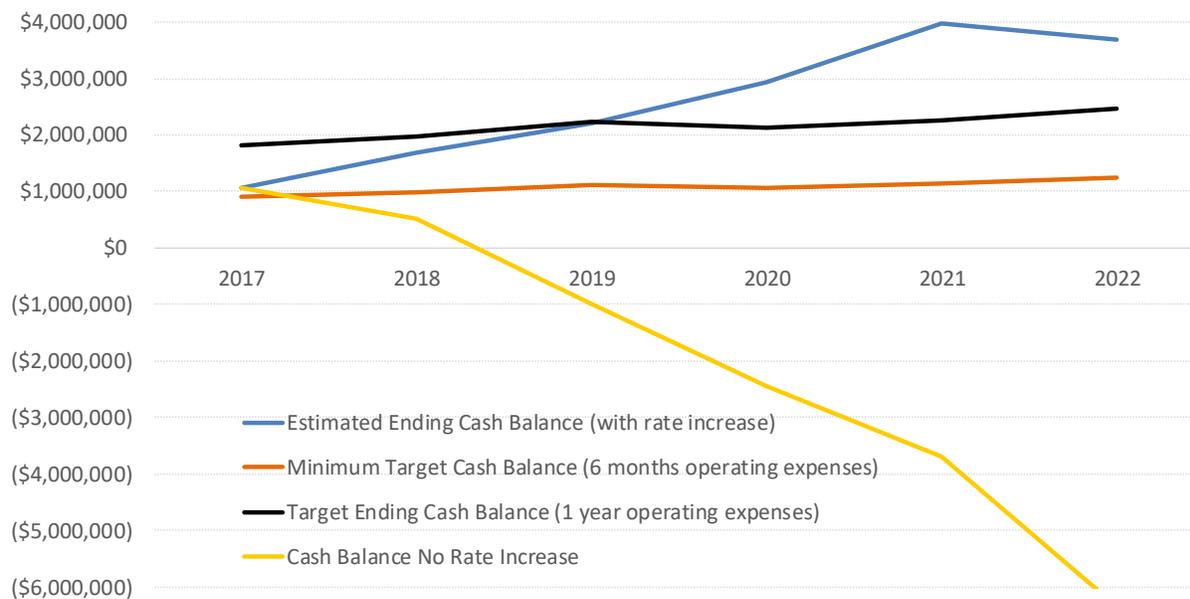
Figure 1
Projected Water Cash Balances



The blue lines show the projected total cash balance with rate increases. The yellow lines show the projected cash balances with no rate increases. The black lines show the target cash balance, equal to one year of operating expenses, and the orange lines show the minimum cash balance at 6 months operating expenses. The goal over time is for the black and blue lines to be as close as possible. These graphs demonstrate that the rate increases are essential.

The projected cash balance for wastewater (with a rate increase) is greater than the target cash balance because of cash outlay necessary in future years for capital improvements, including more than \$2 million for completion of the operations building and shop at the wastewater treatment plant.

Figure 2
Projected Wastewater Cash Balances



1.4 CUSTOMER BASE

The City services a population of approximately 6,000. The City experienced population decline which began before, and lasted through, the Great Recession (2004 through 2014). Population is now slightly greater than it was in 2000. The average annual population growth from 2000 to 2015 was 0.1%. According to the US Census Bureau there are 2.47 persons per occupied housing unit, a figure that has remained relatively stable since 2000. Historical population change is shown in **Figure 3** below.

The City has approximately 2,600 water connections and serves more than 3,000 residential households, about 260 non-residential establishments, including businesses, schools, religious places and community centers, more than 20 industrial customers, and about 30 irrigation-only customers. A pie chart illustrating the customer base is shown in **Figure 4**.

Water use by residential and non-residential customer type is shown in **Figure 5**. Although residential customers comprise 87% of the total customer base, they use 50% of total water deliveries. Industrial customers, who comprise only 1% of the customer base use 21% of total water deliveries.

Figure 3
Historical Population Growth

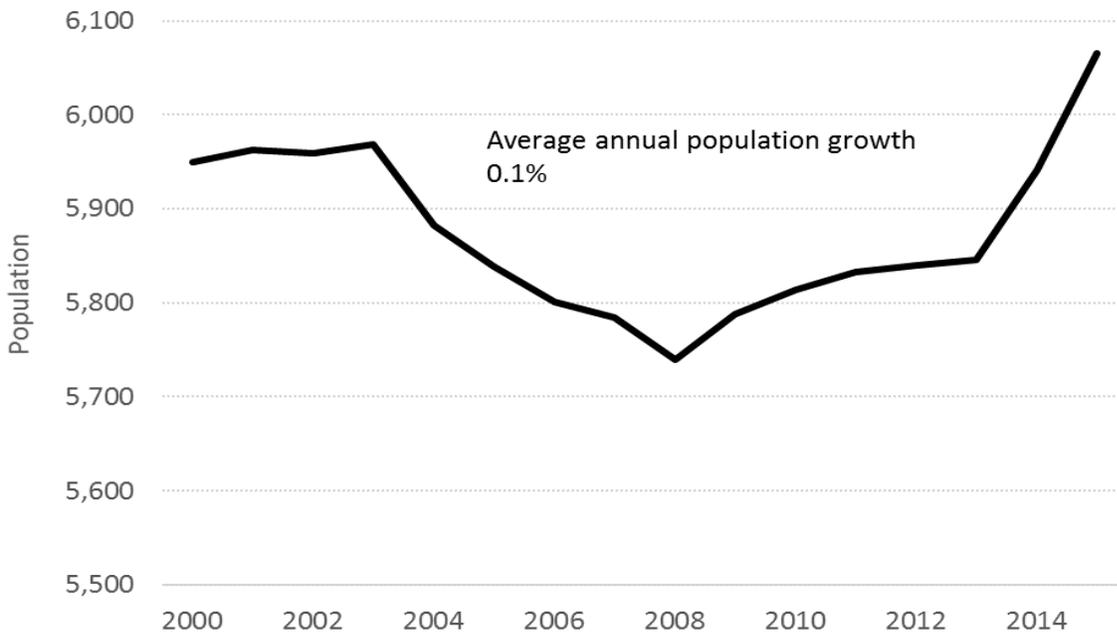


Figure 4
Water Customers

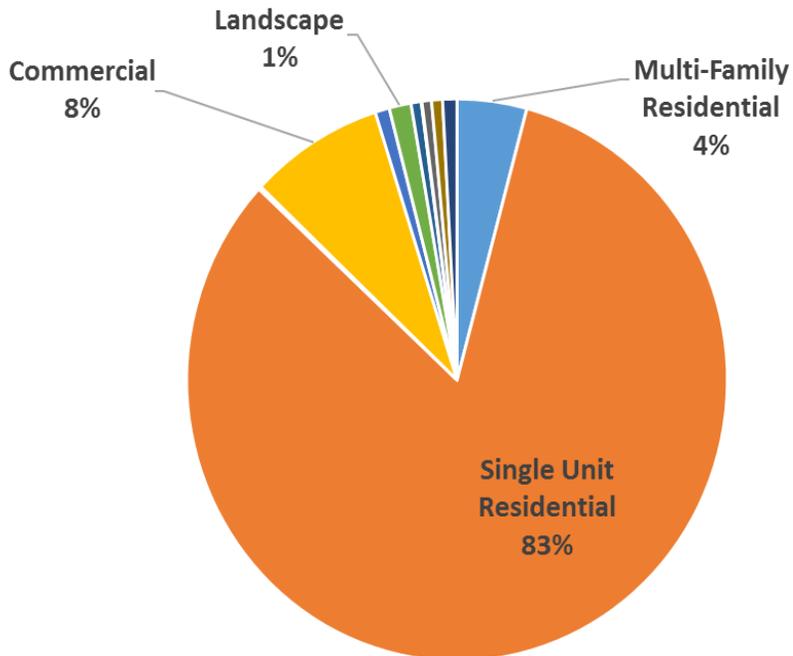
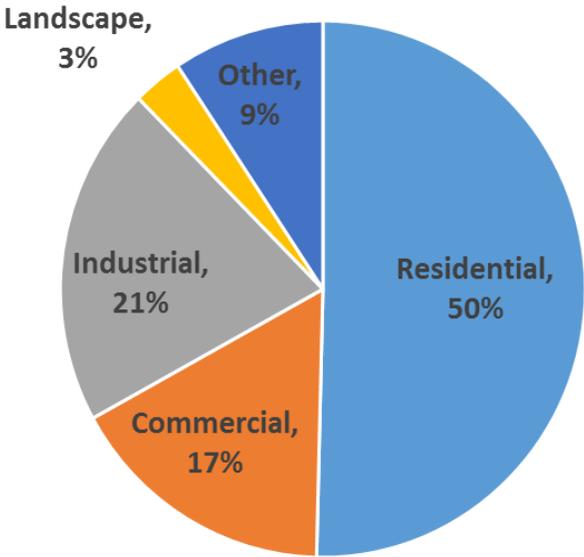
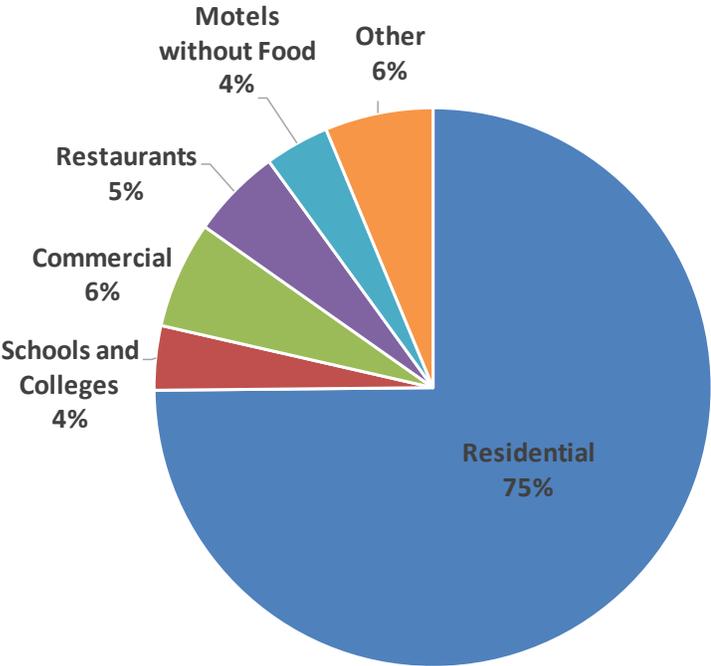


Figure 5
Water Use by Customer Type



The City provides wastewater service to the same households, institutional uses and businesses, with the exception of those having septic systems. **Figure 6** shows typical annual flow to the wastewater treatment plant by residential and non-residential customer types.

Figure 6
Typical Annual Wastewater Flow by Customer Type



1.5 MAJOR ASSUMPTIONS

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

- **Water CIP Projects will be funded through rates, grants, old and new debt, impact fees, and reserves.** The York Creek upper dam removal and mitigation project as well as the Meadowood tank upgrades project are expected to be partially grant funded, and partially funded by existing bond proceeds. The Bell Canyon Creek flow measurement project will be partially funded by existing bond proceeds. For large infrastructure projects the City will apply to advantageous loan and grant programs. Pump station upgrades and the Bell Canyon intake tower replacement are assumed to be funded by new debt. Spill containment at both the Bell Creek intake and Stonebridge Well, valve replacement at the Bell Valve House, as well as the Bell Canyon reservoir improvements, will be funded by reserves. Rates (cash) will be used for all other capital outlay needs for existing customers. Impact fees will be used to fund capital project costs attributable to new customers. The water enterprise fund will loan the impact fee fund cash to pay for the new customers' share of facility costs.
- **Wastewater CIP Projects will be funded through rates, reserves and debt.** Reserves will be used to fund the replacement of the wastewater reclamation facility operations building and shop. Phase 1 and Phase 2 of the wastewater treatment plant upgrades are assumed to be funded by new debt. Cash will be used for all other capital improvement projects. The wastewater impact fee fund has sufficient cash to pay for new customers' share of wastewater facility costs.
- **Future users' share of costs updated.** The water and wastewater impact fees must be updated to reflect the CIP presented in the Rate Study. The cash balances for impact fee funds 764 (water) and 774 (wastewater) have not been updated in the Study; with updated CIPs for both utility systems the impact fees need to be updated. An increase in the water impact fee would improve the repayment period from future to existing customers and reduce future rate increases for existing customers.
- **System rehabilitation costs are fully accounted for in the rate models.** Both the water and wastewater rate models include a calculated annual cost for long-term replacement of facilities. Facilities include existing and new facilities built in the next five years. The Study projects that a capital repair and replacement reserve of \$1.4 million could be accumulated in the wastewater fund by 2022. It is not anticipated that any reserve for capital repair and replacement could be accumulated in the water fund.
- **New growth.** New development is assumed to increase at a pace of five single family units per year. This pace of growth was estimated using the St. Helena average annual change in US Census reported number of occupied housing units from 2000 to 2015, and is consistent with the City's General Plan.

- **Rate structure is modified for both water and wastewater.** In an effort to allocate costs as equitably as possible with available data, the Study modifies the rate structures for both utilities as described further below and elsewhere in this report.
- **The new rate structures are assumed to be in effect February 8, 2017. The following five rate increases are assumed to be in effect November 8 of each year (November 2017, 2018, 2019, 2020, and 2021).** The rate increases go into effect as soon as possible to increase cash flow, and in the fall when price changes have less impact to customers than in the summer months. The new rates would be reflected on the City's February (and thereafter November) utility bills. The rate change dates are based on the City's current billing cycles; if the dates of the billing cycles change (for example meter reads change from the 8th of each month to the 10th of each month) the rate changes will follow the date of the new billing cycle.
- **Low income utilities subsidies, authorized by City Resolution No. 2006-44, are funded by the City general fund so that some utility customers do not subsidize others.** The general fund transfers the appropriate subsidy amount for low income households into the water and wastewater funds to maintain the revenue requirement.
- **Water-specific Assumptions:**
 - **New water meter replacement fee.** With the useful service life of a meter being approximately 20 years, the City needs to collect funds for a routine meter replacement program, replacing about five percent of the meters in the system each year. There are approximately 2,500 meters to be serviced with an approximate annual cost of \$46,000 in 2016 dollars. The new meter replacement fee is included in the updated service charges.
 - **Meadowood area surcharges are eliminated.** Customers in the Meadowood area, which is outside of the City limits, currently pay a surcharge based on consumption by all using those facilities plus a uniform maintenance surcharge. Per the decision made during the September 13th, 2016 Task Force meeting, Meadowood area customers will no longer pay a surcharge.
 - **The percentage of revenue requirement collected in base (flat) fees/service charges gradually increases.** Fixed costs comprise about 70% of the City's water system total annual operating costs. Currently the City collects 30% of costs in service charges and 70% in use charges. The water rate study gradually increases the base charges from 30% of revenue requirement to 36% of revenue requirement over the next five years. Greater revenue collection from service charges increases revenue stability for the enterprise funds. The increase is gradual to avoid large increases to households on fixed incomes.
 - **Single family residential 1" meter customers pay the same rates as single family residential 5/8" meter customers.** The total number of 5/8" meters was adjusted to include single family 1" 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 5/8" or 3/4" meter. Because the 1" residential customers utilize the same average amount of water as the 3/4" and 5/8" customers, it is appropriate for them to pay the same rates, and not be penalized by the fire sprinklers requirement.

- **The new water rate structure includes a drought-year surcharge.** A drought year will be defined in the City municipal code. When the City implements Phase 1 drought restrictions it would also implement drought rates. Drought rates are only applied to use charges (does not affect service charges). Drought rates are 6% higher than non-drought rates because during drought years the cost of water per 1,000 gallons is 6% higher than during non-drought years.

1.6 RATE STRUCTURES

Water Rate Structures

The water rate study calculated water charges under two methods of collection for costs recovered through use charges. A brief summary of the rate structure differences is provided below. The Task Force chose the seasonal rate structure as the preferred water rate structure at the September 13th, 2016 Task Force Meeting; therefore, the Study only presents findings of the seasonal rate structure. Details of the seasonal rate structure, along with results, are presented in Section 2.

WATER STUDY	
Uniform Rate Structure	
Same as current rate structure except no tiers for use charges	
All customers pay a base charge by meter size per month + a uniform use charge for all treated water	
Seasonal Rate Structure	
All customers pay a base charge by meter size per month + a seasonal use charge for all water (higher during the peak than off-peak months)	
Peak = May through October	
Off-Peak = November through April	

Wastewater Rate Structures

In the financial modeling for the wastewater rate study two rate structures were considered for collection of the revenue requirement; a modified rate structure and a new rate structure. A comparison of the two rate structures considered is provided on the following page. Per the August 4th, 2016 and September 13th, 2016 Task Force meetings, the City's Task Force chose the new rate structure as the preferred rate structure; therefore, the Study only presents findings of the new rate structure. For record keeping the modified rate structure findings are presented in Attachment B of the 'City of St. Helena Wastewater Rate Study Technical Memorandum'.

WASTEWATER STUDY	
Modified Rate Structure	
	Same as current rate structure except religious places/community centers are broken out as their own rate category
	Single family pay monthly flat base rate and a flow charge per Hundred Cubic Feet (HCF) of average winter month water
	Multi-family/mobile homes and non-residential pay monthly flat base rate based on meter size per month and a flow charge per HCF of average winter month water
New Rate Structure	
	Mobile Home parks classified as residential; religious places/community centers are broken out as their own rate category
	All Residential (single family, multi-family and mobile homes) pay flat base rates based on number of dwelling units plus a flow charge per HCF of average winter month water
	Flat monthly charge for schools based on number of students
	Non-residential pay a flat base rate by customer type (per account) plus a flow charge per HCF of average winter month water

Section 2: WATER RATE STUDY SUMMARY

2.1 KEY FINDINGS

- The City has been pulling from reserves for water system operations. At the end of fiscal year 2016 (June 30) the operating fund had a positive unrestricted net position of roughly \$5 million. At the end of fiscal year 2017, the operating fund is expected to be depleted to an unrestricted net position of about \$525,000. System rehabilitation is being funded from reserves because depreciation is not currently included in the rates. This is unsustainable.
- It is projected that in fiscal year 2017 the water fund will have a 0.72 debt service coverage ratio. The City is out of compliance with its bond covenants to maintain a 1.20 minimum debt service coverage ratio. This must be rectified immediately.
- The City has identified a minimum of \$17.7 million, net of grant funds and existing bond proceeds, of water system capital improvements in today's dollars to be funded over the next 10 years. This cost is inflated to a total of \$20.8 million dollars over the next 10 years.
 - The funding plan applies two City-awarded grants, which total \$1,787,876, for the York Creek dam removal and creek restoration project, as well as existing water bonds in the amount of \$2.7 million.
 - Meadowood tank upgrades are partially funded by \$120,100 from existing bond proceeds.
 - The City will continue to aggressively pursue any grant opportunities.
 - \$0.2 million for pump station upgrades, and \$2.1 million for Bell Canyon intake tower replacement are assumed to be financed by new debt.
 - All other system improvement costs will be cash-funded.
 - The project for installation of smart meters is currently unfunded; however, the project is not anticipated to start in the next five years. The total cost for this project is estimated at \$1.5 million, and
 - A new water meter replacement fee for routine replacement of existing meters, which is included in the monthly service charge, will fund \$0.3 million of meter replacement costs, not included in the CIP.
- By raising the rates in February 2017 the City will generate sufficient revenue to meet its bond covenants, to begin building a healthy reserve, to fund necessary planned capital improvements, and to fully fund water operations without using other City funds. A healthy reserve is necessary to fund emergencies and other unanticipated capital projects. Without the rate increases the water fund is projected to have a negative balance of <\$10.9 million> by the end of fiscal year 2022. The water fund would have to be loaned money from other City funds, taking away money for other essential City services such as parks, library and streets.

Current and calculated water rates are shown in **Table 1**.

Table 1
Calculated Water Rates through Fiscal Year Ending 2022

Charges	Current	Billing Period Beginning *					
		2/8/2017	11/8/2017	11/8/2018	11/8/2019	11/8/2020	11/8/2021
Service Charge		Monthly Charges per Meter					
5/8", 3/4" & SF 1"	\$27.52	\$43.22	\$51.71	\$60.59	\$64.78	\$68.91	\$73.27
1"	\$63.80	\$80.08	\$96.76	\$114.44	\$123.35	\$132.22	\$141.61
1.5"	\$124.12	\$141.67	\$172.02	\$204.36	\$221.14	\$237.94	\$255.72
2"	\$196.50	\$215.12	\$261.84	\$311.76	\$337.99	\$364.27	\$392.10
3"	\$365.51	\$413.06	\$503.54	\$600.40	\$651.86	\$703.51	\$758.21
4"	\$607.01	\$640.46	\$780.29	\$930.11	\$1,010.10	\$1,090.44	\$1,175.54
6"	\$1,210.18	\$1,252.50	\$1,528.85	\$1,825.17	\$1,983.80	\$2,143.19	\$2,312.05
Private Fire Protection		Monthly Charges per Fire Service Pipe					
4"	\$4.00	\$16.93	\$19.84	\$22.75	\$23.77	\$24.72	\$25.71
6"	\$6.00	\$49.19	\$57.62	\$66.10	\$69.05	\$71.81	\$74.69
8"	\$8.00	\$104.82	\$122.79	\$140.85	\$147.15	\$153.03	\$159.16
Raw Water <i>per Gallon</i>	\$0.00267	\$0.00471	\$0.00552	\$0.00633	\$0.00661	\$0.00688	\$0.00715
TREATED WATER USE CHARGES PER HCF							
NON-DROUGHT PERIOD	[1]						
Off-Peak (Nov-Apr)		\$5.50	\$6.37	\$7.19	\$7.37	\$7.54	\$7.71
Peak (May-Oct)		\$6.11	\$7.09	\$8.00	\$8.20	\$8.38	\$8.58
DROUGHT PERIOD	[1]						
Off-Peak (Nov-Apr)		\$5.81	\$6.73	\$7.60	\$7.79	\$7.97	\$8.15
Peak (May-Oct)		\$6.46	\$7.49	\$8.45	\$8.66	\$8.86	\$9.06

Source: HEC.

* Dates reflect the current billing cycle; if the billing cycle date changes so will these effective dates.

[1] Current Rate Structure rates as follows:

Tiers by customer category (in hcf):	<u>Tier 1</u>	<u>Tier 2</u>		<u>Tier 1</u>	<u>Tier 2</u>
Single family	0-14	15+	Non-residential <=1"	0-36	37+
Multi-family	0-5	6+	Non-residential 1.5"	0-120	121+
			Non-residential 2"	0-192	193+
<i>Price per HCF</i>	\$4.48	\$6.74	Non-residential 3"	0-360	361+
<i>Price per HCF - Landscape Irrigation</i>	\$5.22		Non-residential 4"	0-600	601+
			Non-residential 6"	0-1,250	1,251+
			Non-residential 8"	0-1,920	1,921+

2.2 METHODOLOGY

The detailed methodology for calculation of rates is presented in the 'City of St. Helena Water Rate Study Technical Memorandum'. Under the new seasonal rate structure, customer bills continue to be comprised of 2 fees: (1) fixed monthly service charges (now also including a meter replacement fee), and (2) variable use charges. The new seasonal rate structure is as follows:

- All customers pay the same usage rate per HCF for treated water off-peak (Nov-Apr) and peak (May-Oct). The peak rate is higher than the off-peak rate to reflect the additional costs of water operations during the peak period. Analysis in the 'City of St. Helena Water Rate

Study Technical Memorandum' demonstrates that water operations costs are 11% higher during the peak period.

2.3 NEW RATE IMPACTS

Components of revenue requirement are shown in **Figure 7**. Operating expenses are the largest component of cost, followed by capital replacement/repair, debt service, and operating reserves.

Single Family Residential Impacts

Figure 8 shows the water bill impact for a typical single family home in the off-peak months using the seasonal water rate structure in a non-drought year. Single family homes typically use 7 HCF per month in the winter (calculated using January and February data 2011 through 2015). **Figure 9** shows the water bill impact for a typical single family home in the peak months using the seasonal water rate structure in a non-drought year. Single family homes typically use 17 HCF per month in the summer (calculated using July and August data 2011 through 2015).

Figure 7
Components of Water Revenue Requirement

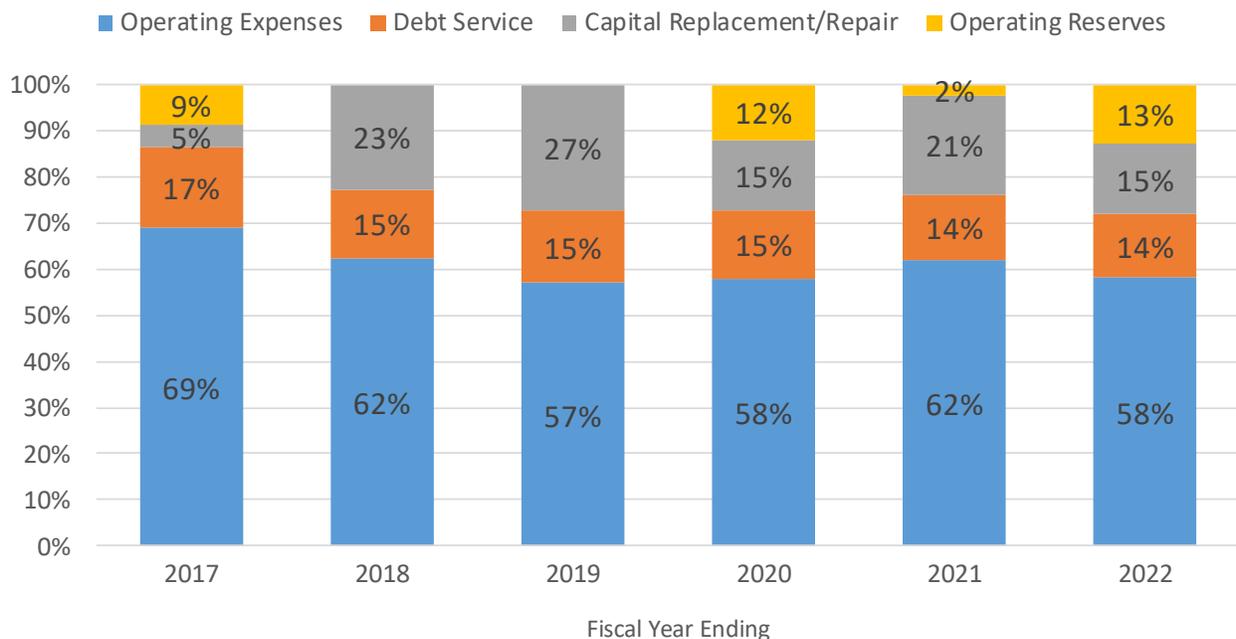


Figure 8
Typical Water Monthly Bill for the Off-Peak Season

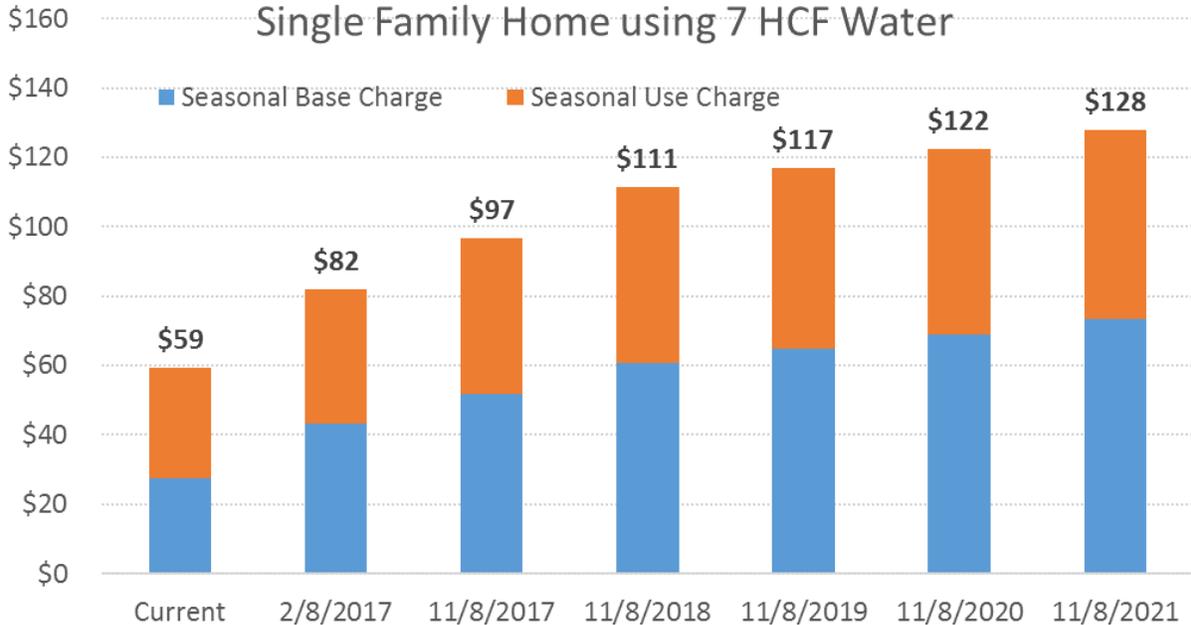
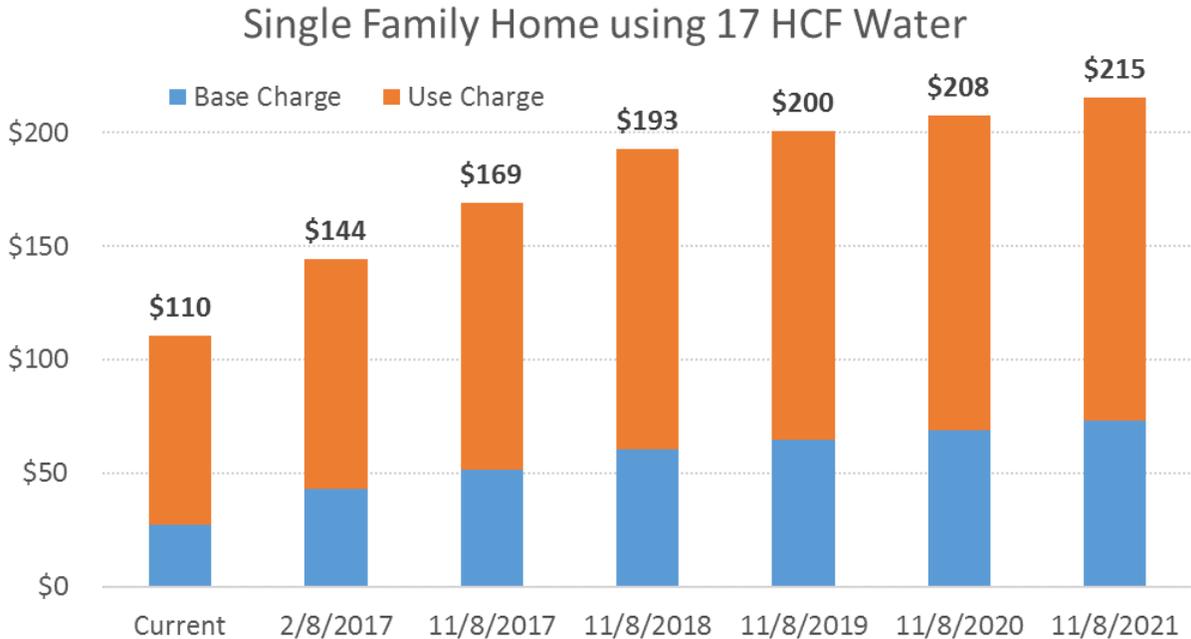


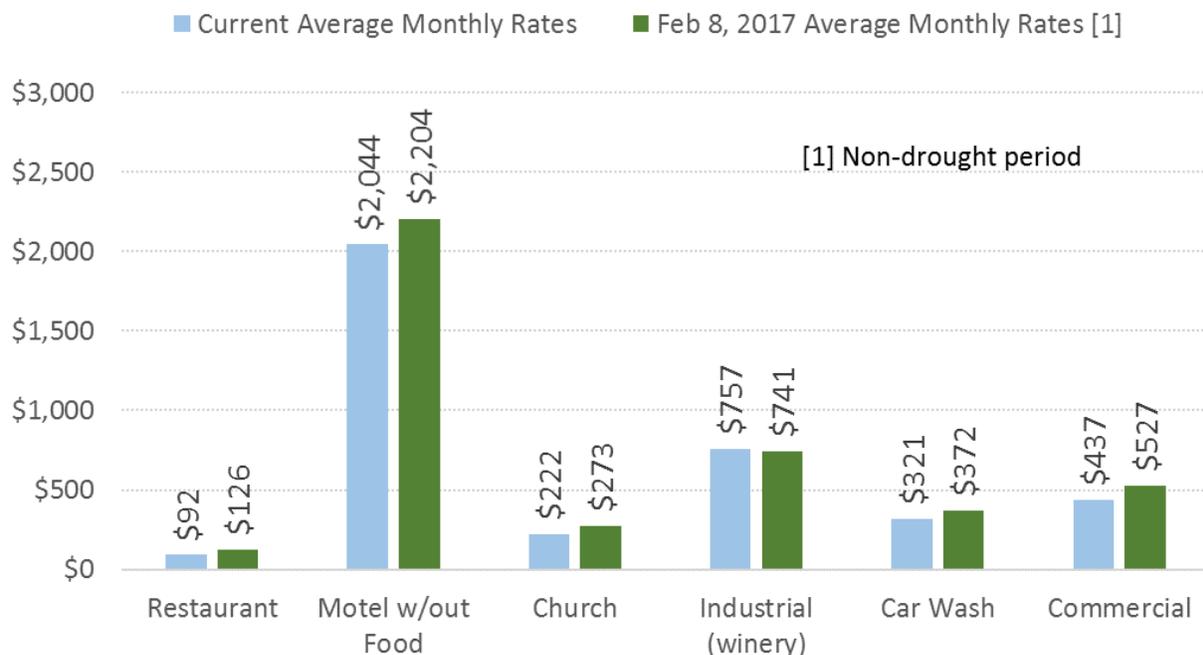
Figure 9
Typical Water Monthly Bill for the Peak Season



Non-Residential Users

Six types of non-residential users were selected to illustrate the impacts of water rate increases in February 2017; these include a restaurant, a motel without food, a church, an industrial customer (winery), a cash wash, and a commercial office. **Figure 10** illustrates the impact to each type of water user assuming a non-drought year. Charges are calculated using actual consumption by the customers between January 2015 and December 2015. The impact is greater for all customers with the exception of the industrial customer.

Figure 10
Non-Residential Water Rate Impact

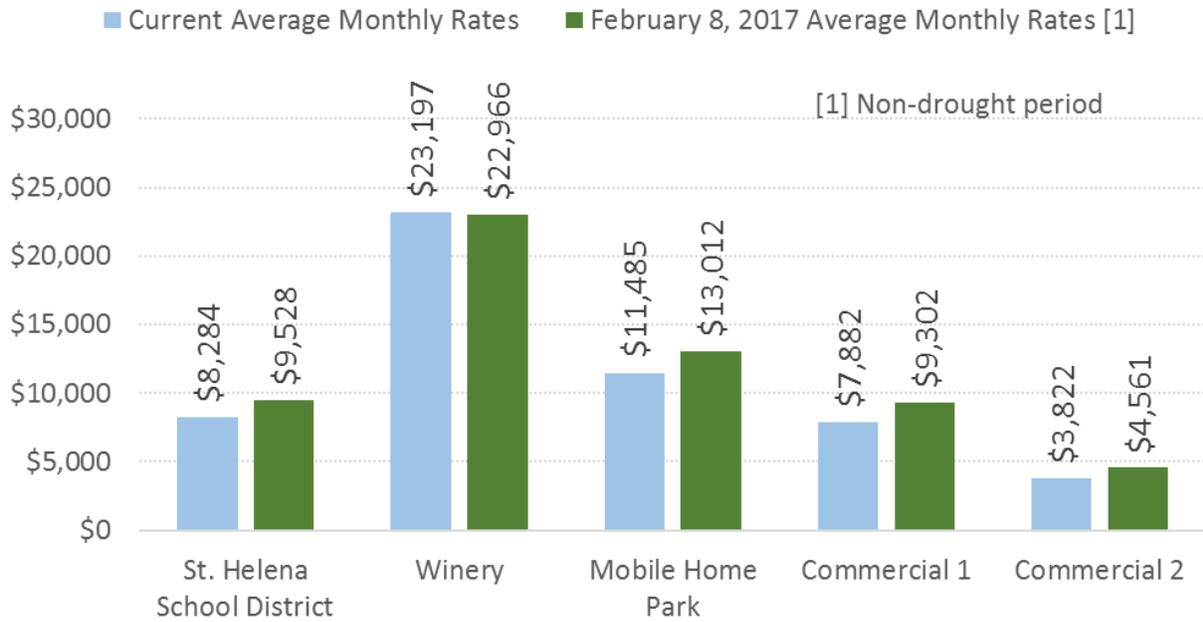


Large Water Users

The largest water users in the City include the St. Helena School District, wineries, mobile home park, and some large commercial businesses.

The Study examines the impact to a selection of these users in **Figure 11** using current charges and February 8, 2017 charges assuming a non-drought year. Charges are calculated using actual consumption by the customers between January 2015 and December 2015. In the selection, average monthly charges increase for all customers except the winery. Actual water bills will differ from customer to customer.

Figure 11
Average Monthly Water Charges for Large Water Users



Section 3: WASTEWATER RATE STUDY SUMMARY

3.1 KEY FINDINGS

- The City has been using wastewater fund reserves to fund operations. At the end of fiscal year 2016 (June 30) the operating fund had a negative unrestricted net position of <\$79,804>. At the end of fiscal year 2017, the operating fund is expected to have a negative unrestricted net position of <\$27,000>. System rehabilitation is being funded from reserves because depreciation is not currently included in the rates. This is unsustainable.
- The City has identified a minimum of \$15.4 million, net of grant funds and existing bonds, in capital improvements in today's dollars to be funded over the next 10 years. In future dollars this totals \$17.7 million to be funded over the next 10 years. The financing plan assumes that:
 - Phases 1 and 2 of the wastewater treatment plant upgrades will be debt-financed.
 - Reserves will be used to finance \$3.7 million for replacement of the wastewater reclamation facility operations building and shop, which is expected to be accomplished fiscal year 2021 through fiscal year 2023.
 - Cash will fund the remaining CIP costs.
- By raising the rates in February 2017 the City will generate sufficient revenue to meet its bond covenants, to begin building a healthy reserve, to fund necessary capital improvements and to fully fund wastewater operations without using other City funds. A healthy reserve is necessary to fund emergencies and other unanticipated capital projects. Without the rate increase the wastewater fund is projected to have a negative fund balance within two fiscal years and would have to be loaned money from other City funds, taking away money for other essential City services.
- The new rate structure improves equity among certain customer classes by basing rates on typical flow and strength characteristics of each customer type. Multi-family dwellings and mobile home parks, which display characteristics more similar to residential than non-residential, are shifted to residential. Schools pay on a flat monthly rate per student basis. Non-residential customers' water use is determined by average winter water use, by customer type, to account for water that does not go to the wastewater treatment plant (applied outdoors or otherwise does not enter the sewer collection system).

Table 2 on the next page shows the new wastewater rate schedule. The current rate schedule cannot be compared with the new rate schedule because the structure is different; however, a single family unit currently pays a base monthly charge of \$47.35 and a monthly use charge of \$3.94 per HCF of winter water use.

Table 2
Calculated Wastewater Rate Schedule
- New Rate Structure

Customer Category		Fiscal Year Ending					
		2017	2018	2019	2020	2021	2022
	<i>Billing Period Beginning * -----></i>	2/8/2017	11/8/2017	11/8/2018	11/8/2019	11/8/2020	11/8/2021
Residential							
Single Family	monthly per unit	\$48.04	\$55.24	\$70.13	\$73.03	\$74.18	\$75.23
Multi-Family	monthly per unit	\$29.07	\$33.42	\$42.43	\$44.18	\$44.88	\$45.52
Mobile Homes	monthly per unit	\$43.11	\$49.57	\$62.93	\$65.53	\$66.56	\$67.51
<i>Residential Rate per HCF</i>	<i>per HCF</i>	<i>\$4.69</i>	<i>\$5.39</i>	<i>\$6.84</i>	<i>\$7.12</i>	<i>\$7.23</i>	<i>\$7.34</i>
Schools Flat Rate per Student	monthly per student	\$1.40	\$1.62	\$2.15	\$2.21	\$2.26	\$2.28
Non-Residential							
Car Wash	monthly per account	\$209.93	\$243.25	\$328.36	\$336.45	\$343.13	\$346.45
Religious Places/Community Centers	monthly per account	\$35.34	\$40.85	\$54.06	\$55.68	\$56.71	\$57.34
Commercial [1]	monthly per account	\$62.70	\$72.20	\$92.64	\$96.19	\$97.78	\$99.09
Groceries and Mortuaries	monthly per account	\$433.93	\$492.12	\$552.00	\$595.15	\$599.41	\$613.71
Laundry	monthly per account	\$970.94	\$1,121.45	\$1,475.85	\$1,522.21	\$1,549.87	\$1,567.76
Mixed Retail w/ Food	monthly per account	\$541.20	\$617.30	\$730.21	\$775.32	\$783.78	\$799.17
Motel with Food	monthly per account	\$2,617.64	\$2,978.36	\$3,444.90	\$3,681.23	\$3,715.59	\$3,795.12
Motel without Food	monthly per account	\$642.15	\$738.08	\$933.28	\$972.87	\$987.93	\$1,002.28
Restaurant	monthly per account	\$840.03	\$952.80	\$1,070.03	\$1,153.27	\$1,161.63	\$1,189.23
Napa Valley College	monthly per account	\$2,889.93	\$3,341.62	\$4,436.77	\$4,565.57	\$4,651.20	\$4,701.87
Service Station	monthly per account	\$93.25	\$107.06	\$134.07	\$140.12	\$142.20	\$144.37
Winery Production (Merryvale/Spottswood)	monthly per account	\$989.21	\$1,116.93	\$1,199.98	\$1,310.53	\$1,315.85	\$1,351.87
Sutter Home Winery	monthly per account	\$876.04	\$1,007.39	\$1,278.85	\$1,331.67	\$1,352.66	\$1,371.89
<i>Car Wash</i>	<i>per HCF</i>	<i>\$3.43</i>	<i>\$3.97</i>	<i>\$5.36</i>	<i>\$5.49</i>	<i>\$5.60</i>	<i>\$5.65</i>
<i>Religious Places/Community Centers</i>	<i>per HCF</i>	<i>\$3.72</i>	<i>\$4.30</i>	<i>\$5.69</i>	<i>\$5.86</i>	<i>\$5.97</i>	<i>\$6.03</i>
<i>Commercial [1]</i>	<i>per HCF</i>	<i>\$4.27</i>	<i>\$4.92</i>	<i>\$6.31</i>	<i>\$6.55</i>	<i>\$6.66</i>	<i>\$6.75</i>
<i>Groceries and Mortuaries</i>	<i>per HCF</i>	<i>\$10.30</i>	<i>\$11.68</i>	<i>\$13.10</i>	<i>\$14.12</i>	<i>\$14.22</i>	<i>\$14.56</i>
<i>Laundry</i>	<i>per HCF</i>	<i>\$3.81</i>	<i>\$4.40</i>	<i>\$5.79</i>	<i>\$5.97</i>	<i>\$6.08</i>	<i>\$6.15</i>
<i>Mixed Retail w/ Food</i>	<i>per HCF</i>	<i>\$6.73</i>	<i>\$7.68</i>	<i>\$9.08</i>	<i>\$9.64</i>	<i>\$9.75</i>	<i>\$9.94</i>
<i>Motel with Food</i>	<i>per HCF</i>	<i>\$7.91</i>	<i>\$9.00</i>	<i>\$10.41</i>	<i>\$11.12</i>	<i>\$11.23</i>	<i>\$11.47</i>
<i>Motel without Food</i>	<i>per HCF</i>	<i>\$4.59</i>	<i>\$5.27</i>	<i>\$6.67</i>	<i>\$6.95</i>	<i>\$7.06</i>	<i>\$7.16</i>
<i>Restaurant</i>	<i>per HCF</i>	<i>\$10.18</i>	<i>\$11.54</i>	<i>\$12.96</i>	<i>\$13.97</i>	<i>\$14.07</i>	<i>\$14.41</i>
<i>Napa Valley College</i>	<i>per HCF</i>	<i>\$3.67</i>	<i>\$4.24</i>	<i>\$5.63</i>	<i>\$5.79</i>	<i>\$5.90</i>	<i>\$5.97</i>
<i>Service Station</i>	<i>per HCF</i>	<i>\$4.82</i>	<i>\$5.53</i>	<i>\$6.93</i>	<i>\$7.24</i>	<i>\$7.35</i>	<i>\$7.46</i>
<i>Winery Production (Merryvale/Spottswood)</i>	<i>per HCF</i>	<i>\$17.31</i>	<i>\$19.55</i>	<i>\$21.00</i>	<i>\$22.93</i>	<i>\$23.03</i>	<i>\$23.66</i>
<i>Sutter Home Winery</i>	<i>per HCF</i>	<i>\$4.50</i>	<i>\$5.17</i>	<i>\$6.57</i>	<i>\$6.84</i>	<i>\$6.95</i>	<i>\$7.04</i>

Source: HEC.

* Dates reflect the current billing cycle; if the billing cycle date changes so will these effective dates.

[1] Commercial includes City buildings.

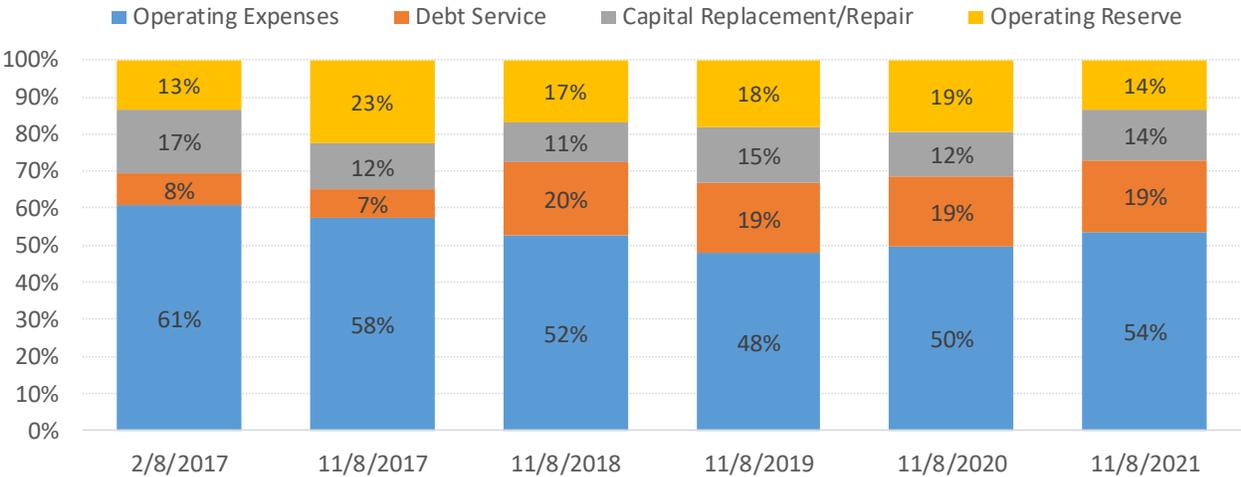
3.2 METHODOLOGY

The detailed methodology for calculation of rates is presented in the 'City of St. Helena Wastewater Rate Study Technical Memorandum'.

3.3 NEW RATE IMPACTS

Components of wastewater fund revenue requirement is shown in **Figure 12**. Operating expenses is the largest component of cost (more than 50%).

Figure 12
Components of Wastewater Revenue Requirement



Residential Bill Impacts

Figure 13 shows monthly bill impacts of the rate increases to single family residential customers under the new rate structure for the next five years.

Figure 13
Wastewater Bill Impact for Single Family Homes

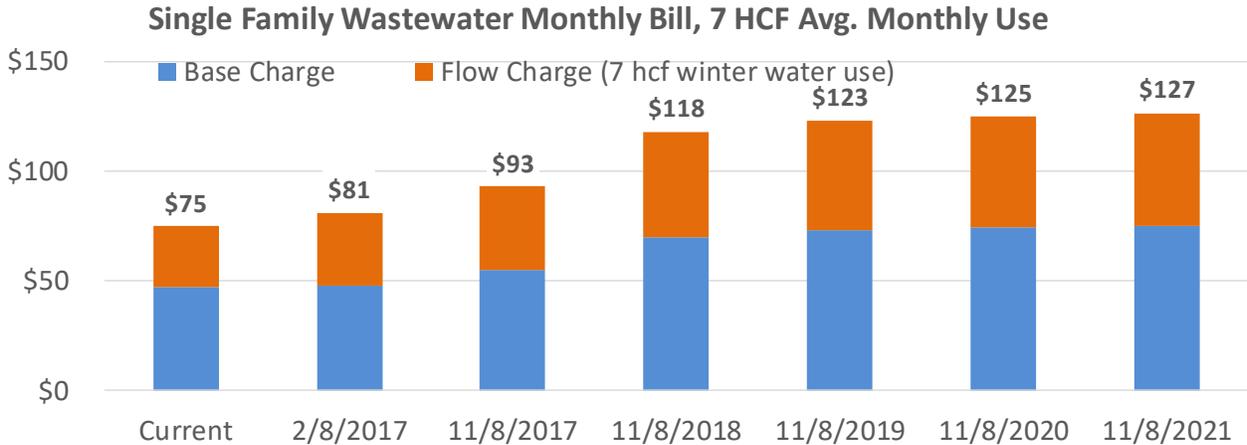


Figure 14 estimates monthly bill impacts of the February 8, 2017 rate changes for a sample of non-residential users. Because monthly bills for non-residential customers will vary from month to month and business type to business type, the examples given are only illustrative. Each non-residential customer will experience a different impact.

Figure 14
Average Wastewater Monthly Bill Impact for Sample Non-Residential Users

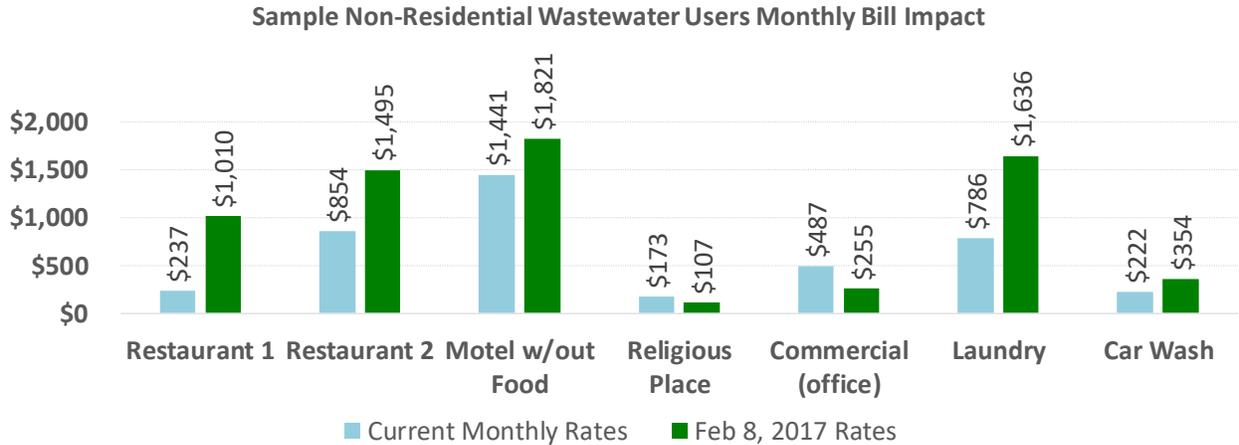
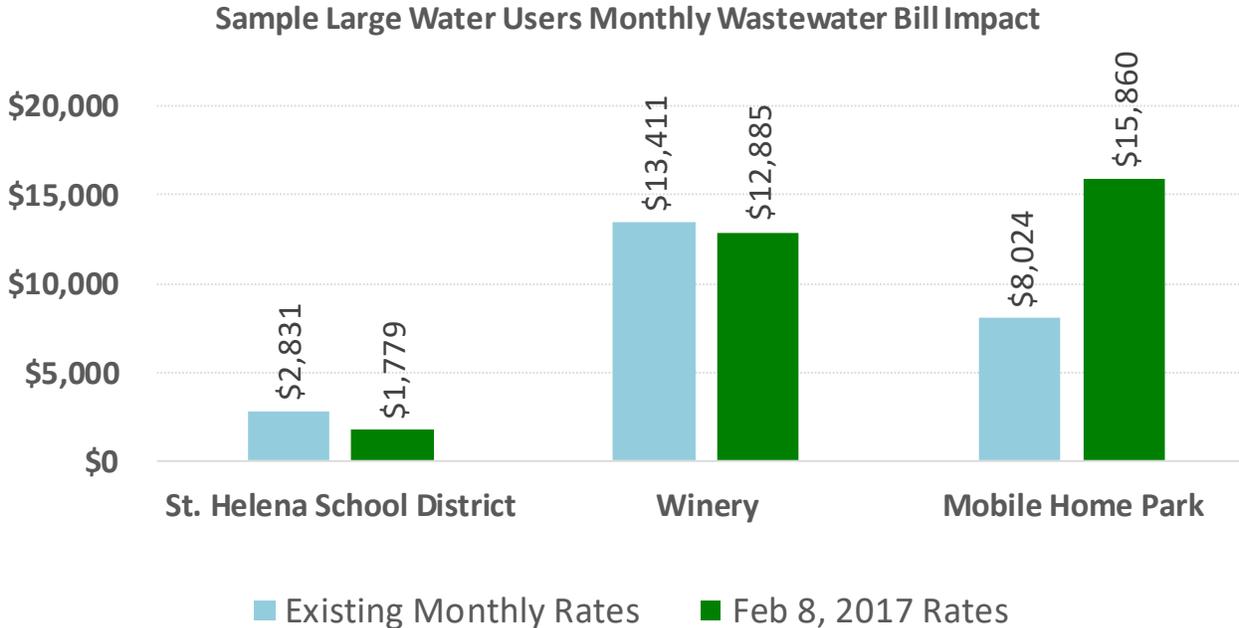


Figure 15 illustrates the impact on the same large water users as in the water rate study, with the exception of the two commercial businesses which do not receive City wastewater service.

Figure 15
Average Wastewater Monthly Bill Impact for Large Water Users



Section 4: COMBINED UTILITIES IMPACT

4.1 RESIDENTIAL IMPACTS

The combined impact of increased water and wastewater rates on typical single family home utility bills is illustrated in **Figure 16** for a typical off-peak month (using 7 HCF water, 7 HCF wastewater), and **Figure 17** for a typical peak month (using 17 HCF water, 7 HCF wastewater). Both comparisons assume a non-drought year.

Figure 16
Single Family Home Utility Costs in Off-Peak Months, based on 7 HCF

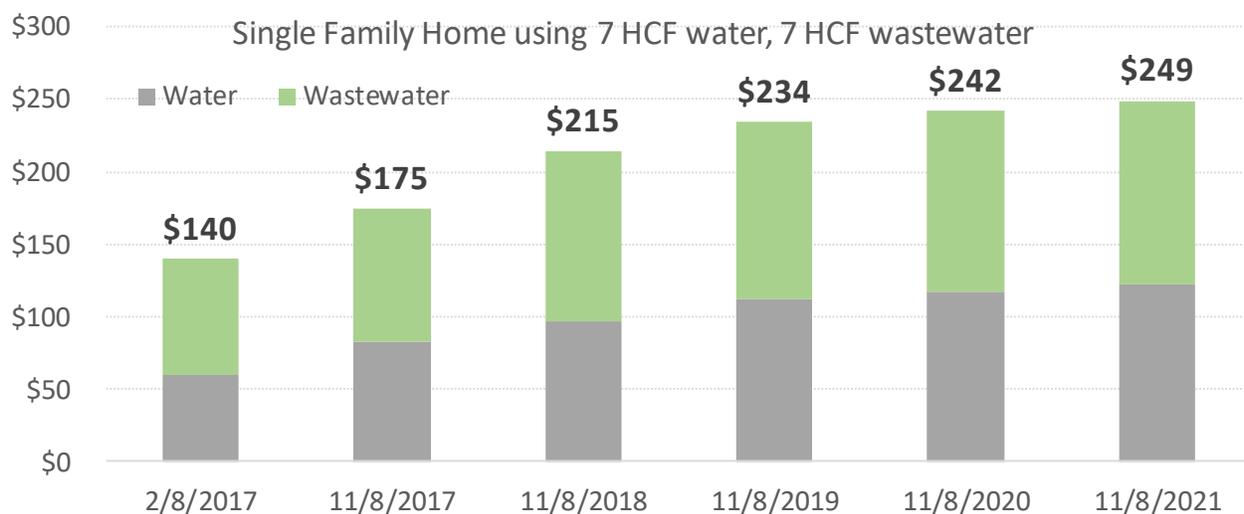


Figure 17
Single Family Home Utility Costs in Peak Months, based on 17 HCF

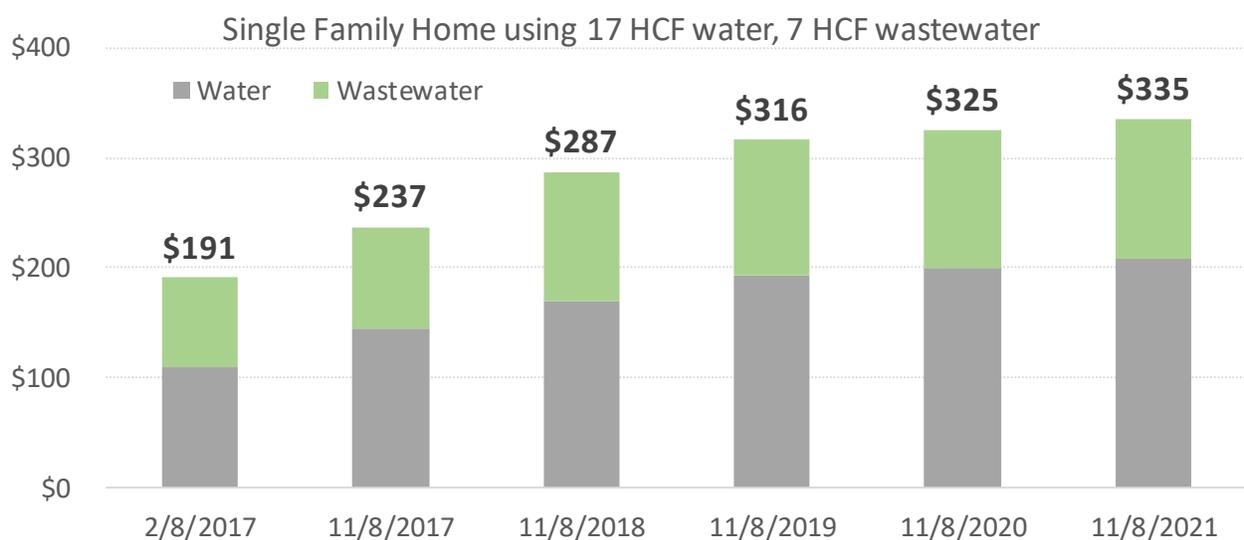
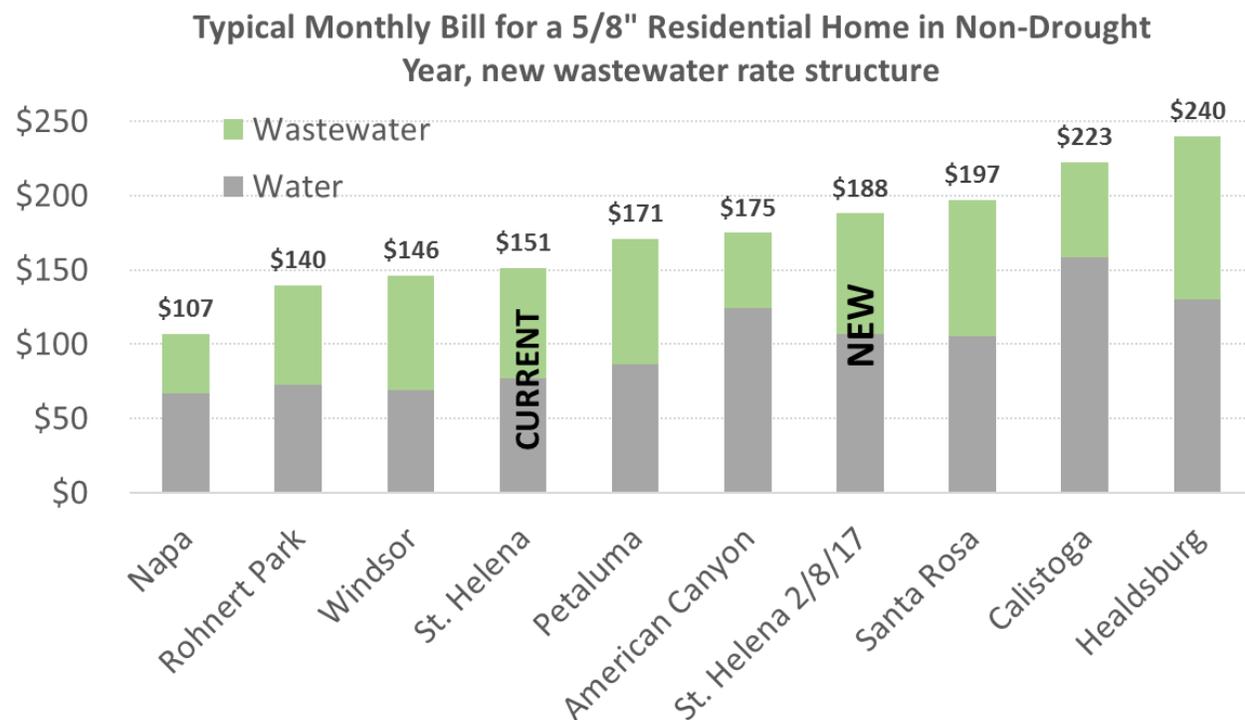


Figure 18 illustrates what a household using an average of 11 HCF of water and 7 HCF of wastewater in a month would pay for combined water and wastewater in several comparison cities. For St. Helena, the use rate was calculated using the average of the peak and off-peak use rates. St. Helena’s combined water and wastewater rates are currently in the middle of the range and will stay in the middle of the range with the proposed 24% rate increase. Note that the comparison cities utilized may be in the process of rate increases as well; this is a snapshot in time.

Figure 18
Impact of Combined Utility Bill Increases



4.2 AFFORDABILITY

The combined impact of increased utility costs must be considered together since they can increase costs beyond what is considered an affordable threshold. The affordability thresholds are guidelines used by State and Federal funding agencies when determining financing terms for debt-financing projects. The State Revolving Fund (SRF) program bases its evaluation of affordability of water rates on two criteria:

1. The Median Household Income (MHI) of the community compared to the State MHI, and
2. The percentage of MHI spent on water related bills.

Generally, water rates are considered to be burdensome if they are greater than 2.50% of MHI, and wastewater rates are considered to be burdensome if they are greater than 2.00% of MHI (or combined, a total of 4.50% 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. St. Helena is not considered disadvantaged, as the City’s MHI is more than 127% of the State MHI.

Currently, St. Helena’s combined water utility costs are 2.32% of MHI. With the increase in costs in February 2017 water costs will total 1.64% of MHI and wastewater will total 1.24% of MHI. Together, the utilities costs will total 2.88% of MHI. The water rates are, per the State’s definition, well within the affordable threshold. The affordability calculations are shown in **Table 3**.

Table 3
Affordability of Water Utility Costs for Residents

Item	Current Rates	Proposed 2/8/2017 Rates
St. Helena Monthly Median Household Income (MHI) [1]	\$6,535	\$6,535
Monthly Water Bill		
Monthly Water Bill for 11 HCF [2]	\$76.80	\$107.08
Water Bill as Percentage of MHI [3]	1.18%	1.64%
Monthly Wastewater Bill		
Monthly Wastewater Bill for 7 HCF	\$74.93	\$80.84
Wastewater Bill as Percentage of MHI [3]	1.15%	1.24%
Total Monthly Utilities Bill	\$151.73	\$187.92
Monthly Utilities Bill as Percentage of MHI [3]	2.32%	2.88%
Median Household Income (MHI)		
Estimated California [1]	\$61,489	
Estimated St. Helena [1]	\$78,421	
St. Helena MHI as a percentage of the State MHI [4]	127.54%	

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

aff comb

[1] 2014 5-year American Community Survey.

[2] Assumes a non-drought year and average seasonal use rate.

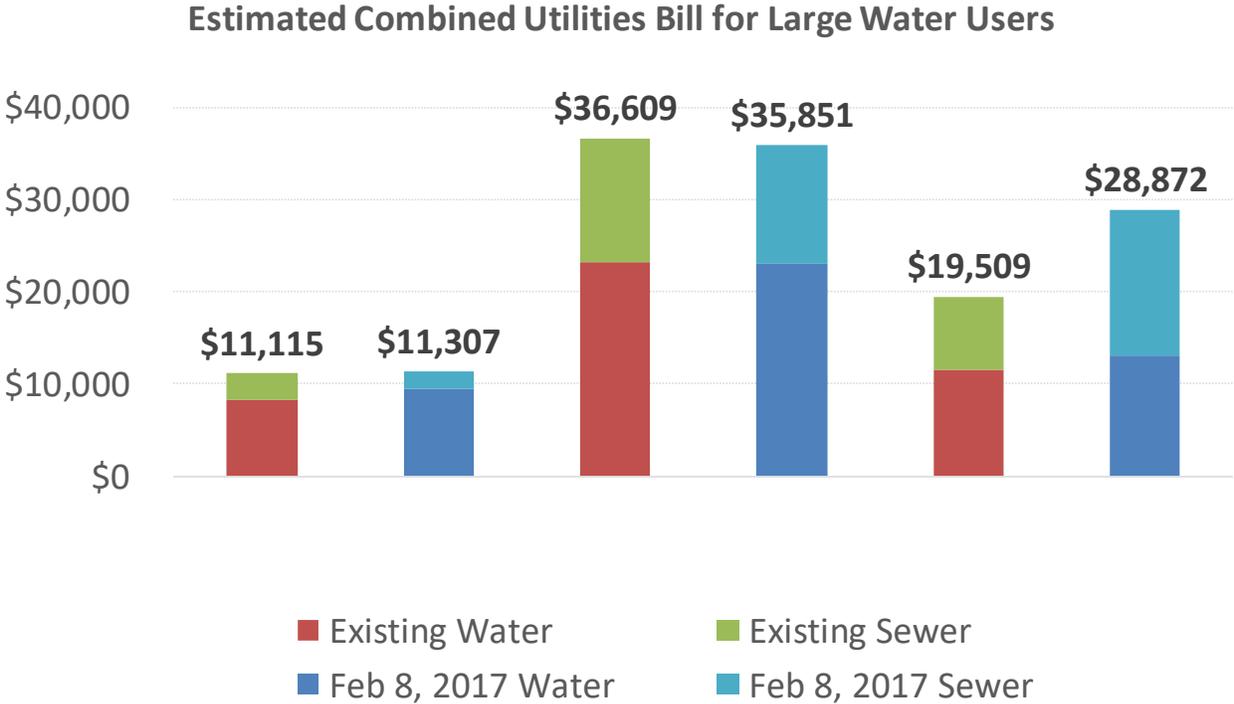
[3] The EPA considers bills unaffordable if combined water and wastewater bills are >4.5% of MHI. The State Clean Water SRF program only provides better loan terms (such as extended term financing, lower interest and principal forgiveness) to communities that are NOT Disadvantaged if the wastewater bill is >4% of MHI.

[4] Per the State Water Resources Control Board, a community with an MHI <80% of the Statewide MHI is Disadvantaged.

4.3 LARGE WATER USERS IMPACTS

Figure 19 shows the cumulative impact of utility rate increases to some of St. Helena’s largest water users. The St. Helena School District’s water bill increases but its wastewater bill decreases, resulting in a small net increase. The winery’s water bill decreases slightly and its wastewater bill decreases slightly, resulting in a net decrease. The mobile home park’s water bill increases slightly; however, its wastewater bill almost doubles.

Figure 19
Combined Utilities Impact on Large Water Users



**HANSFORD ECONOMIC
CONSULTING**



**City of St. Helena (2016)
Water Rate Study
Technical Memorandum**

DRAFT

September 20, 2016

Technical Memorandum DRAFT WATER RATE STUDY

To: City of St. Helena

From: Catherine Hansford

Date: September 20, 2016

This technical memorandum presents the detailed water rate study. Support tables are provided in **Attachment A**.

THE WATER FUND

Revenues

The water system is 97% funded by water sales (rates) revenue, 1% by Meadowood area rate surcharges, and 2% by other revenues including investment earnings, finance charges, fees/fines, and other miscellaneous revenues.

Rate revenue is generated according to the current water rate schedule shown in **Table 1**. Under the current rate schedule all customers pay a service charge (or base charge) and a use charge. The service charge is different by meter size, and the use charge varies by customer type. All customers pay use charges in two tiers. The tier 1 rate is applied to single family homes for the first 14 units of water. A unit of water is a hundred cubic feet (HCF). Tier 2 is applied to all water use greater than 14 units consumed each month. The amount of water that tier 1 applies to each month differs by customer type, as shown in **Table 1**.

The Madrone Knoll pump facility (otherwise called the Meadowood pump facility) specifically benefits Meadowood area customers, who are outside the St. Helena city limits. Meadowood area customers pay an additional monthly surcharge for electric use at Meadowood pump facility plus a monthly maintenance fee. The schedule of current Meadowood surcharges is shown in **Table 2**.

Table 1
Current Water Rate Schedule

Customer	Rate Schedule	
Monthly Fixed Service Charge		
Meter Size		Basis of Charge
5/8"	\$27.52	Month
3/4"	\$27.52	Month
1"	\$63.80	Month
1.5"	\$124.12	Month
2"	\$196.50	Month
3"	\$365.51	Month
4"	\$607.01	Month
6"	\$1,210.18	Month
8"	\$1,935.52	Month
Residential Use Charge		[1]
Tier 1 (0-14 Units)	\$4.48	Unit
Tier 2 (15+ Units)	\$6.74	Unit
Multi-Family Residential Use Charge		
Tier 1 (0-5 Units)	\$4.48	Unit
Tier 2 (6+ Units)	\$6.74	Unit
Non-Residential Use Charge		
5/8", 3/4", 1"		
Tier 1 (0-36 Units)	\$4.48	Unit
Tier 2 (37+ Units)	\$6.74	Unit
1.5"		
Tier 1 (0-120 Units)	\$4.48	Unit
Tier 2 (121+ Units)	\$6.74	Unit
2"		
Tier 1 (0-192 Units)	\$4.48	Unit
Tier 2 (193+ Units)	\$6.74	Unit
3"		
Tier 1 (0-360 Units)	\$4.48	Unit
Tier 2 (361+ Units)	\$6.74	Unit
4"		
Tier 1 (0-600 Units)	\$4.48	Unit
Tier 2 (601+ Units)	\$6.74	Unit
6"		
Tier 1 (0-1,250 Units)	\$4.48	Unit
Tier 2 (1,251+ Units)	\$6.74	Unit
8"		
Tier 1 (0-1,920 Units)	\$4.48	Unit
Tier 2 (1,921+ Units)	\$6.74	Unit
Landscape Irrigation Rate (\$ per unit) [2]	\$5.22	Unit

Source: City of St. Helena.

curr rates

[1] 1 unit=100 cubic feet.

[2] Service must be for landscape irrigation of public space (park, school or residential common area). Customer must implement water conservation best management practices, as determined by the city. Customer must accept more stringent water use cutbacks during periods of water shortage, as determined by the City.

Table 2
Current Monthly Meadowood Area Surcharges

Total Water Consumption in HCF used by all accounts served by the same special reservoirs and pumping stations

0-150	\$1.81
151-200	\$1.45
201-250	\$1.25
251-300	\$1.07
301-350	\$0.88
351-400	\$0.80
401-450	\$0.74
451-500	\$0.65
501-550	\$0.56
551-600	\$0.50
601-1,250	\$0.49
1,251-1,500	\$0.48
1,501-1,750	\$0.47
1,751-2,000	\$0.43
2,001-2,250	\$0.40
2,251-2,500	\$0.39
2,501-2,750	\$0.37
2,751-3,000	\$0.36
3,001-3,250	\$0.34
3,251-3,500	\$0.33
3,501-3,750	\$0.32
3,751 and more	\$0.31
<hr/>	
Per Residential Unit	\$27.94
Meadowood Complex (99 units + clubhouse)	\$2,793.60

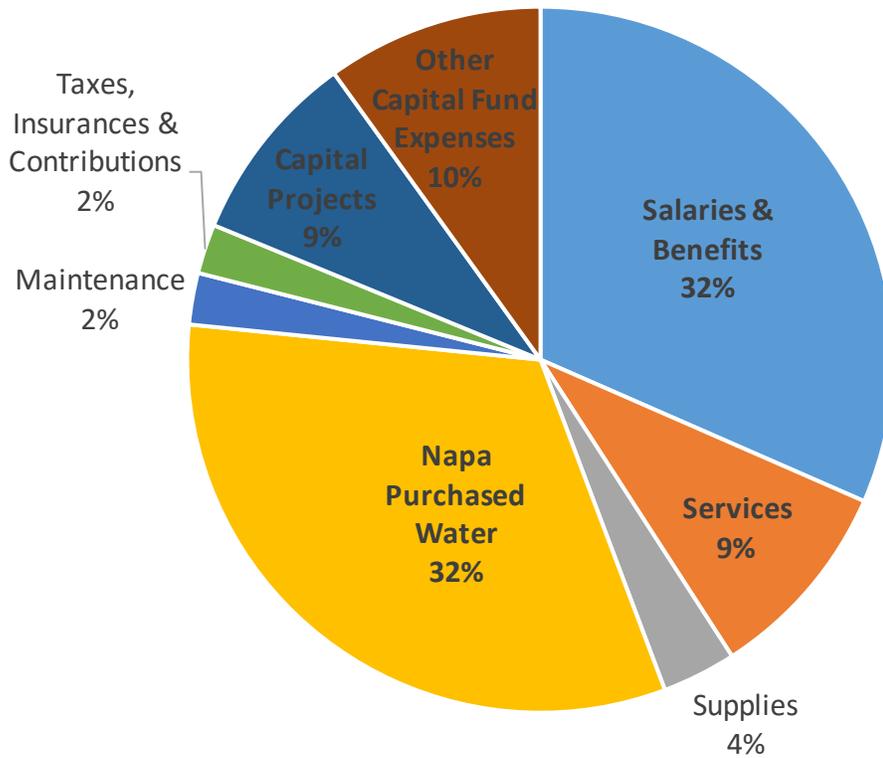
Source: City of St. Helena.

pump

Expenses

The water fund includes an operating and capital fund. Annual operating costs include all water system operating and capital expenses. Over the past five years, personnel costs (salaries and benefits), Napa purchased water, capital projects, other capital fund expenses, and services have been the largest expenditure items. Personnel costs and Napa purchased water have comprised approximately 64 percent of annual costs. Percentage share of historical expenses by expense category is shown in **Figure 1**.

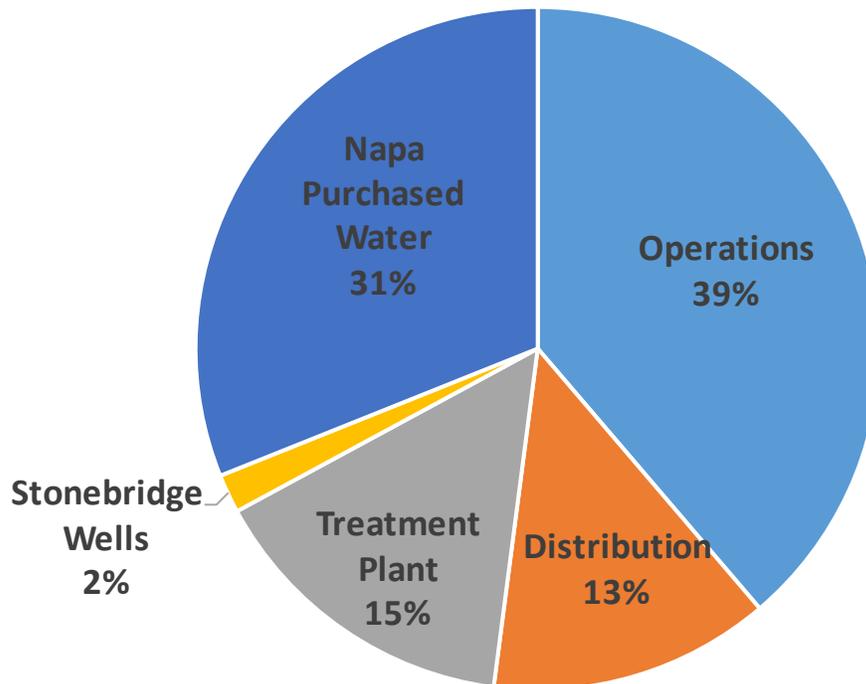
Figure 1
Typical Annual Water Fund Expenses



The operating fund expenses are further broken down into operations, distribution, treatment plant, Stonebridge Wells, and Napa purchased water. Percentage share of historical operating annual expenses by these categories is shown in **Figure 2**.

Supporting financial data is provided in Attachment A, **Tables A-1** through **A-3**.

Figure 2
Operating Fund Expenses



THE WATER SYSTEM

The City's water sources include surface water from Bell Canyon Reservoir, groundwater from Stonebridge Wells, and purchased treated water from the City of Napa. The Louis Stralla Water Treatment Plant (water treatment plant), which treats surface water stored in Bell Canyon Reservoir, has a capacity of 4.3 million gallons a day (MGD); however, there are flow limitations in the inlet piping which restricts use of the plant to less than its capacity. Stonebridge Wells includes two active groundwater wells and a filtration facility, including filtration tanks, chlorination facilities and a backwash return system. The filter removes iron and manganese. Treated water from the City's water sources is distributed via six storage tanks and four pump stations.

The City first entered into an agreement with the City of Napa for delivery of treated water in September 2006. The third amendment to that agreement, entered into in December 2011, increases the minimum annual delivery to 600 acre-feet with optional delivery up to 800 acre-feet. Optional additional delivery of 200 acre-feet may be delivered provided the City of Napa has sufficient water supply. If Napa does not have sufficient supply it will attempt to acquire supplemental dry-year water on a single year basis from an outside source. Price and payment terms of the optional supply will differ from the base supply, as detailed in the agreement.

Untreated water available for construction water purposes only is also available for purchase from the Lower Reservoir adjacent to York Creek.

Historical system-wide water deliveries are shown in **Table 3**. Almost three-quarters of annual water production is used year-round consistently, and 26% of water production is additional water delivered for increased demand between May and October.

Table 3
Monthly Water Delivery

Month	2013	2014	2015		Avg. Annual Water Delivery (millions of gallons)	Percent of Delivery by Month
<i>millions of gallons</i>						
Jan	27.731	36.865	27.682		30.759	6%
Feb	25.853	24.743	29.805		26.800	5%
Mar	32.701	28.927	39.625		33.751	6%
Apr	43.635	31.822	39.224		38.227	7%
May	59.950	49.464	41.328		50.247	9%
Jun	57.567	50.268	46.679		51.505	10%
Jul	65.613	57.505	51.105		58.074	11%
Aug	67.830	56.303	54.491		59.541	11%
Sep	72.640	55.720	55.173		61.178	11%
Oct	65.278	52.195	52.491		56.655	11%
Nov	44.466	32.516	35.409		37.463	7%
Dec	38.386	30.405	28.648		32.480	6%
Total	601.651	506.733	501.661	A	536.681	100%
Peaking Period (May through October inclusive)				B	337.200	63%
Base Monthly Flow				C	33.247	
Base Annual Flow				D = C*12	398.962	74%
Additional Flow				E = A-D	137.719	26%

Source: City of St. Helena.

delivery

The City uses conjunctive management to preserve its water supplies in the long-term. The share of water supply from one particular source might change month to month. **Figure 3** shows the percentage share of water supply each month using data from 2013 and 2014, both non-drought years. The graph shows that Bell Canyon water is consistently about 40% of the total water supply each month. Water from the City of Napa and Stonebridge Wells fluctuates from year to year but the most variable use of water supply is Stonebridge Wells.

During a non-drought year approximately 40% of water supply is from Bell Canyon, 32% from the City of Napa, and 28% from Stonebridge Wells. This is illustrated in **Figure 4**. During a drought year the City reduces pumping from Stonebridge Wells to preserve groundwater supplies. The percentage share of water supplies during a drought year are 46% from Bell Canyon, 38% from the

City of Napa, and 16% from Stonebridge Wells, as illustrated in **Figure 5**. Total water deliveries are reduced during a drought year. In 2013, a non-drought year, almost 602 million gallons of water were delivered. In 2015, a drought year, almost 502 million gallons of water were delivered.

Figure 3
Water Sources by Month in a Non-Drought Year

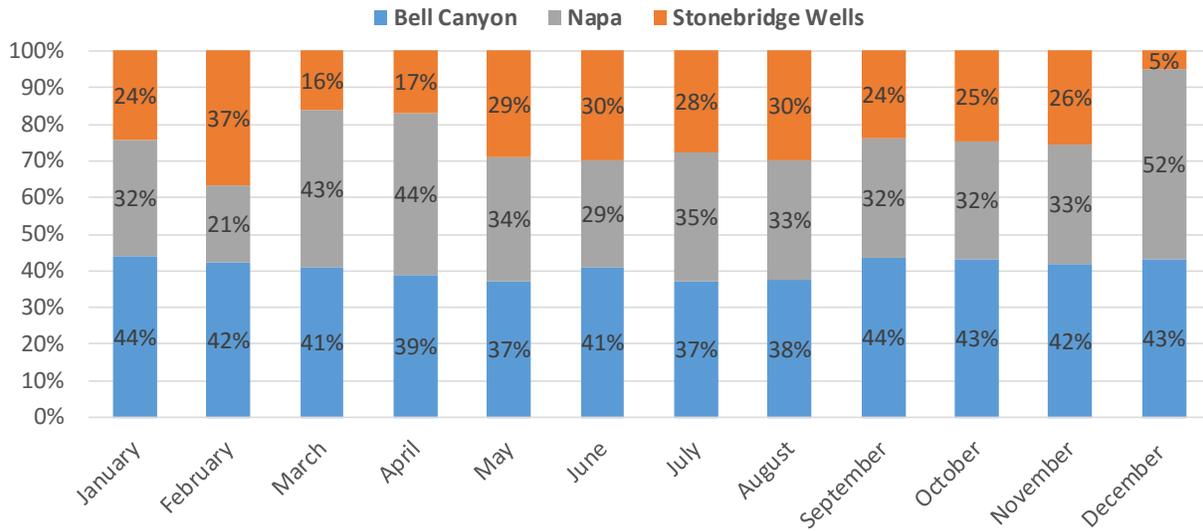


Figure 4
Water Supplies in a Non-Drought Year

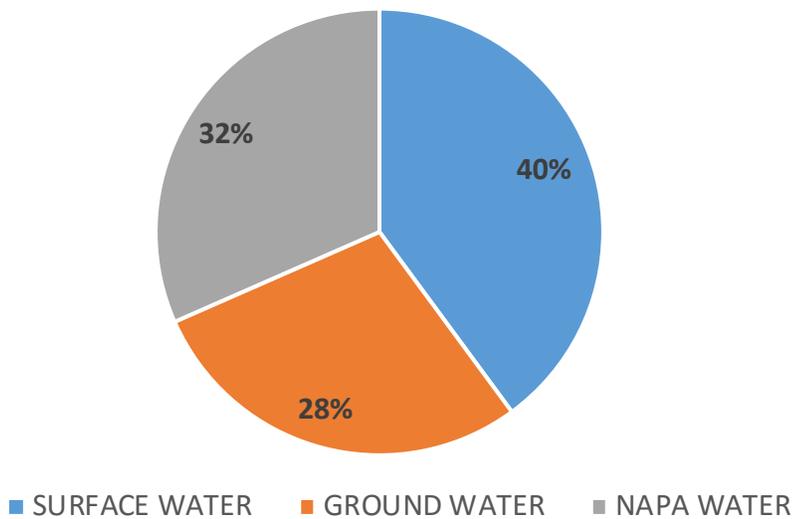
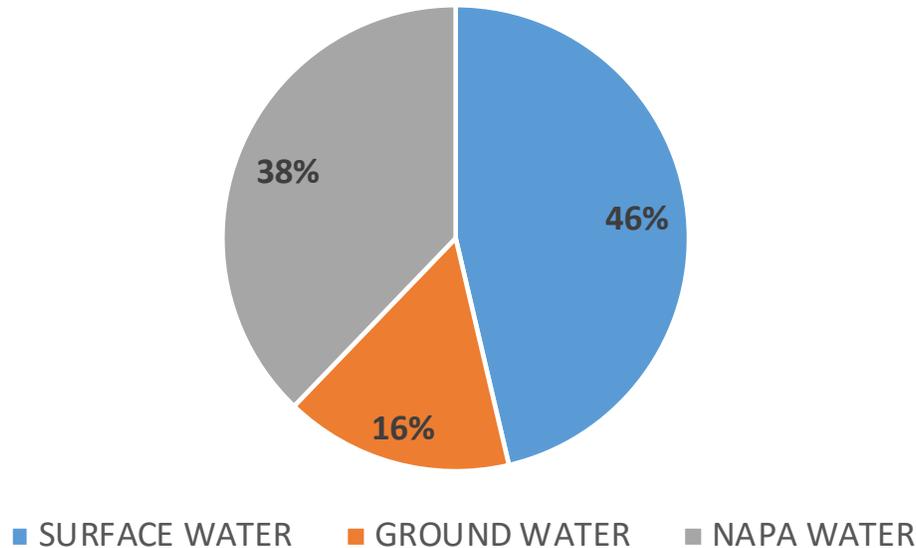


Figure 5
Water Supplies in a Drought Year



WATER USE

Water use fluctuates year to year depending on several factors including, but not limited to, growth, weather, sustained drought, plumbing retrofits, and pricing of water. Average water use by customer type for the past five years is used as the basis on which to project water use over the next five years in the rate study. Historical annual and average annual water use by customer type is shown in **Table A-4**.

Comparison of production and consumption in **Table A-5** shows that unaccounted for water is about 7% of total deliveries which is well within acceptable industry standards. Some unaccounted water will be for hydrant flushing, running to waste at wells and other operational uses of water. Not all unaccounted for water is leaked.

Customer Characteristics

St. Helena experiences greater water demand during summer months than winter months primarily due to outdoor irrigation applications of water. **Table 4** shows average monthly annual use, winter use, and summer use by customer category. With the exception of multi-family, commercial, and laundry customers all water customers use twice as much water, or more, during the summer months than they do in the winter months.

Table 4
Customer Usage Characteristics

Customer Type	Number of		Average Monthly Use	Winter Monthly Average	Summer Monthly Average	Summer to Winter Ratio
	Accounts	Units				
			<i>hcf monthly</i>	[1]	[2]	
Residential			<i>use per unit</i>			
Single Unit	2,028	2,028	11	7	17	2
Multi-Fam	102	673	7	6	7	1
Mobile Homes	4	247	7	7	13	2
Subtotal Residential	2,134	2,948				
Non-Residential			<i>use per meter</i>			
Commercial	197		34	28	41	1
Industrial	21		541	359	647	2
Landscape	32		53	11	108	10
Religious Places [3]	15		17	9	28	3
Laundry	1		256	265	254	1
Library Schools	14		119	73	164	2
Motel/Hotel	16		152	93	170	2
City Owned	21		52	18	74	4
Subtotal Non-Residential	317					
Total	2,451	2,948				

Source: City of St. Helena and HEC.

char

[1] January and February consumption.

[2] July and August consumption.

[3] Includes community centers.

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 revenue requirement is the cornerstone for calculation of rates. This section explains the derivation of revenue requirement for this Study. Components of 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 investment earnings, finance charges (late fees for past due payments), existing Meadowood area surcharges, meter replacement fees, and other miscellaneous revenues.

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. **Table 5** summarizes the capital improvement costs identified by the City as necessary in the next ten years. The costs do not include project costs that already have funding sources identified (i.e. have a grant secured or are to be funded with existing City bond proceeds). All costs are expressed in future dollars. The total ten-year capital improvements projects (CIP) cost is estimated at \$20.8 million. Of this total it is anticipated that \$13.8 million will be spent in the next five years.

Costs are further allocated to existing and future customers based on their estimated use of the facilities. Only \$2.0 million of the total cost is for projects partially benefiting future customers. These projects include Meadowood tank upgrades, Dwyer Road booster improvements, Bell House valve replacement, Holmes tank upgrade, Bell Canyon creek flow measurement, Tank 2 rehabilitation, and Bell Canyon intake tower replacement. **Table A-6** and **Table A-7** provide the water system CIP detail in current and future dollars. Future costs are inflated using the Engineering News Record Construction Cost Index (ENR CCI) past 20-year annual average increase of 3.1%.

Table 5
Capital Improvement Costs Summary

Customer	Estimated CIP Costs in Future Dollars		
	Through 2022	2023 to 2027	Total CIP
Existing Customer Share	\$11,747,982	\$7,006,340	\$18,754,322
Future Customer Share	\$2,045,145	\$0	\$2,045,145
Total Existing and Future	\$13,793,127	\$7,006,340	\$20,799,466

Source: HEC.

cip share

CIP funding sources of costs are shown in **Table 6**, with supporting data in **Table A-8**.

Table 6
Sources of Funding for CIP Costs

Source	Total Cost	Total Through FY 2022	Fiscal Year Ending					
			2017	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5
Future \$'s								
Cash - Capital Fund	\$14,571,782	\$7,565,442	\$274,386	\$1,496,091	\$2,069,348	\$1,195,209	\$1,750,606	\$779,802
Cash - Operations Fund	\$405,604	\$405,604	\$0	\$0	\$0	\$56,453	\$349,151	\$0
Debt - Capital Fund	\$2,001,334	\$2,001,334	\$569,522	\$1,431,811	\$0	\$0	\$0	\$0
Reserves	\$1,775,602	\$1,775,602	\$0	\$159,385	\$0	\$0	\$0	\$1,616,217
Existing Customers CIP	\$18,754,322	\$11,747,982	\$843,908	\$3,087,287	\$2,069,348	\$1,251,662	\$2,099,757	\$2,396,019

Source: City of St. Helena and HEC.

exis rates

Debt Service

The City has existing debt service for a water revenue bond sold in 2006. In 2012, the City entered into an installment purchase agreement with the California Statewide Communities Development Authority to finance for water and wastewater system improvements. The debt is secured by a pledge of the net revenues of the water and wastewater system. The installment purchase agreement includes provisions requiring that the City set rates, fees and charges for each fiscal year so as to yield system net revenues during each fiscal year equal to at least 120% of the annual debt service (including parity debt). The City is currently, and has been, out of compliance with this requirement, which will impact the City's rating for future debt if not corrected. Existing yearly debt service payments are shown in **Table A-9**.

New debt service is assumed to be incurred, financed by the State Drinking Water Revolving Fund (DWSRF), for pump station upgrades and Bell Canyon intake tower replacement. The total estimated DWSRF-funded project costs are \$2.3 million. Due to the size of the projects a 15% contingency factor was added to the estimated City cost. The calculated annual new debt service is calculated based on total project costs of \$2.7 million. The estimated annual debt service is \$167,000 although an additional 10% is due in the first 10 years of the loan to build up a reserve of one year of debt service. Existing customers' share of the debt is 86%; the remaining debt service is for future customers' share of the Bell Canyon intake tower replacement costs. The calculated new debt is shown in **Table 7**.

Table 7
Estimated DWSRF New Debt

Item	Construction Fiscal Year
Projects Needed in Next 3 Years	2018
Pump Station Upgrades	\$212,514
Bell Canyon Intake Tower Replacement	\$2,104,494
Subtotal Costs	\$2,317,008
Contingency (15%) [1]	\$347,551
Total	\$2,664,559
Estimated Annual Debt Service [2], [3]	\$166,118
<i>Existing Customers Debt Service</i>	<i>\$143,485</i>
<i>Future Customers Debt Service</i>	<i>\$22,632</i>
Total Debt-Financed Infrastructure Cost	\$2,664,559
Estimated Total Financing Costs	\$657,795

Source: State Water Resources Control Board and HEC.

new debt

[1] State-funded projects typically cost more (more administration as well as American Iron and Steel requirements, and labor reporting).

[2] DWSRF loan assumptions:

Interest Rate (2016 rate is 1.6%)	2.2%
Term (years)	20

[3] Annual debt service is 10% higher for the first 10 years to build one year of res

Meter Replacement Program

The City does not currently collect for replacement of water meters; costs of replacement are currently paid for with reserves, which is unsustainable. This rate study includes calculation of annual costs to replace meters. Each year City crews will replace older water meters that are near the end of their useful life, or which are inaccurately measuring water flow. The cost to replace meters by size of meter was used to determine the annual cost of the meter replacement program. The estimated meter replacement fee revenues are shown in **Table 8**. 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 2017 to \$54,000 in 2022. Meter replacement costs by size are shown in **Table A-10**.

Table 8
Estimated Meter Replacement Fee Program Cost

Item	Assumption	Fiscal Year Ending					
		2017	2018	2019	2020	2021	2022
		Year 1	Year 2	Year 3	Year 4	Year 5	
	<i>Projected Growth in Water Meters</i>		5	5	5	5	5
City Water Meters in 2016 [1]		2,485	2,485	2,485	2,485	2,485	2,485
Projected City Water Meters		2,485	2,490	2,495	2,500	2,505	2,510
Estimated Replacement Cost per Meter [2]	3.0%	\$374	\$385	\$397	\$409	\$421	\$434
Percentage of Meters Replaced	20-yr cycle	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Estimated Meter Replacement Program Cost		\$46,494	\$47,985	\$49,524	\$51,112	\$52,751	\$54,442

Source: City of St. Helena and HEC.

meter cost

[1] Includes each meter in compound meters.

[2] Weighted average cost of meters.

Operations Expenses and Reserves

Budgeted fiscal year 2017 expenses are used to project future year expenditures. All operating expenditures are increased 5% each year with the exception of maintenance, taxes, insurances and contributions which are increased at 10% per year, and Napa purchased water, increased at 3% per year per the 2011 amended agreement with the City of Napa. **Table A-11** shows historical annual average operating cost increases of 5.3%.

The water rate study has a target cash reserve of six to twelve months of operating expenses. Additional rate revenue will have to be collected to achieve this reserve fund target within the five-year period.

System Rehabilitation

Depreciation is used as the basis for which to collect rates to cover system rehabilitation costs. Inclusion of system rehabilitation costs demonstrates fiscal responsibility toward the assets to potential future investors and helps to establish good credit¹. Depreciation is calculated based on existing water facilities and new facilities built in the next 5-year period. **Table 9** shows the total annual amount included in the rates for system rehabilitation. Supporting data is provided in **Tables A-12** and **A-13**.

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 9
System Rehabilitation Annual Budget Estimate

Depreciation	Fiscal Year Ending					
	2017	2018	2019	2020	2021	2022
Existing Assets Annual Depreciation	\$875,144	\$902,107	\$929,901	\$958,551	\$988,084	\$1,018,526
New Assets Annual Depreciation	\$72,094	\$104,294	\$158,594	\$268,189	\$309,305	\$343,313
Total Annual Depreciation	\$947,239	\$1,006,401	\$1,088,495	\$1,226,740	\$1,297,389	\$1,361,840
Percentage of Depreciation in Rates	100%	100%	100%	100%	100%	100%
Estimated System Rehabilitation Cost	\$947,200	\$1,006,400	\$1,088,500	\$1,226,700	\$1,297,400	\$1,361,800

Source: HEC.

depr

Meadowood Area Surcharges

Currently approximately \$50,000 each year is generated from surcharges applied in the Meadowood area, which is outside of the City limits. Per the September 13, 2016 Task Force meeting, Meadowood area surcharges are to be eliminated when new rates go into effect February 8, 2017.

Revenue Requirement

Table 10 on page 16 provides the projection of annual costs and revenues and the resulting revenue requirement through fiscal year 2027. Total revenue requirement is projected to increase from \$5.5 million in fiscal year 2017 to \$8.3 million in fiscal year 2022, and \$9.4 million in fiscal year 2027.

COST CLASSIFICATION

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.

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

Cost classification provides a guideline for the City in determining the portion of revenue requirement to collect through service charges versus use charges. Generally, rates reflect fixed costs in the service charges (flat monthly rates) and variable costs in the use charges (per HCF of

water). Through the cost classification analysis, it is calculated that fixed costs comprise about 70% of St. Helena's water system total annual operating costs. Currently St. Helena collects 30% of costs recovered through rates in service charges and 70% in use charges.

If all fixed costs (70%) were in the service charge the bill increase would be dramatic for people on a fixed income. This rate study gradually increases the allocation of total costs to base charges from 31% in 2017, to 36% in 2022, and to 41% in 2027. Allocation of the projected revenue requirement is shown in **Table 11**. Supporting detail is shown in **Tables A-14 and A-15** in **Appendix A**.

Table 11
Allocation of Revenue Requirement to Service and Use Charges

Costs	Fiscal Year Ending										
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Total Revenue Requirement	\$5,518,867	\$6,465,298	\$7,416,316	\$7,747,788	\$8,057,602	\$8,380,166	\$8,731,788	\$9,001,167	\$9,226,532	\$9,381,828	\$9,527,249
Fire Services	0.48%	\$26,569	\$31,126	\$37,300	\$38,792	\$40,345	\$42,037	\$43,334	\$44,419	\$45,167	\$45,867
Non-Fire Services Rev. Req.											
Customer Charges	9.43%	\$609,684	\$699,366	\$730,624	\$759,840	\$790,258	\$823,416	\$848,819	\$870,071	\$884,716	\$898,429
Subtotal in Customer Charges		\$520,435	\$609,684	\$730,624	\$759,840	\$790,258	\$823,416	\$848,819	\$870,071	\$884,716	\$898,429
% in base	[1]	21.23%	22.23%	24.23%	25.23%	26.23%	27.23%	28.23%	29.23%	30.23%	31.23%
Subtotal in Capacity Charges		\$1,171,870	\$1,437,487	\$1,877,590	\$2,033,246	\$2,198,443	\$2,378,005	\$2,541,379	\$2,697,274	\$2,836,491	\$2,975,730
% in use	[1]	68.85%	67.85%	65.85%	64.85%	63.85%	62.85%	61.85%	60.85%	59.85%	58.85%
Subtotal in Use Charges		\$3,799,993	\$4,387,001	\$5,102,274	\$5,225,724	\$5,351,120	\$5,488,329	\$5,567,635	\$5,614,768	\$5,615,454	\$5,607,223

cost alloc

Source: HEC.

[1] Percentages shown are rounded to the nearest one hundredth.

RATES ANALYSIS

Service Charges. Service costs are divided into customer costs and capacity costs. Customer costs are allocated to customers based on the number of water accounts (which is the same as the number of meters). Capacity 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 5/8-inch meter. **Table 12** shows the calculation of equivalent meters, calculation of equivalent fire units, and number of meters by meter size. Total number of meters by customer type is shown in **Table A-16**.

The total number of 5/8" meters was adjusted to include single family 1" 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 5/8" or 3/4" meter. Because the 1" residential customers utilize the same average amount of water as the 3/4" and 5/8" customers, it is appropriate for them to pay the same rates, and not be penalized by the fire sprinklers requirement.

Table 12
Estimated Meter and Fire Equivalent Units

Meter Size	Number of Meters	Meter Flow (gpm)	Meter Ratio	Equivalent Meter Units	Number of Fire Services	Pipe Flow	Equivalent Fire Units
		[1]	[1]			[2]	
5/8"	1,987	20	1.0	1,987			
1"	330	50	2.5	825		1	0
1.5"	61	100	5.0	305		3	0
2"	47	160	8.0	376		6	0
3"	7	320	16.0	112		18	0
4"	9	500	25.0	225	79	38	3,027
6"	11	1,000	50.0	550	33	111	3,673
8"	0	1,600	80.0	0	14	237	3,321
Total	2,452			4,380	126		10,021

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

m equiv

[1] AWWA standard meter flow and ratios - assumes all larger meters are compound meters (AWWA C702). 1.5" meters and smaller are displacement type. 2" and larger are compound type meters.

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

The calculation of monthly service charges through fiscal year 2022 is shown in **Table 13**. The total service charges include addition of the customer and capacity charges. All 5/8", 3/4" and single family residential 1" meters pay the same service charge.

Table 13
Calculated Monthly Service Charge per Meter

	Fiscal Year Ending						
	2017	2018	2019	2020	2021	2022	
Billing Period Beginning*	2/8/2017	11/8/2017	11/8/2018	11/8/2019	11/8/2020	11/8/2021	
Customer Costs	\$520,435	\$609,684	\$699,366	\$730,624	\$759,840	\$790,258	
Customer Accounts	2,451	2,456	2,461	2,466	2,471	2,476	
Cost per Account per Month	\$17.69	\$20.69	\$23.68	\$24.69	\$25.63	\$26.60	
Capacity Costs	\$1,171,870	\$1,437,487	\$1,723,098	\$1,877,590	\$2,033,246	\$2,198,443	
Est. Billable Meter Equivalents	4,032	4,037	4,042	4,047	4,052	4,057	
Meter Size	Meter Ratio	Capacity Costs Monthly Service Charges per Meter					
5/8", 3/4" & SF 1"	1.0	\$24.22	\$29.67	\$35.52	\$38.66	\$41.82	\$45.16
1"	2.5	\$60.55	\$74.18	\$88.81	\$96.66	\$104.54	\$112.89
1.5"	5.0	\$121.10	\$148.37	\$177.62	\$193.31	\$209.08	\$225.79
2"	8.0	\$193.76	\$237.39	\$284.20	\$309.30	\$334.53	\$361.26
3"	16.0	\$387.52	\$474.77	\$568.40	\$618.59	\$669.05	\$722.52
4"	25.0	\$605.50	\$741.83	\$888.12	\$966.55	\$1,045.39	\$1,128.94
6"	50.0	\$1,211.01	\$1,483.66	\$1,776.24	\$1,933.11	\$2,090.78	\$2,257.87
Total Base Monthly Charges per Meter							
Meter Size							
5/8", 3/4" & SF 1"		\$41.91	\$50.36	\$59.21	\$63.35	\$67.44	\$71.75
1"		\$78.25	\$94.87	\$112.49	\$121.35	\$130.16	\$139.49
1.5"		\$138.80	\$169.05	\$201.31	\$218.00	\$234.70	\$252.38
2"		\$211.46	\$258.07	\$307.88	\$333.99	\$360.15	\$387.86
3"		\$405.22	\$495.46	\$592.08	\$643.28	\$694.68	\$749.12
4"		\$623.20	\$762.52	\$911.80	\$991.24	\$1,071.02	\$1,155.53
6"		\$1,228.70	\$1,504.35	\$1,799.93	\$1,957.80	\$2,116.41	\$2,284.47

Source: City of St. Helena and HEC.

service charge

* Dates reflect the current billing cycle; if the billing cycle date changes so will these effective dates.

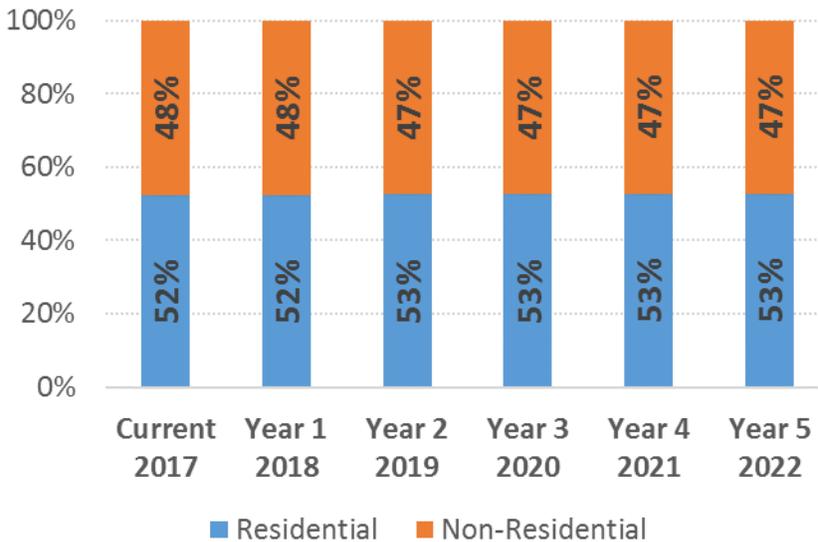
Seasonal Rate Structure

Two rate structures were evaluated for collection of use charges: the uniform rate structure and the seasonal rate structure. The September 13th, 2016 Task Force meeting selected the seasonal rate structure as the preferred rate structure for the Study; therefore, only the seasonal rate structure is presented herein.

Total costs allocated to use charges are divided by projected water demand in the peak and off-peak seasons to calculate the use rate per HCF in the peak and off-peak seasons. The use rate during each season is the same for all treated water customers. Water use by season is determined

in **Table A-17**. Total annual projected water demand is shown in **Figure 6**, with supporting data in **Table A-18**.

Figure 6
Projected Water Demand



The projection of water demand incorporates assumed growth of 5 units per year and an expectation that as water rates increase demand will decrease. The projection of water demand accounts for reduced consumption due to increased rates. 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. Hansford Economic Consulting (HEC) applied industry knowledge to establish assumed price elasticity factors for St. Helena. The price elasticity and water demand analysis is shown in **Tables A-18** through **A-20**.

Off-peak water rates are lower November through April (off-peak months) than during peak months (May through October). During the peak months the costs of operating the water system are 11% higher. Supporting data is provided in **Tables A-17** and **A-21**.

Drought Surcharge

In addition to the seasonal rate structure the City may implement a drought surcharge. The drought surcharge would be implemented when the City enters Phase I drought regulations. **Table A-22** calculates a drought surcharge ratio that would be applied to the seasonal rate structure. The drought surcharge would only be applied to use charges, not to service charges. The analysis demonstrates that during drought years the cost of water is 6% higher than during non-drought years.

The calculation of use charges is shown in **Table 14**.

Table 14
Calculated Use Charges per HCF

	Billing Period Beginning*	Fiscal Year Ending					
		2017 2/8/2017	2018 11/8/2017	2019 11/8/2018	2020 11/8/2019	2021 11/8/2020	
Allocated Cost		\$3,799,993	\$4,387,001	\$4,958,147	\$5,102,274	\$5,225,724	\$5,351,120
Total Consumption		645,800	643,042	644,175	646,780	647,544	648,219
Cost per HCF		\$5.88	\$6.82	\$7.70	\$7.89	\$8.07	\$8.26
SEASONAL RATE STRUCTURE							
Off-Peak Water Use (Nov-Apr)	37%	240,040	239,015	239,436	240,404	240,688	240,939
Peak Water Use (May-Oct)	63%	405,760	404,027	404,739	406,376	406,856	407,280
Total Consumption		645,800	643,042	644,175	646,780	647,544	648,219
Calculated Cost per HCF by Season -- NON-DROUGHT PERIOD							
Off-Peak Costs per HCF		\$5.50	\$6.37	\$7.19	\$7.37	\$7.54	\$7.71
Peak Costs per HCF	1.11	\$6.11	\$7.09	\$8.00	\$8.20	\$8.38	\$8.58
Calculated Cost per HCF by Season -- DROUGHT PERIOD							
Off-Peak Costs per HCF	1.06	\$5.81	\$6.73	\$7.60	\$7.79	\$7.97	\$8.15
Peak Costs per HCF	1.11	\$6.46	\$7.49	\$8.45	\$8.66	\$8.86	\$9.06

Source: HEC.

use charge

* Dates reflect the current billing cycle; if the billing cycle date changes so will these effective dates.

A small portion of fixed costs are associated with private fire protection. Fire costs are allocated to fire customers based on the number of equivalent fire units. Fire service charges are calculated in **Table 15**.

Calculated meter replacement fees are shown in **Table 16**. Meter replacement fees are calculated using data presented in **Table A-10**. The raw water cost and rate per HCF for February 8, 2017 is calculated in **Table 17**. Raw water may only be taken from the Lower Reservoir for construction-related water applications.

Table 15
Calculation of Fire Service Charges

Fire Services	2017	2018	2019	2020	2021	2022	
	Current	Year 1	Year 2	Year 3	Year 4	Year 5	
<i>Billing Period Beginning*</i>	2/8/2017	11/8/2017	11/8/2018	11/8/2019	11/8/2020	11/8/2021	
Fire Services Cost Allocation	\$26,569	\$31,126	\$35,704	\$37,300	\$38,792	\$40,345	
Equivalent Fire Units	10,021	10,021	10,021	10,021	10,021	10,021	
Monthly Cost per Equivalent Fire Uni	\$0.44	\$0.52	\$0.59	\$0.62	\$0.65	\$0.67	
Pipe Size	Pipe Flow	Monthly Charge					
1"	1	\$0.44	\$0.52	\$0.59	\$0.62	\$0.65	\$0.67
1.5"	3	\$1.28	\$1.50	\$1.72	\$1.80	\$1.87	\$1.95
2"	6	\$2.74	\$3.20	\$3.68	\$3.84	\$3.99	\$4.15
3"	18	\$7.95	\$9.31	\$10.68	\$11.15	\$11.60	\$12.07
4"	38	\$16.93	\$19.84	\$22.75	\$23.77	\$24.72	\$25.71
6"	111	\$49.19	\$57.62	\$66.10	\$69.05	\$71.81	\$74.69
8"	237	\$104.82	\$122.79	\$140.85	\$147.15	\$153.03	\$159.16

Source: HEC.

fire

* Dates reflect the current billing cycle; if the billing cycle date changes so will these effective dates.

Table 16
Calculated Meter Replacement Fees by Meter Size

Meter Size	Fiscal Year Ending					
	2017	2018	2019	2020	2021	2022
		Year 1	Year 2	Year 3	Year 4	Year 5
3/4" or less	\$1.31	\$1.35	\$1.39	\$1.43	\$1.47	\$1.52
1"	\$1.83	\$1.89	\$1.94	\$2.00	\$2.06	\$2.12
1-1/2"	\$2.88	\$2.96	\$3.05	\$3.14	\$3.24	\$3.33
2"	\$3.66	\$3.77	\$3.88	\$4.00	\$4.12	\$4.24
3"	\$7.84	\$8.08	\$8.32	\$8.57	\$8.83	\$9.09
4"	\$17.26	\$17.78	\$18.31	\$18.86	\$19.42	\$20.01
6"	\$23.79	\$24.51	\$25.24	\$26.00	\$26.78	\$27.58

Source: HEC.

meter fee

Table 17
Raw Water Rate Calculation for Fiscal Year 2017

Costs	Estimated Cost FY 2016-17
Total Operating Costs [1]	\$3,897,723
Less Napa Purchased Water	\$1,349,019
Less Stonebridge Wells Costs	\$85,400
Less Distribution Costs	\$685,930
Less Treated Water Costs	\$834,407
Total Raw Water Operating Costs	\$1,628,897
City Water Supplies (gallons) [2]	345,701,088
Cost per Gallon	\$0.00471
Cost per HCF	\$3.52

Source: City of St. Helena.

raw

[1] Equals total operating costs in the revenue requirement table less the meter replacement program costs, WTP condition assessment costs, updating GIS maps costs, and Water Master Plan update costs.

[2] Based on annual average production of city groundwater and surface water.

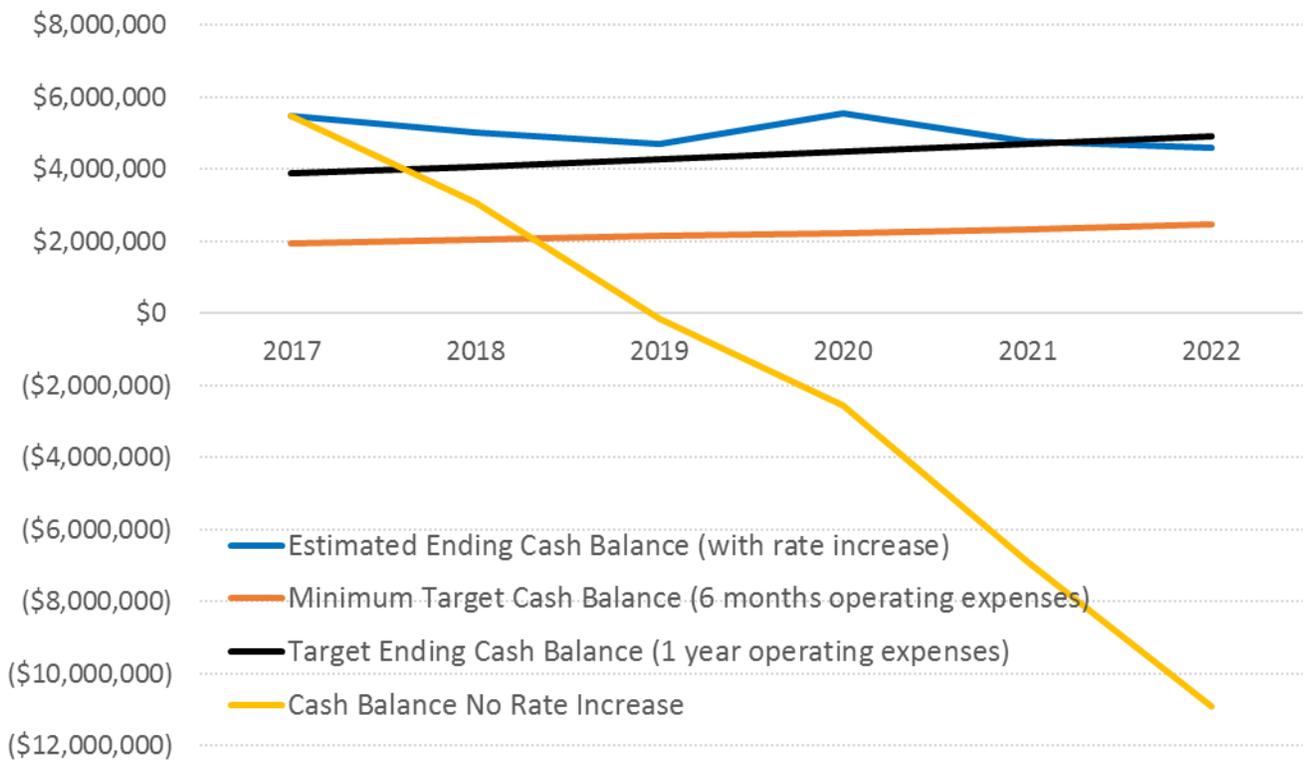
A summary of the calculated water rates schedule through fiscal year 2027 is given in **Table 18**.

CASH FLOW

Table 19 and **Table 20** on the following pages show the projected cash flow and cash flow by fund, respectively, through fiscal year 2027. With adoption of the calculated rates it is anticipated that the City will be able to meet all water enterprise fund obligations and achieve at least six months of operating expenses in cash reserves in each year of the projection. The cash flow table demonstrates that a debt service coverage ratio of at least 1.20 will be met. In addition, the City may be able to designate (put aside) up to \$3.1 million by fiscal year ending 2027 for future cash funding of system rehabilitation.

Figure 6 shows projected water fund balances with and without rate increases as well as target and minimum operating cash reserves.

Figure 6
Projected Water Fund Cash Balance (Operating and Capital Funds combined)



**Table 19
Projected Cash Flow**

Revenues and Expenses	Fiscal Year Ending										
	2017 Estimated	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5	2023 Year 6	2024 Year 7	2025 Year 8	2026 Year 9	2027 Year 10
	Billing Period Beginning*										
Revenue	2/8/2017	11/8/2017	11/8/2018	11/8/2019	11/8/2020	11/8/2021	11/8/2022	11/8/2023	11/8/2024	11/8/2025	11/8/2026
Water Sales [1]	\$4,459,929	\$6,107,560	\$7,032,975	\$7,566,302	\$7,878,287	\$8,191,127	\$8,527,126	\$8,817,476	\$9,050,515	\$9,221,566	\$9,362,015
Meadowood Surcharge [1]	\$53,088	\$62,031	\$66,335	\$70,995	\$76,044	\$81,517	\$87,454	\$93,898	\$100,895	\$108,497	\$116,760
Meter Replacement Fee	\$19,373	\$47,612	\$49,139	\$50,715	\$52,341	\$54,019	\$55,750	\$57,537	\$59,381	\$61,283	\$63,247
Other Revenues	\$93,850	\$93,850	\$93,850	\$93,850	\$93,850	\$93,850	\$93,850	\$93,850	\$93,850	\$93,850	\$93,850
Total Revenues	\$4,626,240	\$6,311,054	\$7,242,299	\$7,781,862	\$8,100,521	\$8,420,513	\$8,764,181	\$9,062,761	\$9,304,641	\$9,485,196	\$9,635,872
Operating Expenses	\$3,917,096	\$4,128,126	\$4,321,846	\$4,582,439	\$5,090,354	\$4,968,197	\$5,207,724	\$5,460,595	\$5,727,681	\$6,009,921	\$6,308,323
Net Revenue before Debt Service and System Rehabilitation	\$709,144	\$2,182,928	\$2,920,454	\$3,199,423	\$3,010,168	\$3,452,317	\$3,556,457	\$3,602,166	\$3,576,960	\$3,475,275	\$3,327,548
Debt Service	\$989,251	\$982,916	\$1,168,496	\$1,165,102	\$1,163,243	\$1,162,861	\$1,157,281	\$1,156,757	\$1,154,646	\$1,152,220	\$1,146,816
Debt Service Coverage [2]	0.72	2.22	2.50	2.75	2.59	2.97	3.07	3.11	3.10	3.02	2.90
System Rehabilitation	\$0	\$947,200	\$1,006,400	\$1,088,500	\$1,226,700	\$1,297,400	\$1,361,800	\$1,440,400	\$1,497,900	\$1,575,300	\$1,629,700
Net Revenue	(\$280,107)	\$252,812	\$745,558	\$945,821	\$620,225	\$992,056	\$1,037,376	\$1,005,009	\$924,414	\$747,755	\$551,032
Beginning Balance [3]	\$6,113,512	\$5,474,019	\$5,018,555	\$4,701,164	\$5,540,276	\$4,766,595	\$4,590,032	\$5,092,389	\$5,722,146	\$7,178,934	\$8,370,648
Net Revenue	(\$280,107)	\$252,812	\$745,558	\$945,821	\$620,225	\$992,056	\$1,037,376	\$1,005,009	\$924,414	\$747,755	\$551,032
Cash Funded Capital Projects	(\$274,386)	(\$548,891)	(\$1,062,948)	(\$106,709)	(\$523,906)	\$0	(\$555,020)	(\$395,253)	\$0	\$0	\$0
Spill Containment at Bell Creek & Stonebridge	\$0	(\$159,385)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Reservoir Improvements	\$0	\$0	\$0	\$0	\$0	(\$1,079,726)	\$0	\$0	\$0	\$0	\$0
Bell Valve House Valve Replacement	\$0	\$0	\$0	\$0	\$0	(\$536,491)	\$0	\$0	\$0	\$0	\$0
Bell Canyon Creek Flow Measurement	(\$85,000)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Transfer Out to Impact Fee Fund	\$0	\$0	\$0	\$0	(\$870,000)	(\$70,000)	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
Add Back System Depreciation Net of CIP	\$0	\$0	\$0	\$0	\$0	\$517,598	\$0	\$0	\$512,375	\$423,959	\$512,699
Ending Balance	\$5,474,019	\$5,018,555	\$4,701,164	\$5,540,276	\$4,766,595	\$4,590,032	\$5,092,389	\$5,722,146	\$7,178,934	\$8,370,648	\$9,454,379
Months of Operating Expenses in Reserve	17	15	13	15	11	11	12	13	15	17	18
Designated [4]	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$200,000	\$1,300,000	\$2,400,000	\$3,100,000
Undesignated Ending Balance	\$5,474,019	\$5,018,555	\$4,701,164	\$5,540,276	\$4,766,595	\$4,590,032	\$5,092,389	\$5,522,146	\$5,878,934	\$5,970,648	\$6,354,379
Undesignated Months of Op. Exps. in Reserve	17	15	13	15	11	11	12	12	12	12	12
Target Balance [5]	\$3,897,723	\$4,080,141	\$4,272,322	\$4,474,874	\$4,688,452	\$4,913,755	\$5,151,537	\$5,402,608	\$5,667,836	\$5,948,158	\$6,244,582

Source: City of St. Helena and HEC.

* Dates reflect the current billing cycle; if the billing cycle date changes so will these effective dates.

[1] Rates for FY 2017 calculated as 7 months of current rates plus 5 months of rates implemented in February 2017. Rates for all future fiscal years calculated as 4 months of the rates implemented in February of the prior fiscal year plus 8 months of the rates implemented in November of the current fiscal year.

[2] Debt service coverage should be at least 1.20.

[3] Estimated beginning balance for the operating and capital funds combined per the City 2016/17 Budget.

[4] New designated fund for capital repairs and replacement.

[5] Minimum six months and target balance is one year of operating expenses.

Table 20
Projected Cash Flow by Fund

Fund	2017 Estimated	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5	2023 Year 6	2024 Year 7	2025 Year 8	2026 Year 9	2027 Year 10
Operating Fund 561											
Beginning Balance	\$4,923,632	\$4,643,525	\$4,896,337	\$4,541,894	\$4,937,716	\$4,137,941	\$4,477,595	\$4,884,971	\$5,159,980	\$6,616,769	\$7,808,483
Net Revenue	(\$280,107)	\$252,812	\$745,558	\$945,821	\$620,225	\$992,056	\$1,037,376	\$1,005,009	\$924,414	\$747,755	\$551,032
Add Back System Depreciation Net of CIP	\$0	\$0	\$0	\$0	\$0	\$517,598	\$0	\$0	\$512,375	\$423,959	\$512,699
Transfer Out to Capital Fund	\$0	\$0	(\$1,100,000)	(\$550,000)	(\$550,000)	(\$1,100,000)	(\$650,000)	(\$750,000)	\$0	\$0	\$0
Transfer In (Out) - Impact Fee Fund	\$0	\$0	\$0	\$0	(\$870,000)	(\$70,000)	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000
Ending Balance	\$4,643,525	\$4,896,337	\$4,541,894	\$4,937,716	\$4,137,941	\$4,477,595	\$4,884,971	\$5,159,980	\$6,616,769	\$7,808,483	\$8,892,214
Capital Fund 763											
Beginning Balance	\$1,189,880	\$830,494	\$122,218	\$159,270	\$602,561	\$628,654	\$112,438	\$207,418	\$562,165	\$562,165	\$562,165
Transfer In from Operating Fund	\$0	\$0	\$1,100,000	\$550,000	\$550,000	\$1,100,000	\$650,000	\$750,000	\$0	\$0	\$0
Capital Projects Expenses [1]	(\$359,386)	(\$708,276)	(\$1,062,948)	(\$106,709)	(\$523,906)	(\$1,616,217)	(\$555,020)	(\$395,253)	\$0	\$0	\$0
Ending Balance	\$830,494	\$122,218	\$159,270	\$602,561	\$628,654	\$112,438	\$207,418	\$562,165	\$562,165	\$562,165	\$562,165
Combined Operating and Capital Funds	\$5,474,019	\$5,018,555	\$4,701,164	\$5,540,276	\$4,766,595	\$4,590,032	\$5,092,389	\$5,722,146	\$7,178,934	\$8,370,648	\$9,454,379
Impact Fee Fund 764											
Beginning Balance	\$685,291	\$702,091	\$620,876	\$388,259	\$114,398	\$8,850	\$3,208	\$2,722	\$2,730	\$3,243	\$4,274
Transfer In (Out) - Operating Fund [2]	\$0	\$0	\$0	\$0	\$870,000	\$70,000	(\$20,000)	(\$20,000)	(\$20,000)	(\$20,000)	(\$20,000)
Fee Revenues [3]	\$16,800	\$17,225	\$17,660	\$18,106	\$18,564	\$19,033	\$19,514	\$20,007	\$20,513	\$21,031	\$21,563
Expenses											
Meadowood Tank Upgrades	\$0	\$0	\$136,913	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Dwyer Road Booster	\$0	\$0	\$0	\$259,225	\$223,069	\$0	\$0	\$0	\$0	\$0	\$0
Bell Valve House Valve Replacement	\$0	\$0	\$0	\$0	\$0	\$94,675	\$0	\$0	\$0	\$0	\$0
Holmes Tank Upgrade	\$0	\$0	\$0	\$32,743	\$771,043	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Creek Flow Measurement	\$0	\$88,876	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tank 2 Rehabilitation	\$0	\$9,563	\$113,364	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Ending Balance	\$702,091	\$620,876	\$388,259	\$114,398	\$8,850	\$3,208	\$2,722	\$2,730	\$3,243	\$4,274	\$5,837

Source: City of St. Helena and HEC.

[1] Cash-funded projects only. Projects that are debt-funded are included in the operating fund.

[2] Future users' share of debt service is approximately \$25,000 each year starting in fiscal year 2019.

[3] Assumes growth of 5 units per year and the current impact fee

\$1.68 per building square foot

Fee assumed to grow 2.5% per year.

2,000 average home building square feet

\$3,360 Average fee per unit

The impact fee needs to be revised for these CIP costs.

fund flow

ATTACHMENT A
WATER RATE STUDY
SUPPORT TABLES

Table A-1
City of St. Helena Water Rate Study
Historical Water Fund Financial Performance

DRAFT

Revenues and Expenses	Actual Financials for Fiscal Year Ending					Avg. Annual Percentage Change
	2011	2012	2013	2014	2015	
OPERATING						
Revenues						
Charges For Services	\$3,062,669	\$4,313,393	\$4,731,720	\$4,883,409	\$4,237,307	8.5%
Miscellaneous	\$6,117	\$12,088	\$28,246	\$12,491	\$89,673	95.7%
Total Revenues	\$3,068,786	\$4,325,481	\$4,759,966	\$4,895,900	\$4,326,980	9.0%
Expenses						
Personnel	\$1,207,335	\$1,214,927	\$1,176,559	\$1,131,354	\$1,362,727	3.1%
Contracted Services	\$21,451	\$56,561	\$0	\$0	\$0	-100.0%
Purchased Water	\$787,525	\$1,178,400	\$1,189,925	\$1,327,251	\$1,272,770	12.8%
Utilities	\$105,749	\$106,389	\$147,994	\$170,384	\$161,313	11.1%
Fuel	\$0	\$0	\$0	\$0	\$0	n.a.
Other Supplies and Expenses	\$399,366	\$530,562	\$370,484	\$498,635	\$560,847	8.9%
Depreciation and Amortization	\$617,876	\$657,710	\$792,559	\$792,559	\$1,028,037	13.6%
Subtotal Expenses	\$3,139,302	\$3,744,549	\$3,677,521	\$3,920,183	\$4,385,694	8.7%
NET OPERATING INCOME (LOSS)	(\$70,516)	\$580,932	\$1,082,445	\$975,717	(\$58,714)	
NON OPERATING						
Transfers Out	\$0	(\$55,479)	\$0	\$0	\$0	n.a.
Gains (Loss) on Capital Asset Disposals	\$0	(\$124,356)	\$0	\$0	\$0	n.a.
Interest and Investment Revenue	\$49,268	\$34,746	\$16,909	\$25,476	\$40,968	-4.5%
Interest Expense	(\$387,792)	(\$349,084)	(\$396,126)	(\$343,880)	(\$196,547)	-15.6%
Net Non Operating Revenues (Expenses)	(\$338,524)	(\$494,173)	(\$379,217)	(\$318,404)	(\$155,579)	-17.7%
Capital Contributions	\$190,034	\$321,951	\$169,417	\$287,140	\$152,989	-5.3%
Change in Net Assets	(\$219,006)	\$408,710	\$872,645	\$944,453	(\$61,304)	
Net Assets Beginning Balance	\$10,649,155	\$10,430,149	\$10,502,760	\$11,375,405	\$12,319,858	
Net Assets Ending Balance	\$10,430,149	\$10,838,859	\$11,375,405	\$12,319,858	\$12,258,554	

Source: City of St. Helena.

cafr

Table A-2
City of St. Helena Water Rate Study
Historical Revenues and Expenditures

DRAFT

Revenues and Expenses	Fiscal Year Ending				Estimated 2016	Budgeted 2017
	2012	2013	2014	2015		
OPERATING FUND						
Revenues						
Investment Earnings	\$33,247	\$16,718	\$24,907	\$30,781	\$24,900	\$25,000
Fire Service Agreement Fees	\$0	\$0	\$0	\$0	\$0	\$0
Raw Water Permit Fees	\$100	\$400	\$550	\$750	\$650	\$800
Water Conservation Fines	\$0	\$0	\$0	\$0	\$0	\$0
Backflow Testing & Insp Fees	\$0	\$300	\$150	\$150	\$150	\$150
Sale Of Capital Asset	\$0	\$0	\$0	\$0	\$0	\$0
Other Revenue	\$11,988	\$6,165	\$11,791	\$7,594	\$5,500	\$8,500
Insurance Receipts	\$0	\$0	\$0	\$0	\$0	\$0
Water Revenue	\$2,251	\$2,089	\$1,306	\$2,327	\$2,300	\$5,500
Surcharge-Meadowood	\$30,210	\$30,223	\$30,223	\$32,223	\$30,223	\$30,223
Pumping Charge	\$23,120	\$23,038	\$23,956	\$22,890	\$23,650	\$18,420
Rates - Inside City Limits	\$3,862,757	\$4,264,423	\$4,381,060	\$3,821,553	\$4,082,365	\$3,343,945
Rates - Outside City Limits	\$337,510	\$364,387	\$385,337	\$345,644	\$359,600	\$359,600
Finance Charges	\$34,418	\$30,514	\$40,533	\$36,142	\$37,150	\$36,000
Sale of Remote Meters	\$571	\$231	\$4,575	\$3,046	\$1,740	\$1,500
Hydrant Rental	\$150	\$150	\$0	\$0	\$0	\$0
Property Rentals	\$8,400	\$8,400	\$8,400	\$8,400	\$8,400	\$8,400
Water Meter Install Fee	\$14,006	\$8,265	\$8,018	\$10,724	\$5,000	\$8,000
Total Revenues	\$4,358,728	\$4,755,303	\$4,920,806	\$4,322,225	\$4,581,628	\$3,846,038
Expenses						
Salaries & Benefits	\$1,217,968	\$1,168,983	\$1,165,302	\$1,299,809	\$1,565,976	\$1,612,243
Services	\$440,097	\$284,472	\$348,495	\$358,264	\$538,363	\$564,625
Supplies	\$147,577	\$100,683	\$82,066	\$117,593	\$142,949	\$151,490
Napa Purchased Water	\$1,178,401	\$1,189,926	\$1,327,251	\$1,272,770	\$1,311,272	\$1,349,019
Maintenance	\$91,794	\$68,433	\$78,880	\$124,006	\$195,116	\$172,579
Taxes, Insurances & Contributions	\$102,988	\$74,528	\$79,111	\$91,930	\$147,415	\$133,167
Capital	\$13,175	\$33,471	\$11,886	\$15,056	\$59,785	\$137,925
Transfers	\$179,836	\$0	\$200,000	\$979,380	\$111,995	\$0
Debt	\$349,084	\$396,126	\$343,980	\$196,547	\$1,008,078	\$1,001,067
Total Expenses	\$3,720,918	\$3,316,623	\$3,636,971	\$4,455,356	\$5,080,949	\$5,122,115
Operating Fund Net Revenues	\$637,810	\$1,438,681	\$1,283,835	(\$133,132)	(\$499,321)	(\$1,276,077)
WATER CAPITAL FUND						
Revenues						
Transfers in	\$182,000	\$92,045	\$200,000	\$979,380	\$75,541	\$0
Total Revenues	\$182,000	\$92,045	\$200,000	\$979,380	\$75,541	\$0
Expenses						
Salaries & Benefits	\$110,984	\$349	\$0	\$0	\$0	\$0
Professional Services	\$233,894	\$430,235	\$1,638,364	\$424,649	\$0	\$0
Training	\$0	\$0	\$0	\$38	\$0	\$0
Supplies	\$0	\$17,802	\$14,030	\$2,382	\$0	\$0
Advertising	\$421	\$0	\$0	\$0	\$0	\$0
Taxes and Charges	\$0	\$0	\$0	\$3,120	\$0	\$0
Capital Projects Budget	\$0	\$0	\$0	\$4,092	\$0	\$0
Capital Equipment	\$0	\$0	\$5,875	\$0	\$0	\$0
Capital Imp Equipment	\$0	\$222,039	\$10,759	\$0	\$0	\$0
Total Expenses	\$345,300	\$670,426	\$1,669,028	\$434,282	\$0	\$0
Capital Fund Net Revenues	(\$163,300)	(\$578,381)	(\$1,469,028)	\$545,098	\$75,541	\$0
WATER IMPACT FUND						
Revenues						
Investment Revenue	\$1,054	\$17	\$569	\$1,787	\$1,500	\$1,800
Other Revenue	\$0	\$21,381	\$0	\$45,937	\$0	\$0
Water Impact Fees	\$321,951	\$169,417	\$287,140	\$152,989	\$110,000	\$100,000
Total Revenues	\$323,005	\$190,815	\$287,709	\$200,713	\$111,500	\$101,800
Expenses						
Transfers Out	\$182,000	\$92,045	\$0	\$0	\$0	\$0
Total Expenses	\$182,000	\$92,045	\$0	\$0	\$0	\$0
Water Impact Fund Net Revenues	\$141,005	\$98,770	\$287,709	\$200,713	\$111,500	\$101,800

Source: City of St. Helena Financial Data.

rev exp

Table A-3
City of St. Helena Water Rate Study
Historical Expenditures

DRAFT

Expenses	Actuals Fiscal Year Ending				Estimated 2016	Budgeted 2017
	2012	2013	2014	2015		
Operations						
Salaries & Benefits	\$509,098	\$442,817	\$448,242	\$507,936	\$678,792	\$706,986
Services	\$271,166	\$91,007	\$127,243	\$137,836	\$290,421	\$311,925
Supplies	\$11,086	\$13,053	\$12,308	\$10,918	\$20,513	\$18,792
Napa Purchased Water	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance	\$6,942	\$6,959	\$10,452	\$21,512	\$13,246	\$13,197
Taxes, Insurances & Contributions	\$86,653	\$64,812	\$68,027	\$79,911	\$123,415	\$113,467
Capital	\$0	\$5,272	\$113	\$551	\$8,234	\$1,925
Transfers	\$179,836	\$0	\$200,000	\$979,380	\$111,995	\$0
Debt	\$349,084	\$396,126	\$343,980	\$196,547	\$1,008,078	\$1,001,067
Subtotal Operations	\$1,413,864	\$1,020,046	\$1,210,366	\$1,934,592	\$2,254,694	\$2,167,359
Distribution						
Salaries & Benefits	\$362,007	\$357,787	\$357,186	\$413,670	\$497,637	\$490,637
Services	\$50,639	\$56,393	\$72,008	\$76,939	\$86,957	\$85,700
Supplies	\$20,493	\$16,111	\$10,127	\$21,459	\$21,810	\$28,298
Napa Purchased Water	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance	\$37,922	\$36,834	\$44,189	\$52,003	\$57,389	\$60,295
Taxes, Insurances & Contributions	\$0	\$0	\$0	\$0	\$0	\$0
Capital	\$12,238	\$0	\$0	\$0	\$26,000	\$21,000
Transfers	\$0	\$0	\$0	\$0	\$0	\$0
Debt	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Distribution	\$483,298	\$467,126	\$483,510	\$564,071	\$689,793	\$685,930
Treatment						
Salaries & Benefits	\$346,863	\$368,378	\$359,875	\$378,203	\$389,547	\$414,620
Services	\$84,949	\$89,641	\$94,000	\$89,843	\$102,350	\$109,900
Supplies	\$109,114	\$59,140	\$49,245	\$73,764	\$74,988	\$91,600
Napa Purchased Water	\$1,178,401	\$1,189,926	\$1,327,251	\$1,272,770	\$1,311,272	\$1,349,019
Maintenance	\$36,589	\$24,384	\$21,299	\$50,197	\$104,518	\$83,587
Taxes, Insurances & Contributions	\$16,335	\$9,716	\$11,084	\$12,019	\$24,000	\$19,700
Capital	\$937	\$28,199	\$1,356	\$14,505	\$14,776	\$115,000
Transfers	\$0	\$0	\$0	\$0	\$0	\$0
Debt	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Treatment	\$1,773,187	\$1,769,383	\$1,864,109	\$1,891,301	\$2,021,451	\$2,183,426
Stonebridge Wells						
Salaries & Benefits	\$0	\$0	\$0	\$0	\$0	\$0
Services	\$33,343	\$47,430	\$55,244	\$53,646	\$58,635	\$57,100
Supplies	\$6,884	\$12,380	\$10,386	\$11,452	\$25,638	\$12,800
Napa Purchased Water	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance	\$10,341	\$257	\$2,940	\$294	\$19,963	\$15,500
Taxes, Insurances & Contributions	\$0	\$0	\$0	\$0	\$0	\$0
Capital	\$0	\$0	\$10,416	\$0	\$10,775	\$0
Transfers	\$0	\$0	\$0	\$0	\$0	\$0
Debt	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Stonebridge Wells	\$50,568	\$60,067	\$78,986	\$65,392	\$115,011	\$85,400
Total Expenses	\$3,720,918	\$3,316,623	\$3,636,971	\$4,455,356	\$5,080,949	\$5,122,115

Source: City of St. Helena.

hist exp

Table A-4
City of St. Helena Water Rate Study
Historical Water Use by Customer Category

DRAFT

Customer	2011	2012	2013	2014	2015	Average [1]	% of Avg.
<i>Figures in HCF</i>							
Residential							
Single Unit	257,882	287,886	315,468	256,777	249,219	262,941	39%
Multi-Fam	53,603	53,447	54,233	47,016	41,356	48,856	7%
Mobile Homes	28,762	28,086	33,486	26,478	24,777	27,026	4%
Subtotal Residential	340,247	369,419	403,187	330,271	315,352	338,822	50%
Non-Residential							
Commercial	79,633	84,345	88,911	85,056	70,394	79,857	12%
Industrial	154,499	149,776	163,569	131,722	117,691	138,422	21%
Landscape	26,100	28,440	30,349	17,268	10,650	20,615	3%
Churches	3,308	3,462	3,911	2,847	1,895	2,878	0%
Wells	2,584	2,470	2,531	2,705	2,579	2,585	0%
Laundry	3,390	3,317	3,366	2,949	2,412	3,017	0%
Library Schools	20,009	19,613	20,981	18,022	20,162	19,452	3%
Motel/Hotel	28,650	32,351	32,173	27,028	27,720	28,937	4%
City Owned	9,664	10,554	14,963	11,559	13,088	11,216	2%
Subtotal Non-Residential	327,837	334,328	360,754	299,156	266,591	306,978	46%
Raw Water	36,005	27,617	27,393	21,756	21,274	26,663	4%
Total Billable	704,089	731,364	791,334	651,183	603,217	672,463	100%
Non-Billable	62,293	59,636	69,465	61,384	64,609	61,980	
Total Water	766,382	791,000	860,799	712,567	667,826	725,950	

Source: City of St. Helena

use

[1] Average excludes 2013.

Table A-5
City of St. Helena Water Rate Study
Calculation of Unaccounted for Water

DRAFT

	2013	2014	2015	Average
	Gallons of Water			
Consumption	568,883,172	477,673,548	446,865,672	497,807,464
Production	601,650,524	506,733,207	501,660,534	536,681,422
Consumption as a % of				
Production	95%	94%	89%	93%
Water	5%	6%	11%	7%

Source: City of St. Helena.

unacc

DRAFT

Table A-6
 City of St. Helena Water Rate Study
 Estimated Ten-Year Schedule of Water Capital Improvements in 2016 \$'s

Project	Notes	Total Cost	Total Cost Less Existing Funding	Fiscal Year Ending										
				2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
Estimated Project Costs (2016 \$'s)			[1]	Costs are net of existing bond proceeds and grant funds										
York Creek Upper Dam Removal/Mitigation	Partially funded by grant and City (existing bond proceeds)	\$6,177,117	\$1,695,775	\$0	\$847,888	\$847,888	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Meadowood Tank Upgrades	Partially funded by grant and City (existing bond proceeds)	\$500,000	\$379,900	\$0	\$0	\$379,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Reservoir Improvements	Funded by Reserves	\$900,000	\$900,000	\$0	\$0	\$0	\$0	\$0	\$900,000	\$0	\$0	\$0	\$0	\$0
Dwyer Road Booster	Moved out 3 years	\$842,523	\$842,523	\$0	\$0	\$0	\$459,190	\$383,333	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Intake Mid-Valve Repair		\$14,387	\$14,387	\$14,387	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bell Valve House Valve Replacement	Funded by Reserves	\$526,105	\$526,105	\$0	\$0	\$0	\$0	\$0	\$526,105	\$0	\$0	\$0	\$0	\$0
Holmes Tank Upgrade	Moved out 3 years	\$1,383,000	\$1,383,000	\$0	\$0	\$0	\$58,000	\$1,325,000	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Creek Flow Measurement	Partially funded by City existing bond proceeds	\$750,000	\$492,750	\$0	\$492,750	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sludge Handling Program	Moved out 2 years	\$150,000	\$150,000	\$0	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Raw Water Metering Station	Moved out 1 year	\$100,000	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000	\$0	\$0
Tank 2 Rehabilitation	Moved out 1 year	\$750,000	\$750,000	\$0	\$60,000	\$690,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Well Filter Rehabilitation		\$11,103	\$11,103	\$11,103	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pump Station Upgrades	Funded by New Debt	\$200,000	\$200,000	\$0	\$200,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Replace 12" Transmission Main	Moved out 1 year	\$400,000	\$400,000	\$0	\$0	\$0	\$0	\$0	\$0	\$400,000	\$0	\$0	\$0	\$0
Lower York Creek Dam Rehab		\$480,695	\$480,695	\$190,695	\$0	\$0	\$0	\$0	\$0	\$0	\$290,000	\$0	\$0	\$0
Bell Canyon Intake Tower Replacement	Funded by New Debt	\$2,000,000	\$2,000,000	\$650,000	\$1,350,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
WTP Condition Assessment	Moved out 2 years	\$150,000	\$150,000	\$0	\$0	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0
Spill Containment at Bell Creek Intake	Funded by Reserves	\$75,000	\$75,000	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
SCADA Improvements (Rutherford & Holmes)		\$150,000	\$150,000	\$0	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Spill Containment at Stonebridge Well	Funded by Reserves	\$75,000	\$75,000	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Upgrade Rutherford Pump Station		\$500,000	\$500,000	\$0	\$0	\$50,000	\$450,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Remove Restriction at Rutherford PS		\$150,000	\$150,000	\$0	\$50,000	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Install Smart Meters	Unfunded [2]	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Update GIS Maps of Water System		\$50,000	\$50,000	\$0	\$0	\$0	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Master Plan Update		\$150,000	\$150,000	\$0	\$0	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0
Replace Mains < 6-Inch Diameter	Moved out and increased in later years	\$4,000,000	\$4,000,000	\$0	\$0	\$0	\$0	\$400,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000
Replace 1% of Water Mains Annually		\$150,000	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$150,000
Additional Storage		\$1,000,000	\$1,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$500,000	\$500,000	\$0	\$0	\$0
Annual Maintenance Program		\$950,000	\$950,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000	\$50,000
Total Estimated Project Costs (2016 \$'s)		\$22,584,930	\$17,726,238	\$916,185	\$3,200,638	\$2,117,788	\$1,367,190	\$2,658,333	\$2,076,105	\$1,550,000	\$1,440,000	\$750,000	\$850,000	\$800,000

Source: City of St. Helena and HEC.

2016 cip

[1] Total Cost Less Existing Funding = Total Cost - Existing Bonds - Existing Grants

[2] Installing Smart Meters program is currently unfunded. Total cost for the program is estimated at \$1.5 million.

Table A-7
City of St. Helena Water Rate Study
Estimated Ten-Year Schedule of Water Capital Improvements in Future \$'s

DRAFT

Project	Notes	Total Cost Less Existing Funding	Fiscal Year Ending										
			2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Estimated Project Costs (Future \$'s) [1]			[3]	Annual Increase 3.1%									
York Creek Upper Dam Removal/Mitigation	Partially funded by grant and City (existing bond proceeds)	\$1,829,635	\$0	\$900,939	\$928,696	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Meadowood Tank Upgrades	Partially funded by grant and City (existing bond proceeds)	\$416,107	\$0	\$0	\$416,107	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Reservoir Improvements	Funded by Reserves	\$1,079,726	\$0	\$0	\$0	\$0	\$1,079,726	\$0	\$0	\$0	\$0	\$0	\$0
Dwyer Road Booster	Moved out 3 years	\$964,587	\$0	\$0	\$0	\$518,449	\$446,137	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Intake Mid-Valve Repair		\$14,830	\$14,830	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bell Valve House Valve Replacement	Funded by Reserves	\$631,166	\$0	\$0	\$0	\$0	\$0	\$631,166	\$0	\$0	\$0	\$0	\$0
Holmes Tank Upgrade	Moved out 3 years	\$1,607,570	\$0	\$0	\$0	\$65,485	\$1,542,085	\$0	\$0	\$0	\$0	\$0	\$0
	Partially funded by City existing bond proceeds	\$523,581	\$0	\$523,581	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sludge Handling Program	Moved out 2 years	\$169,358	\$0	\$0	\$0	\$169,358	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Raw Water Metering Station	Moved out 1 year	\$131,403	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$131,403	\$0	\$0
Tank 2 Rehabilitation	Moved out 1 year	\$819,515	\$0	\$63,754	\$755,761	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Well Filter Rehabilitation		\$11,445	\$11,445	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pump Station Upgrades	Funded by New Debt	\$212,514	\$0	\$212,514	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Replace 12" Transmission Main		\$494,663	\$0	\$0	\$0	\$0	\$0	\$0	\$494,663	\$0	\$0	\$0	\$0
Lower York Creek Dam Rehab		\$566,250	\$196,570	\$0	\$0	\$0	\$0	\$0	\$0	\$369,680	\$0	\$0	\$0
Bell Canyon Intake Tower Replacement	Funded by New Debt	\$2,104,494	\$670,026	\$1,434,468	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
WTP Condition Assessment	Moved out 2 years	\$174,576	\$0	\$0	\$0	\$0	\$174,576	\$0	\$0	\$0	\$0	\$0	\$0
Spill Containment at Bell Creek Intake	Funded by Reserves	\$79,693	\$0	\$79,693	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
SCADA Improvements (Rutherford & Holmes)		\$169,358	\$0	\$0	\$0	\$169,358	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Spill Containment at Stonebridge Well	Funded by Reserves	\$79,693	\$0	\$79,693	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Upgrade Rutherford Pump Station		\$562,839	\$0	\$0	\$54,765	\$508,073	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Remove Restriction at Rutherford PS		\$162,659	\$0	\$53,128	\$109,531	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Install Smart Meters	Unfunded [2]	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Update GIS Maps of Water System		\$56,453	\$0	\$0	\$0	\$56,453	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Master Plan Update		\$174,576	\$0	\$0	\$0	\$0	\$174,576	\$0	\$0	\$0	\$0	\$0	\$0
	Moved out and increased in later years	\$5,131,085	\$0	\$0	\$0	\$0	\$465,535	\$719,817	\$741,995	\$764,855	\$788,420	\$812,711	\$837,751
Replace 1% of Water Mains Annually		\$209,438	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$209,438
Additional Storage		\$1,255,708	\$0	\$0	\$0	\$0	\$0	\$0	\$618,329	\$637,379	\$0	\$0	\$0
Annual Maintenance Program		\$1,166,546	\$51,540	\$53,128	\$54,765	\$56,453	\$290,959	\$59,985	\$61,833	\$63,738	\$65,702	\$338,630	\$69,813
Total Estimated Project Costs (Future \$'s)		\$20,799,466	\$944,412	\$3,400,897	\$2,319,626	\$1,543,629	\$3,093,869	\$2,490,694	\$1,916,820	\$1,835,653	\$985,525	\$1,151,341	\$1,117,001

Source: City of St. Helena and HEC.

future cip

[1] Estimated costs increased by historical Engineering News Record Construction Cost Index 20-year average increase.

[2] Installing Smart Meters program is currently unfunded. Total cost for the program is estimated at \$1.5 million.

[3] Total Cost Less Existing Funding = Total Cost - Existing Bonds - Existing Grants

Table A-8
City of St. Helena Water Rate Study
Total Cost by Water System and Share of Cost to Existing Customers

DRAFT

Project	Funding Source	Percent Share Existing Customers	Percent Share in Rate Model	Total Cost	Fiscal Year Ending											
					2017	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5	2023 Year 6	2024 Year 7	2025 Year 8	2026 Year 9	2027 Year 10	
Estimated Project Costs (2016 \$'s)																
York Creek Upper Dam Removal/Mitigation	Cash	100%	100%	\$1,695,775	\$0	\$847,888	\$847,888	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Meadowood Tank Upgrades	Cash	67%	67%	\$254,900	\$0	\$0	\$254,900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Reservoir Improvements	Reserves	100%	100%	\$900,000	\$0	\$0	\$0	\$0	\$0	\$900,000	\$0	\$0	\$0	\$0	\$0	\$0
Dwyer Road Booster	Cash	50%	50%	\$421,262	\$0	\$0	\$0	\$229,595	\$191,667	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Intake Mid-Valve Repair	Cash	100%	100%	\$14,387	\$14,387	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bell Valve House Valve Replacement	Reserves	85%	85%	\$447,189	\$0	\$0	\$0	\$0	\$0	\$447,189	\$0	\$0	\$0	\$0	\$0	\$0
Holmes Tank Upgrade	Cash	50%	50%	\$691,500	\$0	\$0	\$0	\$29,000	\$662,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Creek Flow Measurement	Cash	83%	83%	\$409,107	\$0	\$409,107	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sludge Handling Program	Cash	100%	100%	\$150,000	\$0	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Raw Water Metering Station	Cash	100%	100%	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$100,000	\$0	\$0	\$0
Tank 2 Rehabilitation	Cash	85%	85%	\$637,500	\$0	\$51,000	\$586,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Well Filter Rehabilitation	Cash	100%	100%	\$11,103	\$11,103	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pump Station Upgrades	Debt	100%	100%	\$200,000	\$0	\$200,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Replace 12" Transmission Main	Cash	100%	100%	\$400,000	\$0	\$0	\$0	\$0	\$0	\$0	\$400,000	\$0	\$0	\$0	\$0	\$0
Lower York Creek Dam Rehab	Cash	100%	100%	\$480,695	\$190,695	\$0	\$0	\$0	\$0	\$0	\$0	\$290,000	\$0	\$0	\$0	\$0
Bell Canyon Intake Tower Replacement	Debt	85%	85%	\$1,700,000	\$552,500	\$1,147,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
WTP Condition Assessment	Ops Cash	100%	100%	\$150,000	\$0	\$0	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Spill Containment at Bell Creek Intake	Reserves	100%	100%	\$75,000	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
SCADA Improvements (Rutherford & Holmes)	Cash	100%	100%	\$150,000	\$0	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Spill Containment at Stonebridge Well	Reserves	100%	100%	\$75,000	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Upgrade Rutherford Pump Station	Cash	100%	100%	\$500,000	\$0	\$0	\$50,000	\$450,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Remove Restriction at Rutherford PS	Cash	100%	100%	\$150,000	\$0	\$50,000	\$100,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Install Smart Meters	Unfunded	100%	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Update GIS Maps of Water System	Ops Cash	100%	100%	\$50,000	\$0	\$0	\$0	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Master Plan Update	Ops Cash	100%	100%	\$150,000	\$0	\$0	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Replace Mains < 6-Inch Diameter	Cash	100%	100%	\$4,000,000	\$0	\$0	\$0	\$0	\$400,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000	\$600,000
Replace 1% of Water Mains Annually	Cash	100%	100%	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$150,000
Additional Storage	Cash	100%	100%	\$1,000,000	\$0	\$0	\$0	\$0	\$0	\$0	\$500,000	\$500,000	\$0	\$0	\$0	\$0
Annual Maintenance Program	Cash	100%	100%	\$950,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000	\$50,000	\$50,000	\$50,000	\$50,000	\$250,000	\$250,000	\$50,000
Total Estimated Project Costs (2016 \$'s)				\$15,913,418	\$818,685	\$2,905,495	\$1,889,288	\$1,108,595	\$1,804,167	\$1,997,189	\$1,550,000	\$1,440,000	\$750,000	\$850,000	\$800,000	

Table A-8
City of St. Helena Water Rate Study
Total Cost by Water System and Share of Cost to Existing Customers

DRAFT

Project	Funding Source	Percent Share Existing Customers	Percent Share in Rate Model	Total Cost	Fiscal Year Ending										
					2017	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5	2023 Year 6	2024 Year 7	2025 Year 8	2026 Year 9	2027 Year 10
Estimated Project Costs (Future \$'s) [1]															
York Creek Upper Dam Removal/Mitigation	Cash	100%	100%	\$1,829,635	\$0	\$900,939	\$928,696	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Meadowood Tank Upgrades	Cash	67%	67%	\$279,194	\$0	\$0	\$279,194	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Reservoir Improvements	Reserves	100%	100%	\$1,079,726	\$0	\$0	\$0	\$0	\$0	\$1,079,726	\$0	\$0	\$0	\$0	\$0
Dwyer Road Booster	Cash	50%	50%	\$482,293	\$0	\$0	\$0	\$259,225	\$223,069	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Intake Mid-Valve Repair	Cash	100%	100%	\$14,830	\$14,830	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Bell Valve House Valve Replacement	Reserves	85%	85%	\$536,491	\$0	\$0	\$0	\$0	\$0	\$536,491	\$0	\$0	\$0	\$0	\$0
Holmes Tank Upgrade	Cash	50%	50%	\$803,785	\$0	\$0	\$0	\$32,743	\$771,043	\$0	\$0	\$0	\$0	\$0	\$0
Bell Canyon Creek Flow Measurement	Cash	83%	83%	\$434,704	\$0	\$434,704	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sludge Handling Program	Cash	100%	100%	\$169,358	\$0	\$0	\$0	\$169,358	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Raw Water Metering Station	Cash	100%	100%	\$131,403	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$131,403	\$0	\$0
Tank 2 Rehabilitation	Cash	85%	85%	\$696,588	\$0	\$54,191	\$642,397	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Well Filter Rehabilitation	Cash	100%	100%	\$11,445	\$11,445	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pump Station Upgrades	Debt	100%	100%	\$212,514	\$0	\$212,514	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Replace 12" Transmission Main	Cash	100%	100%	\$494,663	\$0	\$0	\$0	\$0	\$0	\$0	\$494,663	\$0	\$0	\$0	\$0
Lower York Creek Dam Rehab	Cash	100%	100%	\$566,250	\$196,570	\$0	\$0	\$0	\$0	\$0	\$0	\$369,680	\$0	\$0	\$0
Bell Canyon Intake Tower Replacement	Debt	85%	85%	\$1,788,820	\$569,522	\$1,219,298	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
WTP Condition Assessment	Ops Cash	100%	100%	\$174,576	\$0	\$0	\$0	\$0	\$174,576	\$0	\$0	\$0	\$0	\$0	\$0
Spill Containment at Bell Creek Intake	Reserves	100%	100%	\$79,693	\$0	\$79,693	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
SCADA Improvements (Rutherford & Holmes)	Cash	100%	100%	\$169,358	\$0	\$0	\$0	\$169,358	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Spill Containment at Stonebridge Well	Reserves	100%	100%	\$79,693	\$0	\$79,693	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Upgrade Rutherford Pump Station	Cash	100%	100%	\$562,839	\$0	\$0	\$54,765	\$508,073	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Remove Restriction at Rutherford PS	Cash	100%	100%	\$162,659	\$0	\$53,128	\$109,531	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Install Smart Meters	Unfunded	100%	100%	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Update GIS Maps of Water System	Ops Cash	100%	100%	\$56,453	\$0	\$0	\$0	\$56,453	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Water Master Plan Update	Ops Cash	100%	100%	\$174,576	\$0	\$0	\$0	\$0	\$174,576	\$0	\$0	\$0	\$0	\$0	\$0
Replace Mains < 6-Inch Diameter	Cash	100%	100%	\$5,131,085	\$0	\$0	\$0	\$0	\$465,535	\$719,817	\$741,995	\$764,855	\$788,420	\$812,711	\$837,751
Replace 1% of Water Mains Annually	Cash	100%	100%	\$209,438	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$209,438
Additional Storage	Cash	100%	100%	\$1,255,708	\$0	\$0	\$0	\$0	\$0	\$0	\$618,329	\$637,379	\$0	\$0	\$0
Annual Maintenance Program	Cash	100%	100%	\$1,166,546	\$51,540	\$53,128	\$54,765	\$56,453	\$290,959	\$59,985	\$61,833	\$63,738	\$65,702	\$338,630	\$69,813
Total Estimated Project Costs (Future \$'s)				\$18,754,322	\$843,908	\$3,087,287	\$2,069,348	\$1,251,662	\$2,099,757	\$2,396,019	\$1,916,820	\$1,835,653	\$985,525	\$1,151,341	\$1,117,001
2016 \$'s															
Cash - Capital Fund				\$12,166,229	\$266,185	\$1,407,995	\$1,889,288	\$1,058,595	\$1,504,167	\$650,000	\$1,550,000	\$1,440,000	\$750,000	\$850,000	\$800,000
Cash - Operations Fund				\$350,000	\$0	\$0	\$0	\$50,000	\$300,000	\$0	\$0	\$0	\$0	\$0	\$0
Debt - Capital Fund				\$1,900,000	\$552,500	\$1,347,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Reserves				\$1,497,189	\$0	\$150,000	\$0	\$0	\$0	\$1,347,189	\$0	\$0	\$0	\$0	\$0
Total				\$15,913,418	\$818,685	\$2,905,495	\$1,889,288	\$1,108,595	\$1,804,167	\$1,997,189	\$1,550,000	\$1,440,000	\$750,000	\$850,000	\$800,000
Future \$'s															
Cash - Capital Fund				\$14,571,782	\$274,386	\$1,496,091	\$2,069,348	\$1,195,209	\$1,750,606	\$779,802	\$1,916,820	\$1,835,653	\$985,525	\$1,151,341	\$1,117,001
Cash - Operations Fund				\$405,604	\$0	\$0	\$0	\$56,453	\$349,151	\$0	\$0	\$0	\$0	\$0	\$0
Debt - Capital Fund				\$2,001,334	\$569,522	\$1,431,811	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Reserves				\$1,775,602	\$0	\$159,385	\$0	\$0	\$0	\$1,616,217	\$0	\$0	\$0	\$0	\$0
Total				\$18,754,322	\$843,908	\$3,087,287	\$2,069,348	\$1,251,662	\$2,099,757	\$2,396,019	\$1,916,820	\$1,835,653	\$985,525	\$1,151,341	\$1,117,001

Source: City of St. Helena and HEC.

exist share

[1] Estimated costs increased by historical Engineering News Record Construction Cost Index 20-year average increase.

Table A-9
City of St. Helena Water Rate Study
Existing Annual Debt Service

DRAFT

Fiscal Year Ending	Principal	Interest	Total	Remaining Principal
2015	\$478,478	\$521,530	\$1,000,008	\$12,131,522
2016	\$496,304	\$493,393	\$989,697	\$11,635,217
2017	\$514,130	\$475,121	\$989,251	\$11,121,087
2018	\$528,043	\$454,873	\$982,916	\$10,593,043
2019	\$550,870	\$434,897	\$985,767	\$10,042,174
2020	\$568,696	\$413,677	\$982,373	\$9,473,478
2021	\$591,522	\$388,991	\$980,513	\$8,881,956
2022	\$618,261	\$361,871	\$980,132	\$8,263,696
2023	\$641,087	\$333,464	\$974,551	\$7,622,609
2024	\$668,913	\$305,114	\$974,027	\$6,953,696
2025	\$696,739	\$275,177	\$971,916	\$6,256,956
2026	\$728,478	\$241,012	\$969,490	\$5,528,478
2027	\$760,217	\$203,870	\$964,087	\$4,768,261
2028	\$800,870	\$166,167	\$967,037	\$3,967,391
2029	\$836,522	\$128,353	\$964,874	\$3,130,870
2030	\$877,174	\$90,504	\$967,678	\$2,253,696
2031	\$908,913	\$51,095	\$960,008	\$1,344,783
2032	\$949,565	\$23,400	\$972,965	\$395,217
2033	\$395,217	\$7,904	\$403,122	\$0

Source: City of St. Helena and HEC.

debt serv

Table A-10
City of St. Helena Water Rate Study
Meter Replacement Costs Estimate

DRAFT

Item	Assumption / Total	Meter Size							
		5/8"	3/4"	1"	1-1/2"	2"	3"	4"	6"
New Meter with Transponder [1]		\$200	\$250	\$350	\$550	\$700	\$1,500	\$3,300	\$4,550
Installation Costs [2]	20%	\$40	\$50	\$70	\$110	\$140	\$300	\$660	\$910
Administration Costs	3%	\$6	\$8	\$11	\$17	\$21	\$45	\$99	\$137
Total Cost per Meter	\$374	\$246	\$308	\$431	\$677	\$861	\$1,845	\$4,059	\$5,597
Replacement Interval (years)		20	20	20	20	20	20	20	20
Cost per Meter per Year		\$12	\$15	\$22	\$34	\$43	\$92	\$203	\$280
Monthly Cost per Meter		\$1.03	\$1.28	\$1.79	\$2.82	\$3.59	\$7.69	\$16.91	\$23.32
Monthly Cost per Billing Meter [3]		\$1.05	\$1.31	\$1.83	\$2.88	\$3.66	\$7.84	\$17.26	\$23.79

Source: City of St. Helena 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-11
City of St. Helena Water Rate Study
Comparison of Historical Operating Expenses to Standard Indices

DRAFT

Historical Water Operating Expenses	Actuals Fiscal Year Ending				Estimated	Change	
	2012	2013	2014	2015	2016	Total	Avg. Annual
Salaries & Benefits	\$1,217,968	\$1,168,983	\$1,165,302	\$1,299,809	\$1,565,976	\$348,008	6.5%
Services	\$440,097	\$284,472	\$348,495	\$358,264	\$538,363	\$98,266	5.2%
Supplies	\$147,577	\$100,683	\$82,066	\$117,593	\$142,949	(\$4,628)	-0.8%
Napa Purchased Water	\$1,178,401	\$1,189,926	\$1,327,251	\$1,272,770	\$1,311,272	\$132,872	2.7%
Maintenance	\$91,794	\$68,433	\$78,880	\$124,006	\$195,116	\$103,322	20.7%
Taxes, Insurances & Contributions	\$102,988	\$74,528	\$79,111	\$91,930	\$147,415	\$44,427	9.4%
Total Expenses	\$3,178,823	\$2,887,026	\$3,081,105	\$3,264,373	\$3,901,091	\$722,268	5.3%
<hr/>							
Engineering News Record	<i>Dec 2011</i>	<i>Dec 2012</i>	<i>Dec 2013</i>	<i>Dec 2014</i>	<i>Dec 2015</i>		
ENR Construction Cost Index 20-City [1]	9,172.00	9,412.00	9,668.00	9,936.00	10,135.00	963.00	2.5%
ENR Construction Cost Index San Francisco	10,204.79	10,355.09	10,898.84	10,915.84	11,155.41	950.62	2.3%
<hr/>							
Bureau of Labor Statistics							
Consumer Price Index - California	232.99	237.71	241.53	244.81	250.71	17.73	1.9%
Consumer Price Index - San Francisco	234.33	239.53	245.71	252.27	260.29	25.96	2.7%

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

indices

[1] Engineering News Record (ENR) Consumer Cost Index (CCI) change 1995 to 2015:

ENR CCI 1995	5,524	Change	<u>Annual Avg. % Change</u>
ENR CCI 2015	10,135	4,611	3.1%

Table A-12
City of St. Helena Water Rate Study
Estimated Depreciation of New Assets

DRAFT

New Asset	Asset Life	Fiscal Year Ending										
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	<i>years</i>											
York Creek Upper Dam Removal/Mitigation	n.a.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Meadowood Tank Upgrades	50	\$0	\$0	\$8,322.14	\$8,322	\$8,322	\$8,322	\$8,322	\$8,322	\$8,322	\$8,322	\$8,322
Bell Canyon Reservoir Improvements	80	\$0	\$0	\$0	\$0	\$0	\$13,497	\$13,497	\$13,497	\$13,497	\$13,497	\$13,497
Dwyer Road Booster	50	\$0	\$0	\$0	\$10,369	\$19,292	\$19,292	\$19,292	\$19,292	\$19,292	\$19,292	\$19,292
Bell Canyon Intake Mid-Valve Repair	10	\$1,483	\$1,483	\$1,483	\$1,483	\$1,483	\$1,483	\$1,483	\$1,483	\$1,483	\$1,483	\$1,483
Bell Valve House Valve Replacement	50	\$0	\$0	\$0	\$0	\$0	\$12,623	\$12,623	\$12,623	\$12,623	\$12,623	\$12,623
Holmes Tank Upgrade	50	\$0	\$0	\$0	\$1,310	\$32,151	\$32,151	\$32,151	\$32,151	\$32,151	\$32,151	\$32,151
Bell Canyon Creek Flow Measurement	40	\$0	\$13,090	\$13,090	\$13,090	\$13,090	\$13,090	\$13,090	\$13,090	\$13,090	\$13,090	\$13,090
Sludge Handling Program	40	\$0	\$0	\$0	\$4,234	\$4,234	\$4,234	\$4,234	\$4,234	\$4,234	\$4,234	\$4,234
Raw Water Metering Station	15	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,760	\$8,760	\$8,760
Tank 2 Rehabilitation	50	\$0	\$1,275	\$16,390	\$16,390	\$16,390	\$16,390	\$16,390	\$16,390	\$16,390	\$16,390	\$16,390
Well Filter Rehabilitation	10	\$1,145	\$1,145	\$1,145	\$1,145	\$1,145	\$1,145	\$1,145	\$1,145	\$1,145	\$1,145	\$1,145
Pump Station Upgrades	50	\$0	\$4,250	\$4,250	\$4,250	\$4,250	\$4,250	\$4,250	\$4,250	\$4,250	\$4,250	\$4,250
Replace 12" Transmission Main	80	\$0	\$0	\$0	\$0	\$0	\$6,183	\$6,183	\$6,183	\$6,183	\$6,183	\$6,183
Lower York Creek Dam Rehab	20	\$9,829	\$9,829	\$9,829	\$9,829	\$9,829	\$9,829	\$9,829	\$28,313	\$28,313	\$28,313	\$28,313
Bell Canyon Intake Tower Replacement	80	\$8,375	\$26,306	\$26,306	\$26,306	\$26,306	\$26,306	\$26,306	\$26,306	\$26,306	\$26,306	\$26,306
WTP Condition Assessment	10	\$0	\$0	\$0	\$0	\$17,458	\$17,458	\$17,458	\$17,458	\$17,458	\$17,458	\$17,458
Spill Containment at Bell Creek Intake	50	\$0	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594
SCADA Improvements (Rutherford & Holmes)	10	\$0	\$0	\$0	\$16,936	\$16,936	\$16,936	\$16,936	\$16,936	\$16,936	\$16,936	\$16,936
Spill Containment at Stonebridge Well	50	\$0	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594	\$1,594
Upgrade Rutherford Pump Station	50	\$0	\$0	\$1,095	\$11,257	\$11,257	\$11,257	\$11,257	\$11,257	\$11,257	\$11,257	\$11,257
Remove Restriction at Rutherford PS	50	\$0	\$1,063	\$3,253	\$3,253	\$3,253	\$3,253	\$3,253	\$3,253	\$3,253	\$3,253	\$3,253
Install Smart Meters	15	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Update GIS Maps of Water System	10	\$0	\$0	\$0	\$5,645	\$5,645	\$5,645	\$5,645	\$5,645	\$5,645	\$5,645	\$5,645
Water Master Plan Update	10	\$0	\$0	\$0	\$0	\$17,458	\$17,458	\$17,458	\$17,458	\$17,458	\$17,458	\$17,458
Replace Mains < 6-Inch Diameter	80	\$0	\$0	\$0	\$0	\$5,819	\$14,817	\$24,092	\$33,653	\$43,508	\$53,667	\$64,139
Replace 1% of Water Mains Annually	80	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$2,618
Additional Storage	50	\$0	\$0	\$0	\$0	\$0	\$0	\$12,367	\$25,114	\$25,114	\$25,114	\$25,114
Annual Maintenance Program	10	\$5,154	\$10,467	\$15,943	\$21,589	\$50,685	\$56,683	\$62,866	\$69,240	\$75,810	\$109,673	\$116,655
Total Estimated Annual Depreciation		\$25,985	\$72,094	\$104,294	\$158,594	\$268,189	\$309,305	\$343,313	\$390,479	\$415,665	\$459,687	\$479,758

Source: City of St. Helena and HEC.

new dep

Table A-13
City of St. Helena Water Rate Study
Depreciation of Existing Assets **DRAFT**

Asset Category	Current Depreciation
Buildings	\$36,008
Vehicles	\$8,383
Equipment	\$155,600
Improvements	\$559,834
Pipes	\$115,319
Total	\$875,144

Source: City of St. Helena. curr depr

Table A-14
City of St. Helena Water Rate Study
Allocation of Plant in Service

DRAFT

Facility	Percent Allocation					Cost Allocation				
	Customer	Capacity	Fire			Customer	Capacity	Fire		
			Capacity	Use	Total			Capacity	Use	Cost Basis
Buildings	100%				100%	\$1,656,932	\$0	\$0	\$0	\$1,656,932
Vehicles	25%	40%		35%	100%	\$10,522	\$16,835	\$0	\$14,730	\$42,086
Equipment	10%	50%		40%	100%	\$206,127	\$1,030,636	\$0	\$824,509	\$2,061,272
Improvements		75%	10%	15%	100%	\$0	\$7,482,162	\$997,622	\$1,496,432	\$9,976,217
Pipes		75%		25%	100%	\$0	\$2,887,942	\$0	\$962,647	\$3,850,589
Total Plant in Service						\$1,873,580	\$11,417,575	\$997,622	\$3,298,319	\$17,587,095
% of Plant in Service						11%	65%	6%	19%	100%

Source: City of St. Helena and HEC.

plant

Table A-15
City of St. Helena Water Rate Study
Functional Allocation of Revenue Requirement

DRAFT

Expenditures	BUDGET 2016/17	Allocation Basis	Customer	Capacity	Fire Capacity	Use	Unclassified
Operations							
Salaries & Benefits	\$706,986	Avg. of Classified	0%	0%	0%	0%	100%
Services	\$311,925	Customers	100%	0%	0%	0%	0%
Supplies	\$18,792	Avg. of Classified	0%	0%	0%	0%	100%
Maintenance	\$13,197	Plant In Service	11%	65%	6%	19%	0%
Taxes, Insurances & Contributions	\$113,467	Avg. of Classified	0%	0%	0%	0%	100%
Capital	\$1,925	Plant In Service	11%	65%	6%	19%	0%
Debt	\$1,001,067	Ratio Avg. to Peak Month	0%	74%	0%	26%	0%
Subtotal Operations	\$2,167,359						
Distribution							
Salaries & Benefits	\$490,637	Avg. of Classified	0%	0%	0%	0%	100%
Services & Supplies	\$52,228	Avg. of Classified	0%	0%	0%	0%	100%
Utilities	\$61,770	Avg. of Classified	0%	0%	0%	0%	100%
Maintenance	\$60,295	Plant In Service	11%	65%	6%	19%	0%
Capital	\$21,000	Plant In Service	11%	65%	6%	19%	0%
Subtotal Distribution	\$685,930						
Treatment							
Salaries & Benefits	\$414,620	Ratio Avg. to Peak Month	0%	74%	0%	26%	0%
Services & Supplies	\$64,000	Ratio Avg. to Peak Month	0%	74%	0%	26%	0%
Utilities & Chemicals	\$137,500	Utilities & Chemicals	0%	0%	0%	100%	0%
Maintenance	\$83,587	Plant In Service	11%	65%	6%	19%	0%
Taxes, Insurances & Contributions	\$19,700	Avg. of Classified	0%	0%	0%	0%	100%
Capital	\$115,000	Plant In Service	11%	65%	6%	19%	0%
Subtotal Treatment	\$834,407						
Stonebridge Wells							
Services	\$57,100	Utilities & Chemicals	0%	0%	0%	100%	0%
Supplies	\$12,800	Utilities & Chemicals	0%	0%	0%	100%	0%
Maintenance	\$15,500	Plant In Service	11%	65%	6%	19%	0%
Subtotal Stonebridge Wells	\$85,400						
Napa Purchased Water	\$1,349,019	Napa	0%	75%	0%	25%	0%
TOTAL OPERATING EXPENDITURES	\$5,122,115		\$345,003	\$2,313,324	\$17,613	\$982,594	\$1,463,580
Reallocate As All Others			\$138,017	\$925,435	\$7,046	\$393,082	
ALLOCATION OF OP. EXP.	\$5,122,115		\$483,021	\$3,238,759	\$24,659	\$1,375,676	
	100%		9.4%	63.2%	0.5%	26.9%	

Source: City of St. Helena and HEC.

func

Table A-16
City of St. Helena Water Rate Study
Number of Meters

DRAFT

Meter Size	TOTAL	Customer Type											
		Commercial	Industrial	Residential			Landscape	Churches [2]	Laundry	Library/Schools	Motel/Hotel	All Other	City-Owned
				SF	MF	Mob							
	[1]												
5/8"	1,987	131	12	1,776	36	1	12	7	0	1	5	0	6
1"	330	40	0	232	36	0	6	6	0	1	2	0	7
1.5"	61	11	1	11	20	1	6	1	1	3	2	0	4
2"	47	11	1	8	6	1	7	1	0	6	4	0	2
3"	7	1	0	0	3	0	1	0	0	0	1	0	1
4"	9	2	1	1	0	0	0	0	0	3	1	1	0
6"	11	1	6	0	1	1	0	0	0	0	1	0	1
Total	2,452	197	21	2,028	102	4	32	15	1	14	16	1	21

Source: City of St. Helena.

meters

[1] Compound meters counted only once.

[2] Includes all religious places and community centers

Table A-17
City of St. Helena Water Rate Study
Calculated Consumption Charges for Seasonal Water Rates

DRAFT

Allocated Peak & Off-Peak	Fiscal Year Ending										
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Allocated Cost	\$3,799,993	\$4,387,001	\$4,958,147	\$5,102,274	\$5,225,724	\$5,351,120	\$5,488,329	\$5,567,635	\$5,614,768	\$5,615,454	\$5,607,223
Off-Peak Water Use (Nov-Apr) 37%	240,040	239,015	239,436	240,404	240,688	240,939	241,176	241,506	241,798	242,107	242,367
Peak Water Use (May-Oct) 63%	405,760	404,027	404,739	406,376	406,856	407,280	407,682	408,238	408,732	409,254	409,695
Total Water Use	645,800	643,042	644,175	646,780	647,544	648,219	648,858	649,744	650,530	651,361	652,062
Off-Peak Costs per HCF	\$5.50	\$6.37	\$7.19	\$7.37	\$7.54	\$7.71	\$7.90	\$8.01	\$8.06	\$8.05	\$8.03
Peak Costs per HCF 1.11	\$6.11	\$7.09	\$8.00	\$8.20	\$8.38	\$8.58	\$8.79	\$8.90	\$8.97	\$8.96	\$8.93

Source: City of St. Helena and HEC.

seasonal rates

Table A-18
City of St. Helena Water Rate Study
Projection of Water Demand

DRAFT

Customer	Fiscal Year Ending										
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
Residential	<i>All figures in Hundreds of Cubic Feet</i>										
Single Unit	262,941	261,914	262,758	264,154	264,862	265,537	266,199	266,954	267,671	268,405	269,091
Multi-Fam	48,856	48,665	48,696	48,830	48,836	48,836	48,833	48,848	48,855	48,866	48,868
Mobile Homes	27,026	26,920	26,938	27,012	27,015	27,015	27,014	27,022	27,026	27,032	27,033
Subtotal Residential	338,822	337,499	338,393	339,995	340,713	341,388	342,046	342,823	343,552	344,303	344,991
Non-Residential											
Commercial	79,857	79,272	79,369	79,778	79,797	79,797	79,789	79,834	79,857	79,889	79,895
Industrial	138,422	138,084	138,140	138,377	138,387	138,387	138,383	138,409	138,422	138,441	138,444
Landscape	20,615	20,413	20,447	20,587	20,594	20,594	20,591	20,606	20,614	20,626	20,628
Churches	2,878	2,867	2,869	2,876	2,877	2,877	2,877	2,878	2,878	2,879	2,879
Wells	2,585	2,585	2,585	2,585	2,585	2,585	2,585	2,585	2,585	2,585	2,585
Laundry	3,017	3,010	3,011	3,016	3,016	3,016	3,016	3,017	3,017	3,017	3,017
Library Schools	19,452	19,357	19,372	19,439	19,442	19,442	19,441	19,448	19,451	19,457	19,458
Motel/Hotel	28,937	28,768	28,796	28,914	28,920	28,920	28,918	28,930	28,937	28,947	28,948
City Owned	11,216	11,189	11,193	11,213	11,213	11,213	11,213	11,215	11,216	11,218	11,218
Subtotal Non-Residential	306,978	305,543	305,782	306,785	306,831	306,831	306,812	306,921	306,978	307,058	307,071
Total Billable	645,800	643,042	644,175	646,780	647,544	648,219	648,858	649,744	650,530	651,361	652,062
Non-Billable [1]	61,980	61,980	61,980	61,980	61,980	61,980	61,980	61,980	61,980	61,980	61,980
Total Water	707,781	705,022	706,155	708,760	709,525	710,199	710,838	711,724	712,510	713,341	714,043

Source: City of St. Helena and HEC.

demand

[1] Non-Billable water includes unaccounted and/or unbilled water e.g. leaks, and certain city agreements.

Table A-19
City of St. Helena Water Rate Study
Assumptions for the Effect of Increasing Prices on Water Demand (Price Elasticity)

DRAFT

Customer Type	Estimated Elasticity	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5	2023 Year 6	2024 Year 7	2025 Year 8	2026 Year 9	2027 Year 10
% Change in Price to Meet Revenue Requirement		17.1%	14.7%	4.5%	4.0%	4.0%	4.2%	3.1%	2.5%	1.7%	1.6%
Assumption for Inflation		2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Price Increase Adjusted for Inflation		14.6%	12.2%	2.0%	1.5%	1.5%	1.7%	0.6%	0.0%	-0.8%	-0.9%
Residential											
Single Unit	-0.08	-1.2%	-1.0%	-0.2%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	0.1%	0.1%
Multi-Fam	-0.08	-1.2%	-1.0%	-0.2%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	0.1%	0.1%
Mobile Homes	-0.08	-1.2%	-1.0%	-0.2%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	0.1%	0.1%
Non-Residential											
Commercial	-0.15	-2.2%	-1.8%	-0.3%	-0.2%	-0.2%	-0.3%	-0.1%	0.0%	0.1%	0.1%
Industrial	-0.05	-0.7%	-0.6%	-0.1%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	0.0%	0.0%
Landscape	-0.20	-2.9%	-2.4%	-0.4%	-0.3%	-0.3%	-0.3%	-0.1%	0.0%	0.2%	0.2%
Churches	-0.08	-1.2%	-1.0%	-0.2%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	0.1%	0.1%
Laundry	-0.05	-0.7%	-0.6%	-0.1%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	0.0%	0.0%
Library Schools	-0.10	-1.5%	-1.2%	-0.2%	-0.1%	-0.2%	-0.2%	-0.1%	0.0%	0.1%	0.1%
Motel/Hotel	-0.12	-1.8%	-1.5%	-0.2%	-0.2%	-0.2%	-0.2%	-0.1%	0.0%	0.1%	0.1%
City Owned	-0.05	-0.7%	-0.6%	-0.1%	-0.1%	-0.1%	-0.1%	0.0%	0.0%	0.0%	0.0%

Source: HEC.

elasticity

Table A-20
City of St. Helena Water Rate Study
Projected Changes in Water Demand due to Price Changes

DRAFT

Customer Type	Fiscal Year Ending									
	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5	2023 Year 6	2024 Year 7	2025 Year 8	2026 Year 9	2027 Year 10
<i>Projected Growth</i>		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Residential										
Single Unit [1]	262,941	263,617	264,292	264,968	265,644	266,320	266,995	267,671	268,347	269,023
Multi-Fam	48,856	48,856	48,856	48,856	48,856	48,856	48,856	48,856	48,856	48,856
Mobile Homes	27,026	27,026	27,026	27,026	27,026	27,026	27,026	27,026	27,026	27,026
Subtotal Residential	338,822	339,498	340,174	340,849	341,525	342,201	342,877	343,552	344,228	344,904
Non-Residential										
Commercial	79,857	79,857	79,857	79,857	79,857	79,857	79,857	79,857	79,857	79,857
Industrial	138,422	138,422	138,422	138,422	138,422	138,422	138,422	138,422	138,422	138,422
Landscape	20,615	20,615	20,615	20,615	20,615	20,615	20,615	20,615	20,615	20,615
Churches	2,878	2,878	2,878	2,878	2,878	2,878	2,878	2,878	2,878	2,878
Wells	2,585	2,585	2,585	2,585	2,585	2,585	2,585	2,585	2,585	2,585
Laundry	3,017	3,017	3,017	3,017	3,017	3,017	3,017	3,017	3,017	3,017
Library Schools	19,452	19,452	19,452	19,452	19,452	19,452	19,452	19,452	19,452	19,452
Motel/Hotel	28,937	28,937	28,937	28,937	28,937	28,937	28,937	28,937	28,937	28,937
City Owned	11,216	11,216	11,216	11,216	11,216	11,216	11,216	11,216	11,216	11,216
Subtotal Non-Residential	306,978	306,978	306,978	306,978	306,978	306,978	306,978	306,978	306,978	306,978
Total Billable Water	645,800	953,454	954,129	954,805	955,481	956,157	956,832	957,508	958,184	958,860
Total Non-Billable Water										
Change in Demand due to Price [2]										
Residential										
Single Unit	-1,027	-858	-139	-106	-106	-120	-42	0	58	68
Multi-Fam	-191	-159	-26	-20	-20	-22	-8	0	11	12
Mobile Homes	-106	-88	-14	-11	-11	-12	-4	0	6	7
Subtotal Residential	-1,324	-1,105	-179	-136	-137	-155	-53	0	75	87
Non-Residential										
Commercial	-585	-488	-79	-60	-60	-68	-23	0	33	38
Industrial	-338	-282	-45	-35	-35	-39	-13	0	19	22
Landscape	-201	-168	-27	-21	-21	-23	-8	0	11	13
Churches	-11	-9	-2	-1	-1	-1	0	0	1	1
Laundry	-7	-6	-1	-1	-1	-1	0	0	0	0
Library Schools	-95	-79	-13	-10	-10	-11	-4	0	5	6
Motel/Hotel	-170	-141	-23	-17	-17	-20	-7	0	9	11
City Owned	-27	-23	-4	-3	-3	-3	-1	0	2	2
Subtotal Non-Residential	-1,435	-1,196	-193	-147	-147	-166	-57	0	80	93
Total Billable Water	-2,758	-2,301	-372	-283	-284	-321	-111	-1	155	180
Total Non-Billable Water										

Source: HEC.

elas demand

[1] Assumes growth of 5 units per year

[2] Change applied to summer months consumption only.

Percent of Year	33%	33%	33%	33%	33%	33%	33%	33%	33%	33%
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Table A-21
City of St. Helena Water Rate Study **DRAFT**
Operating Expenses (FY2016) Peak to Off-Peak Ratio

Expenses	TOTAL Excl. Debt	Percent of Year Total
Jul-15	\$280,972	8%
Aug-15	\$156,745	5%
Sep-15	\$373,717	11%
Oct-15	\$367,289	11%
Nov-15	\$297,387	9%
Dec-15	\$391,236	11%
Jan-16	\$256,759	7%
Feb-16	\$158,108	5%
Mar-16	\$267,578	8%
Apr-16	\$252,836	7%
May-16	\$155,424	5%
Jun-16	\$471,651	14%
TOTAL	\$3,429,701	100%
PEAK	\$1,805,798	
PEAK AS % OF TOTAL	53%	
OFF-PEAK	\$1,623,903	
PEAK AVG.	\$300,966	
OFF-PEAK AVG.	\$270,650	
PEAK TO OFF-PEAK RATIO	1.11	

Source: City of St. Helena. exp monthly 2

[1] Excludes operating costs not influenced by seasonal changes; debt, taxes, insurance, and capital.

Table A-22
City of St. Helena Water Rate Study
Calculated Drought and Non-Drought Year Water Costs

DRAFT

Source Costs	Imported <i>City of Napa</i>	Surface Water <i>Bell Canyon</i>	Ground Water <i>Stonebridge Wells</i>	Total <i>All Sources</i>
<u>Fiscal Year 2015</u>				
Cost per 1,000 Galls	\$6.70	\$2.82	\$0.65	
DROUGHT YEAR				
Wtd. Avg. Cost per 1,000 Galls.	\$2.53	\$1.31	\$0.10	\$3.94
Source of Supply	38%	46%	16%	100%
NON-DROUGHT YEAR				
Wtd. Avg. Cost per 1,000 Galls.	\$2.12	\$1.13	\$0.19	\$3.43
Source of Supply	32%	40%	28%	100%
All Other Operations Costs (assumed not to change) [1]				\$1,814,740
All Other Operations Costs per 1,000 Gallons of City produced water				\$5.68
TOTAL DROUGHT YEAR COST PER 1,000 GALLONS				\$9.62
TOTAL NON-DROUGHT YEAR COSTS PER 1,000 GALLONS				\$9.10
<i>Ratio of Drought to Non-Drought</i>			<i>1.06</i>	

Source: City of St. Helena and HEC.

cost by source

[1] Includes general operations costs; excludes distribution costs, debt, capital, and transfers.

HANSFORD ECONOMIC
CONSULTING



**City of St. Helena (2016)
Wastewater Rate Study
Technical Memorandum**

DRAFT

September 20, 2016

Technical Memorandum DRAFT WASTEWATER RATE STUDY

To: City of St. Helena

From: Catherine Hansford

Date: September 20, 2016

This technical memorandum presents the detailed wastewater rate study. Support tables are provided in **Attachment A**.

THE WASTEWATER FUND

Table A-1 in **Attachment A** shows comprehensive audited financial report data for the wastewater fund from 2011 through 2015. Detailed historical revenues and expenses are shown in **Table A-2**, with supporting data in **Table A-3**.

Revenues

The wastewater system is funded through rates, annexation fees, investment earnings, and sewer connection fees. More than 99% of revenue is from wastewater rates. Rate revenue is generated according to the current wastewater rate schedule shown on the following page in **Table 1**. Under the current rate schedule all customers pay a service charge (or base charge) and a flow charge per HCF based on average winter month water use. Residential single family customers pay a flat monthly base charge, and a flow charge. For non-residential customers, including residential multi-family customers, the service charge is different by meter size, and the flow charge is different by customer type.

Expenses

Figure 1 displays the components of expenditures for the past five years for the wastewater capital and operating funds combined. Personnel costs (salaries and benefits), services, and capital projects have been the largest expenditure items.

Figure 1
Typical Annual Wastewater Fund Expenditures

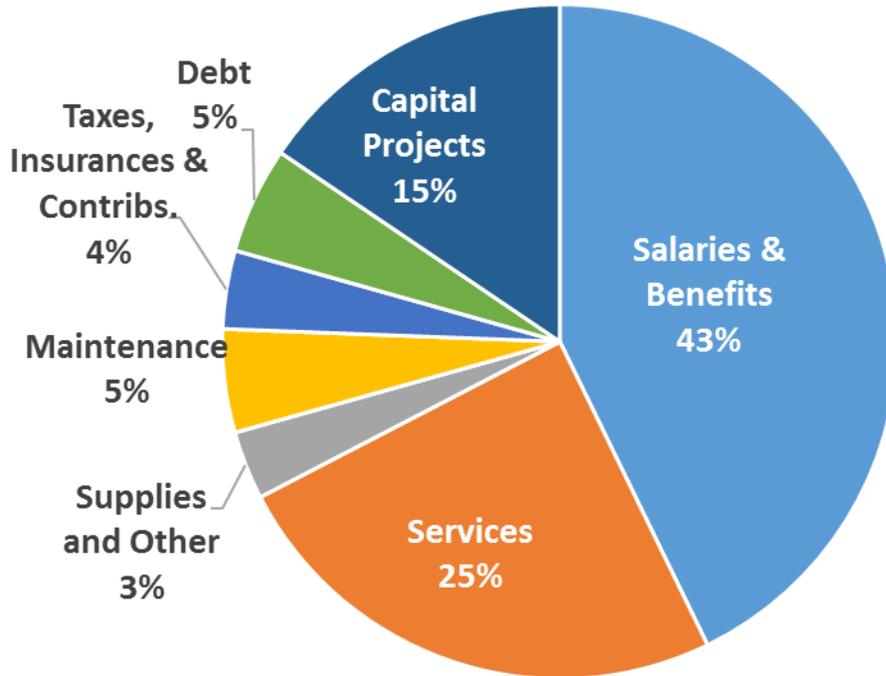


Table 1
Current Wastewater Rate Schedule

Land Use	Base Monthly Rate (2016)	Usage Rate (\$ per hcf of Winter Water Use)
Residential		[1]
Single Family	\$47.35	\$3.94
Multi-family	[2]	\$3.94
Non-Residential Base Rates		
5/8" & 3/4" Meter	\$42.12	
1" Meter	\$102.42	
1 1/2" Meter	\$202.92	
2" Meter	\$323.53	
3" Meter	\$604.94	
4" Meter	\$1,006.96	
6" Meter	\$2,012.00	
Non-Residential Usage Rates (per hcf)		
Car Wash		\$2.85
Schools		\$3.17
Laundry/Laundromat		\$3.34
Churches		\$3.64
City Buildings		\$3.64
Commercial (General)		\$3.64
Winery (Sutter Home)		\$4.27
Motels without Food		\$4.35
Service Stations/Auto Repair		\$4.70
Mixed Retail with Food		\$6.79
Motels with Food		\$8.75
Restaurant		\$11.68
Grocery		\$11.87
Mortuary		\$11.87
Winery (Merryvale)		\$20.94
Winery (Spottswoode)		\$20.94

Source: City of St. Helena.

curr

[1] Single family usage charge based on average winter water use, determined as average monthly usage for billing cycles with read dates from January through March. Months with zero usage are to be excluded from the averaging. Usage charge to be adjusted annually in April, based on the newest winter average.

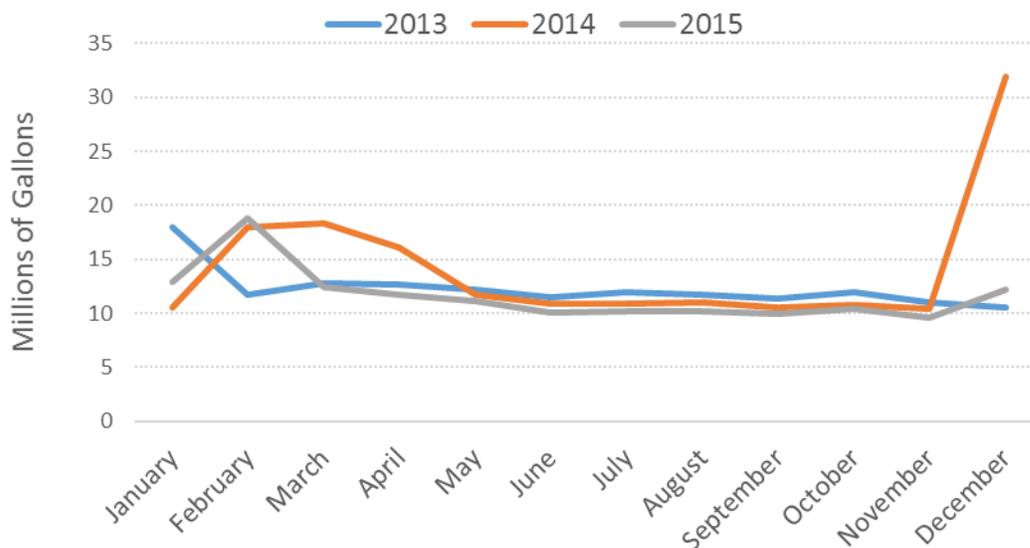
[2] Multi-family pays same base charges based on meter size as non-residential.

THE WASTEWATER SYSTEM

The City's wastewater system consists of a collection system of more than 22 miles of pipe. Effluent is treated at the 0.5 million gallons a day (average daily dry weather flow) treatment plant. The wastewater treatment plant was built in 1967. The secondary level treatment plant discharges to the Napa River or land (City-owned grass fields, redwood/willow trees, and mosquito fish ponds). The City's National Pollutant Discharge Elimination System (NPDES) permit was renewed in March 2016; at the same time a Cease and Desist Order (CDO) No. R2-2016-0004 was issued because the City is unable to meet the more stringent effluent requirements of the renewed NPDES permit. A draft feasibility study was prepared for the City in August 2016 which recommends improvements at the wastewater treatment plant so that the City can be in compliance and the CDO lifted.

Figure 2 shows historical monthly influent at the wastewater treatment plant. Data is provided in **Table A-4**. Wastewater inflow at the treatment plant currently averages 0.4 million gallons per day (MGD).

Figure 2
Historical Wastewater Plant Monthly Influent Flow



Customer Characteristics

The number of customers and total calculated flow for each customer and customer category, BOD and TSS characteristics are summarized in **Table 2**.

**Table 2
Summary of User Characteristics**

Customer Category	Billing Basis	No. Billing Units (A)	Wastewater Characteristics				Existing Treatment Capacity/Load				Total Annual Capacity/Load					
			Flow GPD (B)	BOD MG/L (C)	SS MG/L (D)	SS Lbs/Day (E)=(A)(B)/1000000	Flow MGD (F)=(C)(E)x8.34	BOD Lbs/Day (G)=(D)(E)x8.34	SS Lbs/Day (H)=(E)(H)x8.34	Flow MG (I)=(F)(I)x365	BOD Lbs/Year (J)=(C)(H)x8.34	SS Lbs/Year (K)=(D)(K)x8.34				
Residential																
Single Family	Unit	1,503	175	200	200	0.26	439.25	439.25	96.12	160,328	160,328	160,328	43,177	20,197		
Multi-Family	Unit	669	106	200	200	0.07	118.29	118.29	25.89	43,177	43,177	43,177	20,197			
Mobile Homes (Vineyard Valley)	Unit	211	157	200	200	0.03	55.33	55.33	12.11	20,197	20,197	20,197				
School	Student	1,437	8	130	100	0.01	11.68	8.99	1.94	2,103	2,103	2,103				
Non-Residential																
Car Wash	Account	1	1,005	20	150	0.00	0.17	1.26	0.37	61	61	61				
Religious Places/Community Centers	Account	13	156	130	110	0.00	2.20	1.86	0.74	802	802	802				
Commercial [2]	Account	126	241	150	200	0.03	37.96	50.61	11.08	13,855	13,855	13,855				
Groceries and Mortuaries	Account	3	691	800	800	0.00	13.84	13.84	0.76	5,052	5,052	5,052				
Laundry	Account	1	4,181	150	110	0.00	5.23	3.84	1.53	1,909	1,909	1,909				
Mixed Retail w/ Food	Account	3	1,319	240	600	0.00	7.92	19.80	1.44	7,228	7,228	7,228				
Motel with Food	Account	2	5,429	500	600	0.01	45.28	54.34	3.96	16,528	16,528	16,528				
Motel without Food	Account	8	2,297	310	120	0.02	47.51	18.39	6.71	17,340	17,340	17,340				
Restaurant	Account	19	1,354	1,000	600	0.03	214.60	128.76	9.39	78,328	78,328	78,328				
Napa Valley College	Account	1	12,925	130	100	0.01	14.01	10.78	4.72	5,115	5,115	5,115				
Service Station	Account	5	318	180	280	0.00	2.38	3.71	0.58	870	870	870				
Winery Production (Merryvale/Spottswoode)	Account	2	937	2,800	400	0.00	43.78	6.25	0.68	15,981	15,981	15,981				
Sutter Home Winery	Account	1	3,195	200	200	0.00	5.33	5.33	1.17	1,945	1,945	1,945				
TOTAL (ADWF 0.5 MGD)						0.50	1,064.78	940.64	179.17	386,483	386,483	386,483				

Source: City of St. Helena, California Department of Education Educational Demographics Unit, and HEC.

[1] Schools multiplied by 180 days per year.

[2] Commercial includes City buildings.

REVENUE REQUIREMENT

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

- Capital Improvements
- Debt Service
- Operations Expenses and Reserves
- System Rehabilitation
- Wastewater Fund Reserves

Non-water sales revenue projections are credited against projected operations costs. Non-water sales include investment earnings and sewer connection fees.

Capital Improvements

Table 3 summarizes the capital improvement costs identified by the City as necessary in the next ten years. The costs do not include project costs that already have funding sources identified (i.e. have a grant secured or are to be funded with existing City bond proceeds). All costs are expressed in future dollars. The total ten-year capital improvement projects (CIP) costs is estimated at \$17.7 million. Of this total it is anticipated that \$13.0 million will be spent in the next five years.

Table A-5 and **Table A-6** provide the wastewater system CIP list of facilities, provided by the City for the next 10 years, in current and future dollars respectively. Major necessary improvements include phase 1 upgrades to the wastewater treatment plant, replacing the wastewater reclamation facility operations building and shop, and sewer mains replacement or rehabilitation.

Costs are further allocated to existing and future customers based on their estimated use of the facilities. Only \$125,000 of the total cost is for projects partially benefiting future customers. These projects include reclamation field facilities and miscellaneous maintenance improvements. Supporting data is provided in **Table A-7**, in 2016 dollars, and **Table A-8**, in future dollars. All other CIP items are allocated entirely to existing customers. Existing customers' costs included in rates are shown in **Table A-9**.

Future costs are inflated using the Engineering News Record Construction Cost Index (ENR CCI) past 20-year annual average increase of 3.1%.

Table 3
Wastewater Capital Improvement Costs by Customer Share

Customer	Estimated CIP Costs in Future Dollars		
	Through 2022	2023 to 2027	Total CIP
Existing Customer Share	\$12,909,786	\$4,699,894	\$17,609,680
Future Customer Share	\$57,033	\$68,049	\$125,082
Total Existing and Future	\$12,966,819	\$4,767,944	\$17,734,763

Source: HEC.

cip share

CIP funding sources of costs are shown in **Table 4**.

Table 4
Sources of Funding for Existing Customers CIP Costs

Project	Total Cost Less Existing Funding	Total Through FY 2022	Fiscal Year Ending					
			2017	2018	2019	2020	2021	2022
			Future \$'s					
Cash - Capital Fund	\$4,636,494	\$2,636,034	\$521,023	\$426,887	\$391,846	\$686,181	\$270,883	\$339,214
Cash - Operations Fund	\$561,029	\$462,386	\$15,462	\$69,067	\$235,491	\$16,936	\$17,458	\$107,973
Debt - Capital Fund	\$8,746,428	\$8,495,287	\$239,259	\$743,798	\$3,582,746	\$3,693,130	\$116,384	\$119,970
Reserves	\$3,665,729	\$1,316,079	\$0	\$0	\$0	\$0	\$116,384	\$1,199,695
Total CIP	\$17,609,680	\$12,909,786	\$775,744	\$1,239,752	\$4,210,083	\$4,396,247	\$521,108	\$1,766,852

Source: City of St. Helena and HEC.

exis rates

Debt Service

The City has wastewater system debt associated with a 2005 bond issue, and refunding of that bond issue in 2012. Yearly debt service for the wastewater system is shown in **Table A-9**.

New debt is anticipated to be incurred for phase 1 and phase 2 of the wastewater treatment plant (WWTP) upgrades. For the rate study it is assumed these projects are funded with a Clean Water State Revolving Fund (CWSRF) loan. Due to the size of the projects, a 15% contingency factor was added to the estimated City cost. The estimated new CWSRF debt service is shown in **Table 5**. A year of debt service must be accumulated prior to repayment of the loan, which begins one year after completion of construction.

Table 5
Estimated CWSRF Debt Financing for WWTP Upgrades

Item	Construction Fiscal Year
Treatment Plant Phase 1	2019
Construction Cost Estimate	\$8,258,933
Contingency (15%) [1]	\$1,238,840
Total	\$9,497,773
Estimated Annual Debt Service [2]	\$592,124
Estimated Total Financing Costs	\$2,344,700
Treatment Plant Phase 2	2022
Construction Cost Estimate	\$487,495
Contingency (15%) [1]	\$73,124
Total	\$560,619
Estimated Annual Debt Service [2]	\$34,951
Estimated Total Financing Costs	\$138,399
Total Debt-Financed Infrastructure Cost	\$10,058,393
Estimated Total Financing Costs	\$2,483,099

Source: State Water Resources Control Board and HEC.

new debt

[1] State-funded projects typically cost more (more administration as well as American Iron and Steel requirements, and labor reporting).

[2] CWSRF loan assumptions:

Interest Rate	2.2%
Term (years)	20

Operations Expenses and Reserves

Estimated fiscal year 2015/16 operating expenses are used to project future year operating expenditures. All operating expenditures are increased 5% each year with the exception of maintenance, taxes, insurances and contributions which are increased at 10% per year to be more consistent with higher historical increases for these expenses. **Table A-10** shows historical annual average operating cost increases of 14.6%. Fiscal year 2015/16 was abnormally high. Taking this out of the calculation, the data shows historical annual average operating cost increases of only 4.9%.

System Rehabilitation Costs

Depreciation is used as the basis for which to collect rates to cover system rehabilitation costs. Inclusion of system rehabilitation costs demonstrates fiscal responsibility toward the assets to

potential future investors and helps to establish good credit¹. Depreciation is calculated based on existing wastewater assets and new assets added to the wastewater system in the next five years. **Table 6** shows the total annual amount of depreciation for existing and new assets included in the rate study. If the collected revenue is not applied to a CIP rehabilitation project it should be designated within the fund for the purposes of repair and rehabilitation only. Supporting data is provided in **Tables A-11** and **A-12**.

Table 6
System Rehabilitation Annual Costs

Asset List	Fiscal Year Ending					
	2017	2018	2019	2020	2021	2022
Existing Assets	\$340,044	\$350,521	\$361,320	\$372,452	\$383,928	\$395,756
Projected Assets Annual Depreciation	\$16,613	\$41,264	\$98,143	\$159,973	\$176,412	\$230,848
Total Annual Depreciation	\$356,657	\$391,785	\$459,463	\$532,425	\$560,339	\$626,604
<i>Percent Depreciation for System Rehabilitation</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>	<i>100%</i>
System Rehabilitation	\$356,700	\$391,800	\$459,500	\$532,400	\$560,300	\$626,600

Source: City of St. Helena and HEC.

depr

Revenue Requirement

Table 7 on the next page provides the projection of annual costs and revenues and the resulting revenue requirement through fiscal year ending 2027. Total revenue requirement is projected to increase from \$3.0 million in the fiscal year 2017 to \$4.6 million in fiscal year 2022 to \$5.7 million in fiscal year 2027.

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.

RATES ANALYSIS

In the financial modeling for the wastewater rate study two rate scenarios were considered for collection of the revenue requirement; a modified rate structure and a new rate structure. Under the modified rate structure:

- Residential single family continues to pay a flat monthly charge per unit, plus a flow charge per HCF of winter water use.
- Non-Residential, including multi-family and mobile homes, pay a flat monthly charge by water meter size plus a flow charge per HCF of winter water use by customer type.
- Religious paces/community centers are placed into their own customer category (previously included as commercial).

Under the new rate structure:

- Residential single family, multi-family, and mobile homes pay a flat monthly charge per housing unit.
- Schools pay a flat monthly charge on a per student basis.
- Non-Residential pay a flat monthly charge by customer type plus a flow charge by customer type per HCF of winter water use.

In the new rate structure, there are no charges based on water meter size and all costs are allocated on flow and strength customer characteristics.

Per the August 4th, 2016 and September 13th, 2016 Task Force meetings, the City's Task Force chose the new rate structure as the preferred rate structure; therefore, the body of this memorandum includes the methodology and results of the new rate structure only. For record keeping the modified rate structure is presented in **Attachment B**.

New Rate Structure

The following four steps outline how wastewater rates are calculated such that the monthly wastewater rates meet legal requirements. The accompanying tables show the calculations for the first year of the analysis, fiscal year 2016-17, in order to demonstrate the model and illustrate how the rates are calculated. The same cost allocation methodology is used for all years considered in this analysis.

- 1. Establish the Wastewater Customer Base and User Characteristics** – The wastewater customer base includes residential (single family, multi-family, and mobile homes), schools, car wash, religious places/community center, commercial, grocery and mortuary, laundry, mixed retail with food, motel with food, motel without food, restaurant, Napa Valley College, service station, winery production, and Sutter Home Winery users. Wastewater flow parameters are based on City winter average (January through March) water meter reads and sewer strength is based on industry standards. *Wastewater inflow at the treatment plant currently averages 0.5 million gallons per day (MGD). The number of customers and total calculated flow for each customer and customer category, Biological Oxygen Demand (BOD) and Total Suspended Solids (TSS) characteristics were summarized earlier in the report in **Table 2**.*

2. **Project Revenue Requirement and Allocate to Collection and Treatment** –Projections of annual costs and non-rate revenues are used to determine revenue requirement as previously described. *The revenue requirement (the amount to be funded through wastewater service charges/rates) for fiscal year 2016-17 is \$3.0 million. The revenue requirement is allocated between collection and treatment. Of this total cost, approximately 72% is for the treatment plant and 28% for the collection system. **Table 8** shows the allocation of projected costs between the wastewater collection system and the treatment plant for fiscal year 2016-17.*
3. **Allocate Revenue Requirement based on Flow and Strength and Determine Unit Costs** – The revenue requirement is allocated based on flow and load (strength) depending on the percentage distribution of operations and maintenance operations attributed to flow, BOD, or TSS. Per unit revenue requirement for each projected year is determined by dividing the allocated revenue requirement by the demand for each customer type.

Costs are allocated to customer categories as follows:

- A. Allocate the costs (by Cost Category) to flow, BOD and TSS
- B. Determine the Unit Cost by Cost Category

Each of these steps is described in greater detail below.

A. Cost Allocation to Flow, BOD, and SS

Costs are allocated to flow, BOD, and SS based on percentage allocation or distribution factors. These percentage allocation factors are based on the estimated distribution of the treatment and collection facilities O&M activities between or related to flow, BOD, and TSS.

Table 9 shows the calculation of unit costs by cost category for flow, BOD, and TSS. Collection costs are strictly related to flow and therefore, 100 percent of the collection costs are allocated to flow. Treatment plant costs are allocated by cost category for flow, BOD and TSS using the subtotal percentages from the collection and treatment cost allocations.

Table 8

**Revenue Requirement Distributed between Collection and Treatment
- New Rate Structure based on Flow and Strength**

FY 2017

Expenditures	Projected		Allocation		Collection		Treatment		Total
	Total		Collection	Treatment	Operations	Capital	Operations	Capital	
Salaries & Benefits	\$1,071,519		21%	79%	\$227,165		\$844,354		\$844,354
Services	\$319,189		4%	96%	\$12,682		\$306,507		\$306,507
Supplies	\$75,942		22%	78%	\$16,619		\$59,323		\$59,323
Maintenance	\$130,513		11%	89%	\$14,137		\$116,376		\$116,376
Taxes, Insurances & Contribs.	\$105,967		0%	100%	\$0		\$105,967		\$105,967
Capital	\$101,700		0%	100%	\$0		\$101,700		\$101,700
Wet Weather Flow Monitoring	\$0		100%	0%		\$0		\$0	\$0
Update GIS Maps of Sewer System	\$0		50%	50%		\$0		\$0	\$0
Sewer Master Plan	\$0		50%	50%		\$0		\$0	\$0
CCTV Program	\$15,462		100%	0%		\$15,462		\$0	\$0
Recycled Water Feasibility Study	\$0		0%	100%		\$0		\$0	\$0
Total Debt Service	\$252,876		100%	0%		\$252,876		\$0	\$0
Capital Projects	\$164,323		0%	100%		\$0		\$164,323	\$164,323
System Rehabilitation	\$356,700		50%	50%		\$178,350		\$178,350	\$178,350
Total Operating Expenses	\$2,594,191		28%	72%	\$270,603	\$446,689	\$1,534,227	\$342,673	\$1,876,900
Operating Reserve	\$400,000								
Less Offsetting Revenue	(\$5,515)								
Total	\$2,988,676								

Source: HEC.

alloc

**Table 9
Unit Cost Determination
- New Rate Structure based on Flow and Strength**

FY 2017

Cost Category	Percent Allocation				Cost			Total Influent			Unit Cost Per:		
	Allocated Costs	Flow	BOD	SS	Flow	BOD	SS	Flow	BOD	SS	Mgal of Flow	Klb of BOD	Klb of SS
	(A)	(B)	(C)	(D)	(E) = (A)*(B)	(F)=(A)*(C)	(G)=(A)*(D)	(H)	(I)	(J)	(K)=(E)/(H)	(L)=(F)/(I)	(M)=(G)/(J)
Operating Costs													
Collection System Costs	\$270,603	100%	0%	0%	\$270,603	\$0	\$0	179	386	342	\$1,510.29	\$0.00	\$0.00
Treatment Costs	\$1,534,227	34%	33%	33%	\$521,637	\$506,295	\$506,295	179	386	342	\$2,911.36	\$1,310.01	\$1,481.83
Capital Costs													
Collection System Costs	\$446,689	100%	0%	0%	\$446,689	\$0	\$0	179	386	342	\$2,493.05	\$0.00	\$0.00
Treatment Costs	\$342,673	34%	33%	33%	\$116,509	\$113,082	\$113,082	179	386	342	\$650.26	\$292.59	\$330.97
Subtotal Collection Costs													
	\$717,291	100%	0%	0%	\$717,291	\$0	\$0	179	386	342	\$4,003.34	\$0.00	\$0.00
Subtotal Treatment Costs													
	\$1,876,900	34%	33%	33%	\$638,146	\$619,377	\$619,377	179	386	342	\$3,561.61	\$1,602.60	\$1,812.80
Subtotal Costs													
	\$2,594,191	52%	24%	24%	\$1,355,437	\$619,377	\$619,377				\$7,564.96	\$1,602.60	\$1,812.80
Other Costs													
Operating Reserve	\$400,000	52%	24%	24%	\$208,996	\$95,502	\$95,502	179	386	342	\$1,166.45	\$247.11	\$279.52
Less Offsetting Revenue	(\$5,515)	52%	24%	24%	(\$2,882)	(\$1,317)	(\$1,317)	179	386	342	(\$16.08)	(\$3.41)	(\$3.85)
Subtotal Other Costs													
	\$394,485	52%	24%	24%	\$206,114	\$94,185	\$94,185				\$1,150.36	\$243.70	\$275.66
TOTAL COSTS													
	\$2,988,676				\$1,561,552	\$713,562	\$713,562				\$8,715.32	\$1,846.30	\$2,088.46

Source: HEC.

unit

B. Unit Cost by Cost Category

The allocated costs are then divided by total annual capacity from **Table 2** to determine the unit cost by flow, BOD, and TSS units of measurement. These unit costs are used to determine the cost allocated to each customer type in the next step.

- Determine Revenue Requirement by Customer Type** – The per unit costs are multiplied by the flow and strength characteristics of each customer category to determine the annual cost by customer type. *The unit costs determined in **Table 9** are multiplied by the flow, BOD, or TSS for each customer type. These costs are then summed to determine the total costs allocated to each customer type, as shown in **Table 10**.*

Total allocated costs to each customer category are shown in **Table 11**. Residential customers are responsible for 69% of the total costs, schools are responsible for 1% of the total costs, and non-residential customers are responsible for 30% of the total costs. Total treatment cost per hundred cubic feet is greatest for high strength customers such as winery production customers, restaurants, groceries and mortuaries, and lowest for customers such as car washes and religious places/community centers which have low strength wastewater. This data is shown graphically in **Figure 3**.

Figure 3
Cost per Hundred Cubic Feet by Customer Type

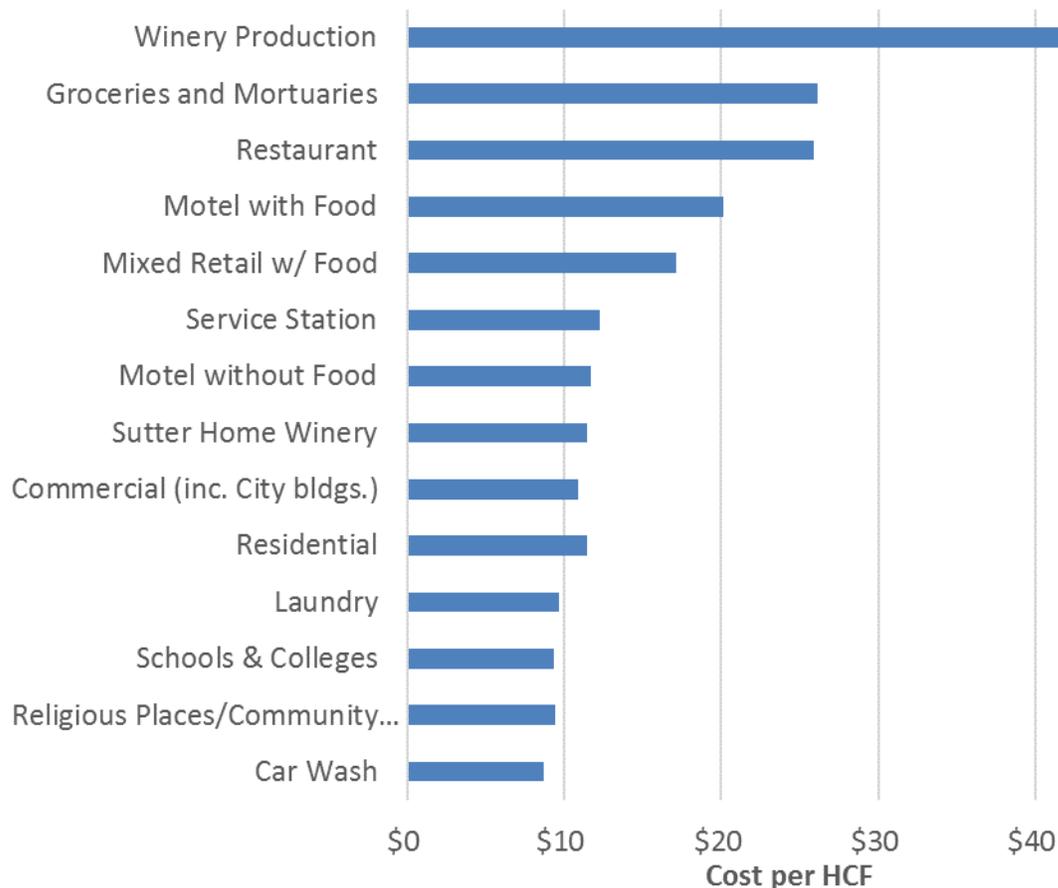


Table 10

Allocation of Costs to Flow, BOD, and SS by Customer Category
 - New Rate Structure based on Flow and Strength

FY 2017

Unit Cost/Customer Category	Collection			Treatment			Other			TOTAL
	Flow MG/Yr	BOD Klb/Yr	SS Klb/Yr	Flow (\$/Mgal)	BOD (\$/Klb)	SS (\$/Klb)	Flow (\$/Mgal)	BOD (\$/Klb)	SS (\$/Klb)	
Unit Cost				\$4,003.34	\$1,602.60	\$1,812.80	\$1,150.36	\$243.70	\$275.66	
Residential										
Single Family	96	160	160	\$384,800	\$256,941	\$290,642	\$110,573	\$39,072	\$44,196	\$1,468,566
Multi-Family	26	43	43	\$103,629	\$69,196	\$78,271	\$29,778	\$10,522	\$11,902	\$395,493
Mobile Homes	12	20	20	\$48,474	\$32,367	\$36,612	\$13,929	\$4,922	\$5,567	\$184,996
School	2	2	2	\$7,766	\$3,371	\$2,933	\$2,232	\$513	\$446	\$24,170
Non-Residential										
Car Wash	0	0	0	\$1,469	\$98	\$832	\$422	\$15	\$127	\$4,270
Religious Places/Community Centers	1	1	1	\$2,961	\$1,285	\$1,230	\$851	\$195	\$187	\$9,345
Commercial [1]	11	14	18	\$44,338	\$22,204	\$33,488	\$12,740	\$3,376	\$5,092	\$160,685
Groceries and Mortuaries	1	5	5	\$3,031	\$8,096	\$9,158	\$871	\$1,231	\$1,393	\$26,477
Laundry	2	2	1	\$6,109	\$3,059	\$2,538	\$1,755	\$465	\$386	\$19,748
Mixed Retail w/ Food	1	3	7	\$5,783	\$4,633	\$13,103	\$1,662	\$705	\$1,993	\$33,022
Motel with Food	4	17	20	\$15,867	\$26,488	\$35,954	\$4,559	\$4,028	\$5,467	\$106,480
Motel without Food	7	17	7	\$26,850	\$27,789	\$12,168	\$7,715	\$4,226	\$1,850	\$104,485
Restaurant	9	78	47	\$37,599	\$125,529	\$85,196	\$10,804	\$19,089	\$12,955	\$324,622
Napa Valley College	5	5	4	\$18,887	\$8,197	\$7,133	\$5,427	\$1,247	\$1,085	\$58,778
Service Station	1	1	1	\$2,320	\$1,394	\$2,453	\$667	\$212	\$373	\$9,483
Winery Production (Merrydale/Spottswoode)	1	16	2	\$2,740	\$25,612	\$4,139	\$787	\$3,895	\$629	\$40,239
Sutter Home Winery	1	2	2	\$4,669	\$3,117	\$3,526	\$1,342	\$474	\$536	\$17,818
TOTAL	179	386	342	\$717,291	\$619,377	\$619,377	\$206,114	\$94,185	\$94,185	\$2,988,676

alloc cost

Source: HEC.

[1] Commercial includes City buildings.

Table 11
Calculated Cost per Hundred Cubic Feet
- New Rate Structure based on Flow and Strength

FY 2017

Customer Category	Allocated Cost	Percentage of Cost	Annual Flow (MG)	Cost per 1,000 Gallons	Cost per HCF
Residential					
Single Family	\$1,468,566	49%	96.12	\$15.28	\$11.43
Multi-Family	\$395,493	13%	25.89	\$15.28	\$11.43
Mobile Homes	\$184,996	6%	12.11	\$15.28	\$11.43
Subtotal Residential	\$2,049,055	69%	134.11	\$15.28	\$11.43
School	\$24,170	1%	1.94	\$12.46	\$9.32
Non-Residential					
Car Wash	\$4,270	0%	0.37	\$11.64	\$8.70
Religious Places/Community Centers	\$9,345	0%	0.74	\$12.63	\$9.45
Commercial [1]	\$160,685	5%	11.08	\$14.51	\$10.85
Groceries and Mortuaries	\$26,477	1%	0.76	\$34.97	\$26.16
Laundry	\$19,748	1%	1.53	\$12.94	\$9.68
Mixed Retail w/ Food	\$33,022	1%	1.44	\$22.86	\$17.10
Motel with Food	\$106,480	4%	3.96	\$26.87	\$20.10
Motel without Food	\$104,485	3%	6.71	\$15.58	\$11.65
Restaurant	\$324,622	11%	9.39	\$34.56	\$25.85
Napa Valley College	\$58,778	2%	4.72	\$12.46	\$9.32
Service Station	\$9,483	0%	0.58	\$16.36	\$12.24
Winery Production (Merryvale/Spottswode)	\$40,239	1%	0.68	\$58.80	\$43.98
Sutter Home Winery	\$17,818	1%	1.17	\$15.28	\$11.43
Subtotal Non-Residential	\$915,452	31%	43.12	\$21.23	\$15.88
TOTAL	\$2,988,676	100%	179.17	\$16.68	\$12.48

Source: HEC.

flow cost

[1] Commercial includes City buildings.

Table 12 presents the calculated rates for February 8, 2017. The total allocated costs to each customer category provide the basis for the rates. It is projected that 59% of costs will be recovered through flat monthly charges (residential and school customers, as well as base charges for non-residential customers) and 41% of costs will be recovered through consumption charges. Customers with consumption charges pay for average monthly winter water passing through the water meter, measured from January through March.

Table 13 shows the projected wastewater rate schedule through fiscal year 2027.

Table 12
Wastewater Rates Calculations for February 8, 2017
- New Rate Structure based on Flow and Strength

FY 2017

Customer Category	Billing Basis	No. Billing Units	Allocated Cost	Base 59%	Flow 41%	Annual Cost per Billing Unit		Monthly Cost	
						Base	Flow	Base	Usage
Residential									<i>per HCF</i>
Single Family	Unit	1,503	\$1,468,566	\$866,454	\$602,112	\$576	\$401	\$977	\$48.04
Multi-Family	Unit	669	\$395,493	\$233,341	\$162,152	\$349	\$242	\$591	\$29.07
Mobile Homes	Unit	211	\$184,996	\$109,148	\$75,848	\$517	\$359	\$877	\$43.11
Residential			\$2,049,055	\$1,208,943	\$840,113				
School	Student	1,437	\$24,170	\$14,260	\$9,910	\$10	\$7	\$17	\$1.40
Non-Residential (\$ per hcf of Winter Water Use)									
Car Wash	Account	1	\$4,270	\$2,519	\$1,751	\$2,519	\$1,751	\$4,270	\$3.43
Religious Places/Community Centers	Account	13	\$9,345	\$5,513	\$3,831.32	\$424	\$295	\$719	\$35.34
Commercial [1]	Account	126	\$160,685	\$94,804	\$65,881	\$752	\$523	\$1,275	\$62.70
Groceries and Mortuaries	Account	3	\$26,477	\$15,621	\$10,856	\$5,207	\$3,619	\$8,826	\$10.30
Laundry	Account	1	\$19,748	\$11,651	\$8,097	\$11,651	\$8,097	\$19,748	\$3.81
Mixed Retail w/ Food	Account	3	\$33,022	\$19,483	\$13,539	\$6,494	\$4,513	\$11,007	\$6.73
Motel with Food	Account	2	\$106,480	\$62,823	\$43,657	\$31,412	\$21,828	\$53,240	\$2,617.64
Motel without Food	Account	8	\$104,485	\$61,646	\$42,839	\$7,706	\$5,355	\$13,061	\$7.91
Restaurant	Account	19	\$324,622	\$191,527	\$133,095	\$10,080	\$7,005	\$17,085	\$4.59
Napa Valley College	Account	1	\$58,778	\$34,679	\$24,099	\$34,679	\$24,099	\$58,778	\$10.18
Service Station	Account	5	\$9,483	\$5,595	\$3,888	\$1,119	\$778	\$1,897	\$3.67
Winery Production (Merrylee/Spottswoode)	Account	2	\$40,239	\$23,741	\$16,498	\$11,871	\$8,249	\$20,120	\$4.82
Sutter Home Winery	Account	1	\$17,818	\$10,512	\$7,305	\$10,512	\$7,305	\$17,818	\$17.31
Non-Residential and Schools			\$939,621	\$554,376	\$385,245				\$2,889.93
TOTAL			\$2,988,676	\$1,763,319	\$1,225,357				\$876.04

Source: City of St. Helena, California Department of Education Educational Demographics Unit, and HEC.

[1] Commercial includes City buildings.

Table 13
Projected Wastewater Rate Schedule
- New Rate Structure based on Flow and Strength

Customer Category	Billing Period Beginning * ----->	Fiscal Year Ending												rate sum
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027		
	2/8/2017	11/8/2017	11/8/2018	11/8/2019	11/8/2020	11/8/2021	11/8/2022	11/8/2023	11/8/2024	11/8/2025	11/8/2026	11/8/2027		
Residential														
Single Family	monthly per unit	\$48.04	\$55.24	\$70.13	\$73.03	\$74.18	\$75.23	\$79.74	\$83.28	\$86.84	\$90.13	\$93.20		
Multi-Family	monthly per unit	\$29.07	\$33.42	\$42.43	\$44.18	\$44.88	\$45.52	\$48.24	\$50.39	\$52.54	\$54.53	\$56.39		
Mobile Homes	monthly per unit	\$43.11	\$49.57	\$62.93	\$65.53	\$66.56	\$67.51	\$71.55	\$74.73	\$77.93	\$80.87	\$83.63		
Residential Rate per HCF	per HCF	\$4.69	\$5.39	\$6.84	\$7.12	\$7.23	\$7.34	\$7.78	\$8.12	\$8.47	\$8.79	\$9.09		
Schools Flat Rate per Student	monthly per student	\$1.40	\$1.62	\$2.15	\$2.21	\$2.26	\$2.28	\$2.41	\$2.52	\$2.62	\$2.71	\$2.80		
Non-Residential														
Car Wash	monthly per account	\$209.93	\$243.25	\$328.36	\$336.45	\$343.13	\$346.45	\$365.12	\$382.42	\$397.39	\$411.10	\$423.62		
Religious Places/Community Centers	monthly per account	\$35.34	\$40.85	\$54.06	\$55.68	\$56.71	\$57.34	\$60.54	\$63.35	\$65.91	\$68.25	\$70.41		
Commercial [1]	monthly per account	\$62.70	\$72.20	\$92.64	\$96.19	\$97.78	\$99.09	\$104.91	\$109.63	\$114.25	\$118.51	\$122.47		
Groceries and Mortuaries	monthly per account	\$433.93	\$492.12	\$552.00	\$595.15	\$599.41	\$613.71	\$658.17	\$683.48	\$717.89	\$749.95	\$781.06		
Laundry	monthly per account	\$970.94	\$1,121.45	\$1,475.85	\$1,522.21	\$1,549.87	\$1,567.76	\$1,656.08	\$1,732.56	\$1,802.98	\$1,867.65	\$1,927.33		
Mixed Retail w/ Food	monthly per account	\$541.20	\$617.30	\$730.21	\$775.32	\$783.78	\$799.17	\$852.68	\$887.69	\$929.47	\$968.22	\$1,005.31		
Motel with Food	monthly per account	\$2,617.64	\$2,978.36	\$3,444.90	\$3,681.23	\$3,715.59	\$3,795.12	\$4,057.95	\$4,220.11	\$4,424.57	\$4,614.57	\$4,797.54		
Motel without Food	monthly per account	\$642.15	\$738.08	\$933.28	\$972.87	\$987.93	\$1,002.28	\$1,062.67	\$1,109.72	\$1,157.47	\$1,201.49	\$1,242.73		
Restaurant	monthly per account	\$840.03	\$952.80	\$1,070.03	\$1,153.27	\$1,161.63	\$1,189.23	\$1,275.22	\$1,324.33	\$1,390.92	\$1,452.93	\$1,513.11		
Napa Valley College	monthly per account	\$2,889.93	\$3,341.62	\$4,436.77	\$4,565.57	\$4,651.20	\$4,701.87	\$4,962.71	\$5,194.00	\$5,402.37	\$5,593.58	\$5,769.41		
Service Station	monthly per account	\$93.25	\$107.06	\$134.07	\$140.12	\$142.20	\$144.37	\$153.21	\$159.92	\$166.89	\$173.33	\$179.38		
Winery Production (Merryvale/Spottswood)	monthly per account	\$989.21	\$1,116.93	\$1,199.98	\$1,310.53	\$1,315.85	\$1,351.87	\$1,455.91	\$1,508.79	\$1,588.84	\$1,663.63	\$1,736.98		
Sutter Home Winery	monthly per account	\$876.04	\$1,007.39	\$1,278.85	\$1,331.67	\$1,352.66	\$1,371.89	\$1,454.02	\$1,518.68	\$1,583.65	\$1,643.55	\$1,699.58		
Car Wash	per HCF	\$3.43	\$3.97	\$5.36	\$5.49	\$5.60	\$5.65	\$5.96	\$6.24	\$6.48	\$6.71	\$6.91		
Religious Places/Community Centers	per HCF	\$3.72	\$4.30	\$5.69	\$5.86	\$5.97	\$6.03	\$6.37	\$6.67	\$6.94	\$7.18	\$7.41		
Commercial [1]	per HCF	\$4.27	\$4.92	\$6.31	\$6.55	\$6.66	\$6.75	\$7.15	\$7.47	\$7.78	\$8.07	\$8.34		
Groceries and Mortuaries	per HCF	\$10.30	\$11.68	\$13.10	\$14.12	\$14.22	\$14.56	\$15.62	\$16.22	\$17.03	\$17.79	\$18.53		
Laundry	per HCF	\$3.81	\$4.40	\$5.79	\$5.97	\$6.08	\$6.15	\$6.50	\$6.80	\$7.07	\$7.33	\$7.56		
Mixed Retail w/ Food	per HCF	\$6.73	\$7.68	\$9.08	\$9.64	\$9.75	\$9.94	\$10.60	\$11.04	\$11.56	\$12.04	\$12.50		
Motel with Food	per HCF	\$7.91	\$9.00	\$10.41	\$11.12	\$11.23	\$11.47	\$12.26	\$12.75	\$13.37	\$13.94	\$14.50		
Motel without Food	per HCF	\$4.59	\$5.27	\$6.67	\$6.95	\$7.06	\$7.16	\$7.59	\$7.93	\$8.27	\$8.58	\$8.88		
Restaurant	per HCF	\$10.18	\$11.54	\$12.96	\$13.97	\$14.07	\$14.41	\$15.45	\$16.04	\$16.85	\$17.60	\$18.33		
Napa Valley College	per HCF	\$3.67	\$4.24	\$5.63	\$5.79	\$5.90	\$5.97	\$6.30	\$6.59	\$6.86	\$7.10	\$7.32		
Service Station	per HCF	\$4.82	\$5.53	\$6.93	\$7.24	\$7.35	\$7.46	\$7.92	\$8.26	\$8.62	\$8.95	\$9.27		
Winery Production (Merryvale/Spottswood)	per HCF	\$17.31	\$19.55	\$21.00	\$22.93	\$23.03	\$23.66	\$25.48	\$26.40	\$27.80	\$29.11	\$30.40		
Sutter Home Winery	per HCF	\$4.50	\$5.17	\$6.57	\$6.84	\$6.95	\$7.04	\$7.47	\$7.80	\$8.13	\$8.44	\$8.73		

Source: HEC.

* Dates reflect the current billing cycle; if the billing cycle date changes so will these effective dates.

[1] Commercial includes City buildings.

Special user rates are calculated for new industries moving to the City that have special requirements attached to their operating permit with the City. Municipal code 13.20.020E would have to be revised from the current formula of $A(V)+B(\text{BOD})+C(\text{SS})+D$ to remove D, which is no longer applicable under the new rate structure. In the special user charges formula:

V is volume of water in millions of gallons

BOD is biochemical oxygen demand in pounds

SS is total suspended solids in pounds

A is allocated cost for each million gallons of flow

B is allocated cost per pound for biochemical oxygen demand

C is allocated cost per pound of total suspended solids

D is charge for water meter size

Table 14 shows the calculated special user rates through fiscal year 2022.

Table 14
Special User Rates

Municipal Code 13.20.020 E	Current	Fiscal Year Ending					
		2017	2018	2019	2020	2021	2022
Billing Period Beginning * ----->		2/8/2017	11/8/2017	11/8/2018	11/8/2019	11/8/2020	11/8/2021
	[1]						
A (per million gallons of flow)	\$2,107.21	\$8,715.32	\$10,206.65	\$14,910.59	\$14,979.88	\$15,353.37	\$15,416.45
B (per pound of BOD)	\$1.02	\$1.85	\$2.07	\$2.08	\$2.32	\$2.32	\$2.39
C (per pound of SS)	\$1.17	\$2.09	\$2.34	\$2.35	\$2.62	\$2.62	\$2.71

Source: City of St. Helena and HEC.

special

* Dates reflect the current billing cycle; if the billing cycle date changes so will these effective dates.

[1] Current rates were set July 2011.

CASH FLOW

Table 15 shows the projected cash flow for the wastewater fund and **Figure 4** demonstrates cash balances with and without rate increases. With adoption of the calculated rates it is anticipated that the City will be able to meet all wastewater enterprise fund obligations, including existing and potential debt service coverage requirements, and achieve at least six months of operating expenses in cash reserves in each year of the projection. The cash flow table demonstrates that a debt service coverage ratio of at least 1.20 will be met. In addition, the City may be able to designate (put aside) up to \$1.7 million by fiscal year ending 2022, and \$3.8 million by fiscal year ending 2027 for future cash funding of system rehabilitation.

**Table 15
Projected Cash Flow**

Revenues and Expenses	Fiscal Year Ending											
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	
<i>New EDUs</i>												
Operating Revenues												
Charges For Services	\$2,533,343	\$3,282,705	\$3,996,014	\$4,410,951	\$4,520,363	\$4,589,140	\$4,802,027	\$5,039,172	\$5,259,709	\$5,472,228	\$5,670,901	
Growth in Services	\$4,850	\$3,287,555	\$5,578	\$7,081	\$7,373	\$7,489	\$7,596	\$8,050	\$8,408	\$8,768	\$9,100	
Total Sewer Sales	\$2,533,343	\$3,287,555	\$4,001,591	\$4,418,032	\$4,527,736	\$4,596,629	\$4,809,622	\$5,047,222	\$5,268,118	\$5,480,997	\$5,680,001	
Investment Earnings	\$4,615	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Sewer Connection Fee	\$900	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Total Operating Revenues	\$2,538,858	\$3,287,555	\$4,001,591	\$4,418,032	\$4,527,736	\$4,596,629	\$4,809,622	\$5,047,222	\$5,268,118	\$5,480,997	\$5,680,001	
Operating Expenses	\$1,820,292	\$1,973,928	\$2,246,507	\$2,140,652	\$2,260,874	\$2,478,583	\$2,524,375	\$2,668,756	\$2,822,367	\$2,985,876	\$3,160,007	
Operating Revenue before Capital Improvements and Debt Service	\$718,566	\$1,313,627	\$1,755,084	\$2,277,380	\$2,266,862	\$2,118,047	\$2,285,247	\$2,378,466	\$2,445,751	\$2,495,120	\$2,519,994	
Debt Service												
Existing Debt	\$252,876	\$253,904	\$256,030	\$252,890	\$253,823	\$255,392	\$250,938	\$251,669	\$252,022	\$252,310	\$251,490	
WWTP New Debt - Phase 1	\$0	\$0	\$592,124	\$592,124	\$592,124	\$592,124	\$592,124	\$592,124	\$592,124	\$592,124	\$592,124	
WWTP New Debt - Phase 2	\$0	\$0	\$0	\$0	\$0	\$34,951	\$34,951	\$34,951	\$34,951	\$34,951	\$34,951	
Total Debt Service	\$252,876	\$253,904	\$848,154	\$845,014	\$845,947	\$882,467	\$878,012	\$878,744	\$879,097	\$879,384	\$878,565	
<i>Debt Service Coverage [1]</i>	2.84	5.17	2.07	2.70	2.68	2.40	2.60	2.71	2.78	2.84	2.87	
System Rehabilitation	\$356,700	\$391,800	\$459,500	\$532,400	\$560,300	\$626,600	\$690,300	\$712,900	\$732,900	\$775,900	\$797,200	
Net Revenues (Deficit)	\$108,989	\$667,923	\$447,430	\$899,967	\$860,615	\$608,980	\$716,935	\$786,822	\$833,754	\$839,836	\$844,230	
Beginning Fund Balance [2]	\$1,110,075	\$1,054,742	\$1,687,578	\$2,202,662	\$2,948,848	\$3,982,496	\$3,679,166	\$1,892,423	\$3,156,634	\$4,487,090	\$5,669,380	
Net Revenues (Deficit)	\$108,989	\$667,923	\$447,430	\$899,967	\$860,615	\$608,980	\$716,935	\$786,822	\$833,754	\$839,836	\$844,230	
Cash Funded Capital Improvements	(\$164,323)	(\$35,087)	\$0	(\$153,781)	\$0	\$0	(\$154,028)	\$0	\$0	\$0	\$0	
Add Back System Rehabilitation	\$0	\$0	\$67,654	\$0	\$289,417	\$287,386	\$0	\$477,388	\$496,702	\$342,454	\$546,224	
Replace WRF Operations Building and Shop	\$0	\$0	\$0	\$0	(\$116,384)	(\$1,199,695)	(\$2,349,650)	\$0	\$0	\$0	\$0	
Ending Fund Balance	\$1,054,742	\$1,687,578	\$2,202,662	\$2,948,848	\$3,982,496	\$3,679,166	\$1,892,423	\$3,156,634	\$4,487,090	\$5,669,380	\$7,059,834	
<i>Months of Operating Expenses in Reserve</i>	7	10	12	17	21	18	9	14	19	23	27	
Designated Balance [4]	\$0	\$0	\$0	\$800,000	\$1,700,000	\$1,700,000	\$1,700,000	\$1,700,000	\$1,700,000	\$2,600,000	\$3,800,000	
Undesignated Balance	\$1,054,742	\$1,687,578	\$2,202,662	\$2,148,848	\$2,282,496	\$1,979,166	\$192,423	\$1,456,634	\$2,787,090	\$3,069,380	\$3,259,834	
<i>Months of Operating Expenses in Reserve</i>	7	10	12	12	12	10	1	7	12	12	12	
Target Operating Reserves [3]	\$1,820,292	\$1,973,928	\$2,246,507	\$2,140,652	\$2,260,874	\$2,478,583	\$2,524,375	\$2,668,756	\$2,822,367	\$2,985,876	\$3,160,007	

Source: HEC.

[1] Debt service coverage should be at least 1.20.

[2] Estimated beginning balance for the operating and capital funds combined per the City 2016/17 Budget.

[3] Minimum six months and target balance is one year of operating expenses.

[4] Designation for future system rehabilitation costs in new, separate fund.

Figure 4
Projected Wastewater Cash Balances

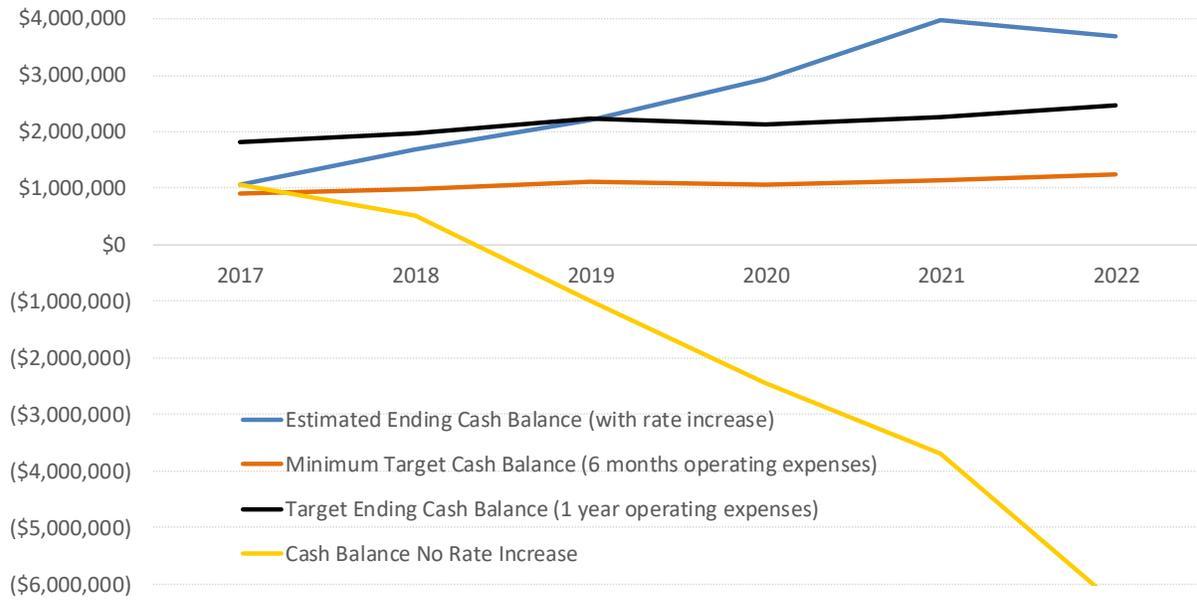


Table 16 on the following page shows the projected cash flow by fund.

Table 16
Projected Wastewater Fund Balances

Fund	Fiscal Year Ending										
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Operating Fund 571											
Beginning Balance	(\$79,805)	\$29,184	\$697,108	\$1,212,192	\$2,112,159	\$3,262,191	\$3,658,557	\$1,875,492	\$2,389,702	\$3,720,159	\$4,902,449
Net Revenue	\$108,989	\$667,923	\$447,430	\$899,967	\$860,615	\$608,980	\$716,935	\$786,822	\$833,754	\$839,836	\$844,230
Add Back System Rehabilitation	\$0	\$0	\$67,654	\$0	\$289,417	\$287,386	\$0	\$477,388	\$496,702	\$342,454	\$546,224
Transfer Out to Capital Fund	\$0	\$0	\$0	\$0	\$0	(\$500,000)	(\$2,500,000)	(\$750,000)	\$0	\$0	\$0
Ending Balance	\$29,184	\$697,108	\$1,212,192	\$2,112,159	\$3,262,191	\$3,658,557	\$1,875,492	\$2,389,702	\$3,720,159	\$4,902,449	\$6,292,902
Capital Fund 773											
Beginning Balance	\$1,189,880	\$1,025,557	\$990,470	\$990,470	\$836,689	\$720,305	\$20,610	\$16,932	\$766,932	\$766,932	\$766,932
Transfer In from Operating Fund	\$0	\$0	\$0	\$0	\$0	\$500,000	\$2,500,000	\$750,000	\$0	\$0	\$0
Capital Projects Expenses [1]	(\$164,323)	(\$35,087)	\$0	(\$153,781)	(\$116,384)	(\$1,199,695)	(\$2,503,678)	\$0	\$0	\$0	\$0
Ending Balance	\$1,025,557	\$990,470	\$990,470	\$836,689	\$720,305	\$20,610	\$16,932	\$766,932	\$766,932	\$766,932	\$766,932
Combined Operating and Capital Funds	\$1,054,742	\$1,687,578	\$2,202,662	\$2,948,848	\$3,982,496	\$3,679,166	\$1,892,423	\$3,156,634	\$4,487,090	\$5,669,380	\$7,059,834
Impact Fee Fund 774											
Beginning Balance	\$698,783	\$730,851	\$741,248	\$751,939	\$762,932	\$774,236	\$785,859	\$797,811	\$810,100	\$822,738	\$869,257
Fee Revenues [2]	\$4,700	\$4,819	\$4,941	\$5,065	\$5,193	\$5,325	\$5,459	\$5,597	\$5,739	\$5,884	\$6,032
Expenses											
Miscellaneous Maintenance Projects	(\$5,412)	(\$5,578)	(\$5,750)	(\$5,928)	(\$6,110)	(\$6,298)	(\$6,492)	(\$6,692)	(\$6,899)	(\$40,636)	(\$7,330)
Reclamation Field Improvements	(\$21,956)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Project Expenses	(\$27,368)	(\$5,578)	(\$5,750)	(\$5,928)	(\$6,110)	(\$6,298)	(\$6,492)	(\$6,692)	(\$6,899)	(\$40,636)	(\$7,330)
Ending Balance	\$730,851	\$741,248	\$751,939	\$762,932	\$774,236	\$785,859	\$797,811	\$810,100	\$822,738	\$869,257	\$882,620

Source: HEC. flow by fund

[1] Cash-funded projects only. Projects that are debt-funded are included in the operating fund.
 [2] Assumes growth of 5 units per year and the current impact fee of \$0.47 per building square foot
 Fee assumed to grow 2.5% per year.
 2,000 average home building square feet
\$940 Average fee per unit

The impact fee needs to be revised for these CIP costs.

ATTACHMENT A
WASTEWATER RATE STUDY
SUPPORT TABLES

Table A-1
City of St. Helena Wastewater Rate Study
Historical Wastewater Fund Financial Performance

DRAFT

Revenues and Expenses	Actual Financials for Fiscal Year Ending					Avg. Annual Percentage Change
	2011	2012	2013	2014	2015	
OPERATING						
Revenues						
Charges For Services	\$1,616,414	\$2,008,709	\$2,050,983	\$2,143,947	\$2,208,105	8.1%
Miscellaneous	\$1,098	\$1,200	\$17,708	\$8,925	\$32,759	133.7%
Subtotal Revenues	\$1,617,512	\$2,009,909	\$2,068,691	\$2,152,872	\$2,240,864	8.5%
Expenses						
Personnel	\$842,317	\$829,804	\$795,479	\$827,027	\$938,472	2.7%
Contracted Services	\$68,782	\$806	\$0	\$0	\$0	-100.0%
Fuel	\$0	\$0	\$0	\$0	\$0	n.a.
Utilities	\$80,906	\$74,339	\$85,819	\$85,755	\$87,970	2.1%
Other Supplies and Expenses	\$313,342	\$327,119	\$361,451	\$429,526	\$525,742	13.8%
Depreciation and Amortization	\$472,561	\$483,070	\$473,784	\$473,784	\$713,189	10.8%
Subtotal Expenses	\$1,777,908	\$1,715,138	\$1,716,533	\$1,816,092	\$2,265,373	6.2%
NON OPERATING						
Gains (Loss) on Capital Asset Disposals	(\$1,169)	(\$2,762)	\$0	\$0	\$0	-100.0%
Interest and Investment Revenue	\$9,180	\$7,990	\$3,478	\$5,515	\$10,347	3.0%
Interest Expense	(\$81,081)	(\$78,070)	(\$86,521)	(\$69,139)	(\$41,398)	-15.5%
Net Operating Revenues	(\$73,070)	(\$72,842)	(\$83,043)	(\$63,624)	(\$31,051)	-19.3%
Capital Contributions	\$94,235	\$217,765	\$98,047	\$4,900	\$19,600	
Change in Net Assets	(\$139,231)	\$439,694	\$367,162	\$278,056	(\$35,960)	
Net Assets Beginning Balance	\$8,421,556	\$8,282,325	\$8,592,123	\$8,959,285	\$9,237,341	
Net Assets Ending Balance	\$8,282,325	\$8,722,019	\$8,959,285	\$9,237,341	\$9,201,381	

Source: City of St. Helena.

cafr

Table A-2
City of St. Helena Wastewater Rate Study
Historical Revenues and Expenditures

DRAFT

Revenues and Expenses	Actuals Fiscal Year Ending				Estimated 2016	Budgeted 2017
	2012	2013	2014	2015		
OPERATING FUND						
Revenues						
Investment Earnings	\$1,380	\$1,532	\$2,697	\$1,000	\$4,500	\$4,615
Annexation Fees	\$500	\$3,428	\$8,925	\$0	\$0	\$0
Rates	\$2,008,709	\$2,050,983	\$2,143,947	\$2,151,615	\$2,260,735	\$2,105,132
Sewer Connection Fee	\$0	\$0	\$4,900	\$0	\$0	\$900
Subtotal Revenues	\$2,010,589	\$2,055,942	\$2,160,470	\$2,152,615	\$2,265,235	\$2,110,647
Expenses						
Salaries & Benefits	\$829,613	\$795,480	\$827,047	\$896,865	\$987,778	\$1,071,519
Services	\$231,717	\$194,235	\$220,039	\$406,364	\$822,159	\$319,189
Supplies	\$48,460	\$55,452	\$80,836	\$41,318	\$91,641	\$75,942
Maintenance	\$81,882	\$72,003	\$68,000	\$118,625	\$167,473	\$130,513
Taxes, Insurances & Contribs.	\$76,885	\$54,533	\$64,460	\$73,328	\$122,416	\$105,967
Capital	\$22,631	\$26,001	\$58,925	\$817	\$170,139	\$101,700
Transfers	\$2,763	\$200,000	\$100,000	\$1,541,664	\$352,634	\$0
Debt	\$78,071	\$86,521	\$69,140	\$41,398	\$258,107	\$252,879
Subtotal Expenses	\$1,372,022	\$1,484,224	\$1,488,447	\$3,120,379	\$2,972,347	\$2,057,709
Operating Fund Net Revenues	\$638,567	\$571,718	\$672,023	(\$967,764)	(\$707,112)	\$52,938
CAPITAL FUND						
Revenues						
Transfers In	\$86,000	\$609,793	\$100,000	\$1,541,664	\$389,087	\$0
Subtotal Revenues	\$86,000	\$609,793	\$100,000	\$1,541,664	\$389,087	\$0
Expenses						
Salaries & Benefits	\$118,932	\$6,737	\$0	\$0	\$0	\$0
Professional Services	\$61,042	\$57,831	\$69,810	\$502,161	\$0	\$0
Advertising	\$344	\$0	\$0	\$803	\$0	\$0
Equipment Rental	\$2,345	\$11,727	\$0	\$0	\$0	\$0
Supplies	\$2,999	\$741	\$4,315	\$464	\$0	\$0
Maintenance	\$8,172	\$0	\$0	\$0	\$0	\$0
Capital Imp Land	\$21,993	\$0	\$0	\$0	\$0	\$0
Capital Projects Budget	\$0	\$0	\$0	\$12,420	\$0	\$0
Capital Equipment	\$0	\$3,261	\$17,765	\$13,831	\$0	\$0
Capital Imp Equipment	\$73,415	\$1,056,244	\$122,351	\$19,229	\$0	\$0
Subtotal Expenses	\$289,243	\$1,136,540	\$214,241	\$548,909	\$0	\$0
Capital Fund Net Revenues	(\$203,243)	(\$526,747)	(\$114,241)	\$992,755	\$389,087	\$0
IMPACT FUND						
Revenues						
Investment Earnings	\$6,423	\$1,872	\$2,818	\$2,587	\$2,000	\$2,500
Other Revenues	\$0	\$14,281	\$0	\$30,625	\$0	\$0
Impact Fees	\$217,766	\$98,047	(\$81,929)	\$19,600	\$15,000	\$18,000
Subtotal Revenues	\$224,188	\$114,200	(\$79,111)	\$52,812	\$17,000	\$20,500
Expenses						
Transfers Out	\$86,000	\$409,793	\$0	\$0	\$0	\$0
Subtotal Expenses	\$86,000	\$409,793	\$0	\$0	\$0	\$0
Impact Fund Net Revenues	\$138,188	(\$295,593)	(\$79,111)	\$52,812	\$17,000	\$20,500

Source: City of St. Helena.

rev exp

Table A-3
City of St. Helena Wastewater Rate Study
Historical Wastewater Operating Fund Expenses by Fund

DRAFT

Expenses	Actuals Fiscal Year Ending				Estimated 2016	Budgeted 2017
	2012	2013	2014	2015		
TREATMENT						
Salaries & Benefits	\$304,386	\$283,226	\$333,535	\$311,489	\$374,936	\$383,496
Services	\$108,212	\$125,718	\$140,438	\$185,439	\$439,873	\$124,950
Supplies	\$25,216	\$40,359	\$62,141	\$22,082	\$60,285	\$44,800
Maintenance	\$71,106	\$61,752	\$54,974	\$90,803	\$145,017	\$104,787
Taxes, Insurances & Contribs.	\$8,390	\$7,793	\$14,879	\$8,557	\$17,723	\$16,000
Capital	\$22,631	\$20,729	\$58,911	\$817	\$20,305	\$100,000
Transfers	\$0	\$0	\$0	\$0	\$0	\$0
Debt	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal Treatment	\$539,940	\$539,577	\$664,878	\$619,187	\$1,058,139	\$774,033
COLLECTION						
Salaries & Benefits	\$177,746	\$185,921	\$176,868	\$191,484	\$106,094	\$103,176
Services	\$1,349	\$3,295	\$2,734	\$4,437	\$3,972	\$5,170
Supplies	\$12,655	\$5,382	\$8,690	\$8,918	\$11,926	\$12,550
Maintenance	\$3,833	\$3,293	\$3,164	\$6,400	\$9,410	\$12,729
Taxes, Insurances & Contribs.	\$0	\$0	\$0	\$0	\$0	\$0
Capital	\$0	\$0	\$0	\$0	\$141,600	\$0
Transfers	\$0	\$0	\$0	\$0	\$0	\$0
Debt	\$0	\$0	\$0	\$0	\$2	\$2
Subtotal Collection	\$195,583	\$197,891	\$191,456	\$211,239	\$273,004	\$133,627
OPERATIONS						
Salaries & Benefits	\$347,482	\$326,332	\$316,644	\$393,892	\$506,748	\$584,847
Services	\$122,156	\$65,222	\$76,868	\$216,488	\$378,314	\$189,069
Supplies	\$10,590	\$9,710	\$10,005	\$10,318	\$19,430	\$18,592
Maintenance	\$6,942	\$6,959	\$9,861	\$21,422	\$13,046	\$12,997
Taxes, Insurances & Contribs.	\$68,495	\$46,740	\$49,581	\$64,771	\$104,693	\$89,967
Capital	\$0	\$5,272	\$13	\$0	\$8,234	\$1,700
Transfers	\$2,763	\$200,000	\$100,000	\$1,541,664	\$352,634	\$0
Debt	\$78,071	\$86,521	\$69,140	\$41,398	\$258,105	\$252,877
Subtotal Operations	\$636,498	\$746,756	\$632,112	\$2,289,953	\$1,641,204	\$1,150,049
Total Expenses	\$1,372,022	\$1,484,224	\$1,488,447	\$3,120,379	\$2,972,347	\$2,057,709

Source: City of St. Helena.

op exp

Table A-4
City of St. Helena Wastewater Rate Study
Historical Wastewater Plant Influent Flow **DRAFT**

Month	2013	2014	2015
	<i>Total Flow (millions of gallons)</i>		
January	17.953	10.586	12.838
February	11.676	17.922	18.802
March	12.789	18.283	12.453
April	12.641	16.041	11.762
May	12.131	11.722	11.142
June	11.461	10.912	10.021
July	11.918	10.851	10.118
August	11.717	10.962	10.162
September	11.405	10.478	9.973
October	11.928	10.802	10.416
November	10.990	10.436	9.539
December	10.546	31.952	12.211
Yearly Total	147.155	170.947	139.4374

Source: City of St. Helena.

inf flow

Table A-5
City of St. Helena Wastewater Rate Study
Wastewater Capital Improvements Schedule in 2016 \$'s

DRAFT

Project	Notes	Total Cost	Total Cost Less		Fiscal Year Ending									
			Existing Funding	2017 Current	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5	2023 Year 6	2024 Year 7	2025 Year 8	2026 Year 9	2027 Year 10
Estimated Project Costs (2016 \$'s)			[1]											
Sewer Collection System														
Miscellaneous Maintenance Projects		\$550,000	\$550,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$200,000	\$35,000
Replace 1% of Sewer Mains Annually		\$1,650,000	\$1,650,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
Crinella Pump Station Upgrades		\$500,000	\$500,000	\$0	\$0	\$75,000	\$425,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Add Sewer Pump Stations to SCADA		\$150,000	\$150,000	\$0	\$0	\$0	\$0	\$50,000	\$100,000	\$0	\$0	\$0	\$0	\$0
Wet Weather Flow Monitoring		\$50,000	\$50,000	\$0	\$0	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Update GIS Maps of Sewer System		\$50,000	\$50,000	\$0	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sewer Master Plan		\$150,000	\$150,000	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Replace Rodding Machine		\$40,000	\$40,000	\$0	\$0	\$40,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CCTV Program		\$165,000	\$165,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000
Subtotal Sewer Collection		\$3,305,000	\$3,305,000	\$200,000	\$250,000	\$515,000	\$625,000	\$250,000	\$300,000	\$200,000	\$200,000	\$200,000	\$365,000	\$200,000
Treatment Plant														
WWTP Upgrades Ph. 1	<i>Funded by New Debt</i>	\$7,474,108	\$7,474,108	\$232,108	\$700,000	\$3,271,000	\$3,271,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Reclamation Field Improvements		\$142,000	\$142,000	\$142,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pond 2 & 3 Levee		\$120,000	\$120,000	\$60,000	\$0	\$60,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Facilities Automation		\$144,000	\$144,000	\$0	\$144,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
New Well		\$65,000	\$65,000	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sludge Removal		\$150,000	\$150,000	\$75,000	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Recycled Water Feasibility Study		\$75,000	\$75,000	\$0	\$0	\$0	\$0	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0
Temp Trailer at WRF		\$28,000	\$28,000	\$5,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$5,000	\$0	\$0	\$0
Replace WRF Operations Building and Shop	<i>Funded by Reserves</i>	\$3,000,000	\$3,000,000	\$0	\$0	\$0	\$0	\$100,000	\$1,000,000	\$1,900,000	\$0	\$0	\$0	\$0
Upgrade Chemical Storage Facilities		\$500,000	\$500,000	\$0	\$0	\$0	\$0	\$0	\$0	\$500,000	\$0	\$0	\$0	\$0
Phase 2 WWTP Upgrades	<i>Funded by New Debt</i>	\$400,000	\$400,000	\$0	\$0	\$0	\$0	\$100,000	\$100,000	\$100,000	\$100,000	\$0	\$0	\$0
Subtotal Treatment Plant		\$12,098,108	\$12,098,108	\$579,108	\$922,000	\$3,334,000	\$3,274,000	\$203,000	\$1,178,000	\$2,503,000	\$105,000	\$0	\$0	\$0
Total Estimated Project Costs (2016 \$'s)		\$15,403,108	\$15,403,108	\$779,108	\$1,172,000	\$3,849,000	\$3,899,000	\$453,000	\$1,478,000	\$2,703,000	\$305,000	\$200,000	\$365,000	\$200,000

Source: City of St. Helena and HEC.

[1] Total Cost Less Existing Funding = Total Cost - Existing Bonds - Existing Grants

Table A-6
City of St. Helena Wastewater Rate Study
Wastewater Capital Improvements Schedule in Future \$'s

DRAFT

Project	Notes	Total Cost	Fiscal Year Ending										
			2017 Current	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5	2023 Year 6	2024 Year 7	2025 Year 8	2026 Year 9	2027 Year 10
Estimated Project Costs (Future \$'s) [1]			Annual Increase 3.1%										
Sewer Collection System													
Miscellaneous Maintenance Projects		\$687,508	\$36,078	\$37,190	\$38,336	\$39,517	\$40,734	\$41,989	\$43,283	\$44,617	\$45,991	\$270,904	\$48,869
Replace 1% of Sewer Mains Annually		\$1,988,624	\$154,621	\$159,385	\$164,296	\$169,358	\$174,576	\$179,954	\$185,499	\$191,214	\$197,105	\$203,178	\$209,438
Crinella Pump Station Upgrades		\$561,995	\$0	\$0	\$82,148	\$479,847	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Add Sewer Pump Stations to SCADA		\$178,161	\$0	\$0	\$0	\$0	\$58,192	\$119,970	\$0	\$0	\$0	\$0	\$0
Wet Weather Flow Monitoring		\$54,765	\$0	\$0	\$54,765	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Update GIS Maps of Sewer System		\$53,128	\$0	\$53,128	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sewer Master Plan		\$164,296	\$0	\$0	\$164,296	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Replace Rodding Machine		\$43,812	\$0	\$0	\$43,812	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CCTV Program		\$198,862	\$15,462	\$15,939	\$16,430	\$16,936	\$17,458	\$17,995	\$18,550	\$19,121	\$19,711	\$20,318	\$20,944
Subtotal Sewer Collection		\$3,931,152	\$206,162	\$265,642	\$564,083	\$705,658	\$290,959	\$359,909	\$247,332	\$254,952	\$262,807	\$494,399	\$279,250
Treatment Plant													
WWTP Upgrades Ph. 1	<i>Funded by New Debt</i>	\$8,258,933	\$239,259	\$743,798	\$3,582,746	\$3,693,130	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Reclamation Field Improvements		\$146,375	\$146,375	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pond 2 & 3 Levee		\$127,567	\$61,849	\$0	\$65,718	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Facilities Automation		\$153,010	\$0	\$153,010	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
New Well		\$67,003	\$67,003	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sludge Removal		\$157,003	\$77,311	\$79,693	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Recycled Water Feasibility Study		\$89,977	\$0	\$0	\$0	\$0	\$0	\$89,977	\$0	\$0	\$0	\$0	\$0
Temp Trailer at WRF		\$32,189	\$5,154	\$3,188	\$3,286	\$3,387	\$3,492	\$3,599	\$3,710	\$6,374	\$0	\$0	\$0
Replace WRF Operations Building and Shop	<i>Funded by Reserves</i>	\$3,665,729	\$0	\$0	\$0	\$0	\$116,384	\$1,199,695	\$2,349,650	\$0	\$0	\$0	\$0
Upgrade Chemical Storage Facilities		\$618,329	\$0	\$0	\$0	\$0	\$0	\$0	\$618,329	\$0	\$0	\$0	\$0
Phase 2 WWTP Upgrades	<i>Funded by New Debt</i>	\$487,495	\$0	\$0	\$0	\$0	\$116,384	\$119,970	\$123,666	\$127,476	\$0	\$0	\$0
Subtotal Treatment Plant		\$13,803,610	\$596,950	\$979,688	\$3,651,751	\$3,696,517	\$236,259	\$1,413,241	\$3,095,354	\$133,850	\$0	\$0	\$0
Total Estimated Project Costs (Future \$'s)		\$17,734,763	\$803,112	\$1,245,330	\$4,215,833	\$4,402,174	\$527,219	\$1,773,150	\$3,342,686	\$388,801	\$262,807	\$494,399	\$279,250
Total Estimated Project Costs (2016 \$'s)		\$15,403,108	\$779,108	\$1,172,000	\$3,849,000	\$3,899,000	\$453,000	\$1,478,000	\$2,703,000	\$305,000	\$200,000	\$365,000	\$200,000
Total Estimated Project Costs (Future \$'s)		\$17,734,763	\$803,112	\$1,245,330	\$4,215,833	\$4,402,174	\$527,219	\$1,773,150	\$3,342,686	\$388,801	\$262,807	\$494,399	\$279,250

Source: City of St. Helena and HEC.

future cip

[1] Estimated costs increased by historical ENR Construction Cost Index 20 year average increase.

Table A-7
City of St. Helena Wastewater Rate Study
Existing Customers Share of CIP Costs in 2016 \$'s

DRAFT

Project	Funding Source	Percent Share Existing Customers	Percent Share Existing Customers in Rate Model	Total Cost	Fiscal Year Ending										
					2017 Current	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5	2023 Year 6	2024 Year 7	2025 Year 8	2026 Year 9	2027 Year 10
Estimated Project Costs (2016 \$'s)															
Sewer Collection System															
Miscellaneous Maintenance Projects	Cash	85%	85%	\$467,500	\$29,750	\$29,750	\$29,750	\$29,750	\$29,750	\$29,750	\$29,750	\$29,750	\$29,750	\$170,000	\$29,750
Replace 1% of Sewer Mains Annually	Cash	100%	100%	\$1,650,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000	\$150,000
Crinella Pump Station Upgrades	Cash	100%	100%	\$500,000	\$0	\$0	\$75,000	\$425,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Add Sewer Pump Stations to SCADA	Cash	100%	100%	\$150,000	\$0	\$0	\$0	\$0	\$50,000	\$100,000	\$0	\$0	\$0	\$0	\$0
Wet Weather Flow Monitoring	Ops Cash	100%	100%	\$50,000	\$0	\$0	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Update GIS Maps of Sewer System	Ops Cash	100%	100%	\$50,000	\$0	\$50,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sewer Master Plan	Ops Cash	100%	100%	\$150,000	\$0	\$0	\$150,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Replace Rodding Machine	Cash	100%	100%	\$40,000	\$0	\$0	\$40,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CCTV Program	Ops Cash	100%	100%	\$165,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000
Subtotal Collection System				\$3,222,500	\$194,750	\$244,750	\$509,750	\$619,750	\$244,750	\$294,750	\$194,750	\$194,750	\$194,750	\$335,000	\$194,750
Treatment Plant															
WWTP Upgrades Ph. 1	Debt	100%	100%	\$7,474,108	\$232,108	\$700,000	\$3,271,000	\$3,271,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Reclamation Field Improvements	Cash	85%	85%	\$120,700	\$120,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pond 2 & 3 Levee	Cash	100%	100%	\$120,000	\$60,000	\$0	\$60,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Facilities Automation	Cash	100%	100%	\$144,000	\$0	\$144,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
New Well	Cash	100%	100%	\$65,000	\$65,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sludge Removal	Cash	100%	100%	\$150,000	\$75,000	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Recycled Water Feasibility Study	Ops Cash	100%	100%	\$75,000	\$0	\$0	\$0	\$0	\$0	\$75,000	\$0	\$0	\$0	\$0	\$0
Temp Trailer at WRF	Cash	100%	100%	\$28,000	\$5,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$3,000	\$5,000	\$0	\$0	\$0
Replace WRF Operations Building and Shop	Reserves	100%	100%	\$3,000,000	\$0	\$0	\$0	\$0	\$100,000	\$1,000,000	\$1,900,000	\$0	\$0	\$0	\$0
Upgrade Chemical Storage Facilities	Cash	100%	100%	\$500,000	\$0	\$0	\$0	\$0	\$0	\$0	\$500,000	\$0	\$0	\$0	\$0
Phase 2 WWTP Upgrades	Debt	100%	100%	\$400,000	\$0	\$0	\$0	\$0	\$100,000	\$100,000	\$100,000	\$100,000	\$0	\$0	\$0
Subtotal Treatment				\$12,076,808	\$557,808	\$922,000	\$3,334,000	\$3,274,000	\$203,000	\$1,178,000	\$2,503,000	\$105,000	\$0	\$0	\$0
Total Estimated Project Costs (2016 \$'s)				\$15,299,308	\$752,558	\$1,166,750	\$3,843,750	\$3,893,750	\$447,750	\$1,472,750	\$2,697,750	\$299,750	\$194,750	\$335,000	\$194,750
Cash - Capital Fund				\$3,935,200	\$505,450	\$401,750	\$357,750	\$607,750	\$232,750	\$282,750	\$682,750	\$184,750	\$179,750	\$320,000	\$179,750
Cash - Operations Fund				\$490,000	\$15,000	\$65,000	\$215,000	\$15,000	\$15,000	\$90,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000
Debt - Capital Fund				\$7,874,108	\$232,108	\$700,000	\$3,271,000	\$3,271,000	\$100,000	\$100,000	\$100,000	\$100,000	\$0	\$0	\$0
Reserves				\$3,000,000	\$0	\$0	\$0	\$0	\$100,000	\$1,000,000	\$1,900,000	\$0	\$0	\$0	\$0
Total				\$15,299,308	\$752,558	\$1,166,750	\$3,843,750	\$3,893,750	\$447,750	\$1,472,750	\$2,697,750	\$299,750	\$194,750	\$335,000	\$194,750

Source: City of St. Helena.

2016 exist share

Table A-8
City of St. Helena Wastewater Rate Study
Existing Customers Share of CIP Costs in Future \$'s

DRAFT

Project	Funding Source	Percent Share Existing Customers	Percent Share Existing Customers in Rate Model	Total Cost	Fiscal Year Ending										
					2017 Current	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5	2023 Year 6	2024 Year 7	2025 Year 8	2026 Year 9	2027 Year 10
Estimated Project Costs (Future \$'s) [1]					<i>Annual Increase 3.1%</i>										
Sewer Collection System															
Miscellaneous Maintenance Projects	Cash	85%	85%	\$584,382	\$30,667	\$31,611	\$32,585	\$33,589	\$34,624	\$35,691	\$36,791	\$37,924	\$39,093	\$230,268	\$41,538
Replace 1% of Sewer Mains Annually	Cash	100%	100%	\$1,988,624	\$154,621	\$159,385	\$164,296	\$169,358	\$174,576	\$179,954	\$185,499	\$191,214	\$197,105	\$203,178	\$209,438
Crinella Pump Station Upgrades	Cash	100%	100%	\$561,995	\$0	\$0	\$82,148	\$479,847	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Add Sewer Pump Stations to SCADA	Cash	100%	100%	\$178,161	\$0	\$0	\$0	\$0	\$58,192	\$119,970	\$0	\$0	\$0	\$0	\$0
Wet Weather Flow Monitoring	Ops Cash	100%	100%	\$54,765	\$0	\$0	\$54,765	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Update GIS Maps of Sewer System	Ops Cash	100%	100%	\$53,128	\$0	\$53,128	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sewer Master Plan	Ops Cash	100%	100%	\$164,296	\$0	\$0	\$164,296	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Replace Rodding Machine	Cash	100%	100%	\$43,812	\$0	\$0	\$43,812	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
CCTV Program	Ops Cash	100%	100%	\$198,862	\$15,462	\$15,939	\$16,430	\$16,936	\$17,458	\$17,995	\$18,550	\$19,121	\$19,711	\$20,318	\$20,944
Subtotal Collection System				\$3,828,026	\$200,750	\$260,064	\$558,332	\$699,730	\$284,849	\$353,610	\$240,839	\$248,259	\$255,908	\$453,764	\$271,920
Treatment Plant															
WWTP Upgrades Ph. 1	Debt	100%	100%	\$8,258,933	\$239,259	\$743,798	\$3,582,746	\$3,693,130	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Reclamation Field Improvements	Cash	85%	85%	\$124,419	\$124,419	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Pond 2 & 3 Levee	Cash	100%	100%	\$127,567	\$61,849	\$0	\$65,718	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Facilities Automation	Cash	100%	100%	\$153,010	\$0	\$153,010	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
New Well	Cash	100%	100%	\$67,003	\$67,003	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Sludge Removal	Cash	100%	100%	\$157,003	\$77,311	\$79,693	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Recycled Water Feasibility Study	Ops Cash	100%	100%	\$89,977	\$0	\$0	\$0	\$0	\$0	\$89,977	\$0	\$0	\$0	\$0	\$0
Temp Trailer at WRF	Cash	100%	100%	\$32,189	\$5,154	\$3,188	\$3,286	\$3,387	\$3,492	\$3,599	\$3,710	\$6,374	\$0	\$0	\$0
Replace WRF Operations Building and Shop	Reserves	100%	100%	\$3,665,729	\$0	\$0	\$0	\$0	\$116,384	\$1,199,695	\$2,349,650	\$0	\$0	\$0	\$0
Upgrade Chemical Storage Facilities	Cash	100%	100%	\$618,329	\$0	\$0	\$0	\$0	\$0	\$0	\$618,329	\$0	\$0	\$0	\$0
Phase 2 WWTP Upgrades	Debt	100%	100%	\$487,495	\$0	\$0	\$0	\$0	\$116,384	\$119,970	\$123,666	\$127,476	\$0	\$0	\$0
Subtotal Treatment				\$13,781,654	\$574,994	\$979,688	\$3,651,751	\$3,696,517	\$236,259	\$1,413,241	\$3,095,354	\$133,850	\$0	\$0	\$0
Total Estimated Project Costs (Future \$'s)				\$17,609,680	\$775,744	\$1,239,752	\$4,210,083	\$4,396,247	\$521,108	\$1,766,852	\$3,336,193	\$382,109	\$255,908	\$453,764	\$271,920
2016 \$'s															
Cash - Capital Fund				\$3,935,200	\$505,450	\$401,750	\$357,750	\$607,750	\$232,750	\$282,750	\$682,750	\$184,750	\$179,750	\$320,000	\$179,750
Cash - Operations Fund				\$490,000	\$15,000	\$65,000	\$215,000	\$15,000	\$15,000	\$90,000	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000
Debt - Capital Fund				\$7,874,108	\$232,108	\$700,000	\$3,271,000	\$3,271,000	\$100,000	\$100,000	\$100,000	\$100,000	\$0	\$0	\$0
Reserves				\$3,000,000	\$0	\$0	\$0	\$0	\$100,000	\$1,000,000	\$1,900,000	\$0	\$0	\$0	\$0
Total				\$15,299,308	\$752,558	\$1,166,750	\$3,843,750	\$3,893,750	\$447,750	\$1,472,750	\$2,697,750	\$299,750	\$194,750	\$335,000	\$194,750
Future \$'s															
Cash - Capital Fund				\$4,636,494	\$521,023	\$426,887	\$391,846	\$686,181	\$270,883	\$339,214	\$844,328	\$235,512	\$236,198	\$433,446	\$250,976
Cash - Operations Fund				\$561,029	\$15,462	\$69,067	\$235,491	\$16,936	\$17,458	\$107,973	\$18,550	\$19,121	\$19,711	\$20,318	\$20,944
Debt - Capital Fund				\$8,746,428	\$239,259	\$743,798	\$3,582,746	\$3,693,130	\$116,384	\$119,970	\$123,666	\$127,476	\$0	\$0	\$0
Reserves				\$3,665,729	\$0	\$0	\$0	\$0	\$116,384	\$1,199,695	\$2,349,650	\$0	\$0	\$0	\$0
Total				\$17,609,680	\$775,744	\$1,239,752	\$4,210,083	\$4,396,247	\$521,108	\$1,766,852	\$3,336,193	\$382,109	\$255,908	\$453,764	\$271,920

Source: City of St. Helena.

fut exist share

[1] Estimated costs increased by historical ENR Construction Cost Index 20 year average increase.

Table A-9
City of St. Helena Wastewater Rate Study
Existing Wastewater Debt Service Schedule

DRAFT

Fiscal Year Ending	Principal	Interest	Total	Remaining Principal
2015	\$126,522	\$125,841	\$252,363	\$3,063,478
2016	\$133,696	\$121,538	\$255,233	\$2,929,783
2017	\$135,870	\$117,007	\$252,876	\$2,793,913
2018	\$141,957	\$111,947	\$253,904	\$2,651,957
2019	\$149,130	\$106,900	\$256,030	\$2,502,826
2020	\$151,304	\$101,586	\$252,890	\$2,351,522
2021	\$158,478	\$95,345	\$253,823	\$2,193,044
2022	\$166,739	\$88,653	\$255,392	\$2,026,304
2023	\$168,913	\$82,025	\$250,938	\$1,857,391
2024	\$176,087	\$75,582	\$251,669	\$1,681,304
2025	\$183,261	\$68,762	\$252,022	\$1,498,044
2026	\$191,522	\$60,788	\$252,310	\$1,306,522
2027	\$199,783	\$51,708	\$251,490	\$1,106,739
2028	\$209,130	\$42,220	\$251,351	\$897,609
2029	\$218,478	\$32,763	\$251,241	\$679,131
2030	\$227,826	\$23,359	\$251,185	\$451,304
2031	\$236,087	\$13,584	\$249,671	\$215,217
2032	\$105,435	\$6,500	\$111,935	\$109,783
2033	\$109,783	\$2,196	\$111,978	\$0

Source: City of St. Helena.

debt service

Table A-10
City of St. Helena Wastewater Rate Study
Operating Expenses Cost Escalation Factors

DRAFT

Expenses	Actuals Fiscal Year Ending				Estimated 2016	Total Change	Annual Avg. % Change
	2012	2013	2014	2015			
Salaries & Benefits	\$829,613	\$795,480	\$827,047	\$896,865	\$987,778	\$158,165	4.5%
Services	\$231,717	\$194,235	\$220,039	\$406,364	\$822,159	\$590,442	37.2%
Supplies	\$48,460	\$55,452	\$80,836	\$41,318	\$91,641	\$43,181	17.3%
Maintenance	\$81,882	\$72,003	\$68,000	\$118,625	\$167,473	\$85,591	19.6%
Taxes, Insurances & Contribs.	\$76,885	\$54,533	\$64,460	\$73,328	\$122,416	\$45,531	12.3%
Total Expenses	\$1,268,557	\$1,171,702	\$1,260,382	\$1,536,500	\$2,191,467	\$922,910	14.6%
Engineering News Record	<i>Dec 2011</i>	<i>Dec 2012</i>	<i>Dec 2013</i>	<i>Dec 2014</i>	<i>Dec 2015</i>		
ENR Construction Cost Index 20-City [1]	9,172.00	9,412.00	9,668.00	9,936.00	10,135.00	963.00	2.5%
ENR Construction Cost Index San Francisco	10,204.79	10,355.09	10,898.84	10,915.84	11,155.41	950.62	2.3%
Bureau of Labor Statistics							
Consumer Price Index - California	232.99	237.71	241.53	244.81	250.71	17.73	1.9%
Consumer Price Index - San Francisco	234.33	239.53	245.71	252.27	260.29	25.96	2.7%

Source: City of St. Helena, Bureau of Labor Statistics, and the Engineering New Record.

index

[1] Engineering News Record (ENR) Consumer Cost Index (CCI) change 1995 to 2015:

ENR CCI 1995	5,524	Change	<u>Annual Avg. % Change</u>
ENR CCI 2015	10,135	4,611	3.1%

Table A-11
City of St. Helena Wastewater Rate Study
Existing Asset Depreciation DRAFT

Asset Category	Current Depreciation
Buildings	\$22,667
Vehicles	\$18,067
Equipment	\$43,216
Improvements	\$239,170
Pipes	\$16,925
Total	\$340,044

Source: City of St. Helena and HEC. cur depr

Table A-12
City of St. Helena Wastewater Rate Study
Estimated Depreciation of Projected Assets

DRAFT

Improvement Type	Average Life of Asset (years)	Fiscal Year Ending										
		2017 Current Year	2018 Year 1	2019 Year 2	2020 Year 3	2021 Year 4	2022 Year 5	2023 Year 6	2024 Year 7	2025 Year 8	2026 Year 9	2027 Year 10
Sewer Collection System [1]												
Miscellaneous Maintenance Projects	10	\$3,608	\$7,327	\$11,160	\$15,112	\$19,186	\$23,384	\$27,713	\$32,174	\$36,774	\$63,864	\$68,751
Reclamation Field Improvements	50	\$2,927	\$2,927	\$2,927	\$2,927	\$2,927	\$2,927	\$2,927	\$2,927	\$2,927	\$2,927	\$2,927
Replace 1% of Sewer Mains Annually	80	\$1,933	\$3,925	\$5,979	\$8,096	\$10,278	\$12,527	\$14,846	\$17,236	\$19,700	\$22,240	\$24,858
New Well	40	\$1,675	\$1,675	\$1,675	\$1,675	\$1,675	\$1,675	\$1,675	\$1,675	\$1,675	\$1,675	\$1,675
Crinella Pump Station Upgrades	50	\$0	\$0	\$1,643	\$11,240	\$11,240	\$11,240	\$11,240	\$11,240	\$11,240	\$11,240	\$11,240
Add Sewer Pump Stations to SCADA	10	\$0	\$0	\$0	\$0	\$5,819	\$17,816	\$17,816	\$17,816	\$17,816	\$17,816	\$17,816
Wet Weather Flow Monitoring	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Update GIS Maps of Sewer System	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Sewer Master Plan	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Replace Rodding Machine	15	\$0	\$0	\$2,921	\$2,921	\$2,921	\$2,921	\$2,921	\$2,921	\$2,921	\$2,921	\$2,921
CCTV Program	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Subtotal Sewer Collection		\$10,143	\$15,854	\$26,306	\$41,971	\$54,046	\$72,491	\$79,138	\$85,990	\$93,053	\$122,683	\$130,188
Treatment Plant [1]												
WWTP Upgrades Ph. 1	80	\$2,991	\$12,288	\$57,073	\$103,237	\$103,237	\$103,237	\$103,237	\$103,237	\$103,237	\$103,237	\$103,237
Pond 2 & 3 Levee	40	\$1,546	\$1,546	\$3,189	\$3,189	\$3,189	\$3,189	\$3,189	\$3,189	\$3,189	\$3,189	\$3,189
Facilities Automation	20	\$0	\$7,650	\$7,650	\$7,650	\$7,650	\$7,650	\$7,650	\$7,650	\$7,650	\$7,650	\$7,650
Sludge Removal	40	\$1,933	\$3,925	\$3,925	\$3,925	\$3,925	\$3,925	\$3,925	\$3,925	\$3,925	\$3,925	\$3,925
Recycled Water Feasibility Study	5	\$0	\$0	\$0	\$0	\$0	\$17,995	\$17,995	\$17,995	\$17,995	\$17,995	\$17,995
Temp Trailer at WRF	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Replace WRF Operations Building and Shop	80	\$0	\$0	\$0	\$0	\$1,455	\$16,451	\$45,822	\$45,822	\$45,822	\$45,822	\$45,822
Upgrade Chemical Storage Facilities	50	\$0	\$0	\$0	\$0	\$0	\$0	\$12,367	\$12,367	\$12,367	\$12,367	\$12,367
Phase 2 WWTP Upgrades	40	\$0	\$0	\$0	\$0	\$2,910	\$5,909	\$9,000	\$12,187	\$12,187	\$12,187	\$12,187
Subtotal Treatment Plant		\$6,470	\$25,410	\$71,837	\$118,001	\$122,366	\$158,357	\$203,186	\$206,372	\$206,372	\$206,372	\$206,372
Total Cumulative Depreciation		\$16,613	\$41,264	\$98,143	\$159,973	\$176,412	\$230,848	\$282,324	\$292,363	\$299,425	\$329,056	\$336,560

Source: City of St. Helena.

new depr

[1] Depreciation in future dollars.

Table A-13
City of St. Helena Wastewater Rate Study
Calculated Winter Use and Total Billed Water Use for Sewer by Customer Type **DRAFT**

Customer Type	Winter Months Jan-Mar 2015	# Units /Accounts /Students	Winter Months Jan-Mar 2015	Average	Average in Gallons
Residential	Total Water Use		Use per Unit per Day in HCF	HCF per Day	GPD
Single Family	34,381	1,503	0.25	0.24	175
Multi-Family	9,259	669	0.15	0.15	106
Mobile Homes (Vineyard Valley)	4,331	211	0.23	0.22	157
Residential	47,971	2,383	0.22	0.21	154
Non-Residential					
Car Wash	126	1	1.40	1.40	1,005
Church/CommCenter	254	13	0.22	0.22	156
Commercial	3,803	126	0.34	0.34	241
Grocery	260	3	0.96	0.96	691
Laundry	524	1	5.82	5.82	4,181
Mixed Retail w/ Food	496	3	1.84	1.84	1,319
Motel w/ Food	1,361	2	7.56	7.56	5,429
Motel w/out Food	2,303	8	3.20	3.20	2,297
Restaurant	3,225	19	1.89	1.89	1,354
Napa Valley College	1,620	1	18.00	18.00	12,925
Service Station	199	5	0.44	0.44	318
Merryvale Winery	235	2	1.31	1.31	937
Sutter Home (industrial) [1]	8,009	1	88.99	4.45	3,195
School	1,304	1,437	0.01	0.01	7

Source: City of St. Helena.

winter

[1] Only 5% of winter water use for this account is estimated to reach the wastewater plant.

ATTACHMENT B

MODIFIED WASTEWATER RATE STRUCTURE

METHODOLOGY

- 1. Determine Number of Sewer Meter Equivalents** – First establish the daily flow for one EDU (equivalent dwelling unit). This flow is the flow per day for a 5/8” meter since almost all residential units have a 5/8” water meter. Calculate the number of sewer meter equivalents using the current City meter ratios. *Using metered water usage data, it is determined that residential units use 280 gallons per day on average; however, only 180 gallons per day reaches the wastewater treatment plant, determined by average winter water use. **Table B-1** shows the flow per day by meter size and the calculation of estimated sewer meter equivalents for non-residential customers.*
- 2. Allocate Revenue Requirement to Residential and Non-Residential** – Single Family residential customers are allocated costs based on percentage of flow. They are then further allocated to fixed base costs collected in flat monthly charges by dwelling unit and use costs collected in consumption charges. Non-residential costs, including multi-family, are allocated based on percentage of flow by non-residential customers. Non-residential costs are further allocated to fixed base costs collected in flat monthly charges by meter size and use costs collected in consumption charges. ***Table B-2** shows the allocation of revenue requirement. Costs are allocated 57% to residential and 43% to non-residential.*
- 3. Calculate Rates** – Divide base residential costs by the number of residential units. Divide residential use costs by typical residential winter water use. Divide non-residential base costs by the number of sewer meter equivalents. Divide non-residential use costs by typical non-residential winter water use. *Calculated rates are shown in **Table B-2**.*
- 4. Compare Rates** – A comparison of current and calculated wastewater rates for the next ten years, through fiscal year 2027, is included in **Table B-3**.

Table B-1
City of St. Helena Wastewater Rate Study
Calculation of Non-Residential Meter Equivalents

DRAFT

Item	Number of Meters	Meter Ratios	Flow per Day in Gallons	Estimated Sewer Meter Equivalents
Single Family (One EDU)			180	
Non-Residential				
5/8"	150	1.00	180	150
1"	73	2.43	438	178
1.5"	40	4.82	867	193
2"	32	7.68	1,383	246
3"	7	14.36	2,585	101
4"	7	23.91	4,303	167
6"	6	47.77	8,598	287
Total Estimated Non-Residential Sewer Equivalents				1,321

Source: City of St. Helena and HEC.

m equivs

Table B-2
City of St. Helena Wastewater Rate Study
Allocation of Revenue Requirement to Residential and Non-Residential

DRAFT

Item		Fiscal Year Ending										
		2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Revenue Requirement		\$2,988,676	\$3,654,719	\$3,972,893	\$4,165,579	\$4,360,853	\$4,600,108	\$4,834,174	\$5,047,859	\$5,271,823	\$5,478,620	\$5,673,230
Residential												
Base Costs	29%	\$875,800	\$1,070,977	\$1,164,214	\$1,220,679	\$1,277,902	\$1,348,013	\$1,416,604	\$1,479,222	\$1,544,852	\$1,605,452	\$1,662,480
Use Costs	28%	\$827,072	\$1,011,389	\$1,099,439	\$1,152,762	\$1,206,802	\$1,273,012	\$1,337,786	\$1,396,920	\$1,458,899	\$1,516,127	\$1,569,983
Number of Units (single family only)		1,503	1,508	1,513	1,518	1,523	1,528	1,533	1,538	1,543	1,548	1,553
Base Annual Cost		\$582.70	\$710.20	\$769.47	\$804.14	\$839.07	\$882.21	\$924.07	\$961.78	\$1,001.20	\$1,037.11	\$1,070.50
Monthly Base Charge per Residential Unit		\$48.56	\$59.18	\$64.12	\$67.01	\$69.92	\$73.52	\$77.01	\$80.15	\$83.43	\$86.43	\$89.21
Estimated Annual Billed Usage		186,767	187,212	187,658	188,103	188,548	188,994	189,439	189,884	190,329	190,775	191,220
Use Charge per HCF		\$4.43	\$5.40	\$5.86	\$6.13	\$6.40	\$6.74	\$7.06	\$7.36	\$7.67	\$7.95	\$8.21
Non-Residential												
Base Costs	30%	\$906,540	\$1,108,567	\$1,205,077	\$1,263,523	\$1,322,755	\$1,395,327	\$1,466,325	\$1,531,141	\$1,599,075	\$1,661,801	\$1,720,831
Use Costs	13%	\$379,265	\$463,786	\$504,162	\$528,614	\$553,395	\$583,756	\$613,459	\$640,576	\$668,997	\$695,240	\$719,936
Meter Equivalents		1,321	1,321	1,321	1,321	1,321	1,321	1,321	1,321	1,321	1,321	1,321
Base Charge per Meter Equivalent		\$686.51	\$839.50	\$912.59	\$956.85	\$1,001.70	\$1,056.66	\$1,110.43	\$1,159.51	\$1,210.96	\$1,258.46	\$1,303.16
Monthly Base Charge per Meter Equivalent		\$57.21	\$69.96	\$76.05	\$79.74	\$83.48	\$88.06	\$92.54	\$96.63	\$100.91	\$104.87	\$108.60
5/8"	1.0	\$57.21	\$69.96	\$76.05	\$79.74	\$83.48	\$88.06	\$92.54	\$96.63	\$100.91	\$104.87	\$108.60
1"	2.4	\$139.11	\$170.11	\$184.92	\$193.89	\$202.98	\$214.12	\$225.01	\$234.96	\$245.38	\$255.01	\$264.07
1.5"	4.8	\$275.61	\$337.04	\$366.38	\$384.15	\$402.16	\$424.22	\$445.81	\$465.51	\$486.16	\$505.24	\$523.18
2"	7.7	\$439.43	\$537.36	\$584.14	\$612.47	\$641.19	\$676.36	\$710.78	\$742.20	\$775.13	\$805.53	\$834.15
3"	14.4	\$821.65	\$1,004.76	\$1,092.24	\$1,145.21	\$1,198.90	\$1,264.67	\$1,329.02	\$1,387.77	\$1,449.34	\$1,506.20	\$1,559.70
4"	23.9	\$1,367.69	\$1,672.49	\$1,818.10	\$1,906.27	\$1,995.64	\$2,105.13	\$2,212.24	\$2,310.03	\$2,412.52	\$2,507.16	\$2,596.21
6"	47.8	\$2,732.78	\$3,341.80	\$3,632.73	\$3,808.91	\$3,987.47	\$4,206.24	\$4,420.26	\$4,615.65	\$4,820.44	\$5,009.53	\$5,187.48
Use Charge per HCF	Est. Annual Billed Use											
Car Wash	511	\$3.37	\$4.12	\$4.48	\$4.70	\$4.92	\$5.19	\$5.46	\$5.70	\$5.95	\$6.18	\$6.40
Religious Places/Community Centers	1,030	\$3.66	\$4.48	\$4.87	\$5.10	\$5.34	\$5.64	\$5.92	\$6.18	\$6.46	\$6.71	\$6.95
Commercial	15,423	\$4.21	\$5.14	\$5.59	\$5.86	\$6.14	\$6.47	\$6.80	\$7.10	\$7.42	\$7.71	\$7.98
Groceries and Mortuaries	1,054	\$10.14	\$12.39	\$13.47	\$14.13	\$14.79	\$15.60	\$16.39	\$17.12	\$17.88	\$18.58	\$19.24
Laundry	2,125	\$3.75	\$4.59	\$4.99	\$5.23	\$5.47	\$5.77	\$6.07	\$6.34	\$6.62	\$6.88	\$7.12
Mixed Retail w/ Food	2,012	\$6.63	\$8.10	\$8.81	\$9.24	\$9.67	\$10.20	\$10.72	\$11.19	\$11.69	\$12.15	\$12.58
Motel with Food	5,520	\$7.79	\$9.52	\$10.35	\$10.85	\$11.36	\$11.99	\$12.59	\$13.15	\$13.74	\$14.27	\$14.78
Motel without Food	9,340	\$4.52	\$5.52	\$6.00	\$6.29	\$6.59	\$6.95	\$7.30	\$7.63	\$7.96	\$8.28	\$8.57
Restaurant	13,079	\$10.02	\$12.25	\$13.32	\$13.96	\$14.62	\$15.42	\$16.20	\$16.92	\$17.67	\$18.36	\$19.02
Napa Valley College	6,570	\$3.61	\$4.42	\$4.80	\$5.03	\$5.27	\$5.56	\$5.84	\$6.10	\$6.37	\$6.62	\$6.85
Service Station	807	\$4.74	\$5.80	\$6.30	\$6.61	\$6.92	\$7.30	\$7.67	\$8.01	\$8.37	\$8.69	\$9.00
Winery Production (Merryvale/Spottswoode)	953	\$17.04	\$20.84	\$22.65	\$23.75	\$24.87	\$26.23	\$27.57	\$28.78	\$30.06	\$31.24	\$32.35
Sutter Home Winery	1,624	\$4.43	\$5.42	\$5.89	\$6.17	\$6.46	\$6.82	\$7.16	\$7.48	\$7.81	\$8.12	\$8.41
Schools	5,288	\$1.84	\$2.26	\$2.45	\$2.57	\$2.69	\$2.84	\$2.98	\$3.12	\$3.25	\$3.38	\$3.50

Source: City of St. Helena and HEC.

curr alloc rates

Table B-3
City of St. Helena Wastewater Rate Study
Calculated Wastewater Rates - Modified Current Rate Structure

DRAFT

Land Use	Current Rates Effective	2017 2/8/2017	2018 11/8/2017	2019 11/8/2018	2020 11/8/2019	2021 11/8/2020	2022 11/8/2021	2023 11/8/2022	2024 11/8/2023	2025 11/8/2024	2026 11/8/2025	2027 11/8/2026
Residential												
Flat Monthly Charge per Unit	\$47.35	\$48.56	\$59.18	\$64.12	\$67.01	\$69.92	\$73.52	\$77.01	\$80.15	\$83.43	\$86.43	\$89.21
Use Charge per HCF	\$3.94	\$4.43	\$5.40	\$5.86	\$6.13	\$6.40	\$6.74	\$7.06	\$7.36	\$7.67	\$7.95	\$8.21
Non-Residential												
Flat Monthly Charge per Account												
5/8"	\$42.12	\$57.21	\$69.96	\$76.05	\$79.74	\$83.48	\$88.06	\$92.54	\$96.63	\$100.91	\$104.87	\$108.60
1"	\$102.42	\$139.11	\$170.11	\$184.92	\$193.89	\$202.98	\$214.12	\$225.01	\$234.96	\$245.38	\$255.01	\$264.07
1.5"	\$202.92	\$275.61	\$337.04	\$366.38	\$384.15	\$402.16	\$424.22	\$445.81	\$465.51	\$486.16	\$505.24	\$523.18
2"	\$323.53	\$439.43	\$537.36	\$584.14	\$612.47	\$641.19	\$676.36	\$710.78	\$742.20	\$775.13	\$805.53	\$834.15
3"	\$604.94	\$821.65	\$1,004.76	\$1,092.24	\$1,145.21	\$1,198.90	\$1,264.67	\$1,329.02	\$1,387.77	\$1,449.34	\$1,506.20	\$1,559.70
4"	\$1,006.96	\$1,367.69	\$1,672.49	\$1,818.10	\$1,906.27	\$1,995.64	\$2,105.13	\$2,212.24	\$2,310.03	\$2,412.52	\$2,507.16	\$2,596.21
6"	\$2,012.00	\$2,732.78	\$3,341.80	\$3,632.73	\$3,808.91	\$3,987.47	\$4,206.24	\$4,420.26	\$4,615.65	\$4,820.44	\$5,009.53	\$5,187.48
Use Charge per HCF												
Car Wash	\$2.85	\$3.37	\$4.12	\$4.48	\$4.70	\$4.92	\$5.19	\$5.46	\$5.70	\$5.95	\$6.18	\$6.40
Religious Places/Community Centers	\$3.64	\$3.66	\$4.48	\$4.87	\$5.10	\$5.34	\$5.64	\$5.92	\$6.18	\$6.46	\$6.71	\$6.95
Commercial	\$3.64	\$4.21	\$5.14	\$5.59	\$5.86	\$6.14	\$6.47	\$6.80	\$7.10	\$7.42	\$7.71	\$7.98
Groceries and Mortuaries	\$11.87	\$10.14	\$12.39	\$13.47	\$14.13	\$14.79	\$15.60	\$16.39	\$17.12	\$17.88	\$18.58	\$19.24
Laundry	\$3.34	\$3.75	\$4.59	\$4.99	\$5.23	\$5.47	\$5.77	\$6.07	\$6.34	\$6.62	\$6.88	\$7.12
Mixed Retail w/ Food	\$6.79	\$6.63	\$8.10	\$8.81	\$9.24	\$9.67	\$10.20	\$10.72	\$11.19	\$11.69	\$12.15	\$12.58
Motel with Food	\$8.75	\$7.79	\$9.52	\$10.35	\$10.85	\$11.36	\$11.99	\$12.59	\$13.15	\$13.74	\$14.27	\$14.78
Motel without Food	\$4.35	\$4.52	\$5.52	\$6.00	\$6.29	\$6.59	\$6.95	\$7.30	\$7.63	\$7.96	\$8.28	\$8.57
Restaurant	\$11.68	\$10.02	\$12.25	\$13.32	\$13.96	\$14.62	\$15.42	\$16.20	\$16.92	\$17.67	\$18.36	\$19.02
Napa Valley College	\$3.64	\$3.61	\$4.42	\$4.80	\$5.03	\$5.27	\$5.56	\$5.84	\$6.10	\$6.37	\$6.62	\$6.85
Service Station	\$4.70	\$4.74	\$5.80	\$6.30	\$6.61	\$6.92	\$7.30	\$7.67	\$8.01	\$8.37	\$8.69	\$9.00
Winery Production (Merryvale/Spottswoode)	\$20.94	\$17.04	\$20.84	\$22.65	\$23.75	\$24.87	\$26.23	\$27.57	\$28.78	\$30.06	\$31.24	\$32.35
Sutter Home Winery	\$4.27	\$4.43	\$5.42	\$5.89	\$6.17	\$6.46	\$6.82	\$7.16	\$7.48	\$7.81	\$8.12	\$8.41
Schools	\$3.17	\$1.84	\$2.26	\$2.45	\$2.57	\$2.69	\$2.84	\$2.98	\$3.12	\$3.25	\$3.38	\$3.50

Source: City of St. Helena and HEC.

calc rates