

VENTURA RIVER WATER DISTRICT

COST OF SERVICE RATE ANALYSIS

2016

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Operating a Sustainable Water District requires a balance between the rates charged and the work necessary to maintain the District facilities and water supplies. The annual cost to operate the Ventura River Water District is about \$2.5 million per year. The District serves a population of about 5,800 persons through 2,150 services. The customers include single family, multi-family and commercial. The District does not have any agricultural customers. The District finances are required by the State to be revenue neutral; the water rates cannot cause the District to make a profit or suffer a loss over the long term.

The California Constitution Article 10, Section 2 prohibits the wasting of water and Article 13D requires the charges for water reflect the cost of providing that water. This “Cost of Service” water rate analysis strives to discourage the wasting of water by providing economic incentives to invest in water use efficiency, all the while tying the cost of water to the cost of providing the water.

Financial Planning: Customer usage data from 2007 to 2015 was compiled. The usage patterns were analyzed for the single family, multi-family and commercial customers. The usage patterns enable a need based distribution of costs of operating the district. The district’s current rate structure includes base rates plus four usage tiers. Operating and capital costs are compiled and revenue requirements are projected for a ten-year period from FYE 2016 through FYE 2025. Financial planning involves estimating annual O&M, capital expenditures and reserve requirements, and the determination of required annual user revenues from rates and charges.

- **Cost of Service Analysis:** Cost of Service Analysis involves identifying and apportioning annual revenue requirements to the different cost centers and defining unit costs so that costs can be allocated to the different user classes based on the costs of supplying their water.

- **User Classes:** User classes as determined by the customer’s usage patterns are:

- **Commercial**
- **Multi-family**
- **Single family**

Commercial and multifamily customers show a fixed rate of usage with very little peaking. During drought to normal years their usage has minimal variability because they do not have readily available ways to reduce usage without severe economic impacts. See Charts 4 & 5. Single family residential on the other hand has large fluctuations in usage and high peaking rates because of extensive landscape irrigation and the ability to minimize landscape irrigation during droughts. See Chart 4.

Cost Classes within the Single Family user class have been defined as follows:

Cost Class 1: 0 to 5 units per month. These single family customers utilize very little water outside the home. Their daily peak flows and fluctuations during drought years are minimal. Property tax revenues are discretionary and are applied to this cost class.

Cost Class 2: 6 to 12 units per month. These single family customers utilize some water outside the home irrigating modest landscaping, usually water efficient types of plants with efficient irrigation systems. Their daily peak flows and fluctuations during drought years are slightly larger than for Cost Class 1 customers.

Cost Class 3 & 4: 13 to 30 and greater than 30 units per month. These two cost classes have high peak flows and large usage fluctuations during drought years. The majority of the water used by these customers is for discretionary landscape irrigation. These cost classes are divided into two classes with approximately equal quantities of water usage per year. The purpose having these two classes is for assigning conservation incentives more proportionally to usage. For example, when supplemental water is purchased from Casitas the Purchase Water Surcharge will be assigned first to Cost Class 4 and then to lower cost classes in proportion to the amount of supplemental water purchased in relation to the amount used in each class.

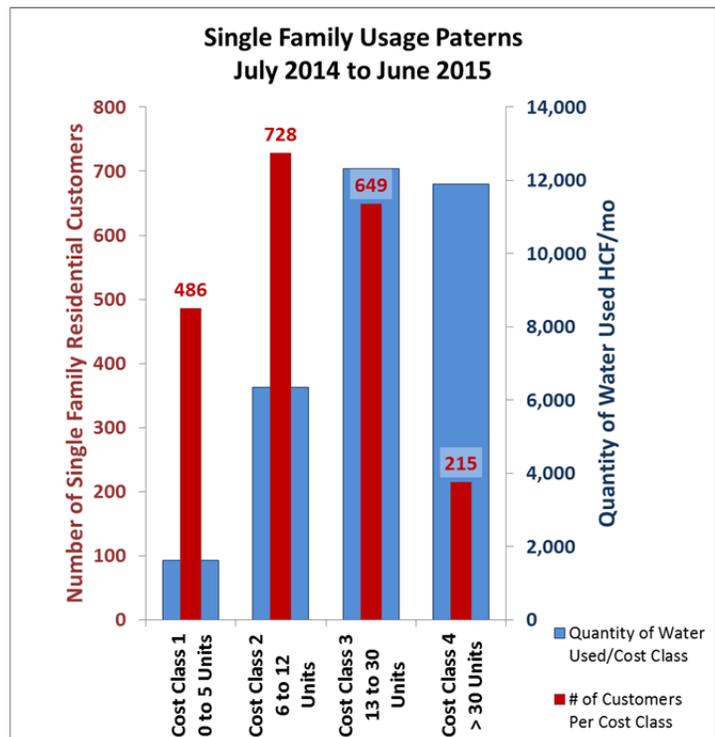


Chart 1

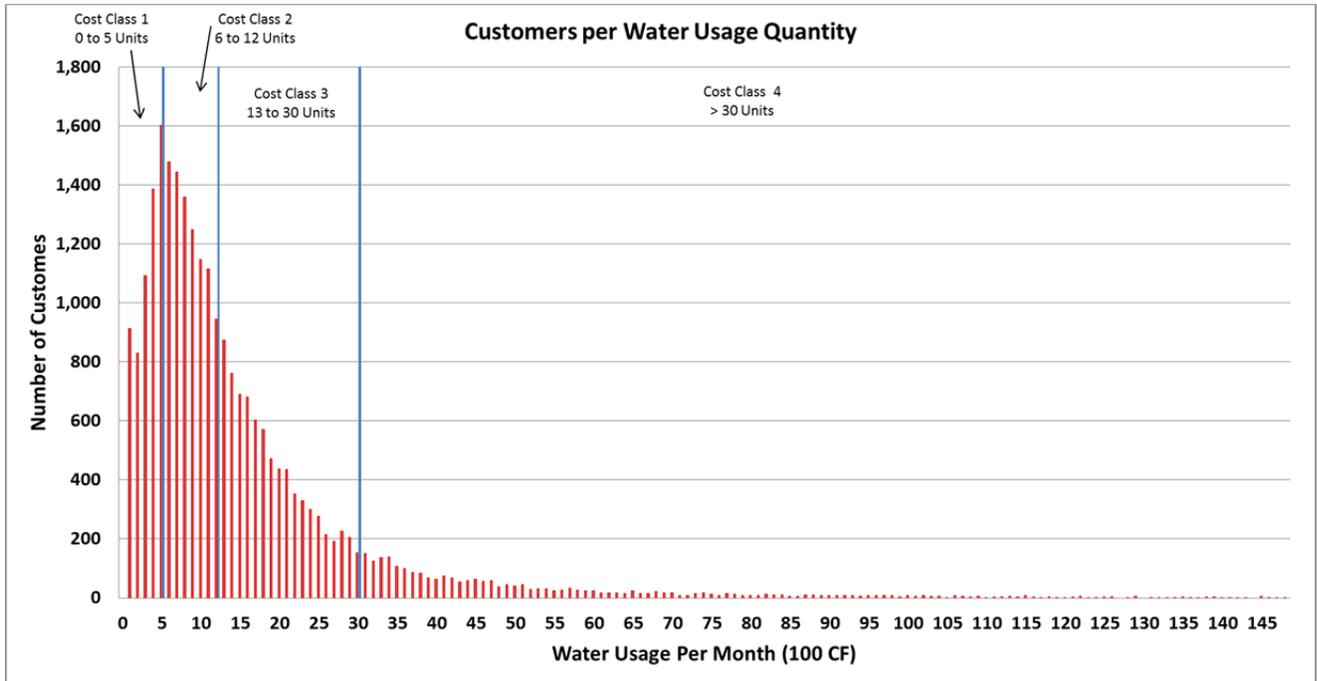


Chart 2

Cost Classes 1 and 2 combined are often referred to as “small users” in this report. Cost Classes 3 and 4 combined are often referred to as “large users.”

- **Rate Design:** Rate Design involves the development of a fixed and variable schedule of rates for each of the different user classes to proportionately recover the costs associated with such user classes. This is also where policy objectives can be achieved, such as encouraging water use efficiency.

The concept of proportionate allocation to user classes takes into consideration not only the average quantity of water used but also the peak rate of consumption. There are costs associated with design and construction of facilities used to meet peak demands, and these need to be allocated so that peaking costs can be calculated and appropriately assigned to cost classes.

The rate design is based upon the premise of generating annual revenues adequate to meet the estimated annual revenue requirements. As part of the rate design, revenues from other sources except water rates and charges, such as revenues from miscellaneous services, are deducted from the appropriate cost elements. Additional deductions are made to reflect interest income and other non-operating income during FYE 2016. See Table 4. Analysis is also

made to account for cash balances to ensure adequate collection of revenue and to determine annual revenues needed from rates.

Base and Usage Rate Assignments: Essentially all the revenue for the District is from the base rate and usage rate. The base rate is the fixed monthly fee attached to each meter and the usage rate is the cost per unit of water used. With cost class water rates the cost per unit of water increases the more the customer uses.

If all of the revenue generation were to be on the base rates the cost per month would be about \$95 per month. This would provide very stable revenues for the District regardless of how much water the customers used and the customer would have no control of the size of their water bill. However, this approach would not meet the objective of discouraging the waste of water, encouraging efficient use of water or allocating the cost of service in proportion to usage patterns.

If all of the revenue generation were to be on the usage rates the goal of encouraging the efficient use of water and cost of service can be achieved however district revenues would be subject to large fluctuations as usage changed.

The proposed rate structure minimizes the base rate and maximizes the usage rate. This enables the flexibility to allocate costs according to the cost of service, encourages the efficient use of water, allows the customer to decide how large of a water bill they want but does increase the variability revenue generation. To compensate for usage and revenue fluctuation two stabilization approaches are proposed: establishment of a Water Sales Fluctuation Reserve charged to the cost classes that fluctuate the most and an ability to adjust the unit cost of water as usage fluctuates from year to year.

Determination of Costs Allocated to Large Single Family Users ie. Cost Classes 3 & 4: Large water users create special water demand for higher flow rates and larger water quantities. Higher flow rates require more wells to produce the water, more and larger pumps to boost the water into the system and up to the higher elevations. The water storage tanks need to be larger to hold the operational and emergency storage waters needed when pumps cannot produce the quantity of water needed by the large users.

Flow Rate Cost of Service Allocation: The purpose of this analysis is to determine the flow rate required for the Cost Classes 1 & 2 customers compared to the larger user in Cost Classes 3 & 4. The highest usage months are July, August and September and were used for comparison.

Table 1 shows the ratio of pumping for the Cost Class 1 & 2 users compared to the larger users in Cost Classes 3 & 4.

Flow Rate Calculation for Small and Large Single Family Water Users Summer of 2014 Water Usage			
Flow Needed for Small Users 0 to 12 Units per month:			
July August September Usage 0 to 12 units =	16,769 Units of water		
Pumping rate Required for < 13 units =	92 days 18 hrs per day =	126 Gal/Minute	
Flow Needed for Large Users > 12 Units per month:			
July August September Usage > 12 units =	121,792 Units of water		
Pumping rate Required for > 12 units =	92 days 18 hrs per day =	917 Gal/Minute	
Total Pumping Rate Required: 1,043 Gal/Minute			
Tank Maintenance			
Use the following ratios to allocate tank maintenance:			
		Small Users	Large Users
	Pumping ratio: small to large users =	12%	88%
The above ratios need to be applied to the storage in the tanks associated with use, see table below.			
Pump Station Maintenance			
For the Baldwin and Parker pump stations allocate the costs in proportion to the actual pumps and the small user's demand of 126 GPM:			
Booster Stations: 126/1,887 ¹ gpm, use 90% to large users			
¹ 1,887 is the pumping rate of two of the three booster pumps			

Table 1

Water Storage Tank maintenance cost distribution is applied at 11% for small users and 89% as shown in Table 2.

Water Storage Maintenance Cost Allocations

		Tank Maintenance Allocations	
Storage Type	Gallons in Parker and Alto Tanks	Small Users 11%	Large Users 89%
Operational	1,254,677	138,014	1,116,662
Emergency	2,509,353	276,029	2,233,324
Fire	1,500,000	0	0
Total	5,264,030	414,043	3,349,986
Maintenance Allocations to Parker and Alto Tanks		8%	64%
Baldwin Tanks are for pumping only, not storage so their allocations are:		11%	89%

Table 2

An additional water storage tank on the Parker site is needed for operational storage and scheduled to be constructed in year 2020. All of the cost of this operational storage is allocated to Cost Classes 3 & 4 because the existing Parker tank is sufficient for the small users.

Zone 1 and Zone 2 Cost Differential: There is a 10% cost difference between the usage rates charged in Zone 1 and Zone 2. This generates the revenue necessary to operate and maintain the Parker Pump Station that pumps water from Zone 1 up to Zone 2.

Water Sales Fluctuation Reserve: The revenues for the Water Sales Fluctuation Reserve will be collected from the Single Family Residential cost classes in proportion to their usage fluctuation. See Chart 6. These revenues would not be collected from Commercial or Multi-family user classes because their usage does not fluctuate consistently or to any large degree. See Chart 5.

Fluctuation in Usage: Chart 3 shows how usage varied from 2007 to 2015 from all customer classes combined.

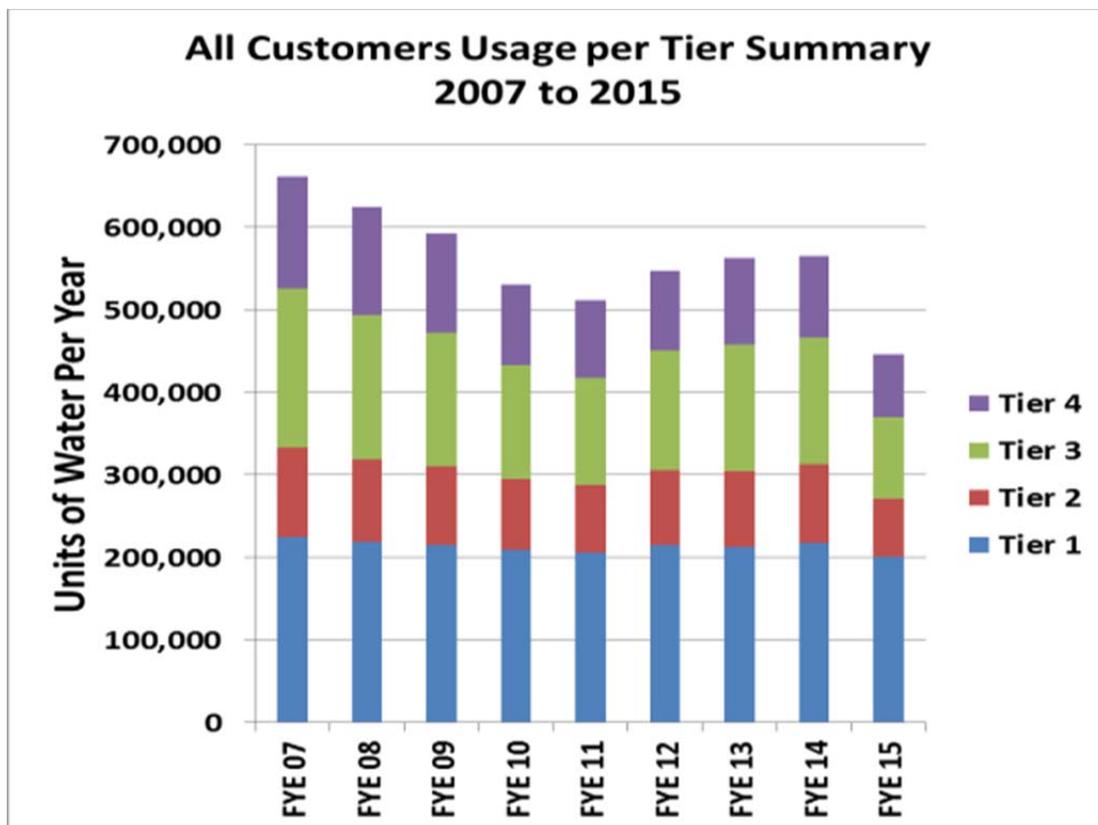


Chart 3

When the Multi-Family and Commercial classes are separated out from the declining usage period from 2007 to 2011 it is apparent that the usage fluctuation is overwhelming occurring within the Single Family class as seen in Charts 4 & 5.

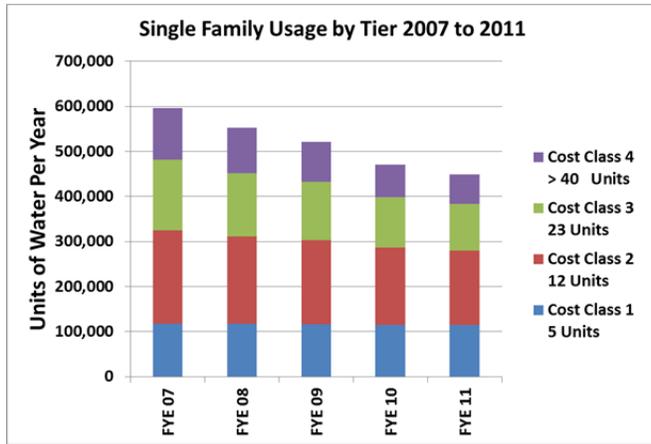


Chart 4

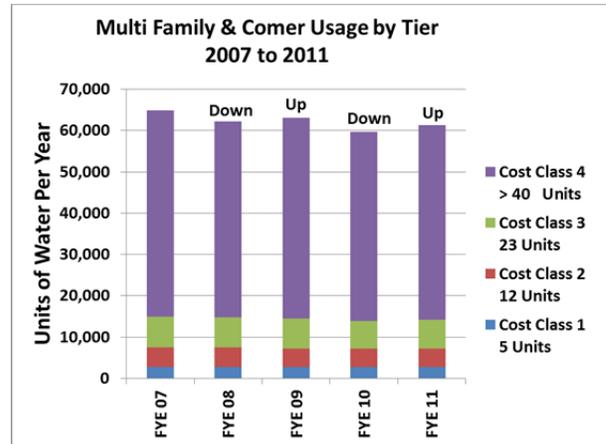


Chart 5

In general multi-family customers and commercial customers do not have a large outdoor irrigation component as a part of their water usage, and therefore do not have the ability to reduce their water usage without significant economic impacts. Based upon the stable usage patterns for multi-family and commercial users and their inability to significantly modify their usage, they are assigned a fixed cost usage rate category.

The usage within the single family class fluctuated from 2007 to 2011 as shown in Chart 6:

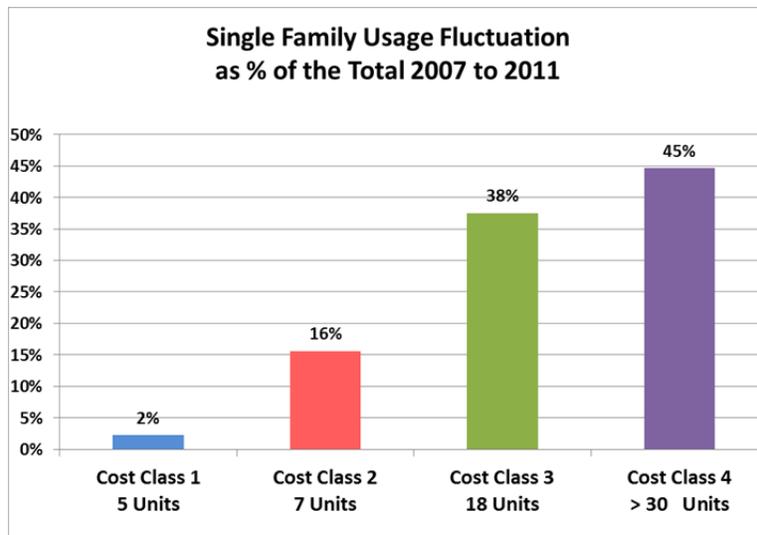


Chart 6

The cost allocations for the Water Sales Fluctuation Reserves are added to the Single Family Cost Classes in proportion to their historic fluctuation rates shown in Chart 6.

Multifamily and Commercial customers usage data shows that their usage is fairly fixed with minor variations up and down during years of declining usage (0.4% of the total fluctuation over 5 years). Therefore the Water Sales Fluctuation reserves will not be collected from the Multifamily and Commercial customer classes.

Because the approach of placing most of the cost on “water usage” rather than on the “fixed base fee” there will be larger fluctuations in revenues when water usage increases or decreases. Therefore a provision has been added to allow the Board to increase the unit cost of water if usage drops. The amount of the cost increase and notification requirements are in the Protest Hearing Notice. The Board always has the authority to lower the unit cost of water if usage increases and excess revenues are collected.

Water Sales Fluctuation Reserve Calculation Recommended Balance

Single Family Revenues							
Zone	Tier 1 \$	Tier 2 \$	Tier 3 \$	Tier 4 \$	Single Family Revenue	Revenue Difference Per Year	Single Family Revenue Reduction
Zone 1	\$3.99	\$4.36	\$7.07	\$8.15			
Zone 2	\$4.39	\$4.80	\$7.78	\$8.97			
FYE 07	\$548,563	\$673,206	\$1,393,621	\$1,387,982	\$4,003,371		
FYE 08	\$544,130	\$636,802	\$1,266,899	\$1,218,713	\$3,666,544	-\$336,827	
FYE 09	\$540,691	\$618,342	\$1,181,921	\$1,087,584	\$3,428,539	-\$238,005	
FYE 10	\$536,479	\$577,713	\$1,031,335	\$901,576	\$3,047,102	-\$381,437	
FYE 11	\$533,223	\$559,478	\$972,892	\$813,756	\$2,879,349	-\$167,752	\$1,124,022

Theoretical Revenue FYE 2006/07: \$4,003,371

Analysis based upon proposed 2016 rates and actual usage in years FYE 07 through FYE 11

Recommended Water Sales Fluctuation Balance 1.2 X 2007 to 2011: \$1,350,000

Collect over 5 years: \$270,000

Table 3

Method of calculating usage rates per Cost Class: The calculations of the cost of each unit of water within the Single Family Cost Classes is shown in Table 4:

Determination of revenues needed to maintain the District

	OPERATING EXPENSE	\$2,160,119
	Minus Depreciation	(\$240,000)
	10 yr ave of CIP =	\$879,308
Allocation to Reserves: Use Fluctuation (assume 50% needed for Revenue 2016/17)		\$135,000
	Allocation to Reserves: Emergency	\$25,000
	Minus Purchase Water Surcharge Passthrough	(\$235,000)
Total Revenue Necessary to Meet Operations & CIP & Other Reserves:		\$2,589,427

Calculation of Costs to Place on Single Family Cost Classes

Total Revenue Necessary to Meet Operations, CIP & Reserves:	\$2,589,427
Minus Base Rate Revenue (\$10):	\$282,289
Minus Property Tax:	\$27,000
Minus Additional Dwelling Charge Revenue (\$5):	\$9,450
Minus the sum of the miscellaneous revenue items:	\$24,850
Minus Multifamily & Commercial Usage Revenue (Fixed Rate = \$5.35/Unit in Zone 1):	\$226,046
Minus Water Sales Fluctuation Reserve Allocation:	\$270,000
Minus Allocation to Upper Cost Classes - Operations:	\$130,000
Minus Allocation to Upper Cost Classes - CIP:	\$154,000
Subtotal of Special Costs allocated to upper tiers:	\$284,000
Operations & CIP Allocation to Single Family Cost Classes 1, 2, 3 & 4:	\$1,465,792

Single Family Cost Class Allocations

Water Usage Cost Allocations to Single Family Cost Classes					
	Cost Class 1	Cost Class 2	Cost Class 3	Cost Class 4	Totals
Water Usage:	112,190	94,645	81,122	49,392	337,350
Water Usage Fluctuation Rate:	2%	16%	38%	45%	100%
Water Usage Fluctuation Allocation:	\$6,022	\$42,093	\$101,287	\$120,598	\$270,000
Property Tax Revenue	-\$27,000				-\$27,000
CIP & Operating Costs to Cost Classes 3 & 4:			\$176,522	\$107,478	\$284,000
Operations & CIP Allocation to Single Family Cost Classes, Proportioned by usage:	\$487,469	\$411,236	\$352,476	\$214,610	\$1,465,792
Total Cost Assigned to each Single Family Residential Cost Class:	\$466,491	\$453,329	\$630,285	\$442,686	\$1,992,792

Table 4

2016 Cost of Service Rates				
Single Family Residential				
	5	7	18	> 30
	Cost Class 1	Cost Class 2	Cost Class 3	Cost Class 4
Zone 1	\$3.99	\$4.36	\$7.07	\$8.15
Zone 2	\$4.39	\$4.80	\$7.78	\$8.97
Multi Family Residential & Commercial				
	Cost Class 1	Cost Class 2	Cost Class 3	Cost Class 4
Zone 1	\$5.35	\$5.35	\$5.35	\$5.35
Zone 2	\$5.89	\$5.89	\$5.89	\$5.89
Additional Dwelling Charge				\$5.00
Base Rate:				
3/4" & 1" Meter				\$10.00
1 1/2" Meter				\$33.30
2" Meter				\$53.30
4" Meter				\$210.00

Table 5

