# ZONE 7
## WATER AGENCY

## Wholesale Water Rate Study

Final Report / October 2018

RAFTELIS

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# Study Background

## Background of the Agency

The Zone 7 Water Agency (Agency) was established in 1957 to provide both untreated water to support agriculture and treated wholesale water to the Livermore-Amador Valley area. In 1961, the Agency contracted for State Water Project (SWP) water deliveries through the South Bay Aqueduct.

The Agency's water resources include imported water from the SWP, local groundwater storage, surface water captured in the Del Valle Reservoir, and offsite groundwater banking in Kern County. Historically, the majority of the Agency's water demand has been met by imported water from the SWP; approximately 80 percent of the current water demand is met through SWP water.

The Agency provides treated water service through its four retail water suppliers (retailers) – the City of Pleasanton, Dublin San Ramon Services District, California Water Service Company, and City of Livermore – to a population of approximately 250,000. The Agency also provides treated wholesale water service to six direct customers – Lawrence Livermore Lab, Livermore Area Recreation and Park District (L.A.R.P.D.), Veterans Hospital, Wente Brothers Vineyard, the State of California Department of Water Resources (California DWR), and the East Bay Regional Park District.

For the untreated water program, the Agency provides untreated water from a variety of sources to 81 separate water users under the Rules and Regulations Governing Untreated Water Service. Untreated water customers may request water deliveries of up to 8,104 acre-feet (AF) per year.

## Background of the Study

In 2018, the Agency engaged Raftelis to conduct a Treated and Untreated Water Wholesale Rate Study. The study involved analyzing various financial plan scenarios for treated water rates, reviewing the untreated water rate structure, and developing treated and untreated wholesale water rates.

Raftelis has developed the treated wholesale water rate studies for the Agency for the 2015 and 2018 rate years. This study marks the first cost of service study conducted for the untreated wholesale water enterprise.

The major objectives of the study include the following:

- Ensure financial sufficiency for the two enterprises to meet operation and maintenance (O&M) costs, fund capital projects, and develop sufficient reserve levels
- Develop treated wholesale water rates for years 2019 through 2022
- Develop untreated and temporary untreated wholesale water rates for 2019
- Increase revenue stability, minimize customer impacts, and maintain fairness and equitability of rates

# Treated Water Rates

This section of the report includes the assumptions, analyses, scenarios, and resulting rates for the Agency's wholesale treated water enterprise.

## Background and Objectives

Like many other utilities in California, the Agency is faced with financial challenges stemming from the water usage reductions due to increased conservation. Historically, water usage projections from retailers and direct customers have been higher than actual water usage. The Agency currently relies on a variable charge per unit of water as its main source of rate revenue, encompassing approximately 65 percent of total rate revenue. The discrepancy between projected versus actual usage can cause revenue shortfalls that negatively impact the financial sufficiency of the Agency's treated wholesale water enterprise.

The major objectives for the treated wholesale water enterprise include the following:

- Develop a financial plan for the treated wholesale water enterprise to ensure financial sufficiency, meet O&M costs, fund capital projects, and develop sufficient reserve levels
- Develop a four-year rate structure that increases revenue stability while minimizing customer impacts
- Develop treated wholesale water rates that are fair and equitable to both the Agency's retailers and direct customers

## Key Assumptions

The study period uses the fiscal year (FY) 2019 budget as the base year. The model projects the financial plan through FY 2022, including calculated rate revenues, projected non-rate revenues and expenses, estimated capital funding, and the resulting cash flow and reserve balance projections. The rates developed in this study will recover the Agency's required revenue in calendar years (CY) 2019 through 2022 based on the data and assumptions contained in this report. The Agency will periodically review rates and take a measured approach with any potential revenue adjustments hereafter if any changed circumstances arise.

Certain cost escalation assumptions and inputs are incorporated into the study to adequately project future costs. These assumptions are based on industry standards and discussions with and/or direction from Agency staff. The escalation assumptions include inflation factors to project future O&M expenses and a Consumer Price Index (CPI) adjustment to rates. **Table 1** presents all inflationary assumptions; any other cost or revenue not shown in this chart are not inflated (for example, miscellaneous non-rate revenues are not inflated in future years).

**Table 1: Inflationary Assumptions**

| Inflation Factors | FY 2019 | FY 2020 | FY 2021 | FY 2022 |
|---|---|---|---|---|
| **General** | 3% | 3% | 3% | 3% |
| **Salary** | 3% | 3% | 3% | 3% |
| **Benefits** | 3% | 3% | 3% | 3% |
| **Utilities** | 5% | 5% | 5% | 5% |
| **Supplies** | 3% | 3% | 3% | 3% |
| **Capital** | 0% | 0% | 0% | 0% |
| **Energy** | 5% | 5% | 5% | 5% |
| **CPI for Rates** | 3% | 3% | 3% | 3% |

Agency staff worked with retailers and direct customers to determine the projected water demand for the study period. **Table 2** shows the annual water demand projections for all customers in AF; **Table 3** shows the same projections in hundred cubic feet (ccf).

**Table 2: Water Demand Projections (AF)**

| Water Sales Projections (AF) | FY 2019 | FY 2020 | FY 2021 | FY 2022 |
|---|---|---|---|---|
| City of Pleasanton | 10,360 | 10,670 | 10,990 | 11,320 |
| Dublin San Ramon Services District | 10,090 | 10,390 | 10,700 | 11,020 |
| California Water Service Company | 6,390 | 6,580 | 6,780 | 6,980 |
| City of Livermore | 5,970 | 6,150 | 6,330 | 6,520 |
| Lawrence Livermore Lab | 300 | 300 | 300 | 300 |
| L.A.R.P.D. | 3 | 3 | 3 | 3 |
| Veterans Hospital | 120 | 120 | 120 | 120 |
| Wente Brothers | 32 | 32 | 32 | 32 |
| State of California DWR | 0 | 0 | 0 | 0 |
| East Bay Regional Park District | 17 | 17 | 17 | 17 |
| **Total Water Sales (AF)** | **33,282** | **34,262** | **35,272** | **36,312** |

**Table 3: Water Demand Projections (ccf)**

| Water Sales Projections (ccf) | FY 2019 | FY 2020 | FY 2021 | FY 2022 |
|---|---|---|---|---|
| City of Pleasanton | 4,512,816 | 4,647,852 | 4,787,244 | 4,930,992 |
| Dublin San Ramon Services District | 4,395,204 | 4,525,884 | 4,660,920 | 4,800,312 |
| California Water Service Company | 2,783,484 | 2,866,248 | 2,953,368 | 3,040,488 |
| City of Livermore | 2,600,532 | 2,678,940 | 2,757,348 | 2,840,112 |
| Lawrence Livermore Lab | 130,680 | 130,680 | 130,680 | 130,680 |
| L.A.R.P.D. | 1,307 | 1,307 | 1,307 | 1,307 |
| Veterans Hospital | 52,272 | 52,272 | 52,272 | 52,272 |
| Wente Brothers | 13,939 | 13,939 | 13,939 | 13,939 |
| State of California DWR | 0 | 0 | 0 | 0 |
| East Bay Regional Park District | 7,405 | 7,405 | 7,405 | 7,405 |
| **Total Water Sales (ccf)** | **14,497,639** | **14,924,527** | **15,364,483** | **15,817,507** |

# Current Water Rates

The Agency's current treated wholesale water rates include a fixed charge per customer based on a two-year rolling average of water usage and a variable charge per ccf of water. The fixed charge recovers approximately 35 percent of rate revenue and the variable charge recovers the remaining 65 percent. **Table 4** shows the Agency's current rate structure for CY 2018 and beyond. The current rates for CY 2018 are increased by the CPI for Rates factor in **Table 1** to determine the water rates used to project revenues under the current rate structure in future years.

**Table 4: Current Treated Water Rates with CPI Increase**

| Current Treated Water Rates | CY 2018 | CY 2019 | CY 2020 | CY 2021 | CY 2022 |
|---|---|---|---|---|---|
| Variable Charge ($/ccf) | $2.04 | $2.10 | $2.16 | $2.22 | $2.29 |
| Annual Fixed Charge (all customers) | $15,849,610 | $16,325,100 | $16,814,856 | $17,319,300 | $17,838,876 |

# Reserve Policy

The Agency has a current reserve policy for Fund 100 (Operating Fund) that includes minimum, target, and maximum reserve levels. Fund 100 has four reserves: Operating, Drought Contingency, Emergency, and Rate Stabilization reserves. The Operating reserve mitigates against cash flow risks and unanticipated O&M expenses. The Drought Contingency reserve prepares for potential droughts and the revenue shortfalls that come with such conditions. The Emergency reserve helps protect the Agency from asset failures, emergencies, and natural disasters. The Rate Stabilization reserve allows the Agency to stabilize rates during periods of increased expenses.

The current reserve policy in effect is as follows:

**Operating Reserve**

- Minimum: 60 days of O&M expenses
- Target: 90 days of O&M expenses
- Maximum: 120 days of O&M expenses

**Drought Contingency Reserve**

- Minimum: 5 percent of water sales revenue
- Target: 10 percent of water sales revenue
- Maximum: 20 percent of water sales revenue

**Emergency Reserve**

- Minimum: 2 percent of capital assets
- Target: 2.5 percent of capital assets
- Maximum: 3 percent of capital assets

**Rate Stabilization Reserve**

- Minimum: 10 percent of water sales revenue
- Target: 15 percent of water sales revenue
- Maximum: 20 percent of water sales revenue

# Financial Plan Scenarios

The study involved an analysis of three financial plan scenarios, which include the status quo and two additional cost scenarios. All scenarios include projected O&M expenses and capital funding based on input from Agency staff. Projected costs consist of salaries and benefits, purchased water, treatment chemicals, debt service, capital funding, and other miscellaneous expenses. The current rates in all scenarios are increased annually with a 3.0 percent CPI factor.

The two variable factors in each financial plan scenario include water supply reliability project costs and reserve funding. The costs for water supply reliability projects represent costs associated with additional water supply to increase reliability in future years. Water supply reliability project costs are widely variable, given the unpredictable nature of water supply sources, and ultimately results in three differing cost scenarios that are realistic and feasible for the near future.

**Status Quo (Base Case)**

- Four-year cost of reliability projects is $9.0 million
- No revenue adjustments above the 3.0 percent CPI factor

**Reduced Reliability Costs (Board Adopted)**

- Four-year cost of reliability projects is $3.0 million
- Funding Operating, Drought Contingency, and Emergency reserves at target levels
- Revenue adjustments of 3.7 percent each year above 3.0 percent CPI factor

**Additional Reliability Costs (Raftelis Recommended)**

- Four-year cost of reliability projects is $15.2 million
- Funding Operating, Drought Contingency, and Emergency reserves at target levels
- Revenue adjustments of 6.6 percent each year above 3.0 percent CPI factor

## Scenario 1: Status Quo (Base Case)

Scenario 1 represents the status quo and shows the Agency's financial standing if there were no additional revenue adjustments above the 3.0 percent CPI factor. The water supply reliability project costs total $9.0 million over the four-year study period. **Table 5** shows the cash flow projections under this scenario.

The rate revenues (Lines 1-4) are calculated using the water demand projections for each FY in **Table 3** and the average of CPI inflated CY rates from **Table 4**. The FY variable charge is equal to the average of the two CY charges[1], equal to $2.07 per ccf in FY 2019 (average of $2.04 and $2.10). The estimated FY 2019 variable charge is multiplied by the projections in **Table 3** to determine the volume-based rate revenue (Line 2). The fixed charge revenue (Line 3) in FY 2019 is equal to $16,087,355, or the average between CY 2018 and CY 2019 fixed charges in **Table 4** (average of $15,849,610 and $16,325,100).

The expenses (Lines 11-16) include the projected O&M expenses from the Agency's budget (Line 12), additional water supply reliability costs (Line 13), and existing and proposed debt service (Lines 14-15). The Agency is not planning to issue debt during the study period.

The net cash flow before capital funding is equal to the total revenues (Line 9) less total expenses (Line 16). The Accumulated Capital Outlay (ACO) transfer and capital funding are derived from data provided by Agency staff. The total net cash flow (Line 22) is equal to the net cash flow before capital funding (Line 18) less capital funding costs (Lines 19-20). The Fund 100 ending balance (Line 25) includes the net cash flow. The Fund 100 reserve targets (excluding Rate Stabilization) are in line with the Agency's current reserve policy.

Under Scenario 1, the Agency will have negative reserve levels in Fund 100 by the end of FY 2022. **Figure 1** shows the projected fund balances (green bars) with target reserve levels (black line), omitting the Rate Stabilization reserve.

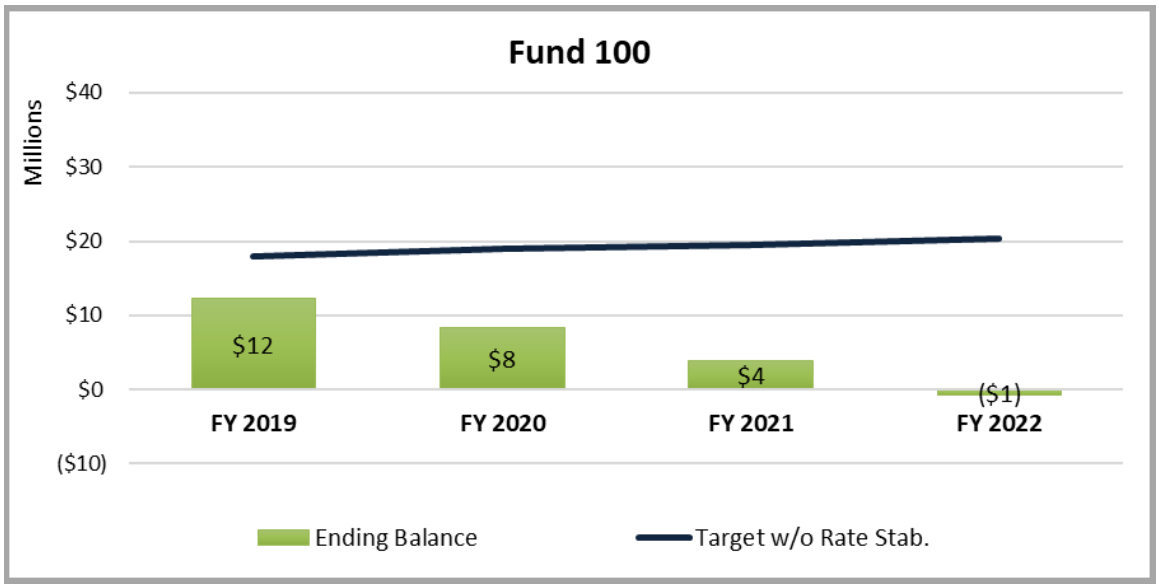
[1] FY 2019 is the period from July 2018 to June 2019, which incorporates half of the months in CY 2018 (July 2018 to December 2018) and half of the months in CY 2019 (January 2019 to June 2019). Therefore, the FY charge is estimated using the average of two CY charges.

## Table 5: Cash Flow Projections (Scenario 1)

| Line | Cash Flow Projections | FY 2019 | FY 2020 | FY 2021 | FY 2022 |
|---|---|---|---|---|---|
| 1 | **Revenue** | | | | |
| 2 | Volume-Based Rate Revenue | $30,010,113 | $31,789,243 | $33,648,218 | $35,668,479 |
| 3 | Fixed Charge Revenue | $16,087,355 | $16,569,978 | $17,067,078 | $17,579,088 |
| 4 | Total Additional Revenue | $0 | $0 | $0 | $0 |
| 5 | | | | | |
| 6 | **Total Rate Revenue** | **$46,097,468** | **$48,359,221** | **$50,715,296** | **$53,247,567** |
| 7 | Investment Earnings | $127,019 | $102,651 | $60,834 | $15,491 |
| 8 | Other Revenue[2] | $1,146,345 | $1,177,925 | $1,207,666 | $1,238,300 |
| 9 | **Total Revenue** | $47,370,832 | $49,639,796 | $51,983,797 | $54,501,357 |
| 10 | | | | | |
| 11 | **Expenses** | | | | |
| 12 | O&M Expenses | $32,649,908 | $35,524,235 | $37,238,845 | $39,022,338 |
| 13 | Water Supply & Reliability Projects | $1,500,000 | $2,000,000 | $2,500,000 | $3,000,000 |
| 14 | Existing Debt Service | $1,692,410 | $3,123,338 | $3,122,338 | $3,124,213 |
| 15 | Proposed Debt Service | $0 | $0 | $0 | $0 |
| 16 | **Total Expenses** | **$35,842,318** | **$40,647,573** | **$42,861,183** | **$45,146,551** |
| 17 | | | | | |
| 18 | **Net Cash Flow before Capital Funding** | **$11,528,514** | **$8,992,223** | **$9,122,614** | **$9,354,806** |
| 19 | ACO Transfers | $197,406 | $203,328 | $203,328 | $203,328 |
| 20 | Capital Funding | $12,300,000 | $12,792,000 | $13,303,680 | $13,835,827 |
| 21 | | | | | |
| 22 | **Net Cash Flow** | **($968,892)** | **($4,003,105)** | **($4,384,394)** | **($4,684,349)** |
| 23 | | | | | |
| 24 | **Fund 100** | | | | |
| 25 | Ending Balance | $12,278,745 | $8,275,641 | $3,891,247 | ($793,102) |
| 26 | Target (no Rate Stabilization) | $17,974,479 | $18,909,392 | $19,567,781 | $20,260,773 |

[2] Other revenues include untreated water revenues at approximately $1.0 million annually and other miscellaneous revenue (rents, royalties, well permit fees, inspection fees, etc.).

Figure 1: Fund 100 Ending Balances (Scenario 1)




# Scenario 2: Reduced Reliability (Board Adopted)

Scenario 2 represents the cost scenario that was adopted by the Agency's Board of Directors on October 17, 2018. This scenario includes reduced water supply reliability project costs (from Scenario 1), totaling $3.0 million over the four-year study period. The additional revenue adjustments of 3.7 percent each year over the 3.0 percent CPI factor is included to fund reserve targets for the Operating, Drought Contingency, and Emergency reserves in Fund 100.

**Table 6** shows the resulting cash flow projections under this scenario. Compared to **Table 5**, the total additional revenue (Line 4), investment earnings (Line 7), water supply and reliability projects (Line 13), net cash flows before and after capital funding (Lines 18 and 22), and ending balances and reserve targets (Lines 24-26) have changed.

The total additional revenue (Line 4) represents the additional 3.7 percent revenue adjustments. Investment earnings (Line 7) are estimated based on fund balances; since the Fund 100 balances have changed due to the revenue adjustments, the investment earnings differ. Water supply and reliability projects (Line 13) are reduced from $9.0 million to $3.0 million in this scenario.

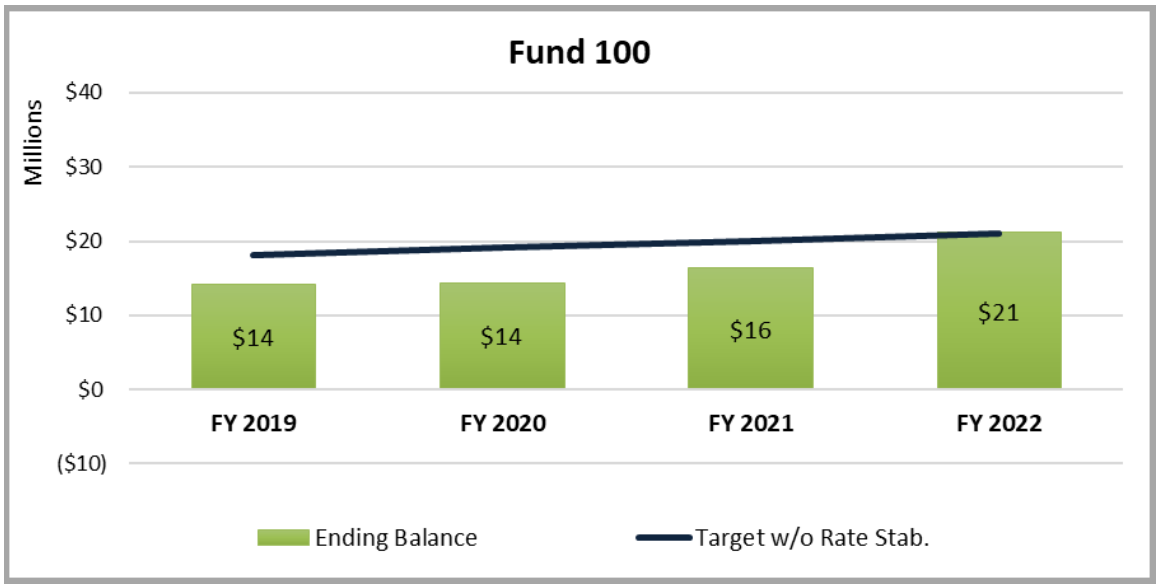
Under Scenario 2, the Agency will fund reserves (omitting the Rate Stabilization reserves) at target levels at the end of the study period in FY 2022. **Figure 2** shows the ending balances for Scenario 2.

## Table 6: Cash Flow Projections (Scenario 2)

| Line | Cash Flow Projections | FY 2019 | FY 2020 | FY 2021 | FY 2022 |
|---|---|---|---|---|---|
| 1 | **Revenue** | | | | |
| 2 | Volume-Based Rate Revenue | $30,010,113 | $31,789,243 | $33,648,218 | $35,668,479 |
| 3 | Fixed Charge Revenue | $16,087,355 | $16,569,978 | $17,067,078 | $17,579,088 |
| 4 | Total Additional Revenue | $852,803 | $2,717,039 | $4,831,308 | $7,230,384 |
| 5 | | | | | |
| 6 | **Total Rate Revenue** | **$46,950,271** | **$51,076,260** | **$55,546,604** | **$60,477,951** |
| 7 | Investment Earnings | $127,019 | $142,463 | $154,054 | $187,846 |
| 8 | Other Revenue[3] | $1,146,345 | $1,177,925 | $1,207,666 | $1,238,300 |
| 9 | **Total Revenue** | **$48,223,635** | **$52,396,647** | **$56,908,324** | **$61,904,097** |
| 10 | | | | | |
| 11 | **Expenses** | | | | |
| 12 | O&M Expenses | $32,649,908 | $35,524,235 | $37,238,845 | $39,022,338 |
| 13 | Water Supply & Reliability Projects | $500,000 | $500,000 | $1,000,000 | $1,000,000 |
| 14 | Existing Debt Service | $1,692,410 | $3,123,338 | $3,122,338 | $3,124,213 |
| 15 | Proposed Debt Service | $0 | $0 | $0 | $0 |
| 16 | **Total Expenses** | **$34,842,318** | **$39,147,573** | **$41,361,183** | **$43,146,551** |
| 17 | | | | | |
| 18 | **Net Cash Flow before Capital Funding** | **$13,381,317** | **$13,249,074** | **$15,547,141** | **$18,757,546** |
| 19 | ACO Transfers | $197,406 | $203,328 | $203,328 | $203,328 |
| 20 | Capital Funding | $12,300,000 | $12,792,000 | $13,303,680 | $13,835,827 |
| 21 | | | | | |
| 22 | **Net Cash Flow** | **$883,911** | **$253,746** | **$2,040,133** | **$4,718,391** |
| 23 | | | | | |
| 24 | **Fund 100** | | | | |
| 25 | Ending Balance | $14,131,548 | $14,385,295 | $16,425,428 | $21,143,819 |
| 26 | Target (no Rate Stabilization) | $18,059,759 | $19,181,096 | $20,050,911 | $20,983,811 |

[3] Other revenues include untreated water revenues at approximately $1.0 million annually and other miscellaneous revenue (rents, royalties, well permit fees, inspection fees, etc.).

Figure 2: Fund 100 Ending Balances (Scenario 2)




# Scenario 3: Additional Reliability (Raftelis Recommended)

Scenario 3 represents the cost scenario recommended by Raftelis. This scenario includes increased water supply reliability project costs (from Scenario 1), totaling $15.2 million over the four-year study period. The additional revenue adjustments of 6.6 percent each year over the 3.0 percent CPI factor is included to fund reserve targets for the Operating, Drought Contingency, and Emergency reserves in Fund 100.

The project cost projections of $15.2 million represent potential additional costs for water supply reliability, as determined by Agency staff. Given the unpredictable and unstable costs that can be associated with obtaining and maintaining additional water supply, Raftelis recommends a more conservative approach in the instance that water supply reliability project costs are higher than anticipated.

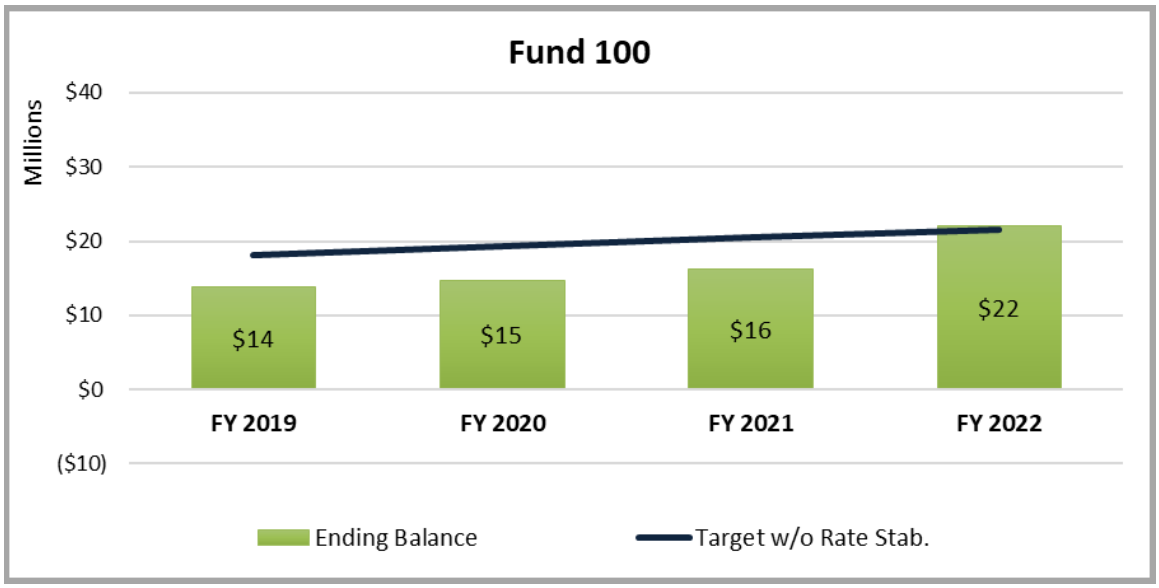
**Table 7** shows the resulting cash flow projections for Scenario 3. Under this scenario, the Agency will fund reserves (omitting the Rate Stabilization reserves) at target levels at the end of the study period in FY 2022. **Figure 3** shows the ending balances for Scenario 3.

## Table 7: Cash Flow Projections (Scenario 3)

| Line | Cash Flow Projections | FY 2019 | FY 2020 | FY 2021 | FY 2022 |
|---|---|---|---|---|---|
| 1 | **Revenue** | | | | |
| 2 | Volume-Based Rate Revenue | $30,010,113 | $31,789,243 | $33,648,218 | $35,668,479 |
| 3 | Fixed Charge Revenue | $16,087,355 | $16,569,978 | $17,067,078 | $17,579,088 |
| 4 | Total Additional Revenue | $1,521,216 | $4,892,889 | $8,817,146 | $13,382,723 |
| 5 | | | | | |
| 6 | **Total Rate Revenue** | **$47,618,684** | **$53,252,110** | **$59,532,442** | **$66,630,290** |
| 7 | Investment Earnings | $127,019 | $142,527 | $154,930 | $191,185 |
| 8 | Other Revenue[4] | $1,146,345 | $1,177,925 | $1,207,666 | $1,238,300 |
| 9 | **Total Revenue** | **$48,892,048** | **$54,572,562** | **$60,895,039** | **$68,059,775** |
| 10 | | | | | |
| 11 | **Expenses** | | | | |
| 12 | O&M Expenses | $32,649,908 | $35,524,235 | $37,238,845 | $39,022,338 |
| 13 | Water Supply & Reliability Projects | $1,500,000 | $2,000,000 | $5,500,000 | $6,150,000 |
| 14 | Existing Debt Service | $1,692,410 | $3,123,338 | $3,122,338 | $3,124,213 |
| 15 | Proposed Debt Service | $0 | $0 | $0 | $0 |
| 16 | **Total Expenses** | **$35,842,318** | **$40,647,573** | **$45,861,183** | **$48,296,551** |
| 17 | | | | | |
| 18 | **Net Cash Flow before Capital Funding** | **$13,049,730** | **$13,924,989** | **$15,033,856** | **$19,763,224** |
| 19 | ACO Transfers | $197,406 | $203,328 | $203,328 | $203,328 |
| 20 | Capital Funding | $12,300,000 | $12,792,000 | $13,303,680 | $13,835,827 |
| 21 | | | | | |
| 22 | **Net Cash Flow** | **$552,324** | **$929,661** | **$1,526,848** | **$5,724,069** |
| 23 | | | | | |
| 24 | **Fund 100** | | | | |
| 25 | Ending Balance | $13,799,962 | $14,729,622 | $16,256,470 | $21,980,539 |
| 26 | Target (no Rate Stabilization) | $18,126,601 | $19,398,681 | $20,449,495 | $21,599,045 |

[4] Other revenues include untreated water revenues at approximately $1.0 million annually and other miscellaneous revenue (rents, royalties, well permit fees, inspection fees, etc.).

Figure 3: Fund 100 Ending Balances (Scenario 3)




# Recommendations

A discussion of the final recommendations and results should begin with reviewing the major objectives set forth in the beginning of the study:

- Develop a financial plan to ensure financial sufficiency, meet O&M costs, fund capital projects, and develop sufficient reserve levels
- Develop a four-year rate structure that increases revenue stability while minimizing customer impacts
- Develop treated wholesale water rates that are fair and equitable

The financial plan scenarios in the previous section were analyzed carefully to determine the resulting financial and rate impacts of each scenario. Based on direction from the Agency's Board of Directors, Scenario 2 was selected to determine the proposed rates.

Currently, 80 percent of water demand is met through SWP water. However, this demand can only be met if supply conditions for SWP are favorable. During unfavorable conditions, the Agency must purchase water from other sources which may drive up costs considerably. The funds used for additional water supply reliability projects, totaling $3.0 million over the study period, will increase water supply reliability for the Agency.

The revenue adjustments proposed in Scenario 2 (3.0 percent CPI increase, with an additional 3.7 percent per year) produce sufficient revenues to ensure the utility's financial sufficiency and cover all costs. The Agency is expected to meet reserve targets without funding the Rate Stabilization reserve. Although this is a reasonable approach to reduce customer impacts during this study period, Raftelis recommends that the Agency fund the Rate Stabilization reserve in the future to have the ability to stabilize rates in case of increased or unexpected expenses.

However, increasing revenues alone does not address another problem the Agency faces: revenue instability. Due to increased conservation over the past few years, fueled mainly by the five-year drought conditions in prior years and conservation mandates, there is a discrepancy between projected sales and actual sales. Agency staff receives projections from its customers, which are ultimately used to determine the variable charge. When actual sales are

less than projected sales, there is a revenue shortfall. The Agency's costs, however, are mostly fixed; in instances of reduced revenue, the Agency must draw from reserves to offset the shortfall.

To address the issue of revenue instability, the proposed fixed revenue recovery percentages increase incrementally each year. The current fixed revenue recovery percentage is equal to 35 percent. Based on discussions with Agency staff, the fixed revenue percentage will increase to 45 percent by the end of the study period, which is an increase of 2.5 percent each year. This incremental change in fixed revenue recovery will increase revenue stability over time and decrease potential customer bill impacts. By recovering a higher proportion of costs through the fixed charge, the Agency is better protected from fluctuations in water demand.

## Proposed Water Rates

The final objective involves determining fair and equitable rates for the selected cost scenario, Scenario 2. The resulting rate structure includes a variable charge per ccf of water usage and an annual fixed charge for each retailer and direct customer.

The proposed water rates are based on Scenario 2 costs and include the revenue adjustments of 3.7 percent over the 3.0 percent CPI increase. The revenue requirement, or the revenue to be recovered from rates, is equal to the total rate revenue amount in **Table 6**. The revenue requirement is based on FY, and the resulting rates are for CY.

For example, the calculated rates assume that the revenues recovered in the first half of FY 2019 are determined by CY 2018 rates. The remainder of the FY revenue requirement is used to calculate CY 2019 rates based on a half-year amount of demand. **Table 8** shows the proposed CY 2019 rates that have a 37.5 percent fixed revenue recovery percentage (an increase of 2.5 percent over the current 35 percent).

The variable charge is a uniform rate per ccf of water based on the water sales projections shown in **Table 3**. The fixed charge is distributed to each customer based on their two-year rolling average of water sales. For example, the fixed charge for CY 2019 is determined using the average of FY 2017 and FY 2018 water sales for each customer. Using a two-year rolling average serves to offset any yearly fluctuations in water demand, increase revenue stability for the Agency, and increase rate stability for its customers.

### Table 8: Proposed Treated Water Rates (CY 2019)

| Proposed Rates | Current CY 2018 | Proposed CY 2019 |
|---|---|---|
| **Variable Revenue Recovery** | 65.0% | 62.5% |
| **Variable Charge ($/ccf)** | **$2.04** | **$2.01** |
| | | |
| **Fixed Revenue Recovery** | 35.0% | 37.5% |
| **Annual Fixed Charge** | | |
| City of Pleasanton | $4,748,097 | $5,971,854 |
| Dublin San Ramon Services District | $4,934,327 | $5,811,601 |
| California Water Service Company | $3,086,763 | $3,672,251 |
| City of Livermore | $2,917,197 | $3,378,443 |
| **Retailers** | **$15,686,384** | **$18,834,149** |
| Lawrence Livermore Lab | $127,329 | $465,889 |
| L.A.R.P.D. | $708 | $1,704 |
| Veterans Hospital | $20,552 | $41,034 |
| Wente Brothers | $11,279 | $11,184 |
| State of California DWR | $18 | $22 |
| East Bay Regional Park District | $3,340 | $9,116 |
| **Direct Customers** | **$163,226** | **$528,949** |
| **Total** | **$15,849,610** | **$19,363,098** |

**Table 9** shows the proposed water rates for the entire study period. The annual fixed charge amount shown is the total for all customers. The Agency will divide the fixed charge amount by the two-year rolling average as water sales data is updated each year.

### Table 9: Proposed Treated Water Rates

| Proposed Rates | Current CY 2018 | Proposed CY 2019 | Proposed CY 2020 | Proposed CY 2021 | Proposed CY 2022 |
|---|---|---|---|---|---|
| **Fixed Revenue Recovery** | 35.0% | 37.5% | 40.0% | 42.5% | 45.0% |
| **Annual Fixed Charge** | $15,849,610 | $19,363,098 | $21,497,919 | $25,716,705 | $28,713,461 |
| | | | | | |
| **Variable Revenue Recovery** | 65.0% | 62.5% | 60.0% | 57.5% | 55.0% |
| **Variable Charge ($/ccf)** | $2.04 | $2.01 | $2.10 | $2.06 | $2.15 |

# Customer Impacts

A simple way of determining customer impacts is to identify the total charge per unit of water. The variable charge is already charged on a per ccf basis. The fixed charge can be translated to a to a charge per unit of water by determining the weighted fixed charge per ccf of water from the estimated two-year rolling average.

The number shown in this section of the report are rounded and therefore some numbers will not add up to the exact amount shown in the tables.

**Table 10** shows the resulting charges determined in **Table 9** as a total charge per ccf of water for the study period.

### Table 10: Proposed Treated Water Rates as Variable Charge

| Weighted Charges | CY 2018 | CY 2019 | CY 2020 | CY 2021 | CY 2022 |
|---|---|---|---|---|---|
| Variable Charge ($/ccf) | $2.04 | $2.01 | $2.10 | $2.06 | $2.15 |
| Weighted Fixed Charge ($/ccf) | $1.14 | $1.32 | $1.43 | $1.67 | $1.81 |
| **Total Charge ($/ccf)** | **$3.18** | **$3.33** | **$3.53** | **$3.73** | **$3.96** |

**Table 11** shows the proposed approximate dollar amount impact to an average customer at different levels of usage derived from the weighted charges shown in **Table 10**. The actual dollar amount impact to individual customers will be dependent upon their respective retailer.

### Table 11: Customer Impacts

| Customer Impacts | CY 2018 | CY 2019 | CY 2020 | CY 2021 | CY 2022 |
|---|---|---|---|---|---|
| **Monthly Water Usage (ccf)** | 10 | 10 | 10 | 10 | 10 |
| Variable Charges | $20.40 | $20.10 | $21.00 | $20.60 | $21.50 |
| Fixed Charges | $11.38 | $13.18 | $14.31 | $16.73 | $18.14 |
| Total Charges | $31.78 | $33.28 | $35.31 | $37.33 | $39.64 |
| **Dollar Amount Difference** | | **$1.50** | **$2.03** | **$2.02** | **$2.31** |
| | | | | | |
| **Monthly Water Usage (ccf)** | 15 | 15 | 15 | 15 | 15 |
| Variable Charges | $30.60 | $30.15 | $31.50 | $30.90 | $32.25 |
| Fixed Charges | $17.07 | $19.77 | $21.46 | $25.09 | $27.21 |
| Total Charges | $47.67 | $49.92 | $52.96 | $55.99 | $59.46 |
| **Dollar Amount Difference** | | **$2.24** | **$3.04** | **$3.03** | **$3.47** |
| | | | | | |
| **Monthly Water Usage (ccf)** | 20 | 20 | 20 | 20 | 20 |
| Variable Charges | $40.80 | $40.20 | $42.00 | $41.20 | $43.00 |
| Fixed Charges | $22.76 | $26.36 | $28.62 | $33.45 | $36.28 |
| Total Charges | $63.56 | $66.56 | $70.62 | $74.65 | $79.28 |
| **Dollar Amount Difference** | | **$2.99** | **$4.06** | **$4.03** | **$4.63** |

**Table 12** summarizes the information in **Table 11** and provides a quick overview of customer impacts by average level of usage.

### Table 12: Customer Impacts Summary

| Dollar Amount Difference | CY 2019 | CY 2020 | CY 2021 | CY 2022 |
|---|---|---|---|---|
| 10 ccf | $1.50 | $2.03 | $2.02 | $2.31 |
| 15 ccf | $2.24 | $3.04 | $3.03 | $3.47 |
| 20 ccf | $2.99 | $4.06 | $4.03 | $4.63 |

# Untreated Water Rates

This section of the report includes the cost analysis and resulting rates for the untreated wholesale water enterprise.

## Current Water Rates

The Agency's current untreated wholesale water rates consist of four types of rates: an untreated water rate, a temporary untreated water rate, a non-scheduled untreated water rate, and a surplus untreated water rate.

**Table 13** shows the current untreated water rates in dollars per AF for CY 2018.

**Table 13: Current Untreated Water Rates**

| Current Untreated Water Rates | CY 2018 |
|---|---|
| Untreated Water Rate | $129 |
| Temporary Untreated Water Rate | $837 |
| Non-Scheduled Untreated Water Rate | $837 |
| Surplus Untreated Water Rate | $240 |

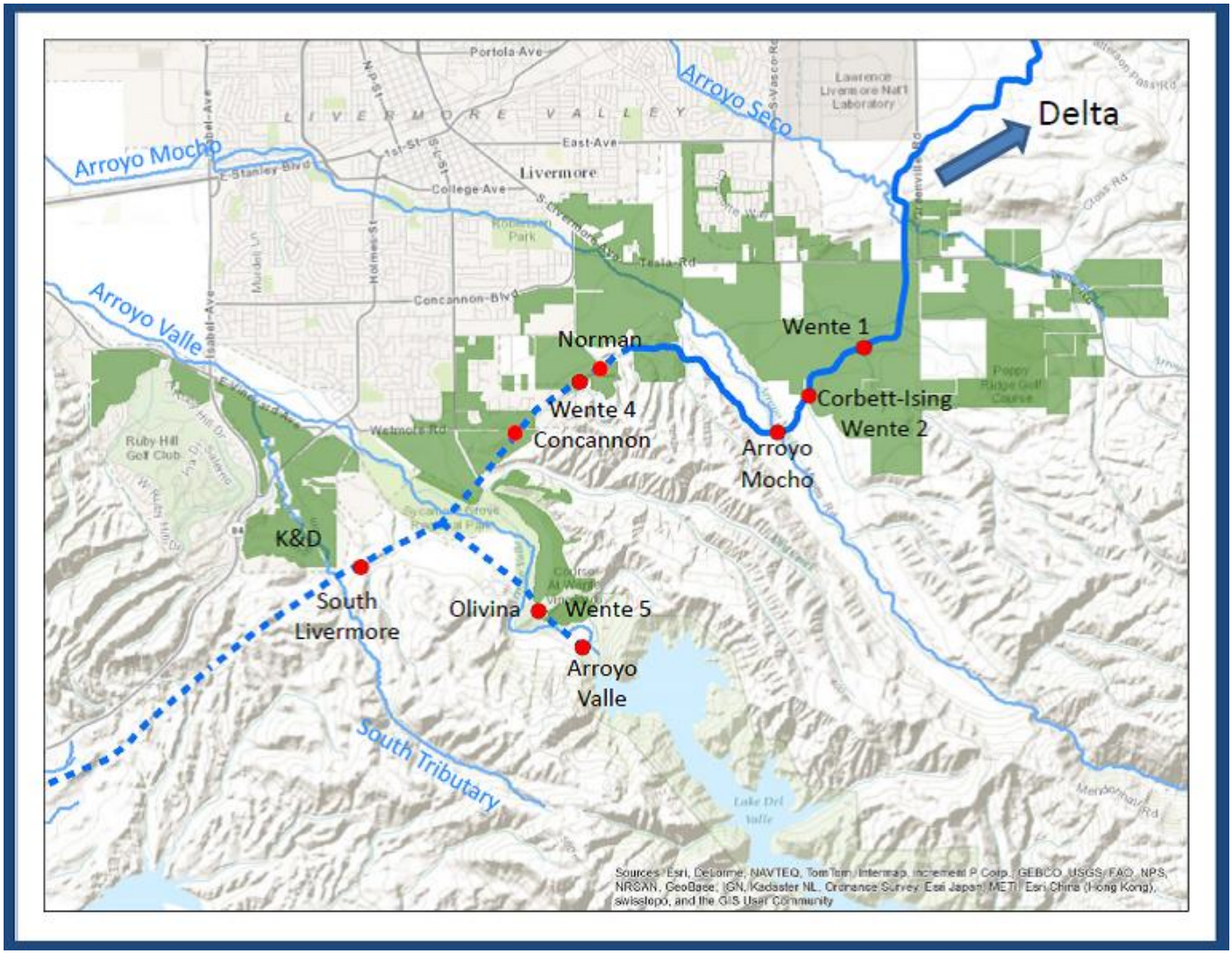
## Background

The Agency began delivering untreated water to its service area from the California Department of Water Resources (DWR) via the South Bay Aqueduct in 1962. Over the years, deliveries increased with the agricultural development of South Livermore. The Agency provides untreated water service to 81 untreated water users that may collectively request water deliveries of up to 8,104 AF per year.

Historically, the Agency has had untreated water contracts with 81 separate users, however, only seven of these contractors receive water from the Agency directly from a South Bay Aqueduct turnout. These seven water users are referred to as "turnout water users." The remaining 74 "remote water users" receive their water deliveries through the turnout water users' respective conveyance facilities. The Agency's current practice is to invoice the seven turnout water users for all water delivered through the turnouts, which includes water wheeled, or delivered through their respective facilities, to remote water users. The turnout water users, in turn, invoice the respective individual remote water users.

**Figure 4** shows the map of the untreated water turnouts and delivery via the South Bay Aqueduct.

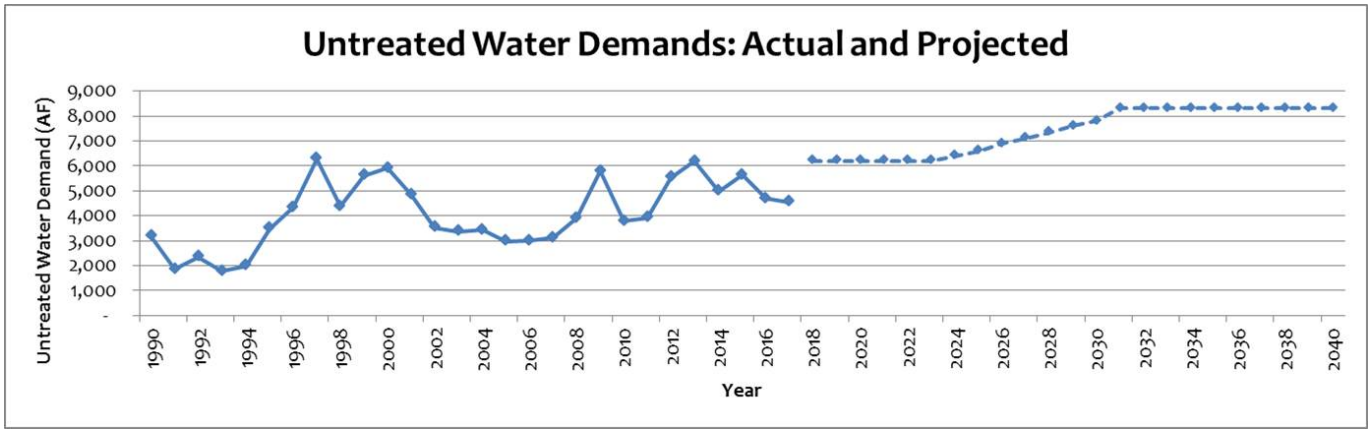
**Figure 4: Map of Untreated Water Turnouts**




The Agency has historically had contracts with the separate users but transitioned from individual contracts to the Rules and Regulations Governing Water Service in 2011. The Rules and Regulations Governing Water Service reflect the actual relationship that the Agency has with its untreated water customers. This transition allowed the Agency to more effectively administer the untreated water program by clearly documenting and maintaining a maximum annual allocation for each water user and provide a process for water transfers within the service area.

**Figure 5** shows a history of the untreated water deliveries and projected future deliveries.

**Figure 5: Untreated Water Deliveries**




# Methodology

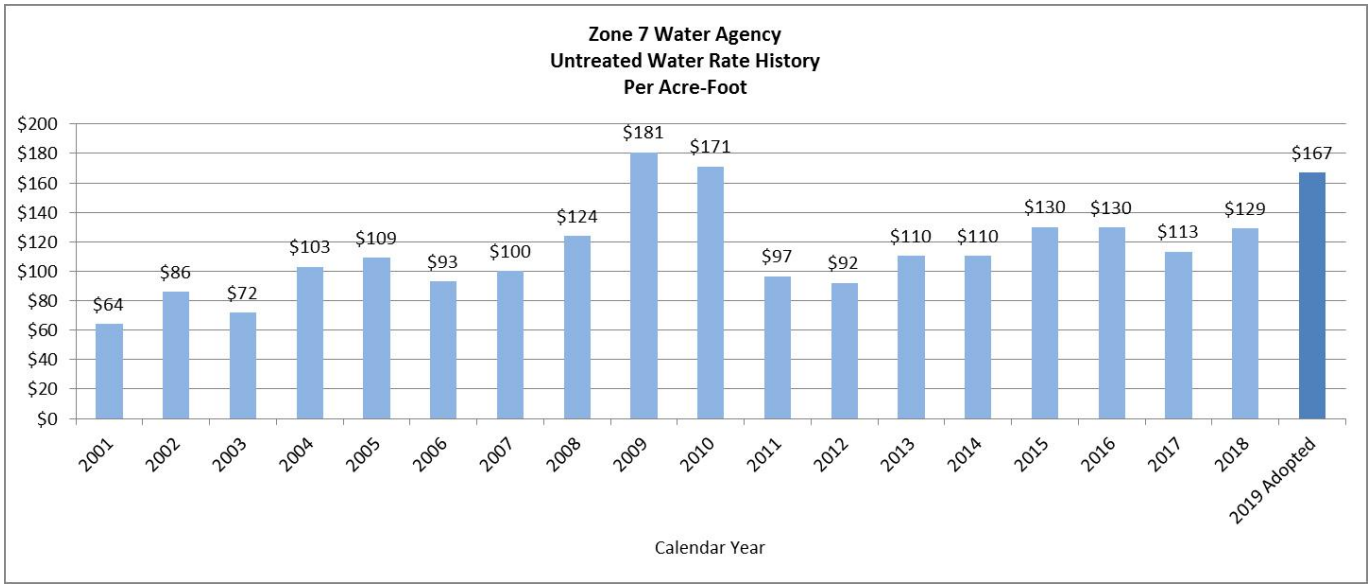
The costs of providing untreated water service are recovered through untreated water rates, shown in **Table 13**. The current rates are based on the cost of imported water, supplemental water purchases, Bay-Delta related costs, and an administrative fee, which is based on actual staff labor for administration of the untreated water program.

To determine the untreated water rates for CY 2019, Raftelis performed a cost of service analysis to verify the ongoing costs of the untreated water program. The current methodology for determining rates, which calculates water rates by dividing the total untreated water costs by expected deliveries in AF, was retained for the updated rates. Several additional cost components were included in this analysis to encompass the Agency's entire water supply portfolio, which includes local water, SWP water supplies, water transfers, local groundwater, and offsite groundwater banking programs.

Maintaining a diverse water supply portfolio ensures that the Agency has reliable and adequate supplies to meet its customer demands for both the treated and untreated water programs. For example, use of local and offsite groundwater supplies allows the Agency to deliver surface water from the South Bay Aqueduct to untreated water customers during droughts or emergencies while meeting municipal and industrial demands with groundwater. The proposed changes for the CY 2019 rates result from these additional components, which are informed by current water supply conditions, and changes to the operational plan and overhead costs.

**Figure 6** shows the history of the untreated water rates and the proposed rate for CY 2019.

**Figure 6: Untreated Water Rates**




# Water Supply Portfolio

The Agency's water sources are used to meet treated and untreated water demand. Treated water demand is from municipal (retailers) and industrial (direct) customers and untreated water demand is from agricultural customers. Excess surface water supplies are placed into storage locally or remotely for future use. Water supply costs are included in the rate calculation for both treated and untreated water deliveries.

**State Water Project/Table A**

The Agency's portion of the annual SWP allocation represents the largest portion of "new" water supply each year. The maximum allocation is 80,619 AF per year. The projected long-term average allocation is 62 percent of the maximum or about 50,000 AF. In the past ten years, the average has been closer to 40,000 AF.

**State Water Project/Article 21**

SWP surplus water is made available in instances when the San Luis Reservoir is full. This is in addition to Table A water.

**Turnback Pool**

This water supply source is from other SWP contractors wishing to sell excess supply.

**Byron Bethany Irrigation District**

Whenever Byron Bethany Irrigation District (BBID), a non-SWP contractor, has surplus supply, water can be made available through a transfer agreement subject to approvals by the DWR and the Bureau of Reclamation. The amount of water varies up to 5,000 AF per year. For planning purposes, this water supply source is presumed to be unavailable for CY 2019. BBID water is subject to a fixed service charge of approximately $90,000 per year regardless of whether the Agency receives water from this source.

**Lake Del Valle/Local Water**
The Agency has water rights to Arroyo Valle water captured in Lake Del Valle, which becomes available for use once it has been stored for 30 days. The annual average yield from this source is 7,300 AF. Water captured in Lake Del Valle during the current year needs to be used within the following year.

**Yuba Accord**
Water from this source is available mainly in dry years through an agreement with the DWR and Yuba County Water Agency. The Agency receives approximately 1 percent of available water.

**Dry Year Transfer Program**
During dry years, the State Water Contractors negotiate water purchases north of the Delta, which makes additional water available to SWP contractors.

**Local Groundwater**
The Agency recharges the Livermore Valley groundwater basin with surface water and uses groundwater for peaking conditions, dry years, and emergencies. The Agency only pumps what it has stored; over the last 15 years, the average recharge is 8,000 AF per year and the average pumping rate is 7,300 AF per year. The estimated maximum pumping capacity is 34,000 AF per year. The basin has 126,000 AF of operational storage capacity, which is the storage capacity above historical lows.

**State Water Project/Article 56 (Carryover)**
SWP Table A water rolls over as carryover for use in future years for individual SWP contractors. In most years, this water remains in the San Luis Reservoir, but in wet years such as 2017 the water is gradually converted to SWP water and can no longer be used by the Agency. When water is converted, SWP Article 21 water is offered as surplus water. Each year, the Agency typically reserves 10,000 to 15,000 AF as carryover to mitigate against fluctuating Table A allocations.

**Offsite Groundwater Banks**
The Agency has agreements with Semitropic Water Storage District and Cawelo Water District in Kern County for 78,000 AF and 120,000 AF of storage capacity, respectively. The Agency recovers water from these banks as needed during dry years.

## Staff Programs

The Agency is committed to providing a reliable supply of high quality water for municipal, industrial, and agricultural customers and spends a considerable amount of time managing the water supply portfolio. Staff program costs are calculated on actual hours worked by Agency staff and an hourly rate of pay. **Table 14** describes the various staff programs in effect.

Table 14: Staff Program Descriptions

| Program | Description |
|---|---|
| Untreated Water Program | Execution, management, and administration of the Untreated Water Program |
| Water Utility Planning | Operational planning of the water utility and the water supply, day-to-day water supply management activities |
| Supply Source and Conveyance Administration | General administration and support related to the Supply Source and Conveyance Program |
| State Water Project | Administration of the State Water Project water supply |
| Byron Bethany Irrigation District | Administration of the Byron Bethany Irrigation District and associated water purchases |
| Bay-Delta | Administration related to the Bay-Delta, including the Bay-Delta Conservation Plan, Delta Habit Conveyance and Conservation Program, and now the CalWater Fix |
| Local Water Rights | Acquisition, maintenance, and renewal of local water rights |
| Other Water Supplies | Evaluation of water supplies not specific to SWP, Byron Bethany Irrigation District, and Bay-Delta |
| Water Storage Administration | General administration and support related to the Water Storage Program |
| Groundwater Basin Management and Monitoring | Groundwater and stormwater monitoring, including toxic site monitoring; groundwater management, including artificial recharge management |
| Semitropic | Administration, operation, and maintenance of Semitropic water supply, including recovery and storage |
| Cawelo | Administration, operation, and maintenance of Cawelo water supply, including recovery and storage |

# Recommendations

The proposed rates developed in this study maintain the current rate structure and are based on the methodologies employed in previous years. However, based on discussion with Agency staff, Raftelis recommends that the Agency eliminate the surplus untreated water rate.

Surplus untreated water deliveries are available only in years when the supplies exceed customer demand. While the rate has been set every year, it has not been utilized in more than 10 years. Water supply conditions have changed, which result in the reduction of available surplus water. The Agency also proactively stores excess water in local and off-site banking programs to bolster supply reliability in dry years or emergencies.

Should the need arise in future years to offer surplus untreated water, Agency staff will determine the rate based on the current water supply and operations plan for discussion and adoption by the Board.

# Proposed Water Rates

The proposed untreated water rates include the untreated water rate, the temporary untreated water rate, and non-scheduled untreated water rate. The latter two rates are the same for billing purposes.

The untreated water rate is calculated using the following methodology:

1. Project water deliveries to the untreated and treated water systems based on delivery requests and trends
2. Determine staff costs for different programs that serve one or both of the systems – all overhead costs are shared between treated and untreated water deliveries and untreated water program administration costs are applied directly to untreated water deliveries
3. Apply water supply unit costs per unit of water purchased, factoring in certain supplies such as local Lake Del Valle water that have no or minimal costs
4. Project amount of water purchased from each source
5. Calculate total costs of water supply by multiplying unit costs with amount of water purchased and include all fixed costs (for water rights, etc.)
6. Divide all costs by the water deliveries of each system dependent upon benefit and use
7. Resulting untreated water rate is $167 per AF for CY 2019

**Table 15** shows the proposed untreated water rate calculation. The proposed untreated water rates are based on total planned water deliveries (Line 3) for water supply costs (Line 22) and staff program costs (Line 37). Untreated water program costs (Line 41) are allocated to untreated water deliveries (Line 1).

The total supply and program costs are divided by the planned deliveries in AF to determine the unit cost. All water supply costs, excluding fixed SWP costs, which are paid through property taxes, are used to calculate the untreated water rate. The unit cost for water supply costs is $128 per AF of water, for treated and untreated water program costs is $38 per AF, and for untreated water program costs is $1 per AF. This results in a total proposed rate of $167 per AF of untreated water.

## Table 15: Proposed Untreated Water Rates

| Line | Untreated Water Rate Calculation | CY 2018 | CY 2019 |
|---|---|---|---|
| 1 | Untreated Water Deliveries (AF) | 5,500 | 5,500 |
| 2 | Treated Water Deliveries (AF) | 31,667 | 32,784 |
| 3 | **Total Planned Water Deliveries (AF)** | **37,167** | **38,284** |
| 4 | | | |
| 5 | **Water Supply Costs** | | |
| 6 | **Water Transfers** | | |
| 7 | Byron Bethany Irrigation District | $90,000 | $90,000 |
| 8 | Other Water Transfers | $1,138,000 | $1,000,000 |
| 9 | **Groundwater Banking Programs** | | |
| 10 | Cawelo Recovery | $0 | $0 |
| 11 | Semitropic Recovery | $1,000,000 | $0 |
| 12 | Cawelo Storage | $0 | $370,000 |
| 13 | Semitropic Storage | $0 | $200,000 |
| 14 | Semitropic O&M | $0 | $480,000 |
| 15 | **Local Water Supplies** | | |
| 16 | Del Valle Water Rights | $3,000 | $3,000 |
| 17 | **State Water Project** | | |
| 18 | Yuba Costs/Dry Year Program | $10,000 | $80,000 |
| 19 | Multi-Year Pool Program | $0 | $0 |
| 20 | Bay-Delta Related Costs/Water Supply Reliability Projects | $210,000 | $500,000 |
| 21 | State Water Project Transportation Variable Cost | $2,079,122 | $2,170,000 |
| 22 | **Total Water Supply Costs** | **$4,530,122** | **$4,893,000** |
| 23 | **Water Supply Unit Cost ($/AF)** | **$122** | **$128** |
| 24 | | | |
| 25 | **Zone 7 Staff Costs** | | |
| 26 | **Treated and Untreated Water** | | |
| 27 | Byron Bethany Irrigation District | $8,101 | $4,500 |
| 28 | Cawelo | $0 | $1,600 |
| 29 | Groundwater Monitoring and Management | $0 | $944,000 |
| 30 | Local Water Rights | $0 | $23,000 |
| 31 | Other Water Supplies | $33,140 | $26,000 |
| 32 | Semitropic | $0 | $3,100 |
| 33 | State Water Project | $158,335 | $127,000 |
| 34 | Supply Source and Conveyance Administration | $0 | $20,800 |
| 35 | Water Storage Administration | $0 | $7,200 |
| 36 | Water Utility Planning | $0 | $290,000 |
| 37 | **Total Treated and Untreated Water Costs** | **$199,576** | **$1,447,200** |
| 38 | Unit Cost ($/AF) | $5 | $38 |
| 39 | **Untreated Water** | | |
| 40 | Untreated Water Program | $10,121 | $8,000 |
| 41 | **Total Untreated Water Costs** | **$10,121** | **$8,000** |
| 42 | Unit Cost ($/AF) | $2 | $1 |
| 43 | **Zone 7 Staff Unit Cost ($/AF)** | **$7** | **$39** |
| 44 | | | |
| 45 | **Total Untreated Water Rate ($/AF)** | **$129** | **$167** |

**Table 16** shows the proposed temporary untreated water rates, which is used to determine the temporary and non-scheduled untreated water rates. The costs attributed to these rates include the majority of the cost elements of the untreated water rate, with the addition of SWP supply costs that are paid for by property taxes.

The need for temporary services results from the inability of customers to obtain water in the outlying areas of the valley. The use of these services is limited. Since temporary untreated water customers do not pay property taxes, they are responsible for the portion of the SWP supply that is paid for by these revenues. Non-scheduled untreated water is charged to all deliveries exceeding scheduled deliveries by 10 percent in any year.

The total estimated expenses (Line 16) is divided by the planned water deliveries (Line 1) to determine the unit cost (Line 17), which is then added to the staff program unit cost (Line 19) determined in **Table 14**. The proposed temporary and non-scheduled untreated water rate is $860 for CY 2019.

### Table 16: Proposed Temporary Untreated Water Rates

| Line | Temporary Untreated Water Rate Calculation | CY 2019 |
|---|---|---|
| 1 | **Total Planned Water Deliveries (AF)** | **38,290** |
| 2 | | |
| 3 | **Estimated Expenses** | |
| 4 | State Water Supply | $26,500,000 |
| 5 | Off-Aqueduct Power Facilities | $41,000 |
| 6 | Variable Transportation Water Charges | $2,170,000 |
| 7 | Cawelo Recovery | $0 |
| 8 | Semitropic Recovery | $0 |
| 9 | Cawelo Storage | $370,000 |
| 10 | Semitropic Storage | $200,000 |
| 11 | Semitropic O&M | $480,000 |
| 12 | Byron Bethany Irrigation District | $90,000 |
| 13 | Yuba Dry Year Purchase Program | $80,000 |
| 14 | Bay-Delta Related Costs/Water Supply Reliability Projects | $500,000 |
| 15 | Other Water Transfers | $1,000,000 |
| 16 | **Total Estimated Expenses** | **$31,431,000** |
| 17 | **Unit Cost ($/AF)** | **$821** |
| 18 | | |
| 19 | **Zone 7 Staff Unit Cost ($/AF)** | **$39** |
| 20 | | |
| 21 | **Total Temporary Untreated Water Rate ($/AF)** | **$860** |

**Table 17** shows the proposed untreated water rates in dollars per AF for CY 2019.

### Table 17: Proposed Untreated Water Rates

| Proposed Untreated Water Rates | CY 2019 |
|---|---|
| Untreated Water Rate | $167 |
| Temporary Untreated Water Rate | $860 |
| Non-Scheduled Untreated Water Rate | $860 |
| Surplus Untreated Water Rate | N/A |