

Water Rate Study

City of Manzanita

Final Report

June 2014



Prepared by:

Oregon Association of Water Utilities

RECEIVED

JUN 20 2014

CITY OF MANZANITA

Table of Contents

Section	Page
Executive Summary	es1/es5
Introduction	1
Cost Evaluation	5
Rate Study Approach.....	5
Affordability Index	6
Historical Rates	7
Rate Synopsis	
System Data	7
Scenario One – Existing Rates	8
Scenario Two – Base Rate 75	9
Scenario Three – Base Rate 85	11
Scenario Four – Meter Multiplier Cost 7525	12
Scenario Five – Meter Multiplier Cost CPI	14
Scenario Six – Increased Consumption Rate	15
Talking Points	16
Summary	17
Table 1: Current Expenditures	2
Table 2: Annual Water Production	2
Table 3: Cost per Unit of Production	3
Table 4: Current Rate Information	4
Table 5: Median Household Information	6
Table 6: System Data	7
Table 7: Existing Rates	8
Table 8: Base Rate 75	9
Table 9: Base Rate 85	11

Table 10: Meter Equivalencies-Capacity Allowances	12
Table 11: Water Allowance / Monthly Cost	13
Table 12: Meter Multiplier Cost 7525	13
Table 13: Meter Multiplier Cost CPI	14
Table 14: Possible Tier Settings	15

EXECUTIVE SUMMARY

The City of Manzanita called upon the Oregon Association of Water Utilities to conduct a water rate study in order to determine the adequacy of the proposed rates for the 2014-2015 year. The purpose of the study was to develop financial assistance and rates that:

- Provide examples of rates which meet the projected capital and operation and maintenance (O&M) costs of the system,
- Determine equitable costs among the different types of system users,
- Encourage efficient use of the water,
- Are relatively simple to administer, understand, and are consistent with industry standards.

The rate study stems from a justification of a single expenditure line created and managed by the city's administration office. This figure includes personnel services, materials and services, contingency funding and capital improvement. The capital improvement costs are not determined in this study but planned improvements will pave the way to aligning system costs to future rates.

Existing rates are as follows:

Table 1: Existing Rates		
Service Connections	Base Charge	Water Allowance
1,697	\$34.50	6,000 gallons ¹

1 – Base rate and gallons are associated with "residential" users. Variable rates are associated with other classification of users.

The \$34.50 typical monthly bill is usually associated with single family residences; yet there is some discrepancy among the classification of users, water allowances and the size of the connection.

Revenues / Expenditures:

Proposed revenue requirements for fiscal year 2014-2015 are \$1,067,408.00 while base rate revenues equal \$748,665.00 or 70.14 percent of total proposed budget. The existing consumption rate, (a charge per unit of water) is \$1.50 (inside) and \$2.25 (outside), generates an unmeasurable figure due to a impracticable allowance of water. Ninety-six percent of users (1,634) receive 6,000 gallons water allowance per month that totals 117 million gallons, when total annual production average is 108 million gallons. When applying data verified figures of 2,800 monthly gallons to the 1,634 users, total annual consumption equals 54.9 million gallons, which when subtracted from total water sales, creates potential revenue of \$90,391.00 or 8.5 percent of total expenditures. Current revenues based on proposed budget totals 78.70 percent

With a total revenue assessment at 70.70 percent, it is determined additional research into the financial aspects of the water department were necessary to create a balanced budget. Proposed annual budget of \$1,067,408.00 includes \$170,417.00 dollars, designated as capital outlay, monies that will be used in the future to upgrade the water system. An evaluation of the water system stated in the February 2010 Water System Capital Improvement Plan table will assist the Council and staff in determining the necessary funds appropriated for both contingency and capital outlay funding.

One suggestion that coincides with the collection of information from the water system is to adjust the monthly rates based solely on the additional planned expenditures and projects discovered from year-to-year. This adjustment can be applied to the base rate or consumption, and is determined by the size of the additional expenditures.

User Characteristics:

Equitable fees assessed to customers begin with a determination of the types of users. For the City of Manzanita, the classification of customers falls into a typical range of categories, with single family residents being the majority (96%) class. Approximately 3-4 percent of the consumers are listed as commercial accounts. Equitable allocation of charges is based solely on the customer's average monthly water consumption.

Cost Evaluations:

If the total operating expenditures were equally divided according to the number of consumers, the cost per user for the city would be \$52.41 per month. As an approximate 16 percent contingency fund is proposed in the budget, this monthly cost figure simply maintains a balance between the revenues and expenditures.

$\$1,067,408.00 \text{ divided by } 12 \text{ months divided by } 1,697 \text{ connections} = \52.41 per month

When determining cost for water, equity centered on water consumption should be applied across the board, (meter size, and classification of the connection) and this is accomplished by means of determining the price per unit and the amount of consumption per month. One should pay only for the amount of water consumed. Believed as the highest priority regarding water costs; is that consumers should pay for those costs associated with providing continued high quality safe clean water.

Rates:

Water rate designs involve outlining charges for the customer necessary to generate a level of revenue to meet budget forecasts for the water system. At this point, we reviewed the amount of water produced and divided the new expenditure line to determine the cost associated with producing a single unit of water (1,000 gallons). Using the production numbers from a four year running average 2009-2013 and applying those same amounts to the new fiscal year expenditures, gives an estimate of the price per unit required to meet proposed expenditures. See Table 2:

Table 2: Cost per unit of production

Production of Water	Expenditures	Cost per 1000 gallons (1 unit)
108,723,999 gallons (108,723 units)	\$1,067,408.00	\$9.82

Looking at the monthly allowance of water and applying the cost per unit to the number of units, a typical residential bill should be six units of water for a total of 6,000 gallons at \$9.82 per unit, or \$58.92 total cost. With extensive review from Jerry Taylor, actual usage at this level was determined to be six percent of total users. Total water sales are more than likely being directed to commercial and bulk water accounts. This is in a closer alignment with the understanding of water consumption, cost evaluations and revenues required to meet budgetary concerns.

One main interest with this study was the equitability of usage for all customers. Fairness across the board is defined in a manner that low volume consumption should pay a fair share, as well as large consumers should not receive a volume discount.

Several methods to determine rates can be applied to a study with the basic approach examining the base rates versus consumption (volume) rates. It is typically suggested that having the base rate cover 60%-75% of the annual fixed expenses of the water budget allows for the balance of revenues generated by what is termed a *volume rate*. The City of Manzanita has met the goal with the base rates equaling 70.14 percent.

The metered amount of water can be charged by a unit measurement in gallons or cubic feet. The meters for the City of Manzanita measure in gallons and for every 1,000 gallons, a dollar amount can be charged. Drawing your attention to the unit of measure, if 70 percent of the unit cost (\$9.82) or \$6.87 is accounted in the base rate, then \$2.95 would be necessary to make up the balance of required revenues.

Scenario One: Existing Rate

This example provides a concise view of the existing rates (both base and consumption rates) which currently provides an indication to the overall revenues required. The City of Manzanita has a good awareness of the approximate water loss. Difference in total master meter gallons and water sales are estimated at a 12.55 percent unaccounted for water loss. This percentage corresponds in the acceptable range as it relates to management and conservation of water. An assumption of 2,800 gallons usage versus the 6,000 gallons provides additional 8 percent revenue, totaling 78.7 percent. A revenue shortfall of 21.3 percent is discovered with this scenario.

Scenario Two: Base Rate 75

In this example, the base rate is adjusted to meet 75 percent of the proposed budget based on a 5/8 inch connection, then applied to all connections regardless of the size. The allowance of water recommended in the base rate is reduced (4,000 gallons / 4 units). The emphasis is placed on the cost per unit of water as it relates to meeting budgetary requirements. Set at \$16.00 per unit, the revenue from consumption charges equals 24.95 percent of the budget. Combined with the base rate projected revenues, revenues match total proposed budget. The discovery in this example is the extremely high per unit consumption rate necessary to meet revenue requirements. When the base rate is low or the number of available units to sell is considered depleted, the cost per unit is increased. The perception of inequality could be found with the high consumption users, as high volumes users would see their bill on an upward trajectory.

Scenario Three: Base Rate 85

Primary attention in this scenario reveals how the base rate affects the consumption rate as well as defining where the initial revenues are determined. When establishing a higher base rate, the water system depends less on high consumer usage each month to make up any difference in budget requirements. With a higher base rate, usually per unit charge is lowered, and with this scenario, the unit consumption costs compares closely with the unit production cost.

Setting the base rate at 85 percent simply outlines how the consumption rate decreases as the base rate is increased. As the variable base rate scenario is implemented, the 85 percent base rate reveals that all consumers, regardless of the amount of water consumed, the cost per unit is applied fairly across the board. There is no burden placed on any one set of users as it relates to the amount of water consumed.

A \$44.55 base rate (4,000 gal. allowance) paired with a per unit cost at \$9.61, allows the water system a steady monthly income regardless of high and low consumptions. In this example, the majority of fixed costs meet base rate revenues. Typical usage estimated at 2.8 units or 2,800 gallons would determine a monthly rate of \$44.55 since the allowance of water is above normal usage.

Scenario Four: MM Cost 7525

With this scenario, the base rate allowance of water is maintained at 4,000 gallons and the base rate for a 5/8 inch connection is \$39.31 per month. This monthly fee establishes the base rate to meet 75 percent of proposed budget, and then applies the meter multiplication factor to larger connections. These factors simply charge an increased monthly fee due to the additional costs of larger infrastructure required to meet the demands of larger user in terms of cost for repair and replacement. If a larger connection pays an increased ratio as it relates to the costs of a 5/8 inch connection, a larger portion of water allowance may also be provided, thus matching the additional monthly costs.

Total base rates for all sized meters equals 79.6% and brings uniformity among the users with the consumption rate applied at \$13.00 per unit. The rate associated with this scenario may be skewed due the allowance of water. With production cost being \$9.82 per unit, 79% from the base rate would correlate the consumption cost at \$2.06.

Scenario Five: MM Costs CPI

Using the consumer price index (CPI) running annual average 2.2%, applying it to the 5/8 inch meter we see a base rate of \$39.31, which was rounded up to \$39.50. Adjoining the cost meter multiplier to the larger meter connections, this scenario generates approximately 80% of required revenues. All monthly cost figures are rounded upward to the nearest 0.25, at a request from the City of Manzanita. The allowance of water is set at 4,000 gallons for the residential users both inside and outside the city. An exception to the cost meter multiplier is the bulk users factored at a 2 inch meter, when a 4 inch pipeline is in place.

Approximately \$1.94 (20% of revenues) per unit will be required for all water units to be sold to meet budget requirements. With this scenario, the city chose to increase the unit rate from \$1.50 and \$2.25, inside and outside respectively to \$2.50 and \$3.25. These figures were determined when reviewing a possibility of applying an "ascending tier rate" thus providing an element of conservation into the rates.

Scenario Six: Increased Consumption Rate

The idea behind increase consumption rate, as users consume more water during seasonal changes, an increase in cost per unit is applied a key component for encouraging conservation. In the example spreadsheet, the first tier relates to the allowance of water (4,000 gallons) included in the base rate, "residential only". The first tier charges \$2.50 per unit of water from 4,001 gallons to 8,000 gallons, when a new rate (\$3.50) applies to each unit of water beyond 8,000 gallons.

The City of Manzanita has chosen to table this idea for the future, until it can be determined how any new rates will affect the consumers.

Conclusions:

The approaches used in this study are centered on industry standard methods and principles. The implementation of the resulting rates and charges will assist the City of Manzanita to continue to provide quality water and service to customers.

The City of Manzanita has selected to use an adjusted version of the examples presented in this rate study as a means to meet required expenditures. With the current base rate set at \$34.50, a decision to increase the monthly cost to \$39.50 for 5/8inch services and apply the cost meter multiplier to the larger sized connections allows 79.98 percent of total expenditures to be acquired from the base rate. The consumption will be increased to \$2.50 per unit inside users and \$3.25 per unit for outside users. The bulks accounts will be charge \$2.75 per unit due to the volume they consume.

Consumer sentiment regarding cost for services is important to keep in mind, relating factors of low consumption and fixed income in the current rates. Holding a high level of consumer confidence in the water system should be accomplished through educational flyers, meetings, and water quality reports.

Conservative and timely approaches to rate increases will allow the consumers of the city's water to better acclimate to the increases brought on by either increased system costs or inflationary requirements. Abrupt increases in monthly rates cause discontentment and mistrust with the consumers.

The City of Manzanita may increase the base rate annually using a method of analyzing the water system expenditures. This would effectively allow the water system to stay in alignment with the costs associated with both routine operations and capital improvements.

The question pertaining to water rates is not "if" they will increase but rather "when" the rates will need to be adjusted. Revealing those aspects that affect the costs of operations and maintenance should be routinely announced to the consumers in an effort to increase and promote the customer's knowledge in an effort to eliminate sticker shock. Regular review of budget expenditures and revenues required will provide insight to the costs of the water system.

It is the hope of Oregon Association of Water Utilities to provide continued support efforts to the City of Manzanita in all aspects of improvements that are executed to their water system.

Water Rate Study

Introduction:

In January 2014, the City of Manzanita authorized Oregon Association of Water Utilities, to review current water rates. The purpose of this study is to develop examples of financial strategies and rates that:

- Provide adequate revenue to meet the operation and maintenance costs, capital improvement costs as well as review contingency funding.
- Determine and distribute costs among the various consumer types.
- Are relatively simple to understand and implement, being consistent with industry practices.

It is a privilege for Oregon Association of Water Utilities to provide this level of rate study service to the membership and present this study and review to the City of Manzanita. When conducting a rate study, the best results are based on the most accurate data obtained, equity among the consumers and revenues that meet demands and allow the water system to operate according to state regulations.

After careful review of the written materials provided by Jerald Taylor and discussions with key personnel, some points are necessary to mention in order to maintain continuity, they are:

- Changes in necessary monies for capital improvement.
- Creation of a contingency fund for emergency purposes.
- Existing expenditures based on billing units of 1000 gallons.
- Monthly costs based on the number of active meter connections.

After an extensive evaluation of current budget numbers, in regards to this rate study, it appears that modifications in the existing water rates is necessary to meet the financial obligations of the City of Manzanita for operations of the public water system. Reserves have been created for future capital replacement, and projects, contingencies, and for major maintenance and repairs. System Development Charges (SDCs) will not be part of this study, but it is recommended they be reviewed on a regular basis.

A recommended contingency fund for emergencies may be 10% to 20% of the operational portion of the budget. These contingencies do not need to be expanded if not essential to match future endeavors. Carry unused contingencies and other revenues not expended over to next year's working capital or other expense line items and again set aside a new contingency figure for the next budget year. The city has implemented contingencies in a method consistent with standard practices, being aware of future expenditures.

Several water rate examples and options for Manzanita's City Council to consider are included in this report. In addition to the general expectations of a rate study, Oregon Association of Water Utilities considers policies, ordinances, and customer relations as factors in the development of water rates. Special interests, political climate, and an ease of understanding also play a role in the rate formation.

We utilize the information provided by the water system that is most pertinent when performing a rate study. The information includes the existing/adopted budget that consists of revenues necessary for O&M, personnel, contingency, capital outlay, loan debt service, and loan debt reserve fund if required. We also consider policy, practices, resolutions, and ordinances that have been adopted. The system figures are based upon as close an estimate as can be determined from the existing records and future needs as discussed and outlined in the proposed budget. This has been provided in a one single budget revenue figure at \$1,067,408.00 (See Table 1: Current Expenditures).

Table 1: Current Expenditures Information		
Personnel and Materials Services:	\$495,340.00	
Sub-total:		\$495,340.00
Contingency Reserve/Transfers: ¹	\$216,400.00	
Debt Service:	\$185,251.00	
Capital Outlay:	\$170,417.00	
Total Expenditures:		Budget notes; \$1,067,408.00

1 – Contingency is based on 10-20 percent of operating costs; actual rate is 20.2 percent of proposed budget.

Additional pertinent information is as follows: approximately 1,697 connections - itemization by number and size of service meters as they relate to a residential single family, multi-family units, commercial, and industrial. Also included in the calculation of rates is the amount of water produced @ approximately 108.8 million gallons, amount of water sold at 95 million gallons, and amount of unaccounted for water at 13.6 million gallons (See Table 2 Annual Water Production).

Table 2: Annual Water Production	
Reporting Year	Total Gallons
2010	105,602,905
2011	108,401,318
2012	110,852,268
2013	110,648,349
Average Annual Production [2010 - 2013]	108,876,210

Table 3: Cost per unit of production			
Total Expenditure: (Running Average 2009 - 2013)			\$1,067,408.00
Average Water Production: 2009 - 2013 (4 year running average)			108,876,210 gals.
Average Unaccounted for Water: 2011 (4 year running average)			13,647,586 gals
Average cost per 1,000 gallon unit based on 4 year average production:			
Expense per gallon:	\$0.009818	Current rate per 1,000 gals	Potential Revenue
Expense per 1000 gals:	\$9.82	\$1.50 and \$2.25	\$133,986.45

Annual production of water, as outlined in table 2, provides insight as to the efficiency of the water system when correlating production numbers with the total operating expenses. Viewed as cost per unit of water being 1,000 gallons, the water system can determine the actual system cost as it relates to each consumer in a given period of time. *Table 3, Cost per unit of production* is figured on a running average of all water produced over a *given period of time*. When water is not accounted for through meter readings, it is seen as a 100 percent loss associated with the expenditure cost for that unit. The exception to this is when operations can provide accurate water use for line flushing or other maintenance tasks. This water is then considered non-billable water used rather than unaccounted for water. Water that cannot be sold should be considered potential lost revenues.

Rate structures vary from utility to utility, but generally include three elements. First, include consideration of the classification of customers served, i.e., residential, commercial and industrial. Second, all customers have an established frequency in billing and third, the schedule of charges will be identified and assessed.

For water utilities using a cost of service approach, the level of the utility's rates is a direct reflection of the utility's costs and customer's demands. The above tables outline this approach in order to reveal how water production affects the overall revenue required.

Setting the base rate per size of connection, multiply by number of connections, and then multiply by 12 (12 months/yr.) forecasts an amount that can be considered as revenue income to help ensure that the majority of "fixed" annual expenditures are covered.

It is typically suggested the base rate cover 60%-75% of the annual water budget. This allows for the balance of revenues generated by what is termed a *volume rate*. The metered amount of water can be charged by a unit measurement in gallons or cubic feet. The meters measure in 1,000 gallon unit and a dollar amount can be charged per said unit.

In table 4, the City of Manzanita revenues are derived from: the size of the connection, the allowance of water given in the base rate, base and volume unit rates, the average monthly consumption per meter size, and the total approximate monthly cost. In order to recover the difference in revenues not earned in the base rate, the volume (consumption) rate income should meet and/or exceed the total revenue requirements when added to the base rate income.

Table 4: Current Rate Information						
Service Connection Size (in.)	# of connections	Allowance (Gallons)	Base Rate	Unit Rate Cost	Ave Consumption	Total Cost
Inside City Limits						
5/8	1,325	6,000 ¹	\$34.50	\$1.50	2,800	\$34.50
3/4	0	0	0	0		
1.0	20	0	\$34.00	\$2.25		
1.5	1	0	\$88.75	\$2.25		
2.0	5	0	\$142.00	\$2.25		
Outside City Limits						
5/8	309	6,000 ¹	\$45.50	2.25		
3/4	35	0	\$32.00	\$2.25		
2.0	2	0	\$178.00	\$2.25		
1 – 6,000 allowance over allocates total available water that is produced. Actual production 4 year average is 108,876,210 gallons						
Total Figures	1,697	117.6 Million	\$748,665.00	NA	Not Determined	\$318,743.00

When developing a rate structure that meets the water system requirements, the rate study results, suggestions, and final decision to be fair to all customers will outline following key points.

- Total revenues generated by base rates.
- Total gallons of water associated with the base rates.
- The price per unit that establishes equitability among all consumers.
- Amount of available water for sale and the price per unit.
- Total revenues generated by base and volume (consumption) rates.

It is when the above points are defined Oregon Association of Water Utilities can utilize the gathered information and apply it to various scenarios, providing a method to better understand the effects from an assortment of applications.

Cost Evaluations:

If the total operating expenditures are equally segregated according to the number of connections, the cost per connection for the City of Manzanita would be \$52.41 per month.

$$\$1,067,408.00 \text{ divided by } 12 \text{ months divided by } 1,697 \text{ users} = \$52.41 \text{ per month}$$

When determining cost for water, fairness centered on per unit of water consumed should be applied across the board (size, and classification of the connection). This is accomplished by means of determining the price per unit and the amount of consumption per month. One should pay only for the amount of water consumed. Reasonable water rates are contingent on sufficient revenues for the water system to operate, levels of consumption by various consumers and classification of users.

Rate Study Approach:

A number of diverse and competing models can be applied to any rate study, but when they are not well understood and evaluated, can cause confusion among those that are affected by a change in the water utility rates. It is the goal of this water rate study to bridge key elements and provide an informational tool for the city council to draw on in selecting an appropriate rate structure, one that is easily adopted and understood by your customers.

Examples shown in this rate study are based on a single line budget to operate and maintain the City of Manzanita's water system. While there are many approaches to determining a monthly consumer's cost, this rate study outlines a methodical style with the following examples:

- System Data – information relevant to the study.
- Existing Rates – current revenues and expenditures, speculation of gains and losses.
- Base Rate 75 – 75 percent of revenues are produced from the base rate.
- Base Rate 85 – 85 percent of revenues are produced from the base rate.
- MM Cost 7525 – meter multiplier applied using 75 percent starting point.
- MM Cost CPI – meter multiplier applied using CPI index since 2008 as a start point.
- Increased Consumption Rate – conservation mindset

The examples will show base rates established, what percentage of revenues is generated from said base rates, and how consumption charges make up any revenue deficits. Examples provide an amount of water included in the base rate, since billing for an actual service or product when no such service or product has been conveyed is not legal in Oregon. As the examples are presented, it will become evident that no single method satisfies all the requirements for every community.

Alternative rate structures identify particular aspects in rate studies that assist in highlighting the dynamics of the water system. Although rate structures are generally composed of three components; who is charged, how often and how much, additional attention is centered on the structure's consumption charge. Typically there are four basic types of consumption charges, including declining block, uniform block, inclining block, and seasonal.

As more precise charges are implemented, policy rates are the responsibility of the utility decision makers. Even though public involvement is not required to design and approve water rate methodologies, it is important to keep the public relations door open by allowing for comment at a public meeting, and follow proper procedures for adopting policies, resolutions, or ordinances. This should take place prior to adopting rate policy by ordinance or resolution. The level of impact on the consumer, and the values instilled from the decision makers play a key role in sustaining rates that will suffice the operation and maintenance of the City of Manzanita's water system, all the while maintaining and building customer trust.

Factors that affect actual total forecasted revenues include the following: water conservation, weather, economic times, number of actual billable customers, etc. This is mentioned as a point to consider when forecasting revenue needs to meet budgeted expenditures. A conservative decision may be made to adopt rates that exceed expected revenues by 10 or 15 percent of budget in order to comply with budgeted expenditures, and consumer practices and revenues generated.

The following information is designed to illustrate methods of approach that will expand the various examples, and highlight specific points of relevancy. The focus with this water rate study is to build on all levels of understanding, create a fair and equitable approach for all consumers, and provide revenues for the water system to continue to operate.

Affordability Index:

One measurement on the impact of water cost for the medium household incomes (MHI) of the area is the affordability index, a tool that state agencies review to determine loan interest rates, loan fees, any percentage of principal forgiveness and loan repayment periods. These concerns may impact economically disadvantaged areas. In order for certain loan processes to continue, a review of the index may establish a pre-determined rate for a specific amount of water each month. For this rate study using the 2009 Median Household Income at \$38,657.00 and the 2011 Affordability Index of 1.25% for the Manzanita area, equates to \$40.27 for a monthly water bill. ¹ See Table 5

1-U.S. Census Bureau 2011 City – County Reference Table for MHI change:

Table 5: Median Household Income Information					
Name	Certified Population 2011	U.S. Census Population 2010	Annual Growth	MHI 2009	2011 Affordability Index 1.25%
Manzanita	605	598	0.59%	\$38,657	\$40.27

Historical Rates:

The last rate increase implemented for the City of Manzanita was effective May 1, 2008 when the minimum monthly rate was set at \$34.50 per unit and \$1.50 cost per 1,000 gallons of water. Included in the base rate was 6,000 gallons. The rate was applied to the residential consumers. Commercial rates were also established and are too numerous to mention.

System Data:

Information compiled in the "System Data" spreadsheet (see next page) outlines those factors that influence the required monthly revenues based on the annual proposed operating budget. Water produced, water sold, and water losses are criteria that affect the rates charged. Relating the volumes of water to the operating expenses will define the cost per unit, either 1,000 gallons or 100 cubic feet (748 gallons).

The number of connections, the size of connections, and the monthly rates determine if a surplus or deficit in revenues is associated with the current rate structure. One important factor to consider is the amount of water allowed with the base rate. A larger allowance of water included in the base rate will lower the price per unit within the base, thus providing water at a lower cost per unit to supply. All the information will relate to how much of the percentage of total expenditures is generated from the base rate. Consumption rates will be included in the existing rate spreadsheet (See Table 5: System Data)

Table 6: System Data			
Total Gallons Produced		108,876,210	
Total Gallons Sold		95,076,413 (87%)	
Cost per Unit (1,000 gallons)^A		\$9.82	
Base Rate Revenues		\$748,665.00	
Total Operating Budget	\$1,067,408.00	% of Total Budget	70.14%

A – Total gallons produced divided by 1,000 gallons divided by total proposed operating budget.

Without using the revenues from the consumption portion of the overall revenues, the System Data spreadsheet indicates that 70.14% of the current total proposed revenues are generated from the base rate. This figure is situated in the recommended range of 60 – 75% of the total proposed budget.

System Data spreadsheet on next page



Rate Study for

Manzanita, City of

System Data

For Year: 2014
Date completed: June-14

Amount of Water Produced
Amount of Water Sold
Unaccounted for Water

Gallons (annual)	Cu Ft. (annual)	4 Year Average	4 Year Average
108,723,999	14,535,294		
95,076,413	12,710,750		
(13,647,586)	1,824,544		-12.55%

Personnel / Materials
Transfers
Annual Debt Service
Capital Outlay
Total Annual Budget

Dollars		Cost per Gallon	Cost Per 1000 Gals	Cost Per 100 Cu.Ft.
\$ 495,340.00		0.009817593	\$9.82	\$7.34
\$ 216,400.00				
\$ 185,251.00				
\$ 170,417.00	\$ 358,000.00			
\$ 1,067,408.00	5 Year Average			

Connection Information
Base Rate Only

Multi-Residential INSIDE
Multi-Residential OUTSIDE
Bulk Coop -compound meter

Size	Inside Residential	# of Connections Inside Commercial	Outside Resi / Comm	Total Connections
5/8"	1,294	0	309	
3/4"	0	34	0	
1"	0	19	3	
1 1/2"	0	1	0	
2"	0	1	1	
5/8"	31	0	0	
3/4"	0	0	1	
2"	0	0	3	1,697

Current Rate information (base)

Multi-Residential INSIDE
Multi-Residential OUTSIDE
Bulk Coop -compound meter

Size	Inside Residential	Inside Commercial	Outside Resi / Comm	Base Rate Revenues
5/8"	\$34.50		\$45.50	
3/4"		\$25.50	\$32.00	
1"		\$34.00	\$43.00	
1 1/2"		\$88.75		
2"		\$142.00	\$178.00	
5/8"	\$34.50			
3/4"			\$32.00	
2"		\$142.00	\$178.00	\$748,665.00

Current Consumption Rate

Per 1000 gallons	\$1.50	\$2.25	\$2.25
------------------	--------	--------	--------

Percentage of budget without any consumption revenue

Operating Budget Outline

Personnel / Materials
Contingency
Capital Outlay
Annual Debt Service

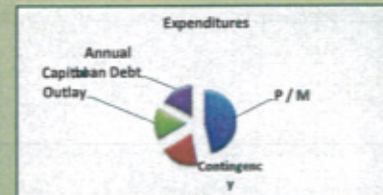
TOTAL OPERATING EXPENDITURES

\$495,340.00
\$216,400.00
\$170,417.00
\$185,251.00

\$1,067,408.00

46.41%
20.27%
15.97%
17.36%

Base Rate % Total Cost
70.14%



Notes: Accts turned off = 23, active - no charge = 14, empty lot meters = 9, collection /Pmt off = 4
\$358,000 average per year over 5 years taken from Feb 2010 CIP public hearing, equaling \$1.184 million budget



Rate Study for

Existing Rates

Manzanita, City of

For Year: 2014
Date completed: June-14

Amount of Water Produced Amount of Water Sold Unaccounted for Water	Annual Gallons	108,723,999		
		95,076,413		
		13,647,586	12.55%	
Annual Operating Budget Annual Debt Service Total Annual Budget	Dollars	\$882,157.00		
		\$185,251.00		
		\$1,067,408.00		
Connection information Multi-Residential INSIDE Multi-Residential OUTSIDE Bulk Coop -compound meter	Size	Inside Residential	Inside Commercial	Outside Resi / Comm
	5/8"	1,294	0	309
	3/4"	0	34	0
	1"	0	19	3
	1 1/2"	0	1	0
	2"	0	1	1
	5/8"	31	0	0
	3/4"	0	0	1
	2"	0	0	3
				Total Connections 1,697
Consumption w/ base (gal.) Current Rate information Multi-Residential INSIDE Multi-Residential OUTSIDE Bulk Coop -compound meter		6,000	0	6,000
	5/8"	Residential \$34.50	Commercial \$0.00	Resi / Comm \$45.50
	3/4"	\$0.00	\$25.50	\$32.00
	1"	\$0.00	\$34.00	\$43.00
	1 1/2"	\$0.00	\$88.75	\$0.00
	2"	\$0.00	\$142.00	\$178.00
	5/8"	\$34.50	\$0.00	\$0.00
	3/4"	\$0.00	\$0.00	\$32.00
	2"	\$0.00	\$142.00	\$178.00
				Ratios associated with 5/8 meter
Consumption Charge Current Base Revenue Multi-Inside Residential Multi-outside Residential Bulk Coop -compound meter	per 1000 gal.	\$1.50	\$2.25	\$2.25
	5/8"	Residential \$44,643.00	Commercial \$0.00	Resi / Comm \$14,059.50
	3/4"	\$0.00	\$867.00	\$0.00
	1"	\$0.00	\$646.00	\$129.00
	1 1/2"	\$0.00	\$88.75	\$0.00
	2"	\$0.00	\$142.00	\$178.00
	5/8"	\$1,069.50	\$0.00	\$0.00
	3/4"	\$0.00	\$0.00	\$32.00
	2"	\$0.00	\$0.00	\$534.00
				Totals
% of operating budget Water with base charge Total Water Included in Base Rate Available water to be sold Consumption Rate Revenues Unaccounted for water (gals.)	Total/month	\$45,712.50	\$1,743.75	\$14,932.50
	12 mo. Total	\$548,550.00	\$20,925.00	\$179,190.00
		51.39%	1.96%	16.79%
	Total/month	7,950,000	0	1,854,000
	12 mo. Total	95,400,000		22,248,000
		100.34%	0.00%	23.40%
	12 mo. Total	117,648,000		
				-22,571,587
				-33,857.38
				Potential Lost Revenue -3.17%
Notes: Budget includes 5 yr average (document "Water Op Expenses 2008-2013), adding expenditures of \$362,457 from Dept 410 "Wellfield &Transmission Lines" Current water allowance at 6,000 gallons, over allocates water source	Total Revenue Generated			\$748,665.00
	Annual Gain/(Shortfall)			(\$318,743.00)
				-29.86%
Typical Residential Water Bill				
Gallons Used	Residential Water Bill			
2,800	\$34.50			
4,000	\$34.50			
6,500	\$35.25			

Base Rate 75:

"Base Rate 75" spreadsheet (see next page) is specifically designed to illustrate how the overall affect a base rate may have on both the consumption rate, management's approach, policy principles and comfort levels . Base Rate 75 establishes the monthly base rate at seventy-five percent of the proposed budget for all consumers equally, regardless of the size of the connection. Seventy-five percent of the total proposed budget is divided by the number of connections creating monthly revenues. The emphasis in this example is routine monthly revenues regardless of water sales. The fairness of this example is negated since not all users consume the same amount of water during the billing cycle.

With this example, the allowance of water was reduced from 6,000 to 4,000 gallons per month to create a balance with water allowed and actual water consumed. This approach reduces the amount of allowed water from 117 million to 78.4 million gallons. Reduction in allowance of water now makes available 16.6 million gallons to be sold.

Having 16.6 million gallons available for sale, is a small percentage of total water sales. This small percentage of water requires a much higher price per unit in order to obtain the necessary revenues for a balanced budget. In a comparison of monthly revenues with available water to be sold, the monthly revenues equal 75.09% and allowance of water is at 82.5%

While beneficial to the low volume users, the burden falls on the unit price. An increase to the price of a single unit of water must be established in order to make up for the additional revenues required to meet budgetary requirements. As the higher price per unit of water is deemed necessary, then monthly cost associated with the high volume user is substantially increased.

Having 75% of the total proposed budget come from the base rate may create a shortfall during the months when water consumption is at its lowest. During the summer months when high volumes of water are utilized, high consumer bills are received by the consumer. The vast differences in a customer's monthly bill may raise questions from the consumer. Consistency in revenues is lost when setting the base rate too low or the allowance of water too high.

Table 8: Base Rate 75

Total # of Connections	1,697		
Base Rate	\$39.31	Annual Base Revenue	\$801,499.50
Total Allowance of Water (gals.)	78,432,000		
Available Water for Sale (gals.)	16,644,413		
Required Balance of Revenues	\$265,908.50	Total Billable Units	16,644
Consumption Rate per Unit	\$16.00	Annual Consumption Revenue	\$266,310.61
		Total Revenue	\$1,067,810.11
Typical Monthly Cost (5/8" meter)(gals.)	4,000 gals.	\$39.31	

In most water rate examples that allow either a low base rate or a high allowance of monthly water (>5,000 gallons), it can be determined that a shortfall in revenues may exist. A high allowance of water may prove erroneous to the actual supplies available for the water system to sell. By allowing large quantities of water included in the base rate, expenses to produce said unit of water must be recovered in the base rate.

Note:

6,000 gallons of water at \$9.82 production cost per unit should generate a monthly bill of \$58.92, when actual charge is \$34.50.

Any additional water available to sell would be at a cost that aligns with the remaining balance of expenditures, and with this example we see the price per unit cost is \$16.00. This is directly connected with having so few units (16,644) available for sale

If the water system has to rely on regular and consistent water sales in order to meet expenditure requirements, then there will be periods of time (drought conditions, wet spring seasons) when budgeted revenues are not met. (See Table 7: Base Rate 75). **Base rate 75 spreadsheet on next page**



Base Rate 75

Rate Study
for

Manzanita, City of

For Year: 2014
Date completed: June-14

Amount of Water Produced Amount of Water Sold Unaccounted for Water	Annual Gallons	108,723,999		
		95,076,413		
		13,647,586	12.55%	
Annual Operating Budget Annual Debt Service Total Annual Budget	Dollars	\$ 882,157.00		
		\$ 185,251.00		
		\$ 1,067,408.00		
Connection information Multi-Inside Residential Multi-outside Residential Bulk Coop -compound meter	Size		# of connections	
			Residential	Commercial
				Resi / Comm
	5/8"	1,294	0	309
	3/4"	0	34	0
	1"	0	19	3
	1 1/2"	0	1	0
	2"	0	1	1
	5/8"	31	0	0
	3/4"	0	0	3
	2"	0	0	3
				75% of Budget \$ 800,556.00
				Cost per 1,000 gallons 9.82
				Cost per 100 Cubic Feet 7.34
Consumption w/ base (gal.)		4,000	0	4,000
Current Rate (base) Multi-Inside Residential Multi-outside Residential Bulk Coop -compound meter			Residential	Commercial
				Outside Resi / Comm
	5/8"	\$39.31	\$39.31	\$39.31
	3/4"	\$39.31	\$39.31	\$39.31
	1"	\$39.31	\$39.31	\$39.31
	1 1/2"	\$39.31	\$39.31	\$39.31
	2"	\$39.31	\$39.31	\$39.31
	5/8"	\$39.31	\$39.31	\$39.31
	3/4"	\$39.31	\$39.31	\$39.31
	2"	\$39.31	\$39.31	\$39.31
Consumption Charge Current Base Revenue Multi-Inside Residential Multi-outside Residential Bulk Coop -compound meter	per 1000 gal.	\$16.00		\$2.25
			Residential	Commercial
				Resi / Comm
	5/8"	\$50,870.14	\$0.00	\$12,147.51
	3/4"	\$0.00	\$1,336.62	\$0.00
	1"	\$0.00	\$746.93	\$117.94
	1 1/2"	\$0.00	\$39.31	\$0.00
	2"	\$0.00	\$39.31	\$39.31
	5/8"	\$1,218.68	\$0.00	\$0.00
	3/4"	\$0.00	\$0.00	\$117.94
	2"	\$0.00	\$0.00	\$117.94
Total/month		\$52,088.82	\$2,162.18	\$12,540.63
12 mo. Total		\$625,065.82	\$25,946.13	\$150,487.55
				\$ 801,499.50
% of operating budget Water with base charge Typical 5/8" Usage Total Water Included in Base Rate 82.49% Available water to be sold Consumption Revenues			58.56%	2.43%
			14.10%	75.09%
	Total/month	5,300,000	0	1,236,000
	12 mo. Total	63,600,000	0	14,832,000
			Residential	Commercial
	12 mo. Total	63,600,000	0	
	12 mo. Total			Other
	12 mo. Total			14,832,000
				16,644,413
			Potential Annual Revenues	\$ 266,310.61
				Total Revenue Generated
				\$ 1,067,810.10
				Annual Gain/(Shortfall)
				\$ 402.10
				Typical Residential Water Bill
				Gallons Used
				Res. Water Bill
				2,800
				\$39.31
				4,000
				\$39.31
				6,500
				\$79.31

Base Rate 85:

Following the same theory as the Base Rate 75 example, this spreadsheet (see next page) sets the monthly base rate for all consumers at 85% of the total proposed budget. A uniform base rate is applied to all users, regardless to the size of the meter. Eighty-five percent of the total proposed budget is divided by the number of connections creating a monthly base rate. Aligning the base rate with fixed monthly costs, revenues are able to meet those non-fluctuating expenditures, (i.e. salaries, insurance). The price per unit is reduced as well as the reliance on water sales. A more consistent monthly bill is established, with winter and summer bills falling into a narrower range, with the exception of small percentage of users at the extreme end of high consumption

The cost per unit for both the low volume users and the high volume users align in a more fair and equitable manner in comparison to the example of Base Rate 75. Both Base Rate examples calculate 4,000 gallons allowed with the base rate in order to factor the potential revenues generated from additional water sales.

Table 9: Base Rate 85			
Total # of Connections	1,697		
Base Rate	\$44.55	Annual Base Revenue	\$907,296.80
Total Allowance of Water (gals.)	78,432,000		
Available Water for Sale (gals.)	16,644,413		
Required Balance of Revenues	\$160,111.20	Total Billable Units	16,644
Consumption Rate per Unit	\$9.61	Annual Consumption Revenue	\$159,952.81
		Total Revenues	\$1,067,249.61
Typical Monthly Cost (5/8" meter)(gals.)		4,000 gals.	\$44.55

Notice when the base rate is increased by ten percentage points, from 75% to 85%, the price per unit decreases from \$16.00 per 1,000 gallons to \$9.61 per 1,000 gallons.

Water allowances included in the base rate should be built on either actual usage or actual costs associated with the production cost of a single unit of water, either 1,000 gallons or 100 cubic feet of water (748 gallons).

Discussions of typical usage of a single family resident were settled on 2,800 gallons per month. With the cost of \$9.61 per 1,000 gallons based on 4,000 gallon allowance, the monthly cost should be \$38.44 which is an 11.5% increase to current rates or 2.3% annual increase, the last rate adjustment in 2008.

With per unit rates set equal to production costs, the burden rest on the large consumers, who would see a significant increase to the monthly water bill.(See Table 8: Base Rate 85).

Base rate 85 spreadsheet on next page



Base Rate 85

Rate Study
for

Manzanita, City of

For Year: 2014
Date completed: June-14

Amount of Water Produced
Amount of Water Sold
Unaccounted for Water

Annual Gallons	
108,723,999	
95,076,413	
13,647,586	12.55%

Annual Operating Budget
Annual Debt Service
Total Annual Budget

Dollars	
\$882,157.00	
\$185,251.00	
\$1,067,408.00	

85% Budget
\$ 907,296.80

Connection information

Size	# of connections		
	Residential	Commercial	Resi / Comm
5/8"	1,294	0	309
3/4"	0	34	0
1"	0	19	3
1 1/2"	0	1	0
2"	0	1	1
5/8"	31	0	0
3/4"	0	0	1
2"	0	0	3

Cost per 1,000 gallons
9.82
Cost per 100 Cubic Feet
7.34

Consumption w/ base (gal.)
Current Rate (base)

Size	Residential	Commercial	Resi / Comm
5/8"	4,000	0	4,000
3/4"			
1"			
1 1/2"			
2"			
5/8"			
3/4"			
2"			

Consumption Charge

per 1000 gal.	\$9.61		
---------------	--------	--	--

Current Base revenue

Size	Residential	Commercial	Resi / Comm	Totals
5/8"	\$57,652.82	\$0.00	\$13,767.17	\$ 71,419.99
3/4"	\$0.00	\$1,514.83	\$0.00	\$ 1,514.83
1"	\$0.00	\$846.53	\$133.66	\$ 980.19
1 1/2"	\$0.00	\$44.55	\$0.00	\$ 44.55
2"	\$0.00	\$44.55	\$44.55	\$ 89.11
5/8"	\$1,381.17	\$0.00	\$0.00	\$ 1,381.17
3/4"	\$0.00	\$0.00	\$44.55	\$ 44.55
2"	\$0.00	\$0.00	\$133.66	\$ 133.66
Total/month	\$59,033.99	\$2,450.47	\$14,123.60	\$ 75,608.07
12 mo. Total	\$708,407.93	\$29,405.61	\$169,483.26	\$ 907,296.80

% of operating budget

66.37%	2.75%	15.88%	85.00%
--------	-------	--------	--------

Water with base charge

Total/month	5,300,000	0	1,236,000	6,536,000
12 mo. Total	63,600,000	0	14,832,000	78,432,000

Typical 5/8" Usage

2,800	5,900
-------	-------

Total Water Included in Base Rate
82.49%

12 mo. Total	Residential	Commercial	Resi / Comm
12 mo. Total	63,600,000	0	14,832,000
12 mo. Total			16,644,413

Total Revenue

Available water to be sold
Consumption Revenues

Potential Annual Revenues	\$ 159,952.81
---------------------------	---------------

Total Revenue Generated	\$ 1,067,249.61
Annual Gain/(Shortfall)	\$ (158.39)

Notes:

Sets base rate at percentage of budget to determine price per unit cost
Total available gallons to sell increases to 25K units, with monthly reduction.
Price per unit too high to have to match expenditures.

Typical Residential Water Bill

Gallons Used	Res. Water Bill
2,800	\$44.55
4,000	\$44.55
6,500	\$68.58

MM Cost 7525:

Generally, meter ratios are designed from two separate theories, where meter multiplier cost ratios are used when assigning elements of costs specifically related to meters. And meter capacity ratios, are most often used when estimating the potential demand requirements from customers.

Customer costs by equivalent meter-and-service ratios recognize that meter-and-service costs vary, depending on considerations such as size of service pipe, materials used, locations of meters, and other local characteristics for various sized meters as compared to 5/8 inch meter service. With a 5/8 inch meter being the starting point and using a one to one ratio, increasing the size of the meter increases those ratios as they relate to the cost for repair and replacement. (See Table 10: Dollar Ratios)

Table 10: Meter Cost Equivalencies / Dollar Ratios

Size (inches)	Equivalent Cost Meter Ratio	Equivalent Dollar Ratios
5/8	1.0	\$1.00
3/4	1.1	\$1.10
1.0	1.4	\$1.40
1.5	1.8	\$1.80
2.0	2.9	\$2.90
3.0	11.0	\$11.00
4.0	14.0	\$14.00
6.0	21.0	\$21.00

A two inch meter equivalency to the 5/8 inch meter correlates as being 2.9 times more costly than a 5/8 inch meter. If a 5/8 inch meter service costs the consumer \$10.00 per month, then a two inch meter has a monthly rate at \$29.00.

Using this approach in determining costs associated with various meter sizes, actually removes the distinction of class categorization, i.e. residential, commercial or industrial. This approach places the emphasis on the size of meter and not user type. The size of the meter is the main focus in determining appropriate monthly rates.

Another focal point using a meter cost ratio is when a water allowance is given as part of the monthly charge; said allowances will increase proportionately with the cost ratios, a significant difference from the capacity ratio, especially as it relates to the larger meters. A 1,000 gallon allowance for a 5/8 inch meter would translate to 2,900 gallons monthly water allowance for a two inch meter, based on the cost ratio establish using standard engineering practices (See Table 11: Meter Cost Equivalencies/Water Allowance on page 13).

Expanding on the Base Rate 75 method, applying the meter equivalency structure, this technique again, merges two methods into a single set of rates. Setting the rate for a 5/8 inch meter, and aligning the cost to meet 75% of total expenditures will automatically synchronize the larger meters and their respective monthly costs.

Table 11: Water Allowance / Water Meter Cost Equivalency (monthly rate)

Size (inches)	Equivalent Meter Ratio	Equivalent Water Allowance	Equivalent Cost
5/8	1.0	1,000	\$10.00
3/4	1.1	1,100	\$11.00
1.0	1.4	1,400	\$14.00
1.5	1.8	1,800	\$18.00
2.0	2.9	2,900	\$29.00
3.0	11.0	11,000	\$110.00
4.0	14.0	14,000	\$140.00
6.0	21.0	21,000	\$210.00

Total base rate revenues obtained when the larger meters are formulated using the meter cost ratio equals 79.6% of proposed budget (See Table 11: Water Meter Cost Equivalency). The increase in the percentage is due to applying the current city water service rate schedule effective May 1, 2008, of charging a higher base rate for those users outside the city limits. Rates in this study will follow the same approach. [Review spreadsheet on next page of interim figures for customer specifics.](#)

An established component of the meter multiplication method is the amount of water allowed with each sized meter correlating with its monthly rate. Calculating all water provided in the base rate will better determine the amounts of available water to be sold. Water provided in the base rate is subtracted from the total water produced. Non-billable water is also subtracted from the category of available water.

The idea of equivalent water allowances as found in Table 11 is one method towards reaching a better understanding of typical usages by any group of users. Water bills can promptly depict the large users simply by viewing the larger dollar amounts on water reports. The current rate schedule only allows a water allowance to residential connections. [MM Cost 7525 spreadsheet on next page](#)

Table 12: MM Cost 7525

Total # of Connections	1,697	Allowance	4,000 gals ¹
Base Rate	\$39.31	Annual Base Revenue	\$849,653.15
Total Allowance of Water (gals.)		78,432,000	
Available Water for Sale (gals.)		16,644,413	
Required Balance of Revenues	\$217,754.85	Total Billable Units	16,644
Consumption Rate per Unit	\$13.25	Annual Consumption Revenue	\$220,533.00
1- Residential users comprise (96%) (1,634) of all users		Total Revenues	\$1,070,186.15
Typical Monthly Cost (5/8" meter) (gals.)		4,000 gals.	\$39.31

Note: Table depicts monthly rates and annual revenues from all meters with only residential users receiving allowance of water



Rate Study
for

MM Cost

75/25

City of Manzanita

For Year: 2014
Date completed: June-14

Amount of Water Produced
Amount of Water Sold
Unaccounted for Water

Annual Gallons	
108,723,999	
95,076,413	
13,647,586	12.55%

Annual Operating Budget
Annual Debt Service
Total Annual Budget
Connection Information

Dollars	# of connections		
\$882,157.00			
\$185,251.00			
\$1,067,408.00			
	Residential	Commercial	Outside Resi / Comm
Size			
5/8"	1,294	0	309
3/4"	0	34	0
1"	0	19	3
1 1/2"	0	1	0
2"	0	1	1
Multi-inside Residential	31	0	0
Multi-outside Residential	0	0	1
Bulk Coop -compound meter	0	0	3
	4,000	0	4,000

Consumption w/ base (gal.)

Gallons Allowed

4000
4400
5600
7200
11600
4000
4400
11600

Consumption Charge

Current Base Revenue

	Residential	Commercial	Resi / Comm
5/8"	\$39.31	\$39.31	\$49.14
3/4"	\$43.24	\$43.24	\$54.05
1"	\$55.04	\$55.04	\$68.80
1 1/2"	\$70.76	\$70.76	\$88.45
2"	\$114.01	\$114.01	\$142.51
5/8"	\$39.31	\$39.31	\$49.14
3/4"	\$43.24	\$43.24	\$54.05
2"	\$114.01	\$114.01	\$142.51
per 1000 gal.	\$13.00		\$0.00

Meter Multiplier In Use

5/8" = 1.0
3/4" = 1.1
1" = 1.4
1 1/2" = 1.8
2" = 2.9
5/8" = 1.0
3/4" = 1.1
2" = 2.9

	Residential	Commercial	Resi / Comm	
5/8"	\$50,870.14	\$0.00	\$15,184.38	\$
3/4"	\$0.00	\$1,470.28	\$0.00	\$
1"	\$0.00	\$1,045.71	\$206.39	\$
1 1/2"	\$0.00	\$70.76	\$0.00	\$
2"	\$0.00	\$114.01	\$142.51	\$
5/8"	\$1,218.68	\$0.00	\$0.00	\$
3/4"	\$0.00	\$0.00	\$54.05	\$
2"	\$0.00	\$0.00	\$427.52	\$
Total/month	\$52,088.82	\$2,700.76	\$16,014.85	\$
12 mo. Total	\$625,065.82	\$32,409.07	\$192,178.26	\$

Totals

66,054.52
1,470.28
1,252.10
70.76
256.51
1,218.68
54.05
427.52
70,804.43
849,653.15

% of operating budget

Water with base charge

Typical 5/8" Usage

Water Consumption

Available Water to be Sold
Consumption Revenues

	58.56%	3.04%	18.00%	79.60%
Total/month	5,300,000		1,236,000	6,536,000
12 mo. Total	63,600,000	0	14,832,000	78,432,000
	2,800			
	Residential	Commercial	Other	
12 mo. Total	63,600,000			
12 mo. Total		0		
12 mo. Total			14,832,000	
			16,644,413	

Total Revenue

Potential Annual Revenues	\$	216,377.37
Total Revenue Generated	\$	1,066,030.52
Annual Gain/(Shortfall)	\$	(1,377.48)
		-0.13%

Notes:

Base rate set at 75% of budget to 5/8" users, then applying meter multiplier on right side
Increases base rate up 14-15%

Typical Residential Water Bill

Gallons Used	Res. Water Bill
4,000	\$39.31
6,000	\$65.31
8,000	\$91.31

MM Cost CPI:

The consumer price index (CPI) for a basket of goods or services is a measuring tool to determine how the likelihood of operating expenses is associated with utility rates. The ten year annual average since 2004 has been 2.213%.

Using the CPI percentage figure and applying it to the base rate for a 5/8 inch meter, an annual adjustment of \$0.79 was added for each past year the rates were not reviewed. This approach provides an approximate indication of where the base rates should be since the last adjustment in May 2008.

The larger sized meters are automatically calculated by the cost ratio meter multiplier as well as the increased base rate formula the City of Manzanita is currently using for outside water services. Collectively, the monthly base rates equal 79.74% of the proposed budget with the remaining revenues being generated from additional water sales.

Table 13: MM Cost CPI			
Total # of Connections	1,697	Allowance	4,000 gals¹
Base Rate	\$39.25	Annual Base Revenue	\$848,306.33
Total Allowance of Water (gals.)		78,432,000	
Available Water for Sale (gals.)		16,644,413	
Required Balance of Revenues	\$219,101.67	Total Billable Units	16,644
Consumption Rate per Unit	\$13.50	Annual Consumption Revenue	\$224,694.00
1- Residential (5/8) users comprise (96%) (1,634) of all users		Total Revenues	\$1,070,186.15
Typical Monthly Cost (5/8" meter) (gals.)		4,000 gals.	\$39.25

With the four examples being presented, each has a starting point that is derived from a varied set of options that correspond with industry standards. The concern with any approach towards change in rate setting is the accuracy of data going into the research will determine the data applied to the consumers. The fluctuation of the base rates is narrow in range, yet the consumption rate per unit has drastic swings in price from \$9.61 to \$16.00. With the next example, the approach of setting the rates at 75% of proposed budget, applying the meter multiplier for larger meters, expands the total revenues from base rates to approximately 80%. The goal is to confirm the price per unit at a reasonable rate, which when applied, fairness for all users is met.



MM Cost CPI

Rate Study
for

City of Manzanita

For Year: 2014
Date completed: June-14

Amount of Water Produced
Amount of Water Sold
Unaccounted for Water

Annual Gallons	
108,723,999	
95,076,413	
13,647,586	12.55%

Annual Operating Budget
Annual Debt Service
Total Annual Budget

Dollars	
\$882,157.00	
\$185,251.00	
\$1,067,408.00	

of connections

Outside
Resi / Comm

Connection Information

Multi-Inside Residential
Multi-outside Residential
Bulk Coop -compound meter

Size	Residential	Commercial	Outside Resi / Comm
5/8"	1,294	0	309
3/4"	0	34	0
1"	0	19	3
1 1/2"	0	1	0
2"	0	1	1
5/8"	31	0	0
3/4"	0	0	1
2"	0	0	3
	4,000	0	4,000

Consumption w/ base (gal.)

Gallons Allowed

4000
4400
5600
7200
11600
4000
4400
11600

	Residential	Commercial	Resi / Comm
5/8"	\$39.50	\$39.50	\$49.38
3/4"	\$43.45	\$43.45	\$54.31
1"	\$55.30	\$55.30	\$69.13
1 1/2"	\$71.10	\$71.10	\$88.88
2"	\$114.55	\$114.55	\$143.19
5/8"	\$39.50	\$39.50	\$49.38
3/4"	\$43.45	\$43.45	\$54.31
2"	\$114.55	\$114.55	\$143.19
per 1000 gal.	\$13.50		

Meter Multiplier In Use

5/8" = 1.0
3/4" = 1.1
1" = 1.4
1 1/2" = 1.8
2" = 2.9
5/8" = 1.0
3/4" = 1.1
2" = 2.9

Consumption Charge

Current Base Revenue

	Residential	Commercial	Resi / Comm
5/8"	\$51,113.00	\$0.00	\$15,256.88
3/4"	\$0.00	\$1,477.30	\$0.00
1"	\$0.00	\$1,050.70	\$207.38
1 1/2"	\$0.00	\$71.10	\$0.00
2"	\$0.00	\$114.55	\$143.19
5/8"	\$1,224.50	\$0.00	\$0.00
3/4"	\$0.00	\$0.00	\$54.31
2"	\$0.00	\$0.00	\$429.56
Total/month	\$52,337.50	\$2,713.65	\$16,091.31
12 mo. Total	\$628,050.00	\$32,563.80	\$193,095.75

Totals

\$	66,369.88
\$	1,477.30
\$	1,258.08
\$	71.10
\$	257.74
\$	1,224.50
\$	54.31
\$	429.56
\$	71,142.46
\$	853,709.55

% of operating budget

Water with base charge

Typical 5/8" Usage

Water Consumption

Available Water to be Sold
Consumption Revenues

	58.84%	3.05%	18.09%	79.98%
Total/month	5,300,000		1,236,000	6,536,000
12 mo. Total	63,600,000	0	14,832,000	78,432,000
	2,800			
	Residential			
12 mo. Total	63,600,000	Commercial		
12 mo. Total		0	Other	
12 mo. Total			14,832,000	
			16,644,413	
Potential Annual Revenues				\$ 224,699.58
Total Revenue Generated				\$ 1,078,409.13
Annual Gain/(Shortfall)				\$ 11,001.13
				1.03%

Total Revenue

Notes:

Annual 2.21 % (CPI) increase annually since 2003 to base rate then, applying MM Cost for all larger meters, except 2" bulk users. Outside users rates set at 25% increase for adding infrastructure. 2" bulk water users base rate factored on volume of water and newly established tiers.

Typical Residential Water Bill

Gallons Used	Res. Water Bill
4,000	\$39.50
6,000	\$66.50
8,000	\$93.50

Increase Consumption Rate:

The approach taken in this example is a method that charges increasing rates for increasing volume of consumption. Increasing block rates are designed based on the customer classification determined by similar usage patterns. This style of rates require applying a judgment and utility policy regarding the number of blocks, the point at which one block ends and the next block begins, and the relative price levels of the blocks.

From the City Council's workshops, the accepted figures base the 5/8 inch meter residential user monthly rate will be set at \$39.50, with an allowance of 4,000 gallons. Larger meters will be charged according to the cost ratio meter multiplier as well as outside city limit users will be applied the current policy in relation to inside city users. No other users will have an allowance provided, which follows current city policy.

With this approach, the base rates equal 80.87% of the proposed budget with the remaining revenues generated from consumption. With a cost per unit of production at \$9.82, it can be derived a required \$1.96 is necessary from each unit of water in order to meet proposed budget.

Price per unit of water sold will be set at \$2.50 per 1,000 gallons for inside city customers and \$3.25 per 1,000 gallons for outside users. Bulk users will be charged \$2.75 per 1,000 gallons due to the volume of water consumed, typically 10-20 times above normal consumptions.

Not accepted at this time is the increase block method, yet a note is cited if an amendment in city policy maybe an idea in the future. The design approach to this method of rate setting focuses on similar meter sizes and not the traditional residential or commercial categories. A simple second tier rate can be implemented that would take the average usages of each meter size, then double the figure and charge a higher rate per unit.

A fair and equitable application of water rates, while meeting the fiscal responsibility of the water system, will be the highest priority. An annual review of the capital required for future projects, revenues collected, as well as expenditure fluctuations, will assist in determining both the base and consumption rate as it is necessary to meet a balanced budget. (See Table: 15 Possible Tier Settings)

Table 14: Possible Tier Setting		Monthly Total	
Base Rate 5/8 inch Residential	Base Allowance <4,000 gals.	Base Rate \$39.50	Total Cost \$39.50
Base Rate	4,001 – 8,000 gals.	\$2.50	\$49.50
Tier Two	8,000 + gals.	\$3.50	\$63.50 ¹

1- \$63.50 monthly cost is based on consumer using up to 12,000 gallons per month.

Talking Points:

As information is exchanged to obtain the data necessary for accurate rates both near and long term expectations, the following talking points are addressed to highlight any concerns on the effectiveness of rates implemented.

- Feb 2010 – Capital Improvement Plan

While reviewing the City of Manzanita's "Water System Capital Improvement Plan", approximately \$4.0 million dollars will be required to build the system for ultimate capacity at 2.64 million gallons per day. The timeframe looks at the next 20 year period, but in relation to the rate study, the next 5 years improvements total \$72K / annually or \$3.55 per month per connection.

- City of Wheeler – IGA

An inter-governmental agreement was formed with the City of Wheeler when the original loan established in 2003 to reflect the construction cost of the water filtration plant and well system. Calculating water rates for the City of Wheeler is performed annually in-house by staff, and was only mentioned in discussions, and not specifically included in the water rate study.

- Bulk Water

Drastic differences in monthly averages used from bulk water customers to other consumers create an anomaly if a tiered structure were to be implemented in the future. Typically an average monthly usage could be doubled, creating a second tier, thus a higher rate per unit is charged. Due to the variance in usage, it is recommended to maintain a consistent rate per unit regardless of total volume of water consumed.

- Alignment of base rates

Uniformity of cost ratios in the base rates will indicate and reflect lowering some monthly base rates from the existing rates, as industry standards are implemented.

- Cost of debt service

The loan payment for the debt service is \$185,251.00 annually, which signals a total per month cost to each consumer in their base rate of \$9.10. This current rate reveals a lower monthly cost (\$12.35) due to the increase of the number of consumers when the loan was first determined.

- Annual adjustment

Based on Consumer Price Index a one-time annual adjustment of \$0.87 per 5/8 inch meter follows the running average of the index of 2.2%. To obtain the annual adjustment for larger sized meters, multiply existing rates by 2.2% to obtain new monthly base rate.

Summary:

There are various arrangements that can be used to reach an acceptable result of water rates that meet budgetary requirements. One size fits all does not normally work from community to community. Whatever the cost associated with providing water from the production well(s) to the consumer's tap, usually varies from one water system to another. The variables associated with other water systems sometimes cannot apply to the City of Manzanita. A new water system completed without any debt owed is rarely seen. The age of a water system plays a bigger role in determining future cost since rebuilding is often more expensive than new development.

The importance of looking at the future in regard to system growth, repair, or replacement of aging components, and determining an evaluation of costs can be difficult at times. Proposed costs are usually lower than actual costs due to various circumstances. It is important for public relations and communications to play a role in preserving consumer confidence in both water quality and to a lesser system operations and management.

The first observation of current water system basics was looking at water production, water sales, number of active connections, average water usage, and existing expenditures. Using four year averages of water production in relation to the proposed budget, it was determined that production costs equal \$9.82 per 1,000 gallons while base rates account for 70 percent of total proposed budget.

Concealed facts discovered in the initial assessment were two: a) the amount of water actually sold throughout the year had a discrepancy and labeled a phantom figure, b) the price differentiation in the unit price of 1,000 gallons of water, with current per unit price at \$1.50 and cost per unit price at \$9.82

Pertaining to the examples presented with this water rate study, the City of Manzanita has chosen to select the model "Meter Multiplier Cost" to correspond and assist in obtaining their goals. This example creates more formality in the water rates than the other examples; using absolute ratios, yet allowing the City of Manzanita to adjust the rates in the future, especially at the per unit figures.

Using one of the industry standards of having the base rate meet 60-75% of proposed budget, the City of Manzanita is on target with established base rates at 70.14% of proposed budget. The consumption rate is the area requiring the majority of adjustment. With the chosen rate structure, an increase in the unit cost from \$1.50 to \$2.50 was necessary in order to meet the proposed budget.

A water rate comparison and recommendation cost chart has been included in the rate study as a guide to assist those who may answer questions from the public regarding the new water rates (see last page).

The City of Manzanita has requested the Oregon Association of Water Utilities to suggest how to conclude an annual adjustment for the city monthly water rates. The aspect of water rates determination relative to future cost can be difficult to decipher.

As the City Council chooses to implement proposed rates, in whatever form, the homework in tallying up water production numbers, water sales, unaccounted for water, and expenditures will begin to

confirm that the "in theory" ideas presented in this study meet the "actuality" of water system operational costs and revenues during the subsequent year.

One suggestion that coincides with the collection of information from the water system is to adjust the monthly rates solely on the additional expenditures discovered from year-to-year. This adjustment can be applied to the base rate or consumption, and is determined by the size of the additional expenditures.

Other methods used to support any adjustments in goods and services are the "Consumer Price Index" or "Cost of Living Index". All statistics indicate that the Consumer Price Index has a 10 year running average of 2.21 percent. If this adjustment is applied to the proposed rates on an annual basis, the base rate would increase by approximately \$0.87 per month. This approach would generate approximately \$17,700.00 in additional annual revenues.

As collected evidence presents itself during the subsequent year, the Oregon Association of Water Utilities will return, if called upon, to review and confirm the effectiveness of the chosen scenario, thus assuring the goals presented in this water rate study.

With numerous considerations and decisions being calculated with this rate study, it is an objective of Oregon Association of Water Utilities to assist the City of Manzanita towards a sufficient water rate to meet the needs of the water system, provide fair and equitable rates for all consumers and to ensure the water system is poised for future growth.

Manzanita Rate Comparison and Recommendations 2

User Class	Size	Current Rates ¹	Gallons Allowed	Unit Price	Rates at 75% ²	Gallons Allowed	Unit Price
		Current Rate Information			75% Rate Information		
Residential	5/8	\$34.50	6K	\$1.50	\$39.50	4K ³	\$2.50
Commercial	5/8	NA	none	\$1.50	\$39.50	none	\$2.50
	3/4	\$25.50	none	\$1.50	\$43.25	none	\$2.50
	1	\$34.00	none	\$1.50	\$55.00	none	\$2.50
	1.5	\$88.75	none	\$1.50	\$70.75	none	\$2.50
	2.0	\$142.00	none	\$1.50	\$114.00	none	\$2.50
Residential Out	5/8	\$45.50	6K	\$2.25	\$49.25	4K	\$3.25
Commercial Out	5/8	\$45.50	none	\$2.25	\$49.25	none	\$3.25
	3/4	\$32.00	none	\$2.25	\$54.00	none	\$3.25
	1.0	\$43.00	none	\$2.25	\$68.75	none	\$3.25
	1.5	\$111.25	none	\$2.25	\$88.50	none	\$3.25
	2.0	\$178.00	none	\$2.25	\$142.50	none	\$3.25
Bulk	2.0	\$534.00 ⁴	none	\$2.25	\$142.50	none	\$2.75 ⁵

Notes:

1 - Current rates are the monthly cost for water established 2008

2 - Rates set at 75% of total proposed budget, rounded to the nearest 0.25, with meter multiplier applied to larger meters.

3 - 4,000 gallon allowance for all residential consumers provides additional water to be sold at \$2.50/\$3.25.

4 - Base rate is not consistent with ratios or standard industry practices.

5 - Bulk water sales sold at higher rate due to delivery location

Additional information:

Using the consumer price index of 2.2% annually, an estimated increase to the base rate would approximately \$0.87

\$39.50 rate equals a normal adjustment of 2.2% annual increase matching closely the CPI index for utility services.

Water is billed by the quarter which allows for 12K gallons of water for the residential user.

Consideration of a "conservation" minded approach would to increase the unit price an additional \$1.00 per unit when excessive usage occurs.

"Out" is defined as users located outside the city limits.