



*clear***WATER**solutions
water rights • planning • engineering

MEMORANDUM

CWS File # 18-140

To: Firestone Town Board c/o Julie Pasillas

From: Steve Nguyen, P.E., Clear Water Solutions, Inc.
Webb Jones, P.E., Water Consulting Group, LLC

Date: October 17, 2018

Subject: 2018 Rate Study Update

In July 2018, Clear Water Solutions, Inc. (CWS) was asked by the Town of Firestone to update a cost-of-services analysis it had prepared in 2014. The Town wanted to confirm that water rates charged to various customer categories accurately reflected the cost of providing water service to those customers. The Town also wanted to confirm that the water rates updated in 2016 were adequate to cover operations, maintenance, administration, and proposed capital projects and improvements. This Technical Memorandum has been prepared to address this request and summarizes our findings and recommendations.

Background

In July 2014, CWS was retained by the Town of Firestone to update a comprehensive water rate study it prepared in 2011. The rates proposed in 2014 were reevaluated in 2016 in anticipation of higher NISP costs, the purchase of Carbon Valley Reservoir, costs associated with a 1.5-MG water tank and participation in the Regional WTP. CWS has analyzed rates for the Town in 2008, 2011, 2014, and 2016. The rate studies prepared on behalf of Firestone over the years have helped the Town stay ahead of anticipated costs and allowed it to proactively acquire new water rights and infrastructure.

Studies prepared in the past by CWS have resulted in: differential rate increases, creation of new customer categories, adjustments to monthly base rates and residential water rates that vary depending on the amount of water used (tiered rates). Revisions to the Town's water rates have accomplished the following:

- Rates are adequate to fund anticipated O&M expenses, water acquisition, capital improvements and debt service obligations.
- Rates prevent any category of customer from subsidizing another customer category.
- Residential water rates promote water conservation by providing financial incentives for customers to reduce their water use.
- Rates are relatively easy to administer, can be understood by customers and insure revenue stability.

Recommendations proposed in the past have been adopted by resolution and resulted in water rates shown in **Table 1**.

Table 1 - Town of Firestone Monthly Rates and Charges – Effective January 1, 2018

Meter Size	Base Rate Charge	Water Included in Base Rate (Gallons)	Water Charge Per 1,000 Gallons	
			Gallons	Rate
Residential				
5/8"	\$ 24.54	-0-		
3/4"	\$ 37.63	-0-		
1"	\$ 62.16	-0-		
1-1/2"	\$ 122.66	-0-		
2"	\$ 197.91	-0-		
Residential			0-5,000	\$ 2.32
			5,001-20,000	\$ 4.09
			20,001-40,000	\$ 6.55
			Above 40,000	\$ 8.19
Commercial, Industrial, Irrigation, Mobile Home Parks				
5/8"	\$ 24.54	-0-		
3/4"	\$ 37.63	-0-		
1"	\$ 62.16	-0-		
1-1/2"	\$ 122.66	-0-		
2"	\$ 197.91	-0-		
3"	\$ 369.64	-0-		
6"	\$ 1,461.52	-0-		
Commercial & Industrial			All usage	\$ 3.61
Irrigation Only			All usage	\$ 5.48
Mobile Home Parks			All usage	\$ 4.09
Out-of-Town Rates	Base rates and gallon charges for any out-of-town service shall be two times the in-Town rates and charges.			

Cash Flow Projections

The amount of water rate revenue required in future years to fund operations, maintenance, water acquisition and capital improvements is determined through preparation of a cash flow projection. Such a projection is based on approved water enterprise budgets and forecasts of future needs and associated expenditures.

The most current cash flow projection for the water enterprise has been prepared by the Town's contract treasurer with input from utility staff and the Town's engineer. The cash flow projection shows water rate revenue needs to increase over the study period (2019-2023) by the percentages shown in **Table 2**. A copy of the cash flow projection is included as **Appendix A**.

Table 2 - Projected Increases in Water Rates ⁽¹⁾

	Actual 2018	Projected 2019	Projected 2020	Projected 2021	Projected 2022	Projected 2023
% Increase in Water Rates	8.0%	8.0 %	8.0 %	8.0 %	8.0 %	8.0 %

⁽¹⁾ Projected annual increases in water rates calculated in cash flow projection prepared by Clifton Allan Larson (CLA), June 2018

Results of Cost-of-Service Analysis

Estimated water rate revenue generated in 2018 represents the projected cost of providing water service to all customers. A cost-of-service analysis allocates that cost to various customer categories in proportion to the demands they place on the water system. The concept of proportionate allocation to customer categories implies that the allocation process consider not only the quantity of water used but also the rate of use (peak demands).

The water system consists of various facilities designed and operated to fulfill one or more specific functions. To provide adequate service to customers at all times, the water system must be capable of providing the total amount of water used in any given year as well as the amount of water required on any given day or time of day to supply peak demands. There are measurable costs associated with facilities required to meet peak demands.

To meet the objectives of this project, CWS updated the cost-of-service analysis performed in 2014 by examining water use in 2015, a year that was neither too wet and cool nor too dry and hot. Unusual weather conditions skew water use and the calculation of customer costs based on water demands.

Water use from 2015 was adjusted to reflect growth in the number and type of customer accounts to generate projected 2018 water sales revenue. This analysis was undertaken to confirm that prior cost-of-service adjustments adopted by the Town at the recommendation of CWS accurately reflect current costs incurred to serve those customers.

Table 3 compares cost-of-service calculations for different customer categories with projected 2018 revenue. In 2018, all customer categories except multi-family and mobile home will pay rates that generate revenue within 1% or 2% of their calculated cost-of-service.

This analysis indicates there is no need for differential rate increases in 2019 for residential, commercial/industrial and irrigation customers. In 2019, water rates for customers in these categories should be increased uniformly by the 8% calculated in the Town's current cash flow projection.

The Town may want to consider increasing the usage charge (cost per 1,000 gallons) for mobile home customers by more than 8% to more accurately reflect that customer category's cost of service.

**Table 3 - Comparison of Cost-of-Service to Projected Rate Revenue
For Firestone Customer Categories**

Customer Categories	2018 Cost-of-Service	2018 ⁽¹⁾ Projected Water Sales Revenue	%
Residential	\$2,833,051	\$2,891,398	102%
Commercial / Industrial	\$353,809	\$351,257	99%
Mobile Home	\$194,523	\$179,345	92%
Multi-Family	\$41,321	\$79,856	193%
Irrigation Only	\$322,330	\$329,949	102 %
Total	\$3,745,035	\$3,831,806	102 %

⁽¹⁾ Customers water use from 2015 was selected as representative of use in a typical year

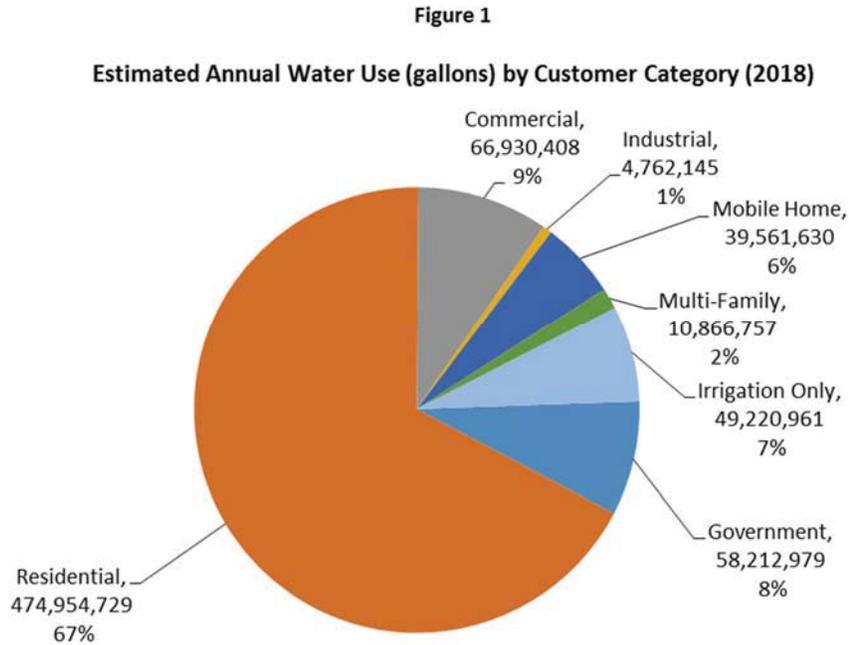
As shown in **Table 1**, Firestone does not currently have a Multi-Family customer category. Until recently, there were not enough multi-family customers to justify a separate category. Multi-family accounts currently pay the same usage charge as commercial/industrial customers. In 2018, customers in the multi-family category will generate only 2% of total projected water sales revenue.

There are still relatively few multi-family accounts, but there are a number of multi-family buildings planned or under construction. Most of the new multi-family buildings will be served by 1½" water meters. At the time of this analysis, there were seven active multi-family accounts served by 1½" meters, but fifteen similar accounts awaiting activation. The average water use of the seven active accounts was used in this analysis to project the water use of the fifteen accounts pending activation.

Without more reliable data from active multi-family accounts, it is premature to calculate and implement a unique water rate for multi-family customers. Until a cost-of-service analysis is performed using reliable data from the multi-family customer category, existing multi-family customers should continue to pay the same rate as they do now (commercial/industrial).

Water Use Comparison

Figure 1 shows the estimated water use by customer category for 2018. These figures were utilized in calculating each customer category’s cost-of-service shown in **Table 3**.

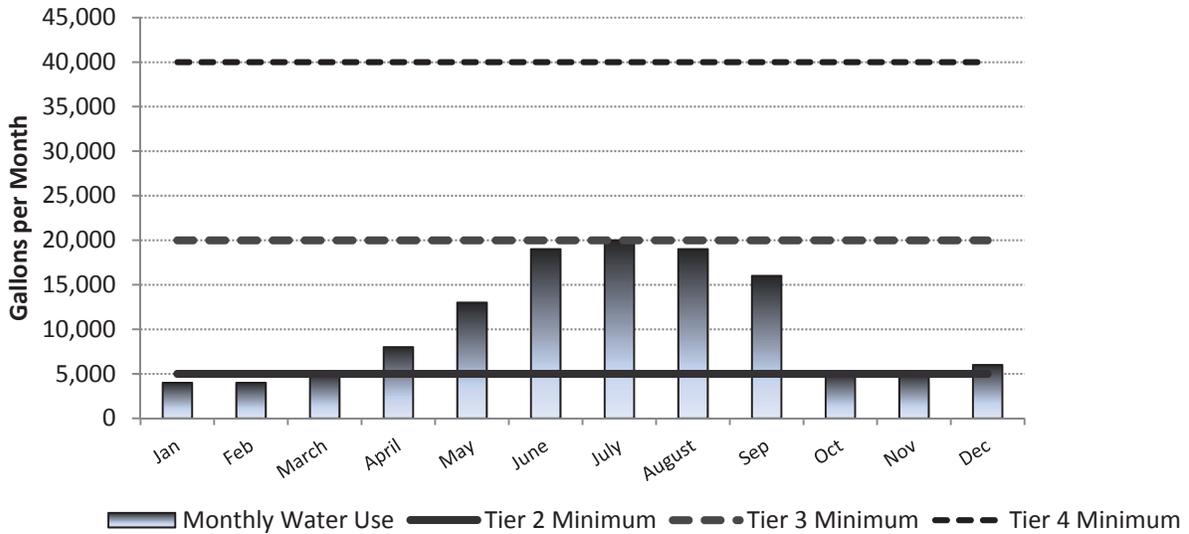


Residential Water Use

The average residential customer in Firestone uses 124,000 gallons annually in a year with typical weather. That figure is almost the same as it was in the 2014 rate study. **Figure 2** shows the amount of water used each month by the average residential customer and the rate tiers that apply to that water use.

Figure 2

Monthly Water Use by Average Firestone Residential Customer
(124,000 gallons/year)

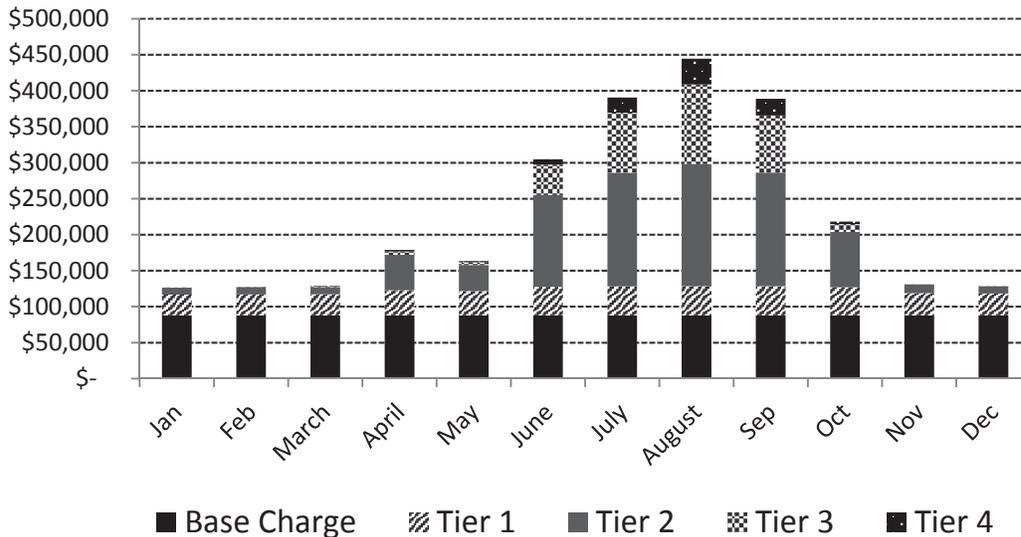


Revenue from Residential Customer Category

In 2018, residential customers are projected to pay 75% of the total water rate revenue collected by the Town. **Figure 3** shows projected residential water rate revenue by month. It also shows the amount of revenue generated from monthly base charges and the four residential user charge tiers shown in **Table 1**.

Figure 3

Estimated Monthly Revenue from Residential Customer Category by Rate Tier (2018)

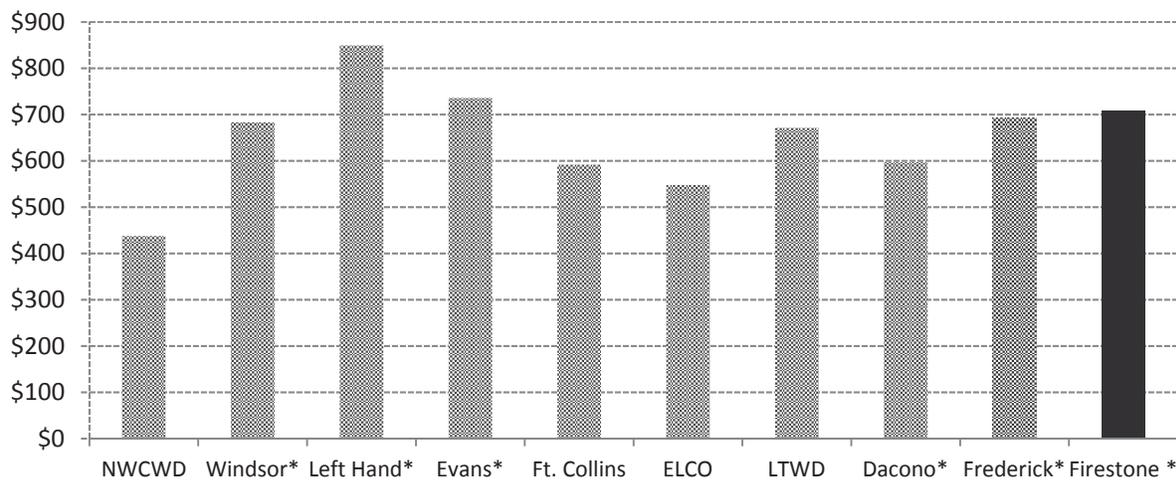


Comparison of Residential Water Bills

Figure 4 compares the annual cost of water for the average Firestone residential customer using 124,000 gallons per year with the amount that customer would pay for the same amount of water in nearby communities based on rates currently charged in those communities. Communities included in the comparison that are also participants in the Northern Integrated Supply Project (NISP) are noted with an asterisk.

Figure 4

**Total Annual Charges in 2018 for Water Service in Area Communities
(based on annual water use of average Firestone residential customer – 124,000 gallons per year)**



* Communities participating in NISP

Each water provider has unique challenges and costs that determine their water rates. Revenue requirements are affected by the availability of water, age of system, rate of growth, financial policies, contractual obligations, capital needs, pumping requirements, source water quality, and a number of other variables. These variables make it difficult to fully understand differences in the cost of water from one community to another.

Comparing the cost of water in different communities is of interest, but should not drive decisions on water rates. Water rates in any community are ultimately determined by the budgets and policies adopted by their governing boards.

Summary and Recommendations

Generally the study shows that Firestone's current proposal to increase water rates by 8% per year across all customer categories is enough to cover anticipated expenditures. The study also shows equitable allocation of rates across customer category, except in the case of mobile homes and multi-family. As discussed earlier, until a cost-of-service analysis can be completed with more reliable multi-family water use data, it is premature to calculate and implement a unique multi-family water rate.

We recommend the following:

- Enact 8% increase across all customer categories in 2019 and subsequent years.
- Create a new customer category for multi-family accounts.
- For now, leave the multi-family user charge the same as the commercial/industrial user charge (\$3.61 per 1,000 gallons).
- Once reliable data is available from the Multi-Family customer category, update cost-of-service calculations to determine if multi-family rates need to be revised.
- Increase the Mobile Home user charge in 2019 from \$4.09 to \$4.77 per 1,000 gallons - 8% cost-of-service adjustment and then an 8% increase applied to all customer categories.