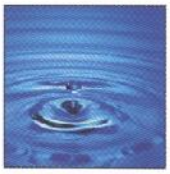
FIRESTONE
COLORADO

TOWN OF FIRESTONE

2008 Water Rate Study

December 2008



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Water
CONSULTING GROUP

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EXECUTIVE SUMMARY

Background

In June 2008, Clear Water Solutions was retained by the Town of Firestone to conduct a comprehensive water rate study. The rate study was authorized to determine the adequacy of existing water rates and provide projections for future rate adjustments. The last time Firestone's water rates were adjusted was 2003.

The need to review water rates was identified in the Firestone Raw Water Master Plan completed by Clear Water Solutions in August 2007. The Town's Raw Water Master Plan identified the need to meet 15% of build-out water needs through water conservation. One tool to help meet that objective is the adoption of water rates that encourage efficient water use.

Water conservation is only one consideration in setting water rates. The primary purpose of water rates is to recover expenditures funded with rates through a rate structure which is not unduly discriminatory to any class of customers.

Representatives from Clear Water Solutions and its subcontractor on this project, Water Consulting Group, presented cost-of-service principles and water rate trends at the Board of Trustees meeting held on June 26, 2008. At Board work sessions held on August 21 and October 2, 2008, we presented several different types of water rate structures and a comparison of Firestone water rates with the rates in nearby communities. Based on direction provided by the Board of Trustees at those meetings and subsequent meetings with Town staff, we developed the following findings and recommendations.

Key Results of Water Rate Study

Based on the cost-of-service analysis and other technical investigations performed during the water rate study, it was determined that:

- Existing water rates charged by Firestone are adequate to recover costs included in the Town's adopted 2008 budget.
- Revenue from water rates needs to increase by approximately 16% in 2009 to recover anticipated costs for: operation and maintenance (O&M), capital improvements, administration, payments for the Northern Integrated Supply Project (NISP), and purchased water from Central Weld County Water District (CWCWD).
- In 2009, the percentage increase for certain customer categories will be greater than 16% while customers in other categories will see minimal changes in the cost of their water service. The amount of the proposed

rate increase is determined by the water demand characteristics in each unique customer category.

- The cost-of-service analysis performed on existing water rates indicates there are some interclass subsidies in Firestone's existing rate structure. The commercial and industrial customer category is over-paying and the irrigation-only customer category is under-paying.

- CWCD has proposed revisions in its contract with Firestone that will increase the amount the Town pays for purchased water in 2009 by approximately 20%. Without the proposed increase in the Town's wholesale water rate, the water rate increase needed for Firestone in 2009 would be 10% instead of 16%.

- It is anticipated that funding for the design and construction of NISP will be required in 2012. If that is the case, the Town's water rate revenue will need to increase another 25% by 2012. This increase is in addition to the 16% increase required in 2009. The cost and timing of NISP will be the determining factor in water rate increases needed after 2009. To prevent a 25% rate increase in the year that NISP is constructed, water rate increases of 12.5% are recommended in both 2010 and 2011.

- Revenue from the Town's policy of requiring payment of cash-in-lieu of water rights at annexation is projected to generate $25,000 per year in each year of the study period (2009 – 2011). This is well below cash-in-lieu revenue in 2008, but a reasonably conservative estimate considering the current slowdown in development.

- It is anticipated that grants will be available in 2009 to fund the majority of costs for new waterlines. The availability of grant funds reduces the amount of revenue the Town will need to generate through its water rates.

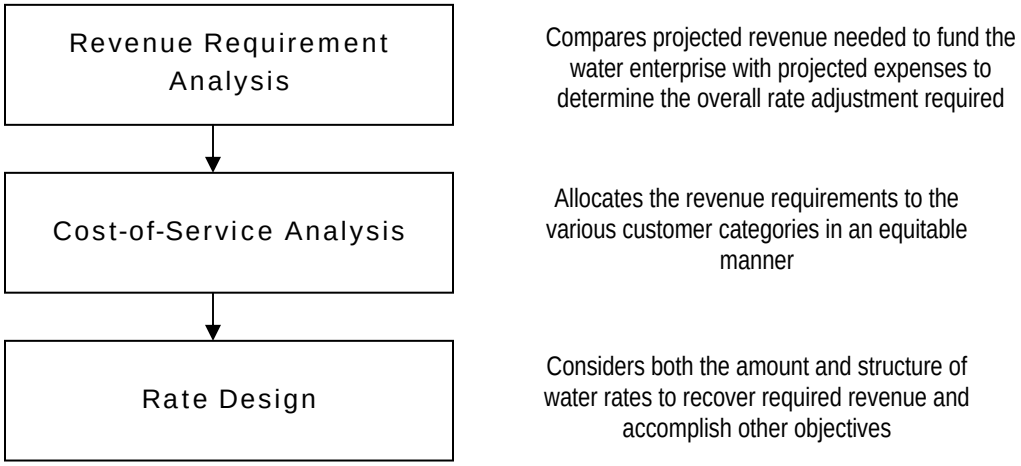
- It is anticipated that 60 new single family customers will be added in 2009 and 100 new single family customers will be added in each year thereafter.

- It is anticipated that beginning in 2009, the Capital Investment and Repair Charge currently assessed by the Town for each new 5/8" meter will increase by $400 (from $600 to $1,000).

Overview of the Water Rate Study Process

A comprehensive water rate study consists of three interrelated analyses. Figure ES-1 illustrates the three major tasks undertaken during the Firestone rate study.

Figure ES.1 – Analyses Performed in a Comprehensive Water Rate Study



Results of Revenue Requirement Analysis

Water rates must be adequate to fund all anticipated costs incurred for O&M, administration, capital improvements, renewal and replacement, debt service, engineering design, feasibility studies, etc. Water rates provide most, but not all, revenue required to offset expenses. Firestone uses other sources of revenue (late fees, water rental, grants, interest earnings, plant investment fees, tap fees, cash-in-lieu of water rights, and hydrant water sales) to reduce the amount of revenue that must be recovered through water rates.

Including all other sources of funds available to offset both capital and operating expenses and anticipating some water use reductions resulting from conservation-based rates and other conservation measures, Firestone will require approximately $1,920,000 in water rate revenue in 2009. This amount is 16% higher than the projected amount of revenue that would be collected in 2009 with existing water rates and no reductions in water use.

Projected Rate Adjustments to Fund Revenue Requirements

In future years, water rates will need to be adjusted to reflect escalating costs and fund anticipated capital improvements. Funding the design and construction of Firestone's share of NISP will require significant expenditures and is expected to begin in 2012. There is much uncertainty about the cost and timing of NISP. This single project will have the greatest influence on the Town's future water rates.

Table ES.1 summarizes projected water rate adjustments for a three-year period beginning in 2009. Projected rate adjustments are based on estimated costs and will need to be revised as better information becomes available.

Table ES.1 – Projected Future Adjustments in Rate Revenue

	2009	2010	2011
Revenue Required from Rates	$1,920,000	$2,160,000	$2,430,000
% Change from prior year	16%	12.5%	12.5%

Projected rate increases for 2010 and 2011 are in anticipation of the need to fund the Town's share of NISP in 2012. The amount and timing of future water rate increases will depend on when NISP is constructed and how much it costs.

Results of Cost-of-Service Analysis

A cost-of-service analysis deals with the equitable allocation of the total water revenue requirements to the various customer categories. The objectives of the cost-of-service analysis are different from the analysis performed to determine revenue requirements. A revenue requirement analysis determines the overall financial needs while the cost-of-service analysis determines the responsibility of each customer category for payment of rates which address the overall financial needs.

The unique water use characteristics of the four customer categories that pay water rates (residential, irrigation only, commercial and industrial, and mobile home parks) determine the prorata share of costs allocated to each customer category. Table ES.2 shows the projected allocation of 2009 revenue responsibility to each customer category. Table ES.2 also compares projected revenue in 2009 derived with cost-of-service water rates to the amount of revenue that would be generated if there were no changes to Firestone's water rates.

Percentage increases for individual customers in each category will vary from figures shown in Table ES.2. The percentage increases in Table ES.2 represent the total overall change in projected revenue from each customer category.

Table ES.2 shows that existing rates for the residential and mobile home park category need to increase by an amount almost equal to the overall rate increase. That is an indication existing rates for those two customer categories are fair and equitable. Rates in those customer categories need to be adjusted to reflect increased costs and not because of any existing interclass subsidies.

Table ES.2 – Comparison of Projected 2009 Revenue from Firestone Customer Categories

Customer Category	Projected Revenue Derived From Water Rates		% Change
	Proposed Cost-of-Service Rate Revenue	Existing Rate Revenue	
Commercial and Industrial	$147,133	$143,292	2.7%
Irrigation-only	$203,444	$147,996	37.5%
Residential	$1,499,441	$1,296,078	15.7%
Mobile Home Park	$70,103	$59,980	16.9%
Total	$1,920,121	$1,647,346	16.6%

Table ES.2 shows that water rates charged to irrigation-only customers need to increase more than in any other category. The proposed 37.5% increase in the irrigation-only rate is a result of the peak demand characteristics of those customers during summer months. Water use during peak demand periods determines the size of waterlines, storage tanks, master meters, pumps and motors. The more customers in any one category utilize those facilities, the more responsibility they have to pay costs associated with those facilities.

Currently, Firestone's water rates are the same for all commercial, industrial and irrigation-only customers that have the same size water meter. The water use characteristics of commercial and industrial customers are very similar; they use water year round and do not generate the peak day and peak hour demands of irrigation-only customers. The water use of irrigation-only customers warrants a unique water rate to reflect the extraordinary demands customers in that category place on the water system during summer months.

Water Rate Design

The Town's existing rate structure consists of: (1) a base rate entitling each customer to use a certain amount of water each month before incurring additional charges, and (2) a consumption charge levied on each 1,000 gallons of water used over the minimum quantity provided under the base rate. The Town's existing water rates are summarized in Table ES.3.

Table ES.3 – Existing (2008) Water Rates Established in Resolution No. 03-12

Meter Size	Base Rate	Water Included in Base Rate (gal)	Additional Water Beyond Base (gal)	Rate for Additional Water per 1,000 gal
5/8"	$22.75	5,000	5,001-15,000 15,001-20,000 above 20,000	$1.50 $1.75 $2.25
3/4"	$34.25	7,000	7,001-15,000 15,001-20,000 above 20,000	$1.50 $1.75 $2.25
1" 1 ½" 2" 3" 4" 6"	$57.00 $136.50 $227.50 $524.75 $932.00 $2,095.50	12,000 30,000 50,000 115,000 204,000 460,000	above 12,000 above 30,000 above 50,000 above 115,000 above 204,000 above 460,000	$1.75 $1.75 $1.75 $1.75 $1.75 $1.75

Results of the revenue requirement analysis performed during the rate study are the basis for establishing cost-of-service based rate alternatives. Several changes to the current rate structures are proposed to improve equity between customer categories and between customers within each customer category. The proposed rate structures have been designed to encourage water conservation. Proposed revisions to the existing water rate structure are summarized below:

- Reduce the base rate charge to more accurately reflect fixed costs (billing, meter reading, postage, customer service, etc,) and costs proportionate to meter size (meter maintenance and repair, meter testing, certain administrative costs, meter pit access and maintenance, etc.)

- Eliminate the practice of providing water with the base rate to prevent overcharging customers that use less than the minimum amount provided with the base rate and to encourage water conservation.

- Implement tiered rates for residential customers with a larger dollar amount between tiers to encourage efficient use of water, particularly as it relates to irrigation of landscaping. The Town's current rate structure does not provide a particularly strong conservation price signal for residential customers.

- Adopt a fixed base rate determined by meter size and a unique cost-of-service based consumption charge (no tiers) for: (1) commercial and industrial customers, (2) irrigation-only customers, and (3) mobile home parks.

Two residential rate alternatives were developed during this analysis. Both alternatives encourage water conservation by increasing the consumption charge as water use

escalates. Alternative #1 is a three-tier rate structure with tiers similar to Firestone's existing rate structure. Alternative #2 is a more aggressive four-tier rate structure that sends a clear price signal to customers that have water use falling within the fourth tier.

Any time new rates are implemented, some reduction in water use can be expected. This reduction has been anticipated in both proposed residential rate alternatives. Even with this degree of planning, the reaction to new rates by residential customers is difficult to accurately predict. The greater the financial impact on customers with water use in the highest rate tier, the greater the uncertainty surrounding the reduction in water use, and consequently, revenue.

Tiered rates are not proposed for commercial and industrial customers, irrigation-only customers and mobile home parks. Tiered rates for these customers would be problematic since water demands vary significantly due to the difference in operations and water needs. Greater water use by customers in these categories does not necessarily imply inefficient or wasteful use. To encourage conservation and efficient use by customers in these categories, water audits or technical assistance might be more productive.

That being said, the proposed irrigation-only water rate is significantly higher than the current commercial rate paid by those customers. The increase in costs for customers that maintain the same irrigation practices should lead to water use reductions. Reductions will only result if the water use of irrigation-only customers is monitored by an interested party. Often times, irrigation schedules for commonly owned greenbelts and commercial landscaping are established by a contractor that is more concerned with the appearance of the irrigated area than the amount of the water bill.

The proposed 2009 residential water rate alternatives derived from the rate study are summarized in Table ES.4. Table ES.5 shows the proposed water rates for all other customer categories.

Table ES.4 – Proposed 2009 Residential Water Rates

	Monthly Minimum Charge	Consumption Charge ($ / 1,000 gallons)
Residential Alternative #1	$15	
0 to 5,000 gallons		$1.40
6,000 to 20,000 gallons		$2.50
Greater than 20,000 gallons		$4.00
Residential Alternative #2	$15	
0 to 5,000 gallons		$1.30
6,000 to 20,000 gallons		$2.50
21,000 to 32,000 gallons		$3.70
Greater than 32,000 gallons		$5.00

Table ES.5 – Proposed 2009 Water Rates for Commercial and Industrial, Irrigation-Only and Mobile Home Parks

	Monthly Minimum Charge	Consumption Charge ($ / 1,000 gallons)
Meter Size		
5/8”	$ 15	
3/4”	$ 23	
1”	$ 38	
1 1/2”	$ 75	
2”	$ 121	
3”	$ 226	
6”	$ 754	
Commercial and Industrial		$2.20
Irrigation Only		$3.35
Mobile Home Parks		$2.50

Proposed water rates summarized in Table ES.5 have different cost impacts on customers in different categories. The projected percentage increase in the overall rate revenue recovered from each customer category was shown previously in Table ES.2 and is as follows: Commercial and Industrial (2.7%), Irrigation-Only (37.5% based on a 15% reduction in total annual water use and 57% if water use is not reduced), and Mobile Home Parks (16.9%).

Impact of Proposed Residential Rate Alternatives

Residential customers represent 95% of all accounts in Firestone and use approximately 70% of total metered water deliveries. Because residential customers are responsible for such a significant portion of water use and revenue, the impact of rate adjustments on individual residential customers warrants additional examination.

Table ES.6 shows the impact of the two residential rate alternatives on single family customers using different amounts of water.

Table ES.6 – Impact of Proposed Residential Rate Alternatives on Single Family Customers

Residential Rate Alternative #1 (three tiers)

Single Family Customer Classification	Existing Annual Charges	Proposed Annual Charges	$ Difference	% Change	Annual Use (gallons)	Annual Use (acre feet)
99th percentile	$1,042	$1,584	$542	52.0%	448,000	1.38
90th percentile	$ 593	$ 801	$208	35.1%	235,000	0.72
Average	$ 380	$ 439	$ 59	15.6%	126,000	0.39
10th percentile	$ 320	$ 349	$ 30	9.4%	79,000	0.24

Residential Rate Alternative #2 (four tiers)

Single Family Customer Classification	Existing Annual Charges	Proposed Annual Charges	$ Difference	% Change	Annual Use (gallons)	Annual Use (acre feet)
99th percentile	$1,042	$1,725	$683	65.5%	448,000	1.38
90th percentile	$ 593	$ 794	$202	34.0%	235,000	0.72
Average	$ 380	$ 433	$ 53	14.0%	126,000	0.39
10th percentile	$ 320	$ 337	$ 18	5.6%	79,000	0.24

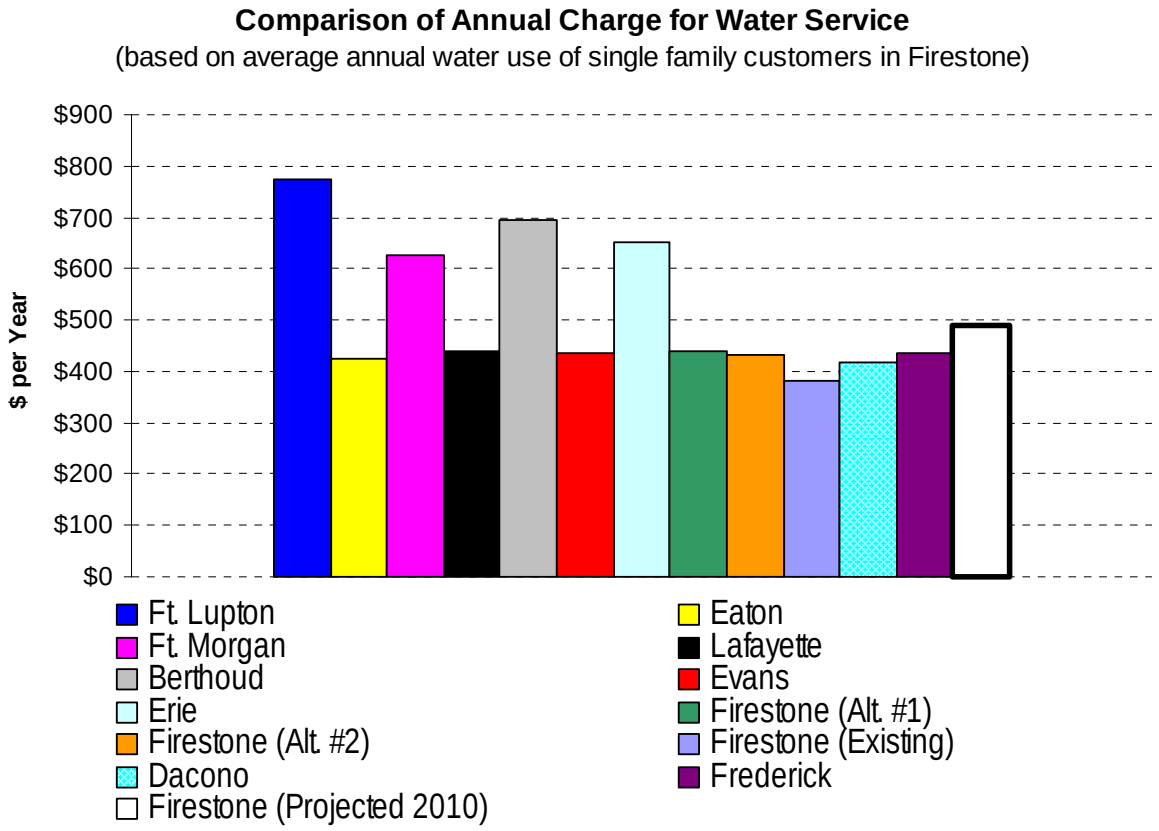
Comparison of Residential Water Bills

Figure ES.2 compares the annual cost of water for the average Firestone single family customer using 126,000 gallons per year with the amount that customer would pay for the same amount of water in nearby communities. The cost to the average Firestone single family customer with existing (2008), proposed (2009) and projected (2010) residential water rates is shown in Figure ES.2.

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, distance to treatment plant, 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 it 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.

Figure ES.2 – Comparison of Annual Charge for Water Service



Summary

The previous discussion provides an overview of results from the rate study undertaken on behalf of Firestone. A more detailed description of the analyses and data utilized during the rate study is included within the remainder of this report.

CHAPTER 1 - INTRODUCTION

In June 2008, Clear Water Solutions was retained by the Town of Firestone to conduct a comprehensive water rate study. Clear Water Solutions teamed with Water Consulting Group to complete this study. The rate study was authorized to determine the adequacy of the Town's water rates to fund anticipated capital improvements, cover the cost of securing future water supplies and pay for ongoing operation and maintenance (O&M) costs. The last time Firestone's water rates were adjusted was 2003.

The need to review water rates was identified in Firestone's Raw Water Master Plan completed by Clear Water Solutions in August 2007. The Town's Raw Water Master Plan identified the need to meet 15% of build-out water needs through water conservation. Implementation of rates that encourage conservation will help meet this objective.

Firestone has grown rapidly in recent years. It is anticipated that the Town will continue to see its population increase. Securing water supplies to meet the demands of future customers will be challenging and costly. One source of water for future customers identified in the Town's Raw Water Master Plan was the Northern Integrated Supply Project (NISP).

NISP is a regional water supply project coordinated by the Northern Water District (Northern Water) on behalf of 15 Front Range water providers. Its goal is to provide participating water providers with approximately 40,000 acre-feet of new, reliable water supply. Firestone is one of the 15 Front Range water providers participating in NISP. Once completed, Firestone anticipates obtaining 1,600 acre feet per year from the project.

The cost and timing of NISP is yet to be determined, but preliminary projections indicate that Firestone's water rates will need to increase significantly to fund its share of the project. The estimated increase in future water rates needed to fund NISP is discussed in later chapters.

Objectives

The rate study performed on behalf of Firestone addresses a number of objectives. Most of these objectives are common in all rate studies, but some are unique to Firestone. The objectives of this study are as follows:

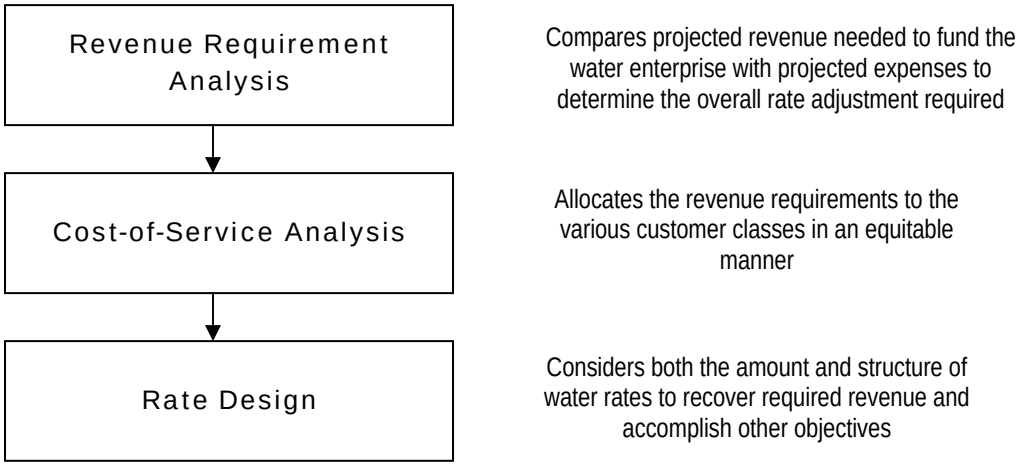
- Insure rates are adequate to meet the Town's anticipated O&M expenses, cost of capital improvements, and financial obligations associated with NISP.
- Establish rates that prevent any class of customer from subsidizing another class of customer.

- Develop rates that are relatively easy to administer, can be understood by customers, insure revenue stability, and consider customers' ability to pay.
- Encourage water conservation through rates that provide financial incentives for customers to reduce their water use.

Overview

This study develops cost-based water rates through a comprehensive analysis of: (1) revenue requirements, (2) cost-of-service, and (3) rate design. Figure 1.1 provides a representation and description of the three steps required to complete a rate study.

Figure 1.1 – Analyses Performed in a Comprehensive Water Rate Study



The analyses performed in this rate study follow the steps summarized above. In this study, we followed generally accepted rate making methodology as outlined in American Water Works Association (AWWA) Manuals of Practice M1, "Principles of Water Rates, Fees, and Charges," and M54, "Developing Rates for Small Systems."

CHAPTER 2 - PROFILE EXISTING WATER SYSTEM

Source of Supply

Firestone currently depends on the Colorado-Big Thompson (C-BT) project for its potable water supply. C-BT facilities divert water from the western slope of Colorado to the Front Range to supplement the region's native water supply. It is the largest transmountain water diversion project in Colorado. It was constructed by the Bureau of Reclamation between 1938 and 1957 and imports an average of 213,000 acre feet of water each year to northern Colorado for agricultural, municipal and industrial uses.

C-BT water originates in the Colorado River Basin and is pumped from Lake Granby into Grand Lake. Water flows from Grand Lake through the Adam's Tunnel to one of several Front Range reservoirs including Carter Lake, the reservoir that supplies the facility that treats water for use in Firestone.

Currently, Firestone's C-BT water is treated by Central Weld County Water District (CWCWD). Besides Firestone, CWCWD also treats water for La Salle, Milliken, Frederick, Kersey, Gilcrest, and Dacono. Like these other entities, Firestone owns the C-BT water it uses and transfers the amount it needs each year to CWCWD. Any surplus C-BT water is rented on an annual basis to other water suppliers or irrigators in the area.

CWCWD treats Firestone's water and delivers it to master meters located at various points surrounding Town limits. CWCWD is responsible for delivering water to the Town's master meters through infrastructure it owns, operates and maintains. Beyond the master meters, the Town is responsible for operating and maintaining its own transmission and distribution system to deliver potable water to its customers.

Firestone and CWCWD entered into a contract in 1974 for CWCWD to be the sole water provider for the Town. The contract had a 20-year term with automatic ten-year renewals. Firestone entered into its second ten-year term in 2004. CWCWD recently proposed revisions to its contract with Firestone that would increase the amount the Town pays for purchased water by approximately 20%.

Customer Categories

For billing and accounting purposes, Firestone currently maintains the following customer categories: Single Family, Multi-Family, Commercial, Industrial, Government, and Irrigation-only. Government accounts include parks and facilities owned and operated by the Town. Firestone does not currently charge itself for water supplied to parks and facilities it owns. Irrigation-only accounts

are generally billed to homeowners associations (HOAs) or commercial properties with water meters dedicated to irrigation systems.

A breakdown of the number of customers in each category at the end of 2007 is shown in Table 2.1.

Table 2.1 – Summary of Customers by Category (December, 2007)

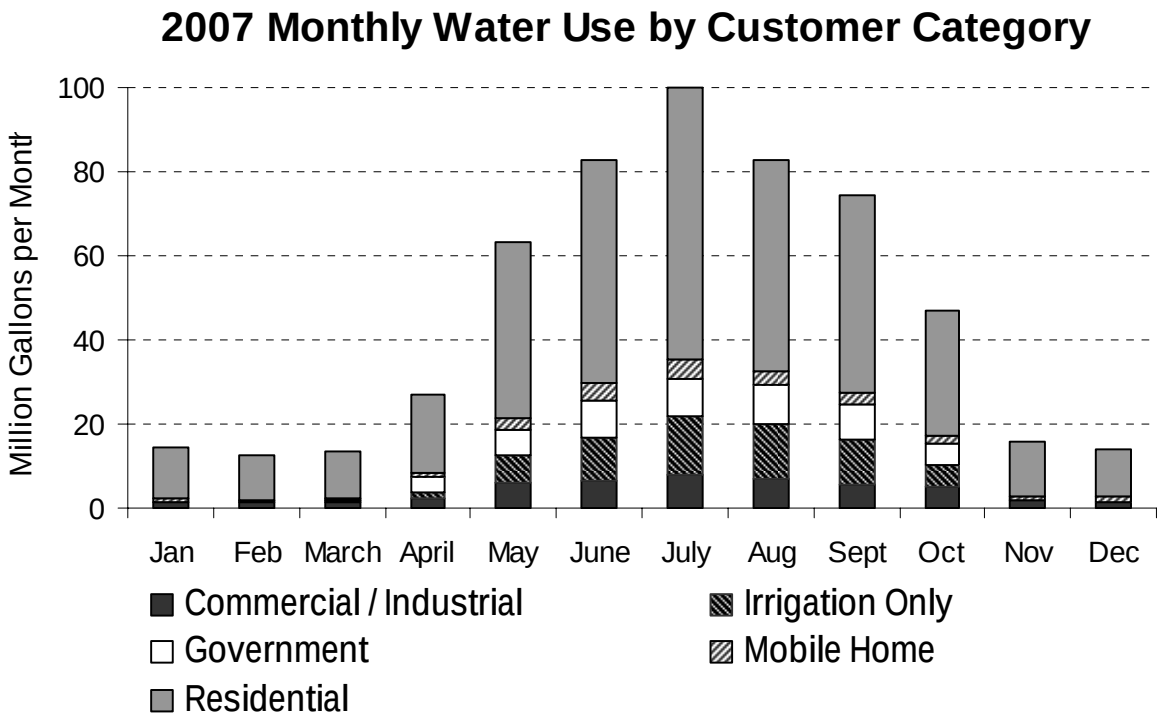
Customer Category	Number of Accounts
Single Family	2,844
Multi-Family	13
Commercial	59
Industrial	2
Government	23
Irrigation Only	48
Total	2,992

To more equitably assign costs to customers with similar water use characteristics, the following customer categories have been utilized in this rate study: Residential (including multi-family but excluding mobile home parks), Mobile Home Parks, Commercial and Industrial, Government and Irrigation-only.

Water Use

Water use data for 2007 was used to estimate future water demands, calculate existing water rate revenue and develop future water rates. Data was obtained with assistance from Town staff that accessed files generated by the Black Mountain Software Utility Billing System. Data generated by the Town's existing utility billing system was especially useful and extremely accurate. Figure 2.1 shows the amount of water used each month in each customer category during 2007.

Figure 2.1 – 2007 Monthly Water Use by Customer Category



Data from 2007 was selected because it was not an especially wet irrigation season, but there were measurable rains scattered at regular intervals throughout the summer months. Furthermore, it was not unusually hot during the summer months of 2007. There was also a brief moratorium on water use in Firestone when the CWCWD treatment facility was inoperable.

Weather conditions and emergencies experienced during the summer of 2007 resulted in water use being at or below average, which is the type of data that is most appropriate for rate setting. Using data from years with dry, hot summer months may result in an over estimation of water use and revenue derived from rates.

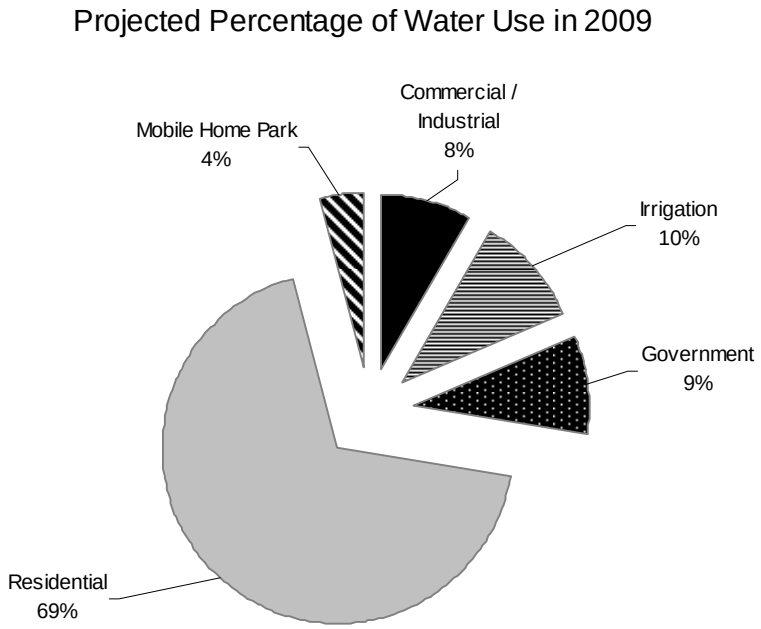
For comparative purposes, total water use through August 2008 has been 16.2% greater than during the same period in 2007 without a significant increase in customer accounts. Based upon that comparison, data from 2007 is better suited for rate making than water use data from 2008.

Test Year

Projected 2009 water demands were calculated by determining the average water use per account by meter size based on 2007 usage records, then multiplying by the projected number of accounts with that size meter the Town is expected to serve in 2009.

The percentage of projected 2009 water use in each customer category is shown in Figure 2.2.

Figure 2.2 – Projected Percentage of Water Use in 2009



For purposes of this rate study, 2009 is known as the "test year." Preliminary estimates of expenditures developed by staff during preparation of the 2009 Budget were used to determine revenue requirements. Customer demands based upon projected 2009 water use was utilized to calculate the cost-of-service for each customer category. Water rates were designed to generate the amount of revenue required in 2009 from each customer category. More detailed discussions of these analyses are presented in the following chapters.

CHAPTER 3 – REVENUE REQUIREMENTS

Study Period

The initial step in calculating the revenue requirement was to establish a study period or time frame in which to perform the analysis. A three-year study period (2009 – 2011) was selected as the time frame for this rate study. This study period includes 2010, the year the Town may be required to fund its share of the design and construction of NISP.

A multi-year study period is generally recommended to identify any major expenses that may be on the horizon. Anticipating major financial commitments in the near future allows the Town to begin planning for necessary rate adjustment sooner rather than later. Proactively planning for and phasing in future rate adjustments decreases the burden to customers that may result from significant rate increases in any one year.

Methodology

A review of the Town's water revenue requirements is the first step in the rate study process. Analysis of revenue requirements determines the overall funding needs of the water enterprise. From this analysis, a determination can be made as to the amount of water rate adjustments needed to adequately fund both O&M and capital costs. The Town's Adopted 2008 Budget, Preliminary 2009 Budget, and Five-Year Capital Improvement Plan were used to determine revenue requirements.

Figure 3.1 provides a summary of the approach used to develop the Town's revenue requirements.

Figure 3.1 – Overview of Revenue Requirements

+	Operation and Expenses including:
	C-BT Assessments
	Purchased Water from CWCWD
	Information Technology
	Human Resources
	Engineering
	Public Works Water Operations
	Administration
-	Non-operating Income Available to Offset Rates including:
	Late Fees
	C-BT Rental Revenue
	Investment Earnings
+	Water Capital Improvements Funded with Rates
-	Sources of Capital Funds Other Than Rates including:
	State and Local Grants
	Plant Investment Fees
	Cash-in-Lieu of Water
	Tap Fees
	Bond Proceeds
=	Total Water Revenue Requirements

After establishing the study period and a method of estimating revenue requirements, we projected rate revenues and expenditures for each year of the study period. Billing records, capital improvement plans and the Adopted 2008 Budget provide the information necessary to make projections.

Water Revenue

The revenue requirement calculation is based on projections of revenue derived from existing water rates. This requires developing projected monthly bills for each customer category based on historical water use and an estimate of the growth in the number and type of customers served. This method of independently calculating water rate revenue insures consistency in data used throughout the rate study.

The number of residential accounts in September 2008 was increased by 60 to establish the estimated number of accounts to be served in 2009. The number of accounts in all other categories (commercial and industrial, irrigation-only and mobile homes) was not increased from 2008 to 2009.

Since no revenue is collected from accounts in the Government category, the water use in this category is excluded from the calculation of revenue requirements. The

responsibility for paying the cost of water used by government accounts is distributed among all other customer categories. Customers pay a slightly higher rate for the water they use to fund costs associated with water for parks and facilities owned by the Town.

The amount of revenue requirements recovered through rates is reduced by the availability of funds generated from other sources. Firestone levies late fees on accounts that fail to pay by the due date. Revenue is also derived from renting surplus C-BT water that exceeds the amount the Town is required to provide CWCWD. The Town also credits interest earnings on water enterprise reserves to offset rates.

Projected revenues from water rates and sources of non-operating income over the study period are presented in Table 3.1. Water sales revenue shown in Table 3.1 does not reflect any adjustments in the Town's current water rates or any reductions in water use resulting from additional water conservation by customers. Rate revenue needs to be calculated with existing rates and water use to determine the amount of additional revenue generated with new rates. Revenue reductions resulting from conservation are more easily tracked if conservation impacts are analyzed during rate design.

Table 3.1 reflects a new source of revenue for 2009. In 2009, the Capital Investment and Repair Charge currently assessed by the Town for each new 5/8" meter is proposed to increase by $400 (from $600 to $1,000). This increase is projected to generate an additional $24,000 in 2009 and $40,000 in 2010 and 2011.

The existing tap fee for a new residential customer obtaining a 5/8" meter is $10,400. Of that amount, Firestone retains $600. The balance is passed on to CWCWD in accordance with the existing contract between Firestone and CWCWD.

Table 3.1 – Summary of Water Revenue

Account		2008 BUDGET	Rate of Escalation	2009 PROJECTED	2010 PROJECTED	2011 PROJECTED
340000	CHARGES FOR SERVICES					
343020	Water Sales	$1,629,500	3.0%	$1,678,385	$1,728,737	$1,780,599
343021	Meter and Yoke	$99,500	3.0%	$102,485	$105,560	$108,726
	Proposed Plant Investment Fees	$0		$24,000	$40,000	$40,000
343022	Tap Fees	$1,037,000		$1,037,000	$1,037,000	$1,037,000
343025	Other	$0		$0	$0	$0
343026	Late Fees	$35,000		$50,000	$50,000	$50,000
343027	Hydrant Meter Water	$0		$0	$0	$0
343028	Water Share Leases (Surplus C-BT)	$50,000		$50,000	$50,000	$50,000
343029	Vendor Fees (Credit Card Charges)	$17,000		$0	$0	$0
	Subtotal	$2,868,000		$2,941,870	$3,011,296	$3,066,325
370000	INVESTMENT EARNINGS					
371010	Investment Earnings	$79,000		$80,000	$80,000	$80,000
	Subtotal	$79,000		$80,000	$80,000	$80,000
	Total	$2,997,000		$3,284,873	$3,354,299	$3,409,328

O&M Expenses

O&M expenditures include the cost of operating and maintaining the Town's storage tanks, transmission and distribution system, meters, service lines, and related facilities. O&M expenses also include the cost of performing water quality tests, meter reading, billing, and administrative support. These and other related costs are necessary to support the water enterprise and are met with operating revenues as costs are incurred.

With input from Town staff, escalation factors were applied to the various O&M expenses. The escalation factors range from 3% to 6% per year based upon past experience and the best estimates of staff and the consultants. Higher rates of escalation were applied to personnel costs and employee benefits to reflect the increasing costs of hiring, retaining and compensating qualified employees.

The cost of purchasing water from CWCWD is projected to increase approximately 20% from 2008 to 2009. That increase is based on proposed revisions to the existing contract between Firestone and CWCWD.

Projected O&M expenses over the study period are summarized in Table 3.2.

Table 3.2 – Summary of Expenditures for O&M

Expenditure Category	BUDGET 2008	Projected 2009	Projected 2010	Projected 2011
OPERATION & MAINTENANCE				
C-BT Assessments	$135,000	$141,750	$146,003	$150,383
CWCWD Treatment	$583,473	$711,964	$733,323	$755,323
Pumping	$0	$0	$0	$0
Transmission and Distribution	$322,823	$342,503	$362,687	$382,236
Customer Services	$193,720	$176,500	$131,075	$135,909
Customer Accounts	$259,528	$326,937	$341,979	$355,977
Administration	$21,043	$26,508	$27,728	$28,863
Total O & M	$1,515,587	$1,726,163	$1,742,795	$1,808,690

Water Capital Improvements

Firestone has developed a comprehensive water Capital Improvement Plan (CIP) to address current and future water system needs. The estimated costs of capital improvements over the study period are shown in Table 3.3.

The cost of NISP represents the single largest expenditure in Firestone's CIP. The expenditure of $889,224 in 2010 is based upon the estimated annual debt service associated with a long-term loan or bond issue obtained to fund the Town's allotment in NISP.

CIP payments to CWCWD shown in Table 34.3 reflect the amount of tap fees collected by the Town and then transferred to the District. This amount is dependent on the number of new taps sold by the Town.

Waterline projects shown in Table 3.3 (Sable Avenue loop, Central Park 12" waterline, Pine Cone / Sable waterline, Firestone Blvd. loop) are needed to improve and replace the existing water system infrastructure. The line item labeled "System Improvements" anticipates a continuation of these kinds of improvements in 2011.

In general, improvements and replacements to a water system should be equal to or greater than annual depreciation expenses. This level of funding currently exists in each year of the study period. Annual depreciation expense reflects the current investment in infrastructure that is losing useful life. Few water utilities actually fund depreciation but all should invest in repairing or replacing infrastructure at a rate sufficient to restore depreciated assets of the utility.

Table 3.3 – Summary of Water CIP

		2008 BUDGET	2009 PROJECTED	2010 PROJECTED	2011 PROJECTED
430540	Capital Outlay – Water				
911	Expansion of Maintenance Facilities – Share	$20,000			
916	Meter & Yoke Equipment	$118,200	$120,000	$130,000	$130,000
921	Vehicles	$12,500	$20,000	$20,000	$20,000
923	Replace/ Lower Main on Granville	$25,000			
929	Heavy Equipment (50% Water)	$10,000	$20,000	$20,000	$20,000
941	NISP	$230,000	$200,000	$889,224	$887,424
947	Capital Outlay – Additional	$9,000			
	Sable Avenue Loop	$3,000	$65,500		
	Central Park 12" Waterline	$2,000	$101,500		
960	Pine Cone / Sable Waterline Construction	$98,900	$226,250		
	Firestone Blvd. Loop	$0		$341,000	
	Potable Water System Master Plan Update	$0	$35,000		
	System Improvements	$0			$250,000
984	Sherilynn Circle	$0	$43,750		
996	CWCWD Tap Fees	$984,000	$984,000	$984,000	$984,000
	Subtotal	$1,512,600	$1,816,000	$2,384,224	$2,291,424
480000	Leases				
549	2006 International Plow Truck	$8,689	$8,689	$8,689	$8,689
558	Water Tank Site Lease	$4,860	$4,860	$4,860	$4,860
	Subtotal	$13,549	$13,549	$13,549	$13,549
	Total	$1,526,149	$1,829,549	$2,397,773	$2,304,973

Revenue sources available to fund capital improvements include: water rates, grants, long-term debt, plant investment fees, tap fees, cash-in-lieu of water rights, and charges for materials and services. The amount of funding from the various sources is determined by whether beneficiaries of improvements are existing or future customers.

Existing customers fund improvements through water rates. The amount of funding obtained through grants, plant investment fees, tap fees, cash-in-lieu of water rights, and payments for materials and services reduces the amount of water rate revenue required from existing customers.

In recent years, the Town has obtained grants to fund the majority of costs associated with installation of new waterlines. Without grants to fund those improvements, the amount of revenue required from rates would be much greater.

In this analysis, the cost of NISP is funded primarily from rate revenue. With NISP in place, existing customers will benefit from a more secure and reliable water supply, but the project is primarily a source of water for new customers. Determining the amount

future customers should contribute towards NISP through plant investment fees or special assessments is beyond the scope of this rate study. Before NISP is built and funded, the Town may want to consider the appropriate allocation of NISP costs between existing and future customers.

Table 3.4 shows 2009 capital improvements assigned to functions utilized in allocating costs to customer categories. Deducting other sources of revenue available to fund capital improvements from the total cost of projects yields the amount of rate revenue needed to fund capital improvements in 2009: $403,061.

Table 3.4 – Revenue Required to Fund Capital Improvements in 2009

Function	Total
Storage	$4,860
System Improvements, Repair and Replacement	$472,000
Meters & Yokes	$120,000
General Plant	$40,000
NISP	$200,000
Leases	$8,689
CWCWD Tap Fees	$984,000
Subtotal	$1,829,549
Other Sources of Funds for Capital Improvements	
State/Local Grants	$238,003
Plant Investment Fees	$24,000
Cash in Lieu of Water Rights	$25,000
Meter and Yoke	$102,485
Tap Fees	$1,037,000
Subtotal	$1,426,488
Total Capital Costs Recovered from Rates	$403,061

Revenue Requirements

Having determined (1) the amount of rate revenue required in 2009 to fund both O&M and capital improvements, and (2) the amount of revenue from other sources available to offset expenditures for both O&M and capital improvements, the total system revenue requirements can be calculated. This amount is shown in Table 3.5 and becomes the basis for allocating costs to customer categories and designing water rates.

Table 3.5 – 2009 Revenue Requirements

O & M Expense	
Assessments	$141,750
CWCWD Treatment	$711,964
Distribution	$342,503
Customer Services	$176,500
Customer Accounts	$326,937
Administration	$26,508
Subtotal	$1,726,163
Non-Operating Income Available to Offset O & M Expense	
Late Fees	$50,000
Water Share Leases	$50,000
Investment Earnings	$80,000
Subtotal	$180,000
Total O&M Costs Recovered from Rates	$1,546,163
Capital Costs	
Total Capital Costs Recovered from Rates	$403,061
REQUIRED REVENUE FROM RATES	$1,949,224

Projections

Table 3.5 shows that in 2009, Firestone needs to collect $1,949,224 in water rate revenue. This amount of revenue is required if water use per customer remains at the same level as in 2007. Proposed water rates developed in this rate study will increase the monthly bills of customers in certain categories, particularly during summer months for irrigation-only customers and residential customers at the upper end of water users in that category.

When adjusting water rates, it is prudent to plan for some reduction in water use by those customers that experience significant increases in their water bills. As a result of

rate increases developed in this rate study and other conservation measures implemented by Firestone, it is anticipated that irrigation-only customers will reduce their total water use by 15% and residential customers will reduce their outdoor use by 4%. These reductions in water use will decrease the amount Firestone pays to CWCWD for purchased water. This reduces the Town's O&M costs and consequently, the revenue requirements during the study period. Revenue requirements in 2009 with the estimated amount of water conservation described above are projected to be $1,920,000.

Table 3.6 shows projected revenue requirements during the study period and the percentage change in revenue requirements from one year to the next.

Table 3.6 – Projected Revenue Requirements

	2009	2010	2011
Revenue Requirements	$1,920,000	$2,160,000	$2,430,000
% Change from prior year	16%	12.5%	12.5%

Projected rate increases for 2010 and 2011 are in anticipation of the need to fund the Town's share of NISP in 2012. The amount and timing of future water rate increases will depend on when NISP is constructed and how much it costs.

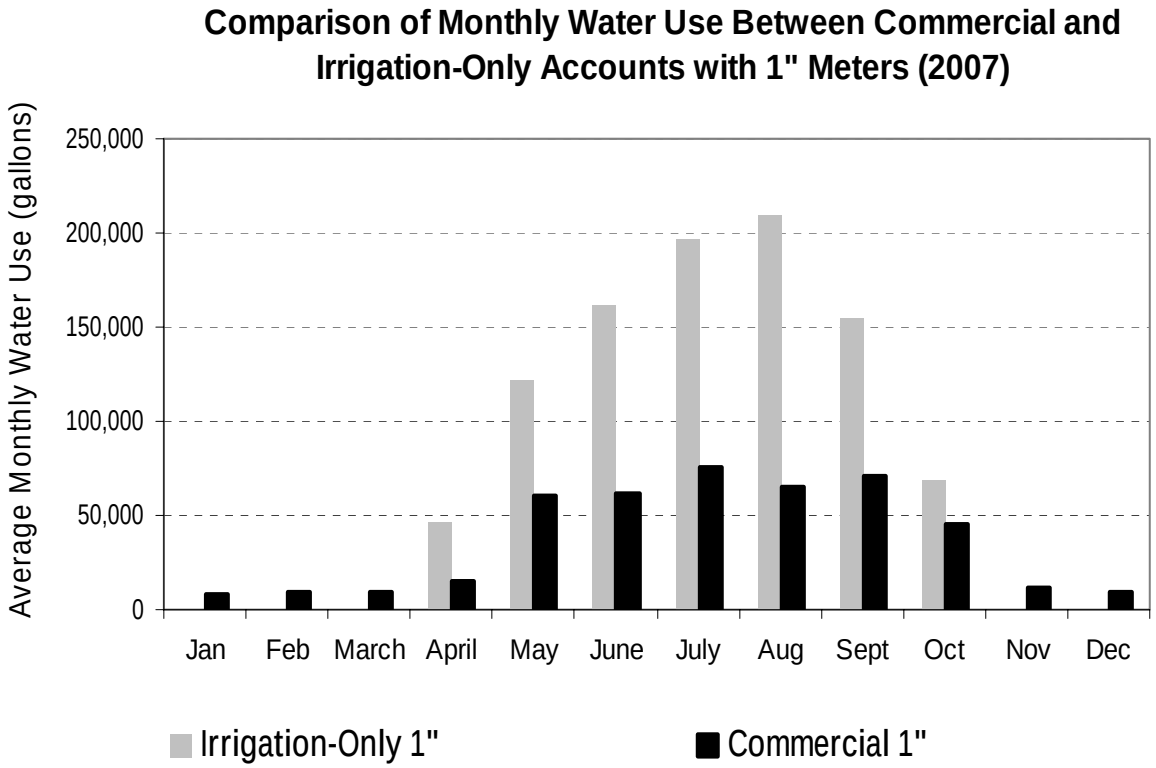
CHAPTER 4 – COST OF SERVICE

The revenue requirements shown in Table 3.6 represent the total cost of providing water service to Firestone's customers during the study period. These figures are used to allocate costs to the 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. In this study, the rates that customers use water are labeled "peak demands."

There are measurable costs associated with facilities required to meet peak demands. These costs need to be allocated appropriately so that customers with higher rates of water use pay proportionately more in recognition of the peak demands they place on the water system.

Figure 4.1 illustrates how customers with the same size meter can generate very different demands on the water system. The difference between the peak period demands of irrigation-only and commercial customers shown in Figure 4.1is an indication that irrigation-only customers should pay a greater percentage of costs for facilities sized to supply peak demands.

Figure 4.1 – Comparison of Monthly Water Use between Commercial and Irrigation-Only Accounts with 1" Meters (2007)



Functional Cost Components

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 rates of use. Identification of costs by functional components provides a means for distributing such costs to the various customer categories on the basis of their respective responsibilities for each particular type of service. In this rate study, costs are assigned to three functional cost components: (1) base costs, (2) extra capacity costs, and (3) customer costs.

Base costs are those O&M and capital costs associated with providing water at a constant rate of use or average-day use. C-BT assessments are an example of an O&M expenditure assigned totally to base costs. Assessments paid to Northern Water do not vary with the rate of water use by Firestone customers.

Extra capacity costs represent those O&M and capital costs incurred to meet customer peak demands in excess of average-day use. Payments to CWCWD for purchased water, public works water operations costs and certain administrative costs vary with the

rate of water use. Extra capacity costs are further segregated into costs associated with supplying peak-day and peak-hour demands.

Customer costs include customer related expenditures independent of water use. The cost of meter reading, billing, collections, accounting, software maintenance and IT support are included in customer costs and are the same for each customer regardless of water use. Customer costs also include expenditures for maintaining, testing, repairing and replacing meters and services. These costs are allocated based on meter size or meter capacity and are proportionally greater for customers with larger water meters.

Determination of Allocation Percentages

Allocation percentages are determined by utilizing projected water demands in the test year. Based on an analysis of historical water use and projected growth in the number of customers served, the following measures of water demand were determined for the test year:

Average Day (million gallons)	1.459
Peak Day (million gallons)	2.999
Peak Hour (million gallons)	4.484

Based on these demands for water service, allocation percentages shown in Table 4.1 were calculated.

Table 4.1 – Calculation of Allocation Percentages

Functional Cost Component	Base	Extra Capacity	
		Peak Day	Peak Hour
Base	100.00% (1)		
Peak Day	51.34% (2)	48.66% (3)	
Peak Hour	32.55% (4)	34.33% (5)	33.12% (6)

(1) 1.459 / 1.459
(2) (2.999-1.459) / 2.999
(3) 1.459 / 2.999
(4) 1.459 / 4.484
(5) (2.999-1.459) / 4.484
(6) (4.484-2.999) / 4.484

These percentages are used to allocate O&M and capital costs to base and extra capacity functions. Assigning functional costs to the different customer categories is necessary to perform the cost-of-service calculations.

Allocation of Capital Costs and Plant Investment

Capital costs include expenditures for capital improvements financed from water rates, long-term loans and other sources. Capital improvements that serve multiple functions (vehicles, equipment leases, etc.) are generally allocated to functional costs on the basis of net plant investment. In this rate study, net plant investment is measured by assigning annual depreciation on all fixed assets to specific cost functions, accumulating the annual depreciation for each cost function, then dividing the functional total by the total annual depreciation. Table 4.2 shows the percentages developed for allocation to general plant.

Table 4.2 – Percentage Allocation of General Plant Based on Depreciation of Fixed Assets

	Extra Capacity		
Base	Peak Day	Peak Hour	Customer
28.23%	28.27%	23.24%	20.26%

The various types of capital improvements planned for 2009 are consolidated and allocated to functional cost components in Table 4.3.

Table 4.3 – Allocation of Capital Improvements and Sources of Revenue

			Extra Capacity		
Classification	Total	Base Cost	Peak Day	Peak Hour	Customer Costs
Storage	$4,860	$2,495	$2,365		
Distribution	$472,000	$153,612	$162,061	$156,327	
Meters and Yokes	$120,000				$120,000
General Plant	$40,000	$11,292	$11,308	$9,297	$8,102
NISP	$200,000	$200,000			
Leases	$8,689	$2,453	$2,456	$2,020	$1,760
CWCWD Tap Fees	$984,000	$984,000			
Debt Service	$0	$0	$0	$0	$0
Subtotal	$1,829,549	$1,353,853	$178,191	$167,643	$129,863
Other Sources of Funds for Capital Improvements					
State/Local Grants	$238,003	$77,458	$81,718	$78,827	
Plant Investment Fees	$24,000	$24,000			
Cash in Lieu of Water Rights	$25,000	$25,000			
Meters and Yokes	$102,485				$102,485
Tap Fees	$1,037,000	$1,037,000			
Subtotal	$1,426,488	$1,163,458	$81,718	$78,827	$102,485
Total Capital Costs to be Recovered from Rates	$403,061	$190,394	$96,472	$88,817	$27,378

Allocation of O&M Expenses

O&M expense for the test year are allocated to functional cost components in the same manner as capital improvements. That is, O&M expenses support specific, identifiable services provided by the water enterprise. Once classified by the type of service provided, O&M expenses are then allocated to functional cost components as shown in Table 4.4.

Table 4.4 – Allocation of O&M Expenses and Non-Operating Income

Function	Total	Base Cost	Extra Capacity		Customer Costs
			Peak Day	Peak Hour	
O & M Expense					
Assessments	$141,750	$141,750			
CWCWD Treatment	$711,964	$116,580	$595,384		
Distribution	$342,503	$111,468	$117,598	$113,437	
Customer Services	$176,500				$176,500
Customer Accounts	$326,937				$326,937
Administration	$26,508	$5,767	$11,120	$1,769	$7,852
Subtotal	$1,726,163	$375,565	$724,102	$115,206	$511,289
Non-Operating Income Available to Offset O&M					
Late Fees	$50,000	$10,879	$20,974	$3,337	$14,810
Hydrant Meter Water	$0	$0	$0	$0	$0
Water Share Leases	$50,000	$10,879	$20,974	$3,337	$14,810
Vendor Fees	$0	$0	$0	$0	$0
Investment Earnings	$80,000	$17,406	$33,559	$5,339	$23,696
Subtotal	$180,000	$39,163	$75,508	$12,013	$53,316
Total O&M Costs Recovered from Rates	$1,546,163	$336,402	$648,595	$103,193	$457,973

Determination of Cost-of-Service

Table 4.5 consolidates allocated O&M expenses shown in Table 4.4 with allocated costs for capital improvements shown in Table 4.3. Combining the two types of expenditures yields a total of $1,949,224. That is the amount of water rate revenue required to fund projected costs in 2009 assuming customers do not reduce their water use. As discussed previously and illustrated in Table 4.6, water conservation is expected to reduce the amount of water revenue needed in 2009 to $1,920,000. This is the figure that will be used in designing rates.

Table 4.5 – Determination of Cost-of-Service

	Total	Base Cost	Extra Capacity		Customer Costs
			Peak Day	Peak Hour	
Total O&M Costs Recovered from Rates	$1,546,163	$336,402		$103,193	$457,973
Total Capital Costs Recovered from Rates	$403,061	$190,394	$96,472	$88,817	$27,378
REQUIRED REVENUE FROM RATES	$1,949,224	$526,797	$745,067	$192,010	$485,350
	$1,678,385	= Projected Revenue from Water Sales with no rate increase			
	16.1%	= Overall Increase in Water Rate Revenue			

Unit Costs of Capacity

To equitably allocate costs of service to the different customer categories, unit costs of service need to be developed for each functional cost component. Unit costs are calculated by dividing the total annual cost allocated to each component by the units of service associated with that particular cost component.

Different units are used for the different cost components. O&M and capital expenditures allocated to base costs are divided by total annual water use to determine the base unit cost of service. Peak-day and peak-hour capacity costs are divided by the maximum daily use and maximum hourly use to determine those respective unit costs. Customer costs are based on the number of accounts and relative capacity of water meters within the system. Table 4.6 shows the unit costs of service for each functional cost component.

Table 4.6 – Calculation of Unit Costs of Capacity

			Extra Capacity		Customer Costs	
Cost Category	Total	Base Cost	Peak Day	Peak Hour	$ / yr per 5/8" meter	$ / month per 5/8" meter
O & M Expenses	$1,546,163	$0.63	$216	$23	$140.44	$11.70
Capital	$403,061	$0.36	$32	$20	$8.40	$0.70
Totals	$1,949,224	$0.99	$248	$43	$148.84	$12.40

Customer Category Costs

The unit cost for each of the functional cost components shown in Table 4.6 is multiplied by the projected water use (base, peak day and peak hour) and number of accounts or equivalent meters in each customer category to determine cost responsibility. Table 4.7 shows the amount each customer category needs to pay toward their respective cost-of-service.

Table 4.7 – Cost-of-Service by Customer Category

Customer Class	Meter Size	Base Cost	Extra Capacity		Customer Costs	Total
			Peak Day	Peak Hour		
Residential						
	5/8"	$391,943	$521,328	$134,780	$466,480	$1,514,531
	3/4"	$0	$0	$0	$298	$298
	1"	$372	$850	$220	$149	$1,590
Mobile Home	2"	$0	$0	$0	$149	$149
Mobile Home	6"	$23,603	$38,269	$9,894	$149	$71,915
Subtotal		$415,918	$560,446	$144,893	$467,224	$1,588,482
Multi-Family	3/4"	$2,407	$2,589	$669	$1,191	$6,857
	1"	$478	$343	$9	$744	$1,574
Subtotal		$2,885	$2,932	$678	$1,935	$8,431
Commercial						
	5/8"	$3,552	$4,656	$1,204	$2,233	$11,644
	3/4"	$1,401	$1,960	$507	$893	$4,762
	1"	$8,279	$11,795	$3,049	$2,828	$25,952
	1 1/2"	$8,932	$11,133	$2,878	$1,488	$24,432
	2"	$3,070	$2,720	$703	$744	$7,237
	3"	$20,223	$30,942	$7,999	$595	$59,759
Subtotal		$45,457	$63,207	$16,341	$8,782	$133,786
Industrial						
	5/8"	$1,310	$1,062	$275	$149	$2,796
	3/4"	$1,036	$1,944	$503	$149	$3,631
Subtotal		$2,346	$3,006	$777	$298	$6,427
Irrigation Only						
	5/8"	$0	$0	$0	$447	$447
	3/4"	$2,890	$5,963	$1,510	$1,488	$11,851
	1"	$17,087	$30,835	$7,808	$2,679	$58,409
	1 1/2"	$17,598	$38,056	$9,636	$1,786	$67,077
	2"	$22,616	$40,621	$10,286	$744	$74,267
Subtotal		$60,191	$115,476	$29,240	$7,145	$212,051
Total Rate Revenue		$526,797	$745,067	$191,930	$485,383	$1,949,177

CHAPTER 5 – RATE DESIGN

Table 5.1 shows the results of consolidating the cost-of-service for customers with similar water use characteristics and incorporating the level of water conservation previously discussed.

Table 5.1 – Projected Revenue from Customer Categories

Customer Category	Projected Revenue Derived From Water Rates		% Change
	Proposed Cost-of-Service Rate Revenue	Existing Rate Revenue	
Commercial and Industrial	$147,133	$143,292	2.7%
Irrigation-only	$203,444	$147,996	37.5%
Residential	$1,499,441	$1,296,078	15.7%
Mobile Home Park	$70,103	$59,980	16.9%
Total	$1,920,121	$1,647,346	16.6%

Water rates developed in this rate study for each customer category are based on the need to recover the amount of revenue shown in Table 5.1.

Considerations in Water Rate Design

Water rates can be designed to address a number of issues, but the most critical considerations in the development of rates proposed in this study are:

- Rates must derive revenue requirements which include O&M expenses and capital costs.
- Revenue requirements derived from water rates must be equitably allocated to the various customer categories commensurate with the cost-of-service.
- Rates should be designed to discourage the wasteful use of water.
- Rates must be relatively easy to administer, understood by customers, non-punitive and insure revenue stability.

Existing Water Rates

The Town's existing rate structure consists of: (1) a base rate entitling each customer to use a certain amount of water each month before incurring additional charges, and (2) a consumption charge levied on each 1,000 gallons of water used over the minimum quantity provided under the base rate. The Town currently has a tiered water rate structure for residential customers. Tiered rates increase the consumption charge incrementally depending on the amount of water used.

The existing residential water rate has three rate tiers: (1) 5,000 to 15,000 gallons, (2) 16,000 to 20,000 gallons, and (3) 21,000 or more. The residential water rate currently allows customers to use up to 5,000 gallons with payment of a $22.75 base rate charge. The Town's existing water rates are summarized in Table 5.2.

Table 5.2 – Existing (2008) Water Rates Established in Resolution No. 03-12

Meter Size	Base Rate	Water Included in Base Rate (gal)	Additional Water Beyond Base (gal)	Rate for Additional Water per 1,000 gal
5/8"	$22.75	5,000	5,001-15,000 15,001-20,000 above 20,000	$1.50 $1.75 $2.25
3/4"	$34.25	7,000	7,001-15,000 15,001-20,000 above 20,000	$1.50 $1.75 $2.25
1" 1 ½" 2" 3" 4" 6"	$57.00 $136.50 $227.50 $524.75 $932.00 $2,095.50	12,000 30,000 50,000 115,000 204,000 460,000	above 12,000 above 30,000 above 50,000 above 115,000 above 204,000 above 460,000	$1.75 $1.75 $1.75 $1.75 $1.75 $1.75

Proposed Changes to Water Rate Structure

Several changes to the current rate structures are proposed to improve equity between customer categories and between customers within each customer category. The proposed rates have been designed to encourage water conservation. Proposed changes to the existing water rate structure are summarized below:

- Reduce the base rate charge to more accurately reflect fixed costs (billing, meter reading, postage, customer service, etc.) and costs proportionate to meter size (meter maintenance and repair, meter testing, certain administrative costs, meter pit access and maintenance, etc.).

- Eliminate the practice of providing water with the base rate to prevent overcharging customers that use less than the minimum amount provided with the base rate and to encourage water conservation.

- Implement tiered rates for residential customers with a larger dollar amount between tiers to encourage efficient use of water, particularly as it relates to irrigation of landscaping. The Town's current rate structure does not provide a particularly strong conservation price signal for residential customers.

- Adopt a fixed base charge determined by meter size and a uniform cost-of-service based consumption charge (no tiers) for: (1) commercial and industrial customers,
  (2) irrigation-only customers, and (3) mobile home parks.

Base Rate

A service charge, minimum monthly charge or base rate is included in the existing and proposed water rates to recover fixed costs that are independent of water use (billing, meter reading, postage, customer service, etc.) and costs proportionate to meter size (meter maintenance and repair, meter testing, certain administrative costs, meter pit access and maintenance, etc.). A base rate provides a means of recovering fixed costs and ensures a stable source of revenue.

The lower the base charge, the higher the consumption charge needs to be to recover the amount of revenue required. Higher consumption charges tend to provide customers a recognizable price signal on their monthly bill when use increases. This can lead to greater awareness about water use and efforts to conserve when possible. However, when a higher percentage of rate revenue is derived from consumption charges, there is less certainty in the amount of fixed revenue generated. Careful consideration was given to balancing the need for a relatively stable source of revenue with the goal of encouraging water conservation.

It is proposed that the base rate paid by all customers in Firestone be reduced and that no water be provided with the base rate. With the proposed rates, all water use will be subject to a consumption charge developed for each customer category using cost-of-service principles.

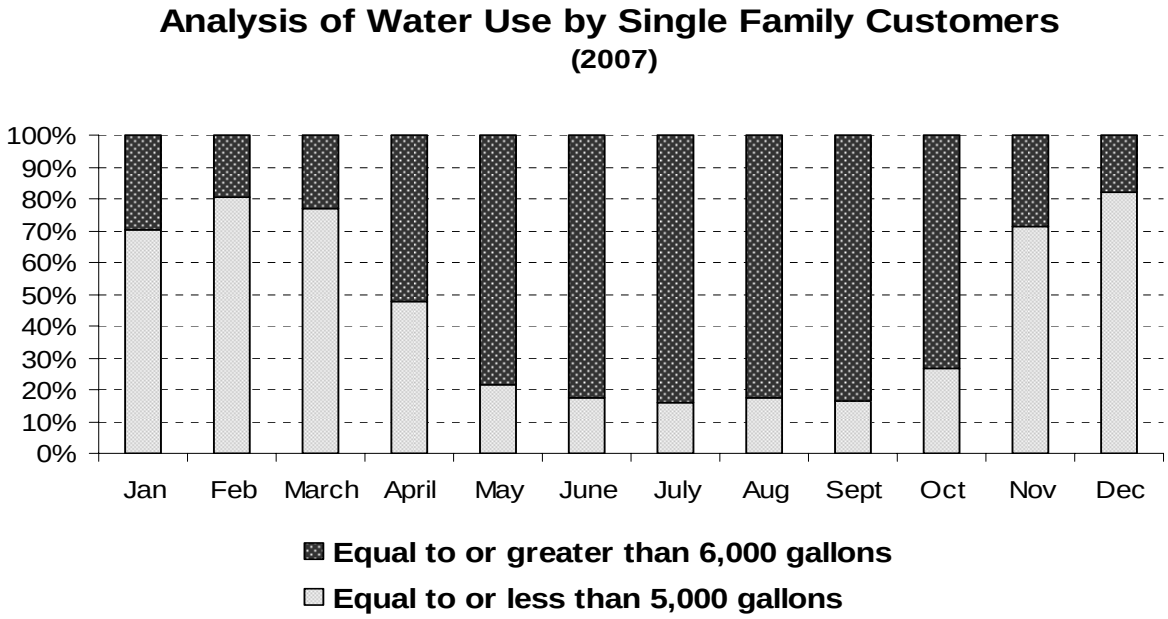
As illustrated in Table 6.2, the base rate charged by Firestone provides each customer a certain amount of water each month. After a customer's use exceeds the amount of water provided with the base rate, the consumption charge applies.

For residential customers, the 5,000 gallons provided each month with the base rate is more than the amount used by the average customer during non-irrigation months. In 2007, the average water use in non-irrigation months (January, February, March, November and December) was 4,000 gallons.

With the amount of water included in the base rate exceeding the amount of water used by the average residential customer during the winter and fall, there is little incentive to reduce indoor water use. The current rate structure also overcharges those customers that consistently use 1,000 or 2,000 gallons per month.

Figure 5.1 shows the percentage of single family customers using 5,000 gallons or less during each month in 2007. It illustrates that during non-irrigation months, 70%-80% of single family customers use less water than the amount provided with the current base rate. Under the existing rate structure, single family customers have little incentive to use less than 5,000 gallons and, receive no clear indication of how their water use affects their monthly bill.

Figure 5.1 – Analysis of Water Use by Single Family Customers (2007)



Proposed base rates recover fixed costs by distributing those costs among all customers based upon relative meter capacity. Relative meter capacity is a measure of how much water a meter can accurately measure compared to a standard 5/8" meter. It is used in rate making to reflect the fact that larger meters are more expensive to maintain, repair, test and replace. Table 6.3 shows the relative capacities of different size meters and how that ratio of capacity is used to develop the proposed base rates.

Costs included in the base rate include both the unit cost of capacity calculated in Table 5.6 and the minimum monthly charge proposed by CWCWD in the most recent contract presented to the Town. Combining those two cost components generate the base rates for different size meters shown in Table 5.3.

Table 5.3 – Calculation of Base Rate for Different Size Meters

Meter Size	Relative Capacity of Meters	Customer Cost	CWCWD Monthly Minimum Charge	Total Base Rate
5/8"	1.0	$12.40	$2.67	$15
3/4"	1.5	$18.61	$4.01	$23
1"	2.5	$31.01	$6.69	$38
1 1/2"	5.0	$62.02	$13.37	$75
2"	8.0	$99.23	$21.40	$121
3"	15.0	$186.06	$40.12	$226
6"	50.0	$620.19	$133.74	$754

Consumption Charge

The consumption charge is the rate (in $ per 1,000 gallons of water use) developed for each customer category to recover variable costs. Cost-of-service based consumption charges are developed for each customer category to insure there are no interclass subsidies. This insures that customers in each category pay only their assigned share of costs.

The annual revenue requirements for each customer category shown in Table 6.1, less annual revenue recovered through base rates, represents the amount of revenue that needs to be recovered through consumption charges.

Revenue from base rates is calculated by multiplying the forecast number of meters of different size in each customer category by the applicable base rate shown in Table 6.3. The portion of revenue recovered through consumption charges is determined by deducting the annual revenues from base rates from the customer category's 2009 cost-of-service. The consumption charge for each customer category is based on the revenue requirements for the test year and the forecast annual water use in each customer category. This is the methodology utilized to develop the proposed consumption charges for the different customer categories in Firestone.

Residential Rate Alternatives

Two residential rate alternatives were developed during this analysis. Both alternatives encourage water conservation by increasing customer's water bills as their water use increases. Alternative #1 is a three-tier rate structure with tiers similar to the ones currently used in Firestone. Alternative #2 is a more aggressive four-tier rate structure that sends a clear price signal to customers that have water use falling within the fourth tier.

Any time new rates are implemented, some reduction in water use can be expected. This reduction has been anticipated in both proposed residential rate alternatives. Even with this degree of planning, the reaction to new rates by residential customers is difficult to accurately predict. The greater the financial impact on customers with water use in the highest rate tier, the greater the uncertainty surrounding the reduction in water use, and consequently, revenue.

The proposed 2009 residential water rate alternatives derived from this rate study are summarized in Table 5.4.

Table 5.4 – Proposed 2009 Residential Water Rates

	Monthly Minimum Charge	Consumption Charge ($ / 1,000 gallons)
Residential Alternative #1	$15	
0 to 5,000 gallons		$1.40
6,000 to 20,000 gallons		$2.50
Greater than 20,000 gallons		$4.00
Residential Alternative #2	$15	
0 to 5,000 gallons		$1.30
6,000 to 20,000 gallons		$2.50
21,000 to 32,000 gallons		$3.70
Greater than 32,000 gallons		$5.00

Proposed Commercial and Industrial, Irrigation-Only and Mobile Home Rates

Tiered rates are not proposed for commercial and industrial customers, irrigation-only customers and mobile home parks. Adoption of tiered rates for these customers would be problematic since water demands vary significantly due to the difference in operations and water needs. Greater water use by customers in these categories does not necessarily imply inefficient or wasteful use. To encourage conservation and efficient use by customers in these categories, water audits or technical assistance might be more productive.

That being said, the proposed irrigation-only water rate generates charges that are approximately 37.5% higher than amounts currently charged. The increase in costs for irrigation-only customers that maintain the same irrigation practices will be even higher. The 37.5% increase is based on the projection that irrigation-only customers reduce annual water use by 15%. Proposed irrigation-only rates and other conservation measures implemented by Firestone should lead to water use reductions in the irrigation-only category. Reductions will only result if water use of irrigation-only customers is monitored by an interested party. Too often, irrigation schedules for commonly owned greenbelts and commercial landscaping are set by a contractor that is

more concerned with the appearance of the irrigated area than the amount of the water bill.

Table 5.5 shows the proposed water rates for customers in the commercial and industrial, irrigation-only and mobile home customer categories.

Table 5.5 – Proposed 2009 Water Rates for Commercial and Industrial, Irrigation-Only and Mobile Home Parks

	Monthly Minimum Charge	Consumption Charge ($ / 1,000 gallons)
Meter Size		
5/8”	$ 15	
3/4”	$ 23	
1”	$ 38	
1 1/2”	$ 75	
2”	$ 121	
3”	$ 226	
6”	$ 754	
Commercial and Industrial		$2.20
Irrigation Only		$3.35
Mobile Home Parks		$2.50

CHAPTER 6 – COMPARISON AND IMPACT ANALYSIS

Residential customers represent 95% of all accounts in Firestone and use approximately 70% of total metered water deliveries. Because residential customers are responsible for such a significant portion of water use and revenue, the impact of rate adjustments on individual residential customers warrants additional examination.

Impact of Proposed Residential Rate Alternatives

Table 6.1 shows the impact of the two residential rate alternatives on single family customers using different amounts of water.

Table 6.1 – Impact of Proposed Residential Rate Alternatives on Single Family Customers

Residential Rate Alternative #1 (three tiers)

Single Family Customer Classification	Existing Annual Charges	Proposed Annual Charges	$ Difference	% Change	Annual Use (gallons)	Annual Use (acre feet)
99th percentile	$1,042	$1,584	$542	52.0%	448,000	1.38
90th percentile	$ 593	$ 801	$208	35.1%	235,000	0.72
Average	$ 380	$ 439	$ 59	15.6%	126,000	0.39
10th percentile	$ 320	$ 349	$ 30	9.4%	79,000	0.24

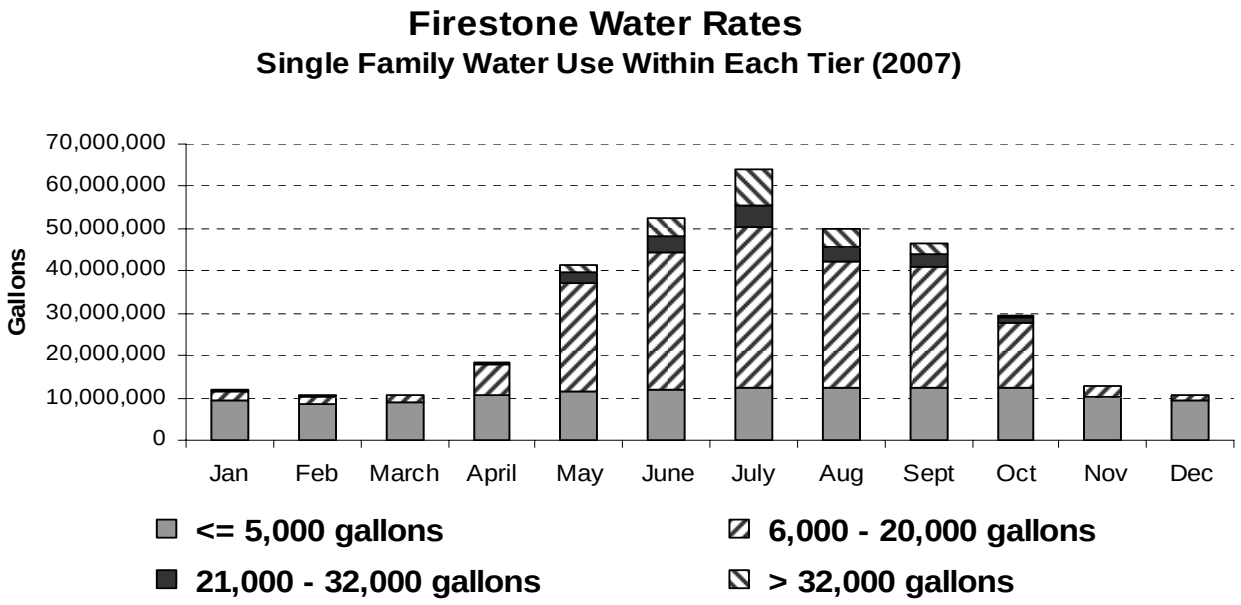
Residential Rate Alternative #2 (four tiers)

Single Family Customer Classification	Existing Annual Charges	Proposed Annual Charges	$ Difference	% Change	Annual Use (gallons)	Annual Use (acre feet)
99th percentile	$1,042	$1,725	$683	65.5%	448,000	1.38
90th percentile	$ 593	$ 794	$202	34.0%	235,000	0.72
Average	$ 380	$ 433	$ 53	14.0%	126,000	0.39
10th percentile	$ 320	$ 337	$ 18	5.6%	79,000	0.24

The majority of water use by single family customers falls within Tier 2 (6,000 to 20,000 gallons). Analysis of water use data from 2007 shows that the average single family customer uses 126,000 gallons per year. Only 3,000 gallons of the annual water use of the average single family customer falls within Tier 3; none of it falls within Tier 4 of Residential Rate Alternative #2.

Figure 6.1 illustrates the amount of residential water use in each tier of Residential Rate Alternative #2 by month during 2007. Tier 2 (6,000 to 20,000 gallons) is the same for both residential rate alternatives.

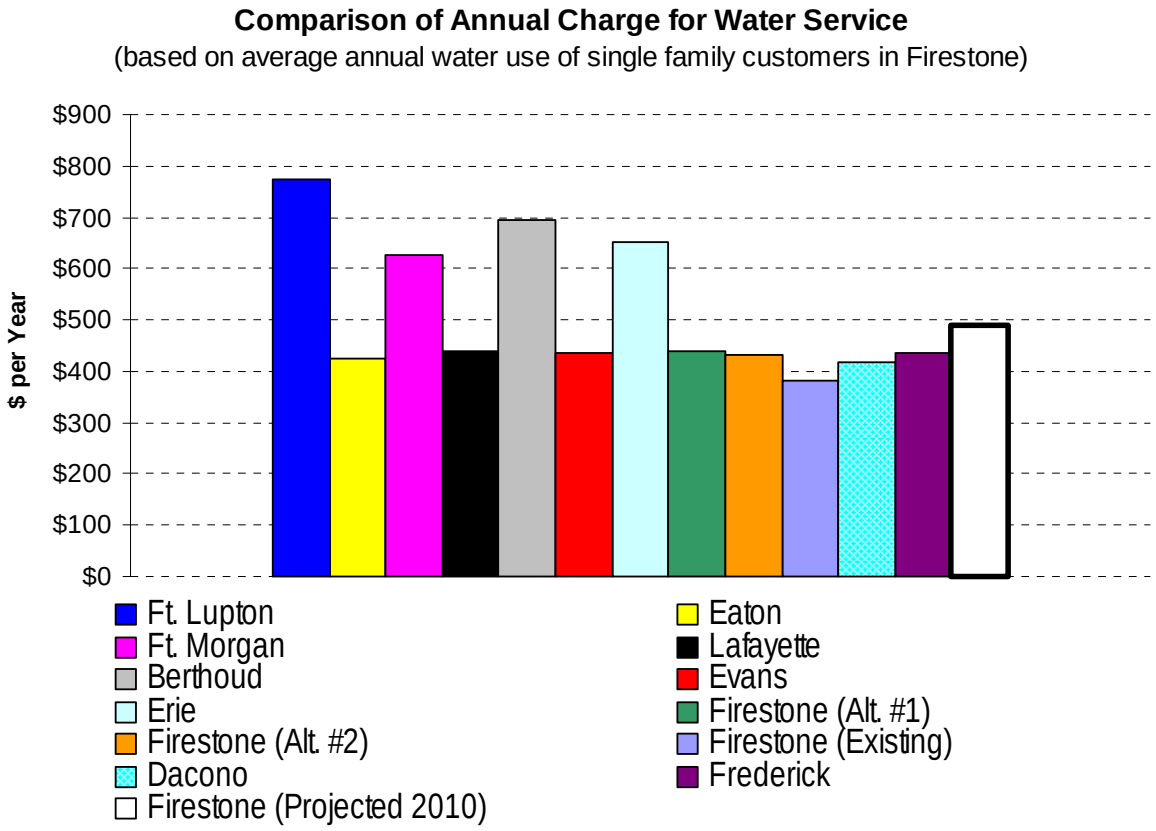
Figure 6.1 – Firestone Water Rates



Comparison of Residential Water Bills

Figure 6.2 compares the annual cost of water for the average Firestone single family customer using 126,000 gallons per year with the amount that customer would pay for the same amount of water in nearby communities. The annual cost paid by the average Firestone single family customer with existing (2008) and proposed (2009) residential water rates is shown.

Figure 6.2 – Comparison of Annual Charge for Water Service



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, distance to treatment plant, 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 it 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.

CHAPTER 7 – WATER CONSERVATION

Although conservation oriented water rates are an important step in managing water demand, they are most effective when part of a comprehensive conservation plan that addresses a variety of issues. This rate study was performed as a result of recommendations contained in the Raw Water Master Plan and Water Conservation Plan recently prepared for Firestone. Staff is in the process of implementing other recommendations included in the Water Conservation Plan. When fully implemented, the proposed water rates and other measures contained in the Water Conservation Plan are expected to reduce build-out water use by at least 15%.

Water rate revisions proposed in this rate study create incentives for customers to use water more efficiently. Proposed changes in rates that encourage water conservation are described below:

- Reducing the amount of the base rate (from $22.75 to $15.00 per month for residential customers) increases the amount of the consumption charge. When customers pay more for the water they use, they tend to monitor their water use more carefully and make modifications when possible.
- Eliminating the policy of providing water with the base rate (currently 5,000 gallons per month for residential customers) rewards those customers that use less than the minimum amount provided with the base rate. Currently, there is no economic incentive to use less than the amount of water provided with the base rate.
- Tiered rates for residential customers have a larger dollar amount between tiers than the existing residential rate. With the proposed residential rate tiers, customers will have a better understanding of the consequence of higher water use.
- The proposed consumption charge for irrigation-only customers is significantly higher than the existing commercial rate charged by Firestone. Irrigation-only customers will see their water bills increase by approximately 50% or more if they do not use water more efficiently. Studies have determined that most irrigation systems apply more water than is required to maintain an attractive landscape. Research also shows the greatest reductions in water use are achieved by focusing on outdoor water use. Irrigation-only customers that improve the efficiency of their sprinkler systems and landscape with materials that require less water will be rewarded under the proposed water rates.

CHAPTER 8 – CONCLUSIONS AND RECOMMENDATIONS

The discussion presented in this report provides a summary of the rate analyses performed on behalf of Firestone. Water rates developed in this rate study recover the Town's cost-of-service, eliminate inequities between customer categories, fund planned capital improvements, promote revenue stability, and encourage water conservation.

Recommendations

The following recommendations are offered as a result of the analyses described in this report:

- Adopt by resolution, the water rates developed in this rate study for the following customer categories: (1) Residential, (2) Commercial and Industrial, (3) Irrigation Only, and (4) Mobile Homes.
- The three-tier Residential Rate Alternative #1 is recommended over the four-tier Residential Rate Alternative #2. Alternative #1 has tiers similar to the existing residential rate structure which should make it easier for customers to understand and accept. Revenue will be more stable with Alternative #1 since the highest rate tier is not as punitive as the highest rate tier in Alternative #2. The price signal sent to residential customers with the greatest water use will still be significant with Alternative #1 ($\pm$ 50% increase in summer month bills with Alternative #1 versus $\pm$ 65% with Alternative #2).
- Continue to pursue grants to fund the cost of new waterlines. The availability of grant funds reduces the amount of revenue the Town needs to generate through its water rates.
- Increase the Capital Investment and Repair Charge currently assessed by the Town for each new 5/8" meter by $400 (from $600 to $1,000). Consider additional adjustments to the Capital Investment and Repair Charge in the future as the cost, timing and allocation of benefits associated with NISP are better understood.
- Evaluate all miscellaneous charges and billing practices to insure the Town recovers the full cost of providing services and materials to customers and contractors.
- Initiate monthly charges for each new customer as soon as the Town is required to start paying the monthly minimum charge required in the CWCWD contract.

- Evaluate charges to new customers that purchase a meter and meter yoke supplied by the Town to recover the full cost of ordering, stocking and supplying these materials.

- Carefully monitor revenues and cash flow with the proposed water rates. Weather and water use will influence revenue more than those factors have in the past. With existing rates, approximately 60% of total annual revenue was collected with base rates. Proposed rates recover approximately 45% of total annual revenue through base rates and the sale of water previously supplied with base rates.

- Revise utility bills to show the amount of water used by residential customers each month in each rate tier. If possible, show 13 months of water use history on all utility bills. These measures will reinforce the conservation signals associated with the new water rates.

- Independently audit bills after implementation of rate changes to insure the utility billing system generates the correct charges for all customers.

- Update the cost-of-service analysis at least every three years or whenever significant changes to the water enterprise budget occur. Changes in the makeup of customers, revisions in the cost and timing of capital projects, and changes in water use patterns may alter the Town's cost-of-service.