POINT ROBERTS
WATER DISTRICT NO. 4

Cost of Service Rate and General Facility Charge Study Report

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INTRODUCTION

In May of 2005, the Point Roberts Water District No. 4 (District) authorized FCS GROUP to conduct a comprehensive water rate study to include: long-term capital forecasting, revenue requirements, general facility charges (GFC), and water service rates, including rate structures fostering conservation and efficient consumption during peak/non-peak and drought/non-drought seasons. FCS GROUP undertook this study for the purpose of analyzing the District's financial position, projecting the required increases in service rates that will be needed to meet future utility operating needs, short and long-term capital investment, and debt obligations, and designing water rate structures that are equitable and based on the District's cost to provide service to each class of customer (single family, commercial, multi-family, golf course irrigation, etc.). For the GFC, the purpose was to develop a fee that will recover the District's investment in existing facilities, and potentially in future facilities, constructed to serve growth.

This report outlines the methodology, findings, and recommendations of the rate and GFC study.

A. Background

The District is facing several issues, such as rate adequacy and equity, enhancement of conservation incentives in its residential water rates, and the equity and adequacy of general facilities charges. A critical question within the rate equity issue is whether the rates charged to the Point Roberts Golf and Country Club are equitably recovering the costs associated with providing irrigation water to the golf course. The District has a verbal understanding with the Golf and Country Club to provide the golf course with nearly all water in excess of the water required by the residents of Point Roberts up to the District's maximum allotment from the Greater Vancouver Water District (GVWD) (840,000 gallons a day). Currently the Golf Club is being charged as any other commercial customer with a fixed rate of $27.50 per month, which includes 800 cubic feet (8 ccf) of water, and $1.00 per 100 cubic feet of consumption over 8 ccf per month. Part of the scope of work for this study was to evaluate the equitableness of this rate and if needed, to develop a new rate that is based on the District's costs to provide service.

The District has grown steadily over the last decade and with approximately 2,050 equivalent residential service connections (*2020 actual connections)* it has reached the limit allowed under the last Water Comprehensive Plan approved by the Washington State Department of Health in 1999. The District applied to the Department of Health to lower the maximum daily demand of water per connection used to compute the number of allowed connections, which was approved and as of Feb. 1, 2006 the District is allowed to serve 2,212 equivalent residential service connections. A planned increase in new development will place even more demands on the water system. To address this, one of the major capital projects for the District over the next few years is to develop new sources of water supply, but this will take time. Consequently, to accommodate the needs of the current customers and still stay within the water allotment, the District needs to implement rates that will encourage its customers to conserve.

Other than the Golf and County Club, the District serves primarily single-family residential homes, with over sixty percent (60%) of those homes being unoccupied during some portion of the year. A "snow bird" community like Point Roberts, where the majority of usage occurs during the summer months, can cause revenue instability for the District if too much reliance is placed on the volume rates. This is compounded by the fact that the District's has a take or pay arrangement with GVWD and their payment schedule has only minimal provisions for seasonal

usage patterns. Out of these conflicting goals of requiring revenue stability when usage patterns vary so significantly, and needing rates that foster conservation, arose another goal of this study – to develop rates for the District that properly balance the fixed rates and volume rates so both revenue stability and conservation incentives can be achieved.

The citizens of Point Roberts have a commitment to independent and responsible financial stewardship of their community and with that is the recognition that it is their responsibility to plan for the future needs of their community. From the District's perspective this involves the renewal and replacement (R&R) of the utility infrastructure. The District is still relatively young *(most of the infrastructure was installed in the 1960's and 1970's)* and because of that it is likely that by beginning now, a funding strategy for both new and R&R capital projects can be implemented in a planned and measured way without creating undue hardships on any one generation of ratepayer. The final goal of this study then was to project the long-term capital needs of the District and develop a capital funding forecast to determine if by beginning now to address the infrastructure replacement issue the long-term rate impacts can be mitigated.

B. Objectives and Scope of Work

This study reviewed the basis, structure, and equity of existing water rates and GFCs and developed rates and GFCs that adhere to the District's policies and practices, recover the required revenues, and establish equity between the customer classes. The study also developed revenue planning strategies necessary to meet the complete annual and forecasted operating and capital obligations of the utility. The key project objectives were to:

- Recommend fiscal policy changes as required.
- Develop water connection charges (General Facility Charges - GFC).
- Project long-term capital needs and incorporate these needs into a long-term funding forecast that may include rate, debt, and GFC funding.
- Assess revenue needs for a multi-year period that includes adequate coverage for operations and maintenance, capital projects, debt service, and other program activities.
- Conduct a cost-of-service rate analyses with a focus on the costs to provide service for the golf course irrigation water.
- Develop equitable cost-of-service based rates that encourage conservation.
- Document and present findings to District staff and the Board of Commissioners.

C. Utility Rate Setting Principles and Methodology

The methods used to establish utility rates are based on principles that are generally accepted and widely followed throughout the industry. These principles when applied are designed to produce rates that equitably recover costs from each class of customer. The methodology used for the District generated the following findings needed to meet the study's fundamental objectives to maintain a self-sustaining enterprise and to not discriminate against any class of customer:

- *The appropriate level of revenue to be collected from ratepayers, and*
- *The appropriate rate structure to collect those revenues equitably.*

Many factors influence the determination of required rate levels. Initially, the total financial resources needed by the utility are defined. Required resources are determined by tabulating all expenses incurred to operate, maintain, and administer the utility system, any existing debt service for past and future capital improvements to the system, cash needed for current capital projects, and reserve funds that should be accumulated for future system improvement and replacement needs. The District must also satisfy any debt covenants as a legal requirement and as a condition of borrowing money in the future.

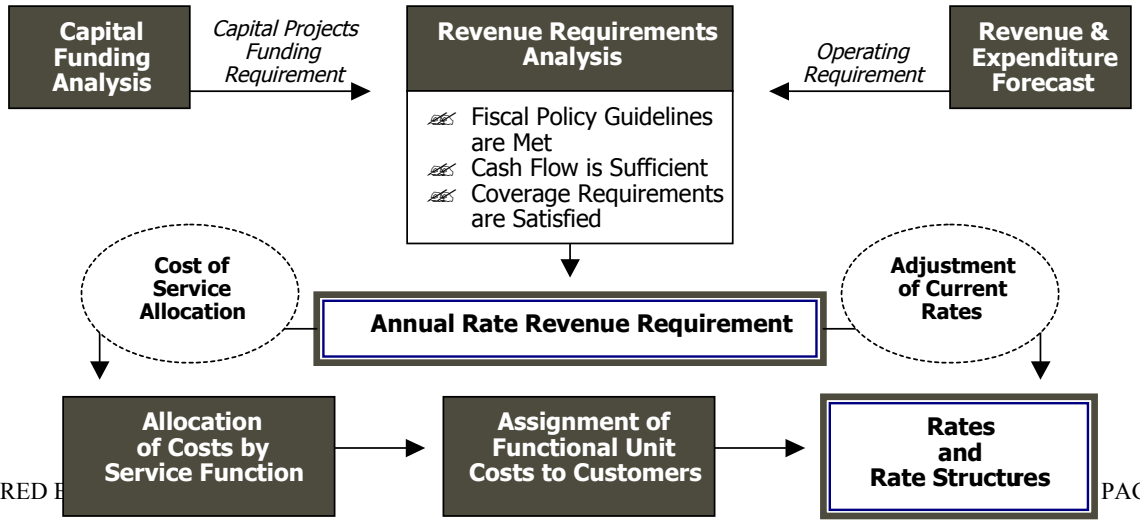
The total financial needs of the District do not directly establish required rate needs. The District has revenue sources other than rates that may assist in meeting financial obligations, including miscellaneous service revenue, interest earnings, and to potentially off-set capital improvements, general facility charge (GFC) revenues *(GFC revenues are for capital expenditures only and may not be used to cover cash operating expenses).* The level of revenue required from rates is calculated by accounting for the total financial requirement of the utility less non-rate revenues.

Next, the structure of service rates should reflect underlying costs to the extent feasible and practical. ***Regardless of the level of complexity employed in setting rates, the standard for evaluating rate equity is simple: rates should reflect the costs of providing service.*** A sound cost-of-service allocation utilizes system data and standards for distinguishing functions of service provided and the customers that share different proportions of those functional costs. An equitable rate structure recovers the revenue requirement from customer classes and, to the extent practical, individual customers in proportion to how each uniquely uses the utility system and what demands are placed on the system to adequately meet their needs.

The primary tasks of the water rate study are listed below and displayed in **Exhibit 1.**

- **Rate Revenue Requirements Analysis:** This analysis identifies the total revenue requirement to be recovered from utility rates, considering operating and maintenance expenditure forecasts, capital funding goals, debt requirements, and policy objectives.
- **Cost-of-Service Analysis:** This analysis develops an allocation of the rate revenue requirement that identifies the functional elements of water service and distributes those calculated costs to customers based on their demand and use of the system.
- **Rate Design:** This task constructs and evaluates alternative rate structures that recover the revenue requirement, while meeting rate equity.

EXHIBIT 1 RATE STUDY METHODOLOGY



TECHNICAL REPORT

I. REVENUE REQUIREMENTS ANALYSIS

A. Methodology

For rates to be sufficient, two individual conditions must be met:

- First, **cash requirements** must be fulfilled; these requirements may include discretionary elements established by District fiscal policy as well as basic operating needs.

- Second, **coverage requirements** on debt service, self-imposed legal requirements agreed to by the District as a condition of borrowing money, must be realized.

The revenue requirements analysis performs two sufficiency tests intended to verify the status of these two conditions. The **Cash Flow Sufficiency Test** examines all known cash requirements for the utility using budgeted annual revenues and expenditures and projections based on budget for the remainder of the fiscal years included in the financial forecast. Cash requirements consist of operating and maintenance expenses, existing debt service, new debt required for capital programs, and directly-funded capital projections, additional capital funding for the renewal and replacement of system infrastructure, and any other projected additions to reserves. All cash revenues of the system, including rate revenue, miscellaneous service revenue, and operating fund interest earnings are compared against the total annual cash needs of the system, and any deficiency is calculated.

This sufficiency test assumes that in the event of a shortfall, rates represent the revenue source that is controllable and can and should be modified to meet that shortfall. In this way, the approach implicitly assumes that other sources of revenue are static and do not change as a result of the finding. If such non-rate revenues could be increased in response to any shortfall, then rate increases could be correspondingly lower as a result.

The **Coverage Sufficiency Test** recognizes the cash needs of the utility in conjunction with its commitments to meet coverage requirements associated with debt service obligations. Coverage is a requirement of any bond covenants the District may agree to; it serves as a safeguard for bondholders against the risk of poor financial performance. Coverage is determined by a defined calculation that includes the following steps:

- Determine total allowable annual revenue typically including current year rates, interest earnings, miscellaneous revenues, and if allowed in the bond covenant, GFC revenues,

but excluding reserves and fund balances.

- Subtract annual cash operating expenses.
- Divide the remainder by applicable annual debt service. The resulting ratio is referred to as the coverage factor. (For the District the coverage factor is required to be 1.25)

Some costs such as direct capital funding *(depreciation funding)*) are not considered in the determination of coverage. If GFC revenues are not allowed, it will be so stipulated in the bond covenants. Similarly, the coverage requirement does not dictate the use of funds once expenses and debt service are funded.

Utility revenues should be sufficient to meet both the cash and the coverage tests, so the higher of the two obligations determines the level of rate increase needed. If either test identifies any cash or coverage shortfalls, the level of rate increase necessary to offset the deficiency is calculated. The test with the greatest deficiency will thus drive the level of rate increase required. For example, if the cash test drives the larger shortfall, then the calculated rate increase required to make up that shortfall will also more than meet the coverage requirements. Similarly, if the coverage test creates the larger deficiency, surplus cash generated from that increase would more than cover the cash needs.

B. Key Assumptions

The results of the revenue requirements analysis are significantly affected by underlying economic, financial, and policy-based assumptions used in the revenue and expense forecast. It is important to recognize the sensitivity of the study's results to changes in the forecast assumptions discussed in this section.

Financial Assumptions

The analysis separates operating and capital needs and tracks funds flow for each separately to ensure appropriate use of designated reserves. Specifically, such separation ensures that restricted resources (such as GFC revenues and bond proceeds) are available for capital projects and are not used for operational expenses. The Maintenance Fund is designated for operating expenses. Capital funds are designated for capital costs. There are also debt service reserves, as required by bond covenants.

The District's 2005 operating and capital budget was used as the financial data from which revenue and cost forecasts were based.

Policy Assumptions

Minimum operating reserves have been established at 75 days of annual operating costs for working capital. If reserves fall below this level, rates will be increased to bring reserves back to

the minimum level. The maximum reserve level adds an addition 4% to the minimum level for operational shortfalls (for a combined 24.5% of annual operating costs). If reserves exceed the maximum balance they will be transferred to the capital or construction fund for capital spending.

The District plans to annually fund a portion of the capital program through rates. There is a provision in the analysis for the annual cash funding of capital that uses a long-term forecast of capital funding needs with annual depreciation expense less annual debt principal as the benchmark for the minimum level of funding. Since completely funding the minimum level in 2006 will generate excessive rate increases, the rate funded capital transfer will be phased in from 2006 through 2010, starting at 30% of the minimum transfer in 2006 and reaching 100% by 2010. Beyond 2010, the capital needs combined with a desired level of debt funding and acceptable rate increases drive the amount of the rate funded capital transfer.

The District's existing revenue bond covenants require the utilities to meet 1.25 coverage, and this level of coverage has been assumed for all future revenue bond issues. Debt coverage provides an additional assurance that the District will have enough resources to meet its debt service obligations, even if circumstances cause its revenues to fluctuate.

Economic Assumptions

Embedded in the calculation of the 2006 required rate revenues and the forecast of future year needs are the following economic assumptions:

- *Customer Growth*: The 150 new homes planned near the golf course were included in the forecast with 40 new homes assumed to be added in 2006 (2% growth), 52 homes added in 2007 (2.5% growth), and 58 homes added in 2008 (2.7% growth). No growth was planned for 2009 and 2010. After 2010, a minimal growth rate of 0.47% was projected on an annual basis. The growth rate after 2010 is a placeholder only and should be updated with the results of the comprehensive planning process.
- *General, construction, and labor inflation*: 2.75% in 2006 and 3.00% annually thereafter.
- *Wholesale Water Cost Increases*: GVWD provided projected rate increases from 2006 through 2010 in Canadian dollars. They are projected to increase by 17.34%, 21.22%, 4.3%, 5.01%, and 2.49% from 2006 through 2010 respectively. After 2010 a 5% annual cost increase was used for the long-term forecast.

  To more closely match water costs with water revenues, GVWD is implementing a two-tiered seasonal rate starting in 2006. A winter rate will be in affect from January through May and October through December and a summer rate will be in affect from June through September. The summer rate will start at 108% of the winter rate in 2006, increase to 116% of the winter rate in 2007, and top out at 125% of the winter rate in 2008.
- *Interest earnings rate:* 3.00% in 2006 gradually phasing to 5% by 2010.
- *Revenue Bond Terms*: 5 % interest, 20-year term, 2% issue costs and reserve funding added to the total bond issue.

- *State taxes*: Public utility tax rate is 5.029% on all service revenue except for the golf course irrigation water revenues, which are exempt from taxation. B&O tax rate is 1.5% on all other non-service revenues, including GFC revenues.

C. Capital Funding Analysis

The revenue requirement analysis not only projects the operating requirements of the utility, but also evaluates expected capital costs and available resources to determine whether additional funding for such projects will be required from rates - either to pay for new debt service or to directly fund the projects themselves. The capital funding component of the District's study was expanded to include the projected water main replacement needs for a replacement cycle of 75 years to determine the possible unfunded liability the District is facing and to determine what the District can do now to begin to address this issue in an equitable and measured way.

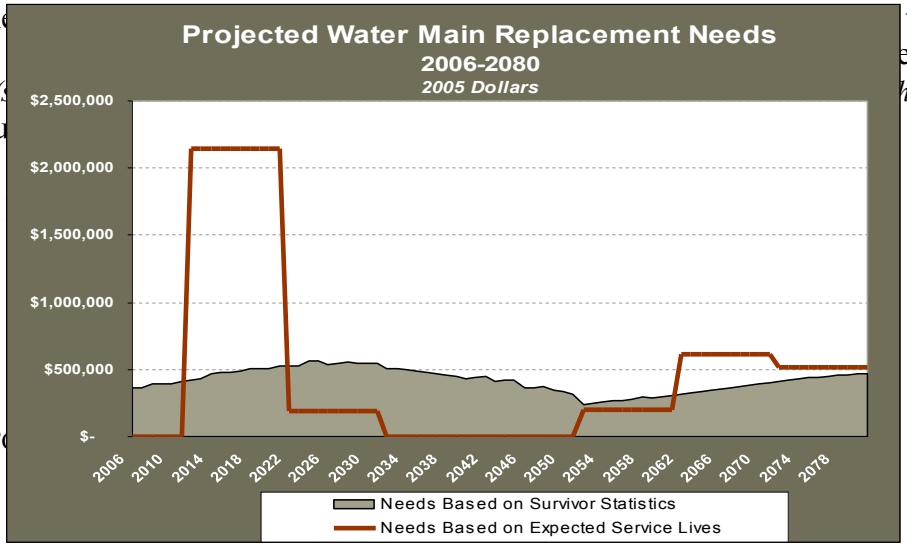
The capital funding analysis is basically a two-step process:

1. ***Capital needs (costs) are defined, and***
2. ***A funding plan or forecast is developed based on those needs.***

1. Defining Capital Needs (Costs)

The short-term capital needs (6 to 20 years) are usually defined in a utility's capital improvement plan (CIP) and comprehensive plans. Since the District's engineers will be begin work on both of these documents during 2006, the District Manager provided preliminary estimates of the capital needs from 2006 through 2011. Included in these estimates is $2.5 million for capital costs related to the development of new sources of water supply. Beyond 2011, long-term water main renewal and replacement (R&R) needs were predicted by applying survivor statistics to the District's inventory of existing pipes. These statistics were developed by the University of Iowa for several utility industries (telephone, electric, water and sewer, etc) in the 1960's and can be used to determine how long water mains will likely survive (*and conversely fail*) based on the age and estimated service lives of the pipes. These statistics are very similar to those used in the life insurance industry to predict mortality rates and are based on the premise that pipes will not all fail on schedule - most will fail either sooner or later than the expected average service life of the class of pipe as a whole, with only a small percentage failing on schedule.

When these statistics were applied to the District's inventory of water mains (***approximately 45 miles of pipe with an estimated replacement value today of over $30 million***), the predicted replacement n the expected service lives. eds based on service lives (*s he pipes were installed*) versu



The application of the survivor statistics not only reduces the amount and cost of pipe that will need to be replaced during the replacement cycle (304,306 lf versus 256,145 lf), it projects that the pipe will fail much more uniformly. Because the survivor based replacements are graphed with the service life replacements, the scale obscures that the District's actual liability will continue to increase over the next 20 to 25 years until it reaches a peak of 1.5 times the current needs by around 2030 *(the costs shown are in real dollars)*. By graphing the replacement needs alone, as shown **Exhibit 3** the real peak in spending is shown more clearly.

EXHIBIT 3 PROJECTED WATERMAIN REPLACEMENTS – RESCALED

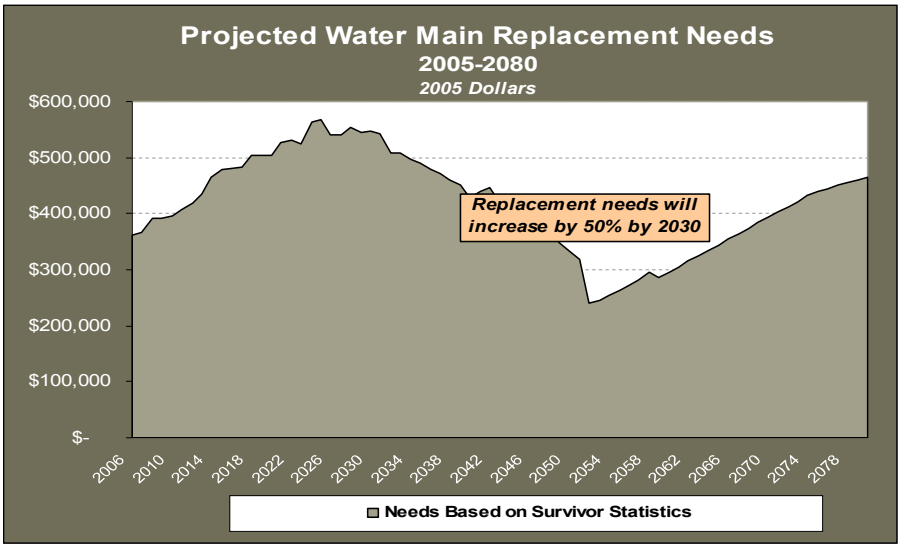
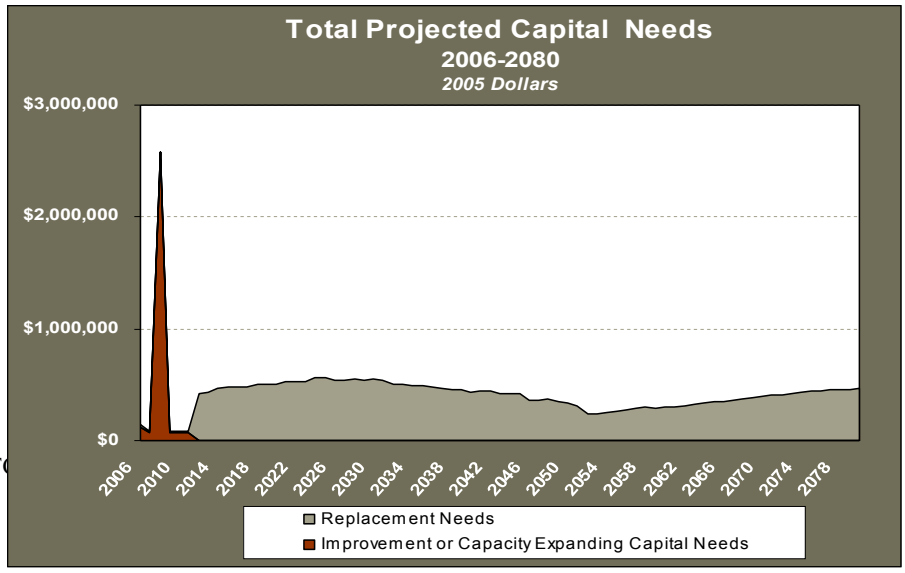


EXHIBIT 4 TOTAL PROJECTED CAPITAL NEEDS



When the projected water main replacements are combined with the District short-term estimates of capital needs, the total projected long-term capital needs for the District are shown in the graph in **Exhibit 4**. The taller darker area in the beginning of the graph is the short-term needs with the major driver being the source of new supply. The water main replacement needs start in 2012 after the completion of the District's estimate of short-term needs, including the sources of new supply, because implementing a replacement program concurrently with these projects would have significant, and unaffordable, rate impacts on the District's customers. By delaying the start of the replacement program, the District will also have time to accumulate capital reserves to help fund these costs.

2. Funding Plan (Forecast)

To develop the funding forecast, the projected capital needs were restated in inflated dollars and combined with the projected operating costs (*also inflated*). These costs were combined because no long-term funding plan can be meaningful unless it considers the system costs as a whole – capital and operating alike.

The goals of a sound funding plan are to:

- ***Provide adequate funding***
- ***Maintain affordable and stable rate increases***
- ***Consider intergeneration equity issues***
- ***Ensure financial stability***

Providing adequate funding means that the plan will provide sufficient funds to pay all operating and capital costs as they come due. The funding sources considered in the long-term capital forecast include the following: current year rates, savings from prior year rates (capital reserves), general facility charges, interest earnings, and debt proceeds for large, and concentrated projects such as the source of new supply (*to be conservative revenue bonds rather than Public Works Trust Fund (PWTF) Loans were used in the long-term forecast*).

The amount contributed from current year rates can be developed in a number of ways including an amount equal to annual book value depreciation expense, annual book value depreciation expense less debt principal, annual replacement value depreciation expense, and an amount based on the long-term forecast of capital needs. For this analysis the amount of the annual rate funded capital transfer is based on a long-term forecast of capital needs with book value depreciation less dept principal used as a minimum amount. However, even the minimum amount cannot be transferred to the capital reserves from 2006 through 2009 without significant rate impacts. For that reason the transfer is phased in over a five-year period by starting at 30% of the minimum amount in 2006 and increasing that amount by 20% per year from 2007 through 2009 and 10% in 2010, until it reaches 100% of the minimum amount in 2010.

Determining the amount to be contributed from rates based on a long-term forecast of needs is an iterative process where various combinations of debt funding, reserve payments, and rate contributions are considered until optimal multi-year rate increases are achieved. When considering whether rate increases are optimal, the lowest and smoothest forecast of rate increases achieved (i.e. **affordable and stable rate increases**), while still meeting all of the forecasted operating and capital needs, not building excessive reserves, and maintaining **financial stability** (*required debt coverage is met and positive net income is maintained*), would be considered an optimal solution. Smooth or level rate increases also helps to ensure **intergenerational equity**.

Because of the District's short-term needs (both operating (see next section) and capital) are significant, smooth level rate increases cannot be achieved for several years. But ***if the District adheres to a policy of implementing the required rate increases on an annual basis, which means year-in, year-out without breaks, they will eventually reach a point when they can pay all current year replacement needs from current year rates.*** By that time the replacement costs will not be any different than any other O&M costs that the District incurs on an annual basis.

Of course, anything beyond the next five or six years cannot be reliably predicted, but a long-term rate forecast was developed to help illustrate when the District may be able to achieve a "pay as you go" funding strategy for capital replacements. **Exhibit 5** shows the projected rate increases over the forecast period (2006 – 2080) and shows that smooth and lower rate increases could be expected as soon as 2015 if rate increases are implemented on an annual basis before that time. Of course, if the rate increases from the GVWD are more than 5% per year the overall level of increases will be higher than those depicted in Exhibit 5.

EXHIBIT 5 PROJECTED RATE INCREASES

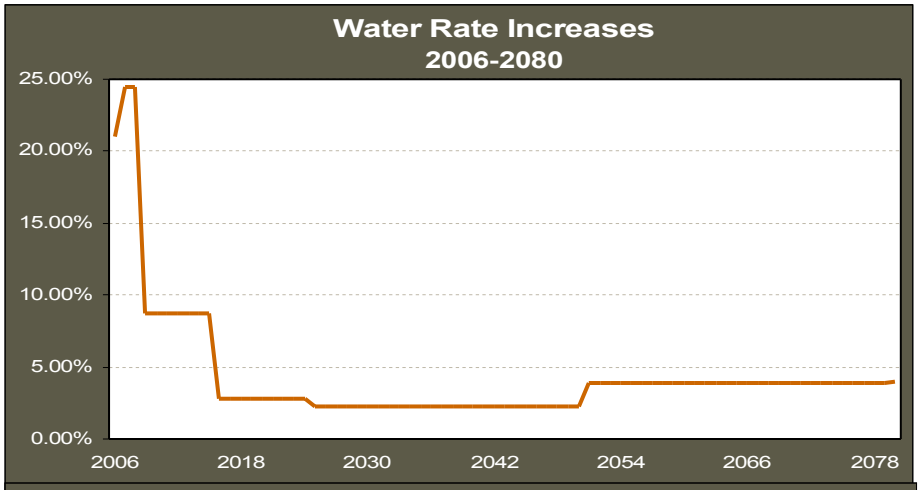


Exhibit 6 sh if the capital contributions wer and then consumed in nner helps to further smoo

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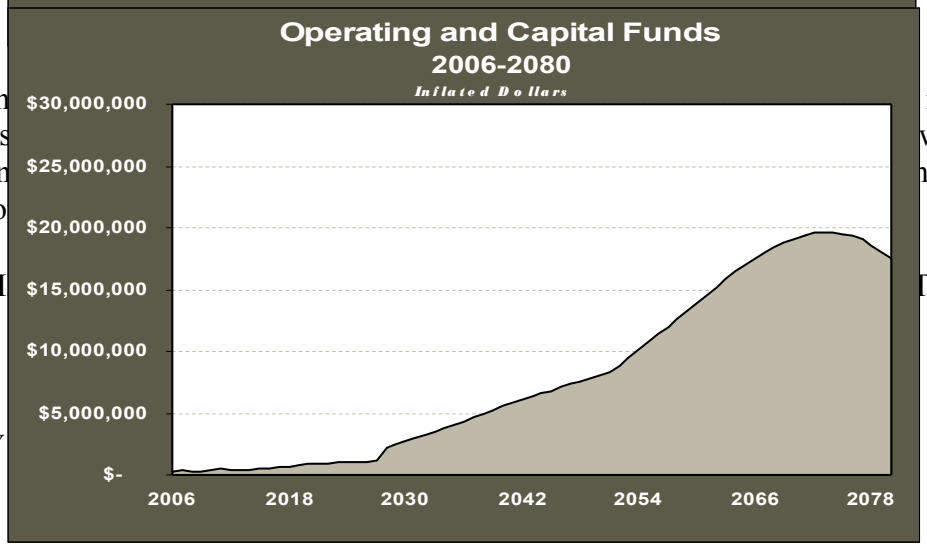


Exhibit 7 shows the capital projects completed in 2005 and the projected capital projects through 2012. The capital project for new source of supply *($2,725,187 – inflated from $2.5 million in 2005 dollars)* has been earmarked for 2008 but may change as the needs are evaluated in the Water Comprehensive Plan. Note that the replacement program is scheduled to start in 2012 *($514,226).*

EXHIBIT 7 CAPITAL IMPROVEMENT PLAN FOR 2005-2012

CIP Program - No New Supply	% Cap Inc	% R&R	2005	2006	2007	2008	2009	2010	2011	2012	TOTAL 2006-2012
Miscellaneous water line improvements	50%	50%		$17,125	$17,639	$18,168	$18,713	$19,274	$19,853		$110,772
Pressure Reducing Zone for Distribution system	100%	0%		$34,250	$70,555	$72,672	$74,852	$77,097	$79,410		$408,836
2.15 Reservoir Disinfection Improvements	50%	50%	$452,559								
Comp Plan	75%	25%		$102,750							$102,750
General Plant	50%	50%	$42,524								
New Source of Supply	100%	0%				$2,725,187					$2,725,187
On-going RR - Based on Survivor Statistics	0%	100%								$514,226	$514,226
Yearly Subtotal			$495,082	$154,125	$88,194	$2,816,026	$93,565	$96,372	$99,263	$514,226	$3,861,770
Capacity Increasing			***$247,541***	***$119,875***	***$79,374***	***$2,806,942***	***$84,208***	***$86,735***	***$89,337***	***$0***	***$3,266,471***
Repair and Replacement			***$247,541***	***$34,250***	***$8,819***	***$9,084***	***$9,356***	***$9,637***	***$9,926***	***$514,226***	***$595,299***

A plan for funding capital projects from 2006 through 2012 is shown in **Exhibit 8.** Note that the plan is actually the activity in a capital or construction fund. Total capital project costs are roughly $3.9 million *(inflation adjusted)* from 2006 through 2012. The analysis indicates that the District will need to fund the capital costs related to the source of new supply primarily from debt proceeds *(see debt proceeds of $2,500,000 in 2008)*. All other capital costs will be funded from [illegible] *excess maintenance fund reserves)*. If the assumptions related to costs and GFC revenues are correct, and the District adopts the needed rate increases each year, they should be able to fund the replacement projects in 2012 without issuing any additional debt.

EXHIBIT 8 SHORT-TERM [illegible] AL FUNDING STRATEGY

CONSTRUCTION FUND	2006	2007	2008	2009	2010	2011	2012	TOTAL
BEGINNING BALANCE	**$21,926**	**$134,984**	**$232,032**	**$118,714**	**$105,680**	**$159,314**	**$264,101**	**$21,926**
Interest Earnings	658	4,724	9,281	5,342	5,284	8,762	14,526	**48,577**
Rate Funded Capital Transfers	34,502	57,503	54,002	75,189	144,721	151,683	264,596	**782,196**
Debt Proceeds			2,500,000					**2,500,000**
Release of Bond Fund Reserves								
GFC Revenues	92,022	123,014	139,425			43,605	44,392	**442,459**
Transfer from Maintenance Fund	140,000						85,557	**225,557**
Capital Expenditures	(154,125)	(88,194)	(2,816,026)	(93,565)	(96,372)	(99,263)	(514,226)	**(3,861,770)**
ENDING BALANCE	**$134,984**	**$232,032**	**$118,714**	**$105,680**	**$159,314**	**$264,101**	**$158,946**	**$158,946**

D. Rate Revenue Requirement Findings

With the exception of higher water costs from Greater Vancouver Water District (GVWD), higher debt service costs that are projected to begin in 2008 with the new water supply project, and a gradual increases in the rate funded capital transfer, the operating forecast is consistent with inflation and growth projections for the District.

Using an exchange rate of $0.87 on the dollar in 2006, the water costs from GVWD are expected to increase by 20% in 2006. With another significant rate increase expected from GVWD in 2007, plus using an exchange rate at PAR, the water costs could go up as much as 39% in 2007. These two wholesale water increases are driving a need for an overall increase in rate revenues of 21% in 2006 and another increase of 24.5% in 2007.

A [illegible] will require another increase in overall rate revenues of 24.5% in 2008. Between 2009 and 2012 the rates are stable but still somewhat high at 8.7%. The major drivers for these increases above an inflationary level are the higher than inflation water purchase costs and the gradual increase in the rate funded transfer as it is phased in over this period. Not shown in this table but shown in the longer-term analysis, are the expected rate increases after 2012. It shows that the District can expect to see rate increases more at the inflationary levels starting around 2015 (see **Exhibit 5**).

EXHIBIT 9 REVENUE REQUIREMENTS

MAINTENANCE FUND	2006	2007	2008	2009	2010	2011	2012	TOTAL
Growth	*1.8%*	*2.3%*	*2.5%*	*0.0%*	*0.0%*	*0.5%*	*0.5%*	*2006-2012*
Rate Increase	*21.0%*	*24.5%*	*24.5%*	*8.7%*	*8.7%*	*8.7%*	*8.7%*	*140.9%*
BEGINNING BALANCE	**$274,535**	**$133,461**	**$161,612**	**$168,200**	**$177,527**	**$192,459**	**$288,813**	**$274,535**
REVENUES								
RATE REVENUES								
Base Service Revenues	$533,642	$657,212	$836,576	$1,067,216	$1,160,063	$1,260,989	$1,377,193	**$6,892,891**
Growth Revenues	9,508	14,737	20,625		0	5,978	6,534	**57,381**
Rate Increase Revenues	114,062	164,628	210,014	92,848	100,926	110,226	120,384	**913,087**
RATE REVENUES	**$657,212**	**$836,576**	**$1,067,216**	**$1,160,063**	**$1,260,989**	**$1,377,193**	**$1,504,111**	**$7,863,360**
OTHER OPERATING REVENUES	47,862	52,310	58,534	25,657	26,964	39,251	44,822	295,400
TOTAL REVENUE	**$705,074**	**$888,886**	**$1,125,749**	**$1,185,720**	**$1,287,953**	**$1,416,443**	**$1,548,933**	**$8,158,759**
EXPENSES								
OPERATING EXPENSES								
water increases	*20%*	*39%*	*4%*	*5%*	*2%*	*5%*	*5%*	
GVWD Water Purchases	$292,372	$407,369	$424,882	$446,172	$457,274	$480,138	$504,145	**$3,012,351**
Transmission and Distribution Ex	208,613	214,871	221,318	227,957	234,796	241,840	249,095	**1,598,490**
Administrative and General Expe	125,113	126,438	130,232	134,138	138,163	142,307	146,577	**942,968**
Taxes	31,956	41,059	52,682	56,842	61,917	67,912	74,290	**386,659**
Non-CIP Capital Expenses	5,818	5,993	6,173	6,358	6,549	6,745	6,947	**44,583**
CIP Engineering & O&M Addition								**0**
All Other Operating Expenses	371,501	388,362	410,404	425,295	441,425	458,804	476,909	2,972,700
TOTAL OPERATING EXPENSES	**$663,872**	**$795,731**	**$835,286**	**$871,467**	**$898,699**	**$938,942**	**$981,054**	**$5,985,051**
CAPITAL EXPENSES								
Debt Service	$7,774	$7,501	$229,874	$229,737	$229,601	$229,464	$229,328	**$1,163,279**
Rate Funded Capital Transfers	34,502	57,503	54,002	75,189	144,721	151,683	237,161	754,761
TOTAL CAPITAL EXPENSES	**$42,276**	**$65,004**	**$283,875**	**$304,926**	**$374,322**	**$381,147**	**$466,489**	**$1,918,040**
TOTAL EXPENSES	**$706,148**	**$860,735**	**$1,119,161**	**$1,176,393**	**$1,273,021**	**$1,320,089**	**$1,447,543**	**$7,903,091**
CASH FLOW SURPLUS (DEFICIT)	***-1,074***	***28,151***	***6,588***	***9,327***	***14,932***	***96,354***	***101,390***	***255,668***
TRANSFERS TO OTHER FUNDS	-140,000						-96,836	**-236,836**
ENDING BALANCE	**$133,461**	**$161,612**	**$168,200**	**$177,527**	**$192,459**	**$288,813**	**$293,367**	**$293,367**

II. COST-OF-SERVICE ANALYSIS

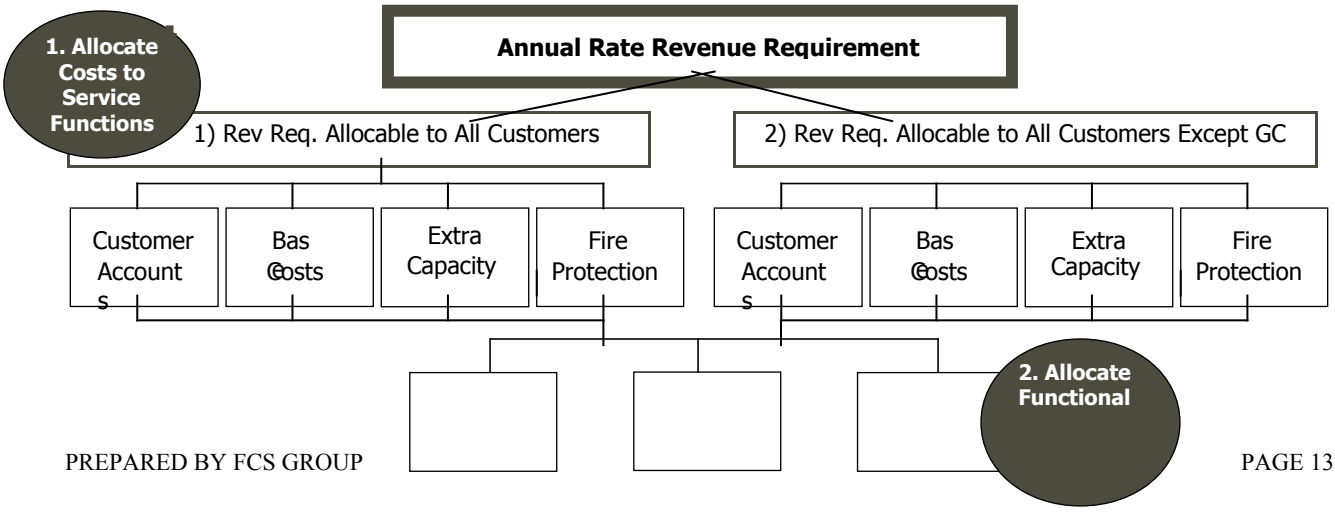
A. Methodology

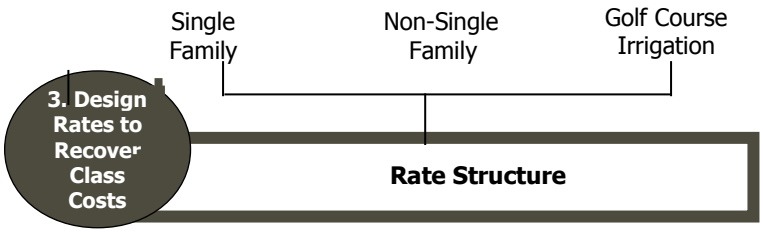
A cost-of-service allocation determines the basis for recovering required revenues from customers through their rates according to unique demands they place on the system. There are three fundamental steps to allocating the calculated annual revenue requirement to customer classes and developing the final rates as outlined below.

- **Functional Allocation:** Annual rate revenue requirement (costs) are allocated to functional categories of water service based on system requirements and characteristics.
- **Customer Class Identification and Allocation of Functional Costs to Customer Classes:** Functional costs are distributed to customer classes based on factors that describe each class' demand for that particular service.
- **Unit Cost Development and Rate Structure Design:** The functional costs allocated to each customer class are broken into unit costs and then used as building blocks for a new rate structure design.

Exhibit 10 illustrates the cost-of-service methodology used in this analysis:

EXHIBIT 10 COST-OF-SERVICE METHODOLOGY





B. Allocation of Revenue Requirement

Ordinarily the cost-of-service analysis requires only one pass through the cost-of-service steps listed in section A, above. However, for the District the revenue requirement was first segregated into two costs pools before making allocations to service functions. The two cost pools are:

1. ***Costs allocable to all District customers <u>including</u> the costs related to delivering the golf course irrigation water, and***
2. ***Cost allocable to all customers <u>excluding</u> costs related to the golf course water (GC).***

The costs were segregated because the water supplied to the golf course for irrigation does not enter the District's distribution system but is rather supplied directly though a dedicated 6-inch water main, which was constructed by the Golf and Country Club and donated to the District. Consequently, costs related to the District's distribution system were removed from the costs used to develop the rates for the golf course irrigation water. The major allocation factors used to segregate the revenue requirement into the two cost pools were:

- Water supply costs - 100% allocable to the golf course irrigation water
- Excise taxes and hydrants - 100% <u>not</u> allocable to the to the golf course irrigation water
- All other cost - Approximately 8% *(ratio transmission mains to total mains)* allocated to the golf course irrigation water.

The results of this allocation segregated the overall revenue requirement of $657,212 for 2006 into $301,269 (46%) of costs that are allocable to all customers including the golf course irrigation water (cost pool 1) and $355,943 (54%) of costs that are allocable to the remaining customers, excluding the golf course irrigation water (cost pool 2). **Exhibit 11** shows these two amounts plus the average cost per 100 cubic feet (ccf) for the 2006 system-wide projected consumption of 141,403 ccf. The 2006 consumption was estimated based on the 2003/2004 actual usage, plus growth, and then adjusted downward by 10% during the summer months to arrive at a more average year consumption. The projected 2006 usage for the golf course irrigation water was based on a five-year average.

EXHIBIT 11 SEGREGATION OF 2006 REVENUE REQUIREMENT

Segregation of Revenue Requirement	Total	Per ccf
1- Functional cost (rev req) allocable to all customers **<u>including</u>** the Golf Course	$ 301,269	$ 2.13
2- Functional cost (rev req) allocable to all customers **<u>excluding</u>** the Golf Course	$ 355,943	$ 2.52
TOTAL 2006 REVENUE REQUIREMENT	**$ 657,212**	**$ 4.65**

C. Functional Allocation

The allocation of the revenue requirements (costs) to water service functions relies on engineering, operational, and customer information. The detailed annual rate revenue requirement pools, (**Exhibit 11**) comprised of operating, maintenance, and capital expenses, were allocated to functional categories based on documented system requirements, including, engineering criteria (e.g., average demand, peak demand, storage requirements) and other general allocation criteria (e.g., industry standards).

To allocate the 2006 rate revenue requirement, it was first broken into two distinct components: the capital requirement and the operating requirement. Capital expenditures such as debt service and capital funding were allocated across the functions of service based on the District's plant-in-service.

When allocating the plant-in-service to functions, a relationship between each asset and its use in the system is identified, and a corresponding cost allocation is made. For example, the water supply assets were allocated entirely to base and extra (peak) capacity by a ratio of historical average daily demand per ERU to the maximum designed demand per ERU. The costs of the water storage reservoirs were allocated based on the design criteria and system requirements for the storage. Hydrants were allocated 100% to fire, meters were allocated 100% to customer, and transmission and distribution (T&D) lines were allocated 20% to customer, 33% to fire protection, with the balance allocated between base and extra capacity costs according to the average daily demand to designed peak day demand. The remaining plant-in-service was allocated as all other plant. Normally T&D plant is allocated at a lower rate (between 5% and 10%) to the customer function but the low plant-in-service costs for meters and services relative to the other plant, indicates that some of these costs were probably not recorded when meters and services were donated from developers in the early days of the District. To account for this, a higher percentage of T&D plant was assigned to the customer function.

Exhibit 12 shows the allocation of plant-in-service for the District by function. Note that the overall cost of plant needed to provide peaking water (summer usage) is over 50% higher than the plant needed to provide base water (year-round indoor usage) *(62.5% for extra capacity vs. 37.5% for base costs)*. This translates directly into higher rates being charged to

PLANT IN SERVICE ALLOCATIONS	Costs	Customer	Base Costs	Extra Capacity	Fire Protection	Total	Allocation Basis
SOURCE OF SUPPLY & PUMPING PLANT	$ 2,764,848		*37.5%*	*62.5%*		*100%*	To base and extra capacity - average demand per ERU of 120 gpd to max designed demand of 380 gpd per ERU
STORAGE - RESERVOIRS / TANKS	1,988,637		*24%*	*43%*	*33%*	*100%*	As storage
T&D PLANT	2,204,067	*20%*	*20%*	*27%*	*33%*	*100%*	20% to customer, fire as storage, balance to base and extra capacity as source of supply
METERS AND SERVICES	238,419	*100%*				*100%*	All to customers
HYDRANTS	2,339				*100%*	*100%*	All to fire protection
GENERAL PLANT	169,361	*9%*	*27%*	*44%*	*19%*	*100%*	As total plant
	$ 7,367,670	9%	27%	44%	19%	100%	

The operating component of the revenue requirement (expenses) was allocated to functions by identifying a relationship between each type of expense and the assumed reason the cost was incurred. For example, the expenses for maintaining transmission plant were allocated in the same manner as transmission plant assets, while water supply costs were allocated in the same manner as water supply plant.

Once the allocations of plant-in-service and expenses were performed, associated allocation percentages were applied to the capital and operating components of the revenue requirement. Capital revenue requirements were allocated by the plant-in-service allocation percentages and operating revenue requirements were allocated by the expense allocation percentages.

The functions of service to which **water** service costs have been allocated are listed below:

- **Customer:** These are the costs associated with establishing, maintaining, and serving water customers and tend to include administrative and billing costs, customer service, and sometimes meter reading. These costs are generally uniform by customer regardless of their size.
- **Base Costs:** These costs relate to average service provided on demand and are essentially correlated with year around indoor usage.
- **Extra Capacity:** These costs relate to peak demand service typically associated with the ability of the system to provide capacity to customers with higher than average volume, which usually occurs during the summer months.
- **Fire Protection:** These are the costs associated with the ability of the system to provide adequate capacity and water flow corresponding to minimum fire safety standards required to serve its customer demographic. These are mostly incremental costs related to providing storage, transmission capacity, and hydrants for fire protection.

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FUNCTIONAL COSTS	Customer	Base Costs	Extra Capacity	Fire Protection	Total
1- Functional Costs Including the Golf Course					
TOTAL COSTS	$ 2,655	$ 110,660	$ 184,431	$ 3,522	$ 301,269
UNIT COSTS	*$ 0.02*	*$ 0.78*	*$ 1.30*	*$ 0.02*	*$ 2.13*
2- Functional Costs Excluding the Golf Course					
TOTAL COSTS	$ 36,288	$ 103,615	$ 172,270	$ 43,770	$ 355,943
UNIT COSTS	*$ 0.26*	*$ 0.73*	*$ 1.22*	*$ 0.31*	*$ 2.52*
Combined Functional Costs					
TOTAL COSTS	$ 38,944	$ 214,275	$ 356,701	$ 47,292	$ 657,212
UNIT COSTS	*$ 0.28*	*$ 1.52*	*$ 2.52*	*$ 0.33*	*$ 4.65*

D. Customer Classification

The allocation process described above resulted in a pool of costs for each functional category. The ideal method for allocating these cost pools to customers would be to assign costs to individual customers based on their unique cost responsibility, but this is not practical. Consequently, customers are grouped or classified together that have similar service characteristic before assigning the costs of providing service. Service characteristics include demand patterns (seasonal usage), level of service, fire flow requirements, and location of the customer. Special customers with unique requirements are generally assigned a unique customer class, such as the golf course irrigation, or rates are established on an entirely different basis such as cost sharing or though a contract.

For the District the first segregation of customers was between the golf course irrigation and all other customers because of the lower service requirements of providing irrigation water to the golf course. The second segregation was based on the amount of water flow needed to extinguish fires *(an average of 500 gallons per minute (gpm) for single family versus 750 gpm for commercial and multi-family over 4 units*). If the usage patterns had so indicated, the commercial/multi-family class could have been further segregated, but it was not warranted.

Exhibit 14 illustrates the customer class identification process with the defined classes listed below:

- **Single Family** (up to 4 plexes)
- **Commercial / Multi-Family over 4 units**
- **Golf Course Irrigation**

EXHIBIT 14 CUSTOMER CLASS IDENTIFICATION

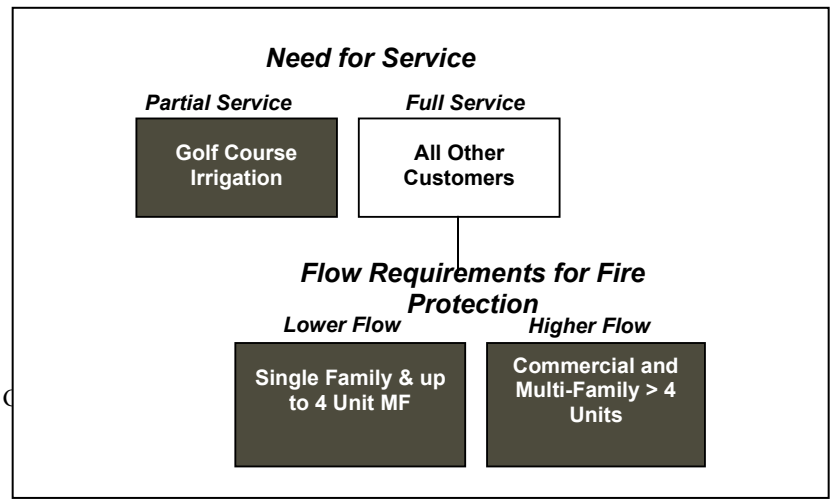
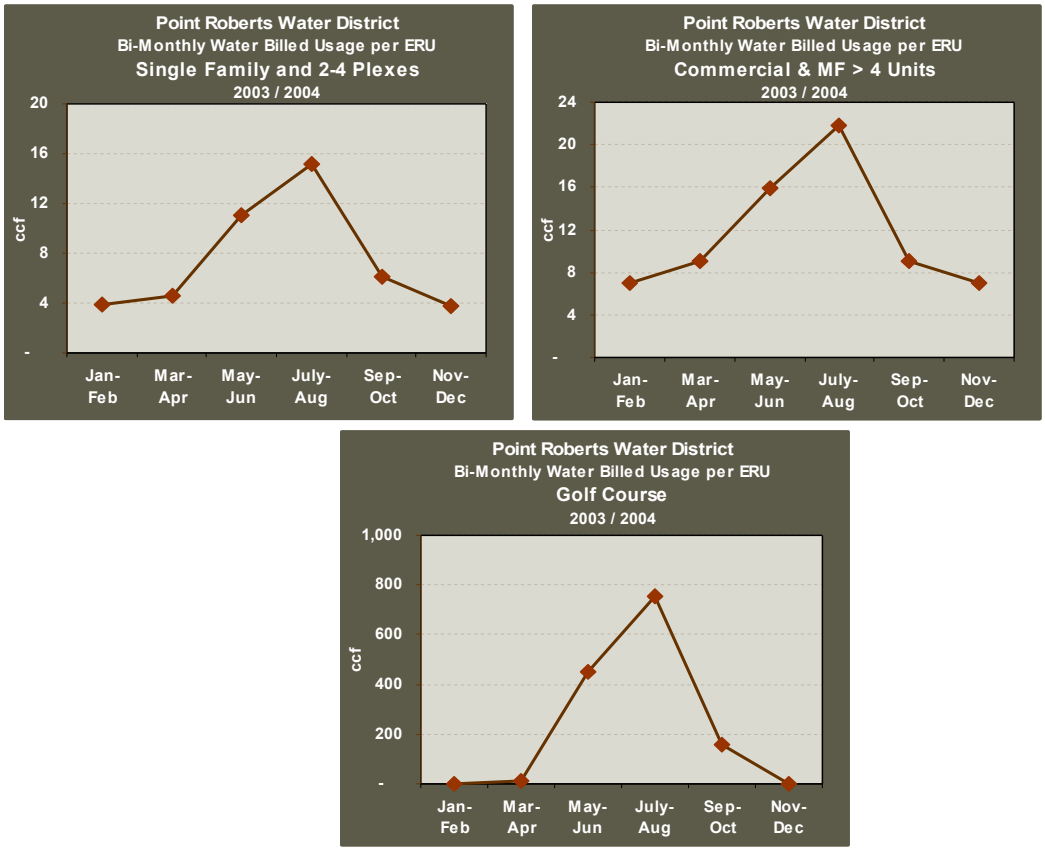


Exhibit 15 shows the usage patterns by customer class. Note that all classes show a usage pattern with relatively high summer usage, which is consistent with a "snow bird" community like Point Roberts.

EXHIBIT 15 USAGE PATTERNS BY CUSTOMER CLASS



E. Allocation of Functional Costs to Customer Classes

Once the customer classes were defined, functional cost pools were then allocated to these customer classes based on the demand each class places on the system. In order to do this, it was first necessary to identify customer characteristics including number of accounts, consumption levels, peak demand patterns, and fire flow requirements. From this detailed customer information, unit costs were developed for each functional cost category using the most applicable bases. *(Unit costs are the functional costs of service distributed over all customers and expressed as a measurable unit from which rates can be based.)* The cost-per-function relationship provided the basis for allocating specific costs to customer classes as follows:

1) **Customer** related costs were allocated based on the number of customers within each class.

2) Year-round indoor usage costs (**base costs**) were allocated to customer classes based on their relative share of annual usage.
3) Summer peak usage costs (**extra capacity costs**) were allocated on weighted average annual usage.
4) **Fire protection** costs were allocated based on the amount of water flow required per minute to extinguish fires.

Exhibit 16 shows the allocation of functional costs to each customer class for the cost pool that includes the golf course irrigation water (cost pool 1). **Exhibit 16** also shows the unit cost per 100 cubic feet (ccf) for each customer class. This was done to better illustrate the relative costs by class, as it gives more of an "apples to apples" comparison of costs. Some considerations used in determining the allocation of functional costs to customer classes are discussed below the exhibit.

EXHIBIT 16 ALLOCATION OF FUNCTIONAL COSTS TO CUSTOMER CLASSES – Cost Pool 1-Including the Golf Course Irrigation

1- Functional Cost Including the GC	Customer	Base Costs	Extra Capacity	Fire Protection	Total
Single Family	$2,564	$72,238	$122,697	$2,268	$199,766
Non-single Family	$91	$11,593	$16,164	$1,254	$29,102
Golf Course Irrigation	$1	$26,829	$45,570	$0	$72,401
TOTAL COSTS	**$2,655**	**$110,660**	**$184,431**	**$3,522**	**$301,269**
Single Family	*$0.03*	*$0.78*	*$1.33*	*$0.02*	*$2.16*
Non-Single Family	*$0.006*	*$0.78*	*$1.09*	*$0.08*	*$1.97*
Golf Course Irrigation	*$0.00004*	*$0.78*	*$1.33*	*$0.00*	*$2.11*
TOTAL UNIT COSTS	***$0.02***	***$0.78***	***$1.30***	***$0.02***	***$2.13***

- **Customer costs** are costs related to billing and customer service, which tend to vary by account. Consequently the single-family class is allocated a greater share of these costs as shown by the $0.03 per ccf for the single family class compared to $0.00004 for the golf course irrigation.
- **Base costs** are the costs related to year-round indoor usage, which are allocated based on annual usage. By using annual usage to allocate base costs for all customer classes, the resulting unit costs are the same for all customer classes *($0.78 per ccf).*
- **Extra capacity costs** are costs related to providing peak summer usage. The single family and golf course irrigation classes are higher than the non-single family classes because they have relatively higher summer peaking demands *($1.33 versus $1.09 per ccf).*
- **Fire protection costs** are the costs related to providing fire protection. The non-single family class receives the highest amount of fire protection costs because the fire flow requirement for the non-single family class is 750 gpm, while the single-family class is 500 gpm. The golf course irrigation class is assigned no fire protection cost since it is for irrigation only *(see the circled amount on Exhibit 16).*

- **Total unit costs** show that the single-family class has the most expensive water per unit at $2.16 per ccf because they use proportionately more water in the peak summer months. The unit cost per ccf for the non-single family class is the least expensive of the three classes in this cost pool at $1.97 because summer peaking costs are lower proportionately.

Exhibit 17 shows the allocation of functional costs to customer classes for the cost pool that excludes costs allocable to the golf course irrigation water (cost pool 2). Note that there are no costs allocated to the golf course irrigation water in this cost pool *(circled in Exhibit 17)* but rather all costs are shared between the single family and non-single family class. The non-single family cost per unit at $3.60 is the highest cost in this cost pool due to the higher fire protection costs.

EXHIBIT 17 ALLOCATION OF FUNCTIONAL COSTS TO CUSTOMER CLASSES – Cost Pool 2 - Excluding the Golf Course Irrigation

2- Functional Cost Excluding the GC	Customer	Base Costs	Extra Capacity	Fire Protection	Total
Single Family	$35,050	$89,286	$150,142	$28,184	$302,663
Non-Single Family	$1,238	$14,329	$22,128	$15,585	$53,280
Golf Course Irrigation	$0	$0	$0	$0	$0
TOTAL COSTS	**$36,288**	**$103,615**	**$172,270**	**$43,770**	**$355,943**
Single Family	*$0.38*	*$0.97*	*$1.63*	*$0.31*	*$3.28*
Non-Single Family	*$0.08*	*$0.97*	*$1.49*	*$1.05*	*$3.60*
Golf Course Irrigation	*$0.00000*	*$0.00*	*$0.00*	*$0.00*	*$0.00*
UNIT COSTS	***$0.26***	***$0.73***	***$1.22***	***$0.31***	***$2.52***

Exhibit 18 shows the combined functional cost pools. The combined non-single family class is the highest cost at $5.56 per ccf. The irrigation water is the same as under **Exhibit 16** at $2.11 per ccf and is the lowest cost per unit. The single-family class is just under the cost per ccf for the non-single family classes at $5.44 per ccf.

EXHIBIT 18 COMBINED ALLOCATION OF COSTS TO CUSTOMER CLASSES

Combined Functional Costs	Customer	Base Costs	Extra Capacity	Fire Protection	Total
Single Family	$37,614	$161,524	$272,839	$30,453	$502,430
Non-Single Family	$1,328	$25,922	$38,291	$16,840	$82,381
Golf Course Irrigation	$1	$26,829	$45,570	$0	$72,401
TOTAL COSTS	**$38,944**	**$214,275**	**$356,701**	**$47,292**	**$657,212**
Single Family	*$0.41*	*$1.75*	*$2.96*	*$0.33*	*$5.44*
Non-Single Family	*$0.09*	*$1.75*	*$2.59*	*$1.14*	*$5.56*
Golf Course Irrigation	*$0.00004*	*$0.78*	*$1.33*	*$0.00*	*$2.11*
UNIT COSTS	***$0.28***	***$1.52***	***$2.52***	***$0.33***	***$4.65***

F. Shifts in Revenue by Customer Class

If a cost-of-service analysis has not been previously performed, or if it has been a number of years since the last update, especially if the customer base has grown or changed, it is highly likely that a cost-of-service analysis will indicate that costs are not being recovered from customer classes according to the demand they place on the system – and this is the case for the District. ***The cost-of-service analysis showed that, within the existing rates, the demand and peaking characteristics of the District's non-single-family and golf course irrigation customer classes are under recovered at the expense of the single-family customers.*** As a result, the cost-of-service analysis shifted costs away from single-family customers and towards non-single-family customers and golf course irrigation water. **Exhibit 19** shows the costs shifts by customer class from the existing 2005 rates to proposed 2006 cost-of-service rates. The columns are explained below **Exhibit 19**:

EXHIBIT 19 REVENUE AND COSTS PER CCF SHIFTS DUE TO COSTS OF SERVICE

	1	2	3	4	5	6	7	8
Customer Classes	Projected 2006 Usage	2006 Revenue at Existing Rates + Growth	2006 Rev at Existing Rates per ccf	2006 Revenue at Existing Rates + Inc	2006 Rev at Existing Rates + Rate Inc per ccf	2006 Revenue at COS Rates	2006 COS Revenue per ccf	% Diff COS & Existing + Growth
Single Family	92,277	$ 477,630	$ 5.18	$ 577,932	$ 6.26	$502,430	$ 5.44	5%
Non-Single Family	14,809	$ 30,798	$ 2.08	$ 37,266	$ 2.52	$ 82,381	$ 5.56	167%
Golf Course Irrigation	34,272	$ 34,506	$ 1.01	$ 41,752	$ 1.22	$ 72,401	$ 2.11	110%
System-Wide	141,358	$ 542,934	$ 3.84	$ 656,950	$ 4.65	$657,212	$ 4.65	21%

Column 1 – Projected 2006 usage in 100 cubic feet (ccf)

Column 2 – 2006 revenues computed by multiplying the projected 2006 consumption by the 2005 rates. This forms the base line for comparisons to the cost-of-service rates.

Column 3 – 2006 revenues *(as computed in column 2)* per ccf *(projected 2006 usage in column 1).* Note the significant variance in unit costs between the single-family class and non-single family class and the single-family class and the golf course irrigation class - the single-family customers are currently paying nearly two and half times more than the non-single family class *($5.18 versus $2.08)* and five times more than the golf course irrigation water *($5.18 versus $1.01)* for each unit of water used. This variance between classes provided a strong indication that the District was probably not fairly recovering costs from each customer class even before the cost-of-service analysis was performed, and this proved to be the case *(see column 7 for what the unit costs should actually be based on the costs to provide service).*

Column 4 – 2006 revenues per customer class if the overall required increase in rate revenues of 21% had been applied across the board to all customer classes *(approach taken by the District in the past).*

Column 5 – 2006 revenues *(as computed in column 4)* per ccf *(projected 2006 usage in column 1).*

Column 6 – 2006 revenues per customer class under a cost-of-service allocation of costs.

Column 7 – 2006 revenues *(based on cost-of-service allocations in column 6)* per ccf *(projected 2006 usage in column 1).*

Column 8 – Percentage impact by customer class of the 21% overall increase in required rate revenues resulting from the cost-of-service analysis. The shift in cost recovery (revenues) between customer classes is very dramatic, with the non-single family class showing a 167% increase. This means that the non-single family class should actually be paying slightly more per unit than the single-family class *($5.56 versus $5.44),* not 2.5 times less *(see column 3).*

The golf course irrigation water should be more than double the current average cost per ccf of $1.01 at $2.11. **Note that if the current cost per ccf for the golf course irrigation water were increased by 21%, the new cost per ccf would only be $1.22 per ccf, which is less than the average cost of water at $2.07 per ccf** (see **Exhibit 9** that shows water costs of $292,392 divided by 141,403 ccf = $2.07 per ccf). That alone indicates how much a re-evaluation of the rates charged to the golf course for irrigation water was needed.

Since one of the basic tenets of good rate design is rate affordability, to implement rates based on a full cost-of-service allocation of costs would result in unaffordable rate increases for all but the single-family customers. Consequently, a cost-of-service phasing plan was recommended. The phased costs were computed by adjusting the customer allocation factors as follows:

- ***Customer costs*** – customer accounts were maintained as the allocation unit for these costs - no adjustments were made to the allocation of these costs.
- ***Base costs*** – the annual usage was reduced by 50% for the non-single family class.
- ***Extra capacity costs*** – the annual usage was reduced by 50% for the non-single family class and by 30% for the golf course irrigation class.
- ***Fire protection costs*** – the water flow requirement for the non-single family class was reduced from 750 gpm to 600 gpm.

To phase the rates to full cost-of-service based, these allocations could be increased by a third each year over the next three years (2007-2009).

Exhibit 20 shows the 2006 revenues under the phased plan in column 9, the cost recovery per ccf in column 10, and the percentage change in column 11. Note that the percentage overall increase in rate revenues is still 21%. The single-family class will go up by 18% under the phased plan, which is more than the 5% computed under the cost-of-service allocations but less than the overall increase in revenues of 21%. The non-single family classes will go up the most at 51% but this is still significantly less than the 167% computed under the cost-of-service allocations. The golf course irrigation water will increase by about a third at 33%.

	1	2	3	6	7	8	9	10	11
Customer Classes	*Projected 2006 Usage*	*2006 Revenue at Existing Rates + Growth*	*2006 Rev at Existing Rates per ccf*	*2006 Revenue at COS Rates*	*2006 COS Revenue per ccf*	*% Diff COS & Existing + Growth*	*2006 Revenue at PHASED Rates*	*2006 Rev at PHASED Rates per ccf*	*% Diff PHASED & Existing + Growth*
Single Family	92,277	$ 477,630	$ 5.18	$502,430	$ 5.44	5%	$564,933	$6.12	18%
Non-Single Family	14,809	$ 30,798	$ 2.08	$ 82,381	$ 5.56	167%	$ 46,510	$3.14	51%
Golf Course Irrigation	34,272	$ 34,506	$ 1.01	$ 72,401	$ 2.11	110%	$ 45,769	$1.34	33%
System-Wide	**141,358**	**$ 542,934**	**$ 3.84**	**$657,212**	**$ 4.65**	**21%**	**$657,212**	**$ 4.65**	**21%**

The revenues by customer class shown in column 9 *($564,933 for single family, $46,510 for non-single family, and $45,769 for the golf course irrigation water)* are the revenues that will be recovered though the rates, which are presented and discussed in the next section of this report.

III. RATE DESIGN

The principal objective of the rate design stage of this rate study was to implement water rate structures that improve the correlation between customer class demands and their underlying costs. The District's customer database provided detailed information about each customer, their water meter size, current customer class, and water bi-monthly consumption. From this information detailed statistics were compiled, such as the number of water meter equivalents, the number of water meter service equivalents, and volume block consumption for the existing rate structure as well as the proposed structures, to be used in rate design process.

A well designed rate structure can provide further equity between customers within a class by assuring that large customers do not subsidize small customers or visa versa, and that fixed and variable components are balanced so that they reflect the District's desired level of revenue stability with the customer's ability to affect their bill with changes in usage patterns (conservation). It can also reflect policy level decisions related to affordability, stability, and simplicity.

Establishing rates is a blend of "Art" and "Science" and especially so when it comes to the rate levels and structures. Several variables must be balanced to arrive at the optimal rates. The balance of variables is best evaluated by answering a series of questions as shown in **Exhibit 21**.

EXHIBIT 21 RATE EVALUATION QUESTIONS

1. **Adequacy**
   - Are rates sufficient to recover all required operating and capital costs *(direct capital funding and debt service)*?

2. **Equitableness**
   - Do the rates assure that each class of customer is paying their fair share?
   - Are the rates fair within the class *(small customers are not subsidizing large customers and visa versus)?*
   - Are they fair to each generation of customers?

3. **Conservation Based**

EXHIBIT 21 RATE EVALUATION QUESTIONS

- Do the rates send a price signal for increased usage?

4. Affordability and Stability

- Are rate structure changes managed so impacts to individual customers are minimized?
- Are rate increases implemented in smaller annual increases rather than larger intermittent increases?

5. Understandability and Simplicity

- Can the customer understand the changes and the need for them?
- Can staff administer the changes without significant changes in processes?

The results of the cost-of-service analysis were used to develop new water rate structures that are designed to equitably recover the projected revenue requirements from customers. Rate structures also reflect policy objectives expressed by the District such as phasing rate changes and moving toward more conservation-based rates for the single-family customers

District staff and the Board of Commissioner's evaluated the impacts of various policy level decisions related to capital needs *(with and with new supply options),* level of O&M costs, Canadian exchange rates *(ranges from $0.85 to par),* and allocations of costs to functions *(see phased allocation of functional costs under section II. E.),* before selecting the recommended 2006 phased cost-of-service rates as discussed in the next section.

A. Water Rates

The District's existing 2005 water rate structure is a fixed charge that varies among customer classes *(single-family customers pay a fixed charge of $19.00 per month, while all other classes pay fixed rate of $27.50 per month)* and a volume charge of $1.00 per ccf over a usage allowance *(the usage allowances are 12 ccf bi-monthly for the single-family customers and 16 ccf bi-monthly for all other customers).*

The recommended water rate structure maintains fixed charges that vary among customer classes but bases the fixed charges on an account charge that is consistent by meter size and a meter charge that varies by meter size according to each meter's service equivalency factor (see list below). The proposed rate structure also maintains a single-block volume charge for all non-single family classes, including the golf course irrigation water. However, to attain the conservation goals sought by the District, single-family volume rates were based on three usage blocks above a usage allowance of 5 ccf bi-monthly, with higher usage blocks commanding a higher price per unit of water.

To meet the conservation objective, more revenues needed to be recovered from the volume rates than under the existing rate structure. This directly impacts revenue stability for the District, which is critical given the take or pay arrangement from GVWD and the highly seasonal usage pattern of the District's "snow bird" community. Two factors mitigate the impacts of shifting

more revenue recovery to the volume rates: *first)* the GVWD is phasing in seasonal rates over the next three years to better match costs with usage, and *second)* the usage allowance has been maintained for the single-family, although it has been lowered from 12 ccf for a bi-monthly period to 5 ccf for the same period *(winter average usage).* An added benefit of maintaining the usage allowance is that it will provide more equitable rates to year around customers by maintaining a level of base usage in the fixed charge, whether water is used or not.

With the exception of the 5/8" and 3/4" meters for the commercial and MF > 4 units class, which have been maintained at the 2005 fixed rate of $27.50, the fixed rates reflect the following service equivalency factors: *(factors published by the AWWA and represents the relative service costs by meter size).*

- **1.0** – 5/8" and 3/4" meters
- **2.0** – 2" meters *(adjusted)*
- **1.4** – 1" meters
- **3.9** – 3" meters
- **1.8** – 1.5" meters
- **11** – 4"

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Rate Alternative Comparisons

Volume Rates *(per bi-monthly ccf)*

Customer Class	EXISTING 2005 RATES	EXISTING 2005 RATES WITH 21% ACROSS THE BOARD RATE INC	FINAL 2006 PHASED RATES
	Block Rates	*Block Rates*	*Block Rates*
SINGLE FAMILY & 2-4 Plexes			
0 to 5 ccf - *winter bi-monthly avg*	$0.00	$0.00	$0.00
6 to 14 ccf - *summer bi-monthly avg for phased rates* - **0 to 12 ccf** *for existing rates*	$1.00	$1.21	$1.00
15 to 40 ccf - *between blk 4 & blk2*	$1.00	$1.21	$1.35
> 40 ccf - *9% of usage, 5% of SF customers in Aug (120 custs), 4% revenues*	$1.00	$1.21	$2.40
	All ccf > 8 ccf per month	*All ccf > 8 ccf per month*	*All ccf*
COMMERCIAL & MF > 4 Units	$1.00	$1.21	$1.30
GOLF COURSE	$1.00	$1.21	$1.30

Fixed Rates *(per month)*

Customer Class	EXISTING 2005 RATES	EXISTING 2005 RATES WITH 21% ACROSS THE BOARD RATE INC	FINAL 2006 PHASED RATES
	Fixed Rates	*Fixed Rates*	*Fixed Rates*
SINGLE FAMILY & 2-4 Plexes			
5/8" x 3/4" Meter - 4 Blk	$19.00	$22.99	$20.14
1" Meter	$19.00	$22.99	$27.57
1.5" Meter	$19.00	$22.99	$35.00
2" Meter	$19.00	$22.99	$39.28
COMMERCIAL & MF > 4 Units			
5/8" x 3/4" Meter	$27.50	$33.28	$27.50
1" Meter	$27.50	$33.28	$33.14
1.5" Meter	$27.50	$33.28	$42.17
2" Meter	$27.50	$33.28	$47.36
3" Meter	$27.50	$33.28	$89.54
4" Meter	$27.50	$33.28	$249.72
GOLF COURSE			
4" Meter	$27.50	$33.28	$113.52

B. Water Rate Impacts

Since the proposed rates are different than the existing rates, the best way to illustrate the impacts to individual customers is to compare the customer bills computed with the new rates to the customer bills computed with the existing rates. **Exhibit 23** shows sample customer bills for representative customers. The single-family bills are for one month and usage amounts are based on winter monthly average, annual monthly average, summer monthly average, and a very h s a e I r b

Meter sizes	Mo ccf	2005 Fixed	2005 Volume	Existing Total 2005 Rates	Proposed Fixed	Proposed Volume	Proposed Total	Change 2005	% Chg from 2005
Single Family & 2-4 Plexes									
Winter Monthly Avg ccf									
5/8 inch	*2.5*	$19.00	$0.00	**$19.00**	$20.14	$0.00	**$20.14**	*$1.14*	***6%***
Annual Monthly Avg ccf									
5/8 inch	*4.0*	$19.00	$0.00	**$19.00**	$20.14	$1.50	**$21.64**	*$2.64*	***14%***
Summer Monthly Avg ccf									
5/8 inch	*7.0*	$19.00	$1.00	**$20.00**	$20.14	$4.50	**$24.64**	*$4.64*	***23%***
High End User - Monthly ccf									
5/8 inch	*60.0*	$19.00	$54.00	**$73.00**	$20.14	$115.55	**$135.69**	*$62.69*	***86%***
Commercial and MF > 4 Units									
Low Usage - (Annual Amount)									
5/8 inch	*12.0*	$330.00	$0.00	**$330.00**	$330.00	$15.60	**$345.60**	*$15.60*	***5%***
Higher Usage - (Annual Amount)									
5/8 inch	*263.0*	$330.00	$171.00	**$501.00**	$330.00	$341.90	**$671.90**	*$170.90*	***34%***
Low Usage - (Annual Amount)									
1 inch	*2*	$330.00	$0.00	**$330.00**	$397.73	$2.60	**$400.33**	*$70.33*	***21%***
Higher Usage - (Annual Amount)									
1 inch	*420*	$330.00	$324.00	**$654.00**	$397.73	$546.00	**$943.73**	*$289.73*	***44%***
Low Usage - (Annual Amount)									
1 1/2 inch	*75*	$330.00	$0.00	**$330.00**	$506.02	$97.50	**$603.52**	*$273.52*	***83%***
Higher Usage - (Annual Amount)									
1 1/2 inch	*930*	$330.00	$859.00	**$1,189.00**	$506.02	$1,209.00	**$1,715.02**	*$526.02*	***44%***
Medium Usage (Annual Amount)									
2 inch	*382*	$330.00	$286.00	**$616.00**	$568.28	$496.60	**$1,064.88**	*$448.88*	***73%***
Higher Usage (Annual Amount)									
2 inch	*1,383*	$330.00	$1,287.00	**$1,617.00**	$568.28	$1,797.90	**$2,366.18**	*$749.18*	***46%***
Golf Course *(Annual Amount)*									
4 inch	*34,272*	$330.00	$34,176	**$34,506**	$1,362	$44,554	**$45,916**	*$11,410*	***33%***

As shown in the table in **Exhibit 23**, there is a heavy shift of costs towards the single-family customers that use high volumes of water *(see 86% increase for customers using 60 ccf in a single month compared to only a 6% increase for customers using 2.5 ccf).* This is consistent with the cost-of-service allocations that indicated that the most expensive water is the summer peaking water and those using that water should pay proportionately more for it as a way to encourage conservation. Usually the high volume users are high because of summer usage but sometimes usage is also high because large families use more water year around. However, not generally in the outer block range established for the District.

There is also shift of costs towards commercial customers with larger meters and low volumes. For example, a customer with a 1 ½" meter with annual consumption of 75 ccf can expect to see an 83% increase in their water bill, whereas a customer with a 1 ½" meter that uses 930 ccf in annual consumption will only see a 44% increase in their annual bill *(see second circled area on table).* This is due to the higher increase in the fixed charge relative to the increase in the volume rate *(53% increase in the fixed charge versus a 30% increase in the volume charge)*. The higher relative increase in the fixed charge is due to the change in structure that recovers costs based on the meter service equivalency factors rather than by account.

IV. GENERAL FACILITY CHARGES (GFC)

General Facilities Charges are sources of funding used by utilities to support capital needs. GFCs are imposed on new customers connecting to the system as a condition of service. Districts are given the authority to collect connection fees by RCW 57.08.005 – the full text is shown in the box to the right.

There are two major underlying assumptions for a connection or GFC charge: *first)* the existing

RCW 57.08.005(10) To fix rates and charges for water, sewer, and drain service supplied and to charge property owners seeking to connect to the district's systems, as a condition to granting the right to so connect, in addition to the cost of the connection, such reasonable connection charge as the board of commissioners shall determine to be proper in order that those property owners shall bear their equitable share of the cost of the system. ***For the purposes of calculating a connection charge, the board of commissioners shall determine the pro rata share of the cost of existing facilities and facilities planned for construction within the next ten years and contained in an adopted comprehensive plan and other costs borne by the district which are directly attributable to the improvements required by property owners seeking to connect to the system. The cost of existing facilities shall not include those portions of the system which have been donated or which have been paid for by grants.***

The connection charge may include interest charges applied from the date of construction of the system until the connection, or for a period not to exceed ten years, whichever is shorter, at a rate commensurate with the rate of interest applicable to the district at the time of construction or major rehabilitation of the system, or at the time of installation of the lines to which the property owner is seeking to connect...

Revenues from connection charges excluding permit fees are to be considered payments in aid of construction as defined by department of revenue rule. Rates or charges for on-site inspection and maintenance services may not be imposed under this chapter on the development, construction, or reconstruction of property.

system was purposefully constructed to provide for growth and that the existing customers who made that investment should be repaid by growth for the capacity available to serve it, and *second)* accommodating growth generally requires construction of new or larger infrastructure and that this new infrastructure should be paid for, in whole or in part, by that growth. It follows then that the GFC is comprised of two components:

1. **Buy-in component**, intended to represent an equitable share of the cost of capacity in existing facilities, and a

2. **Future component**, intended to represent an equitable share of the cost of planned facilities.

In the absence of such a right-to-connect charge, growth-related costs would be borne by existing customers. The GFC should be imposed *in addition to* any operational cost of connecting to the system (e.g., a meter installation charge). The GFC is also distinct from, and generally additive to, any local facilities charges (or their surrogates, such as ULID assessments) related to facilities providing direct connection for the property served.

‘

A. Basis of GFC

The source of the District’s existing investment in the water system was the 2004 fixed asset schedule updated with specifically identified assets constructed or purchased in 2005. The source of the District’s projected future investment in the water system was based on the District’s estimated capital improvement program that includes a provision of over $2.5 million for sources of new water supply and a statistical forecast of replacement needs. ***It is important to note that before a GFC can be adopted that includes this projected future investment, the capital improvement program must be adopted through an approved comprehensive plan.***

Historically, the District has charged a common GFC to all new connections. However, this practice does not acknowledge the fact that customers of differing usage patterns or meter sizes will not place the same demands on the system – for example, the capacity needed to serve a single-family residence is likely to be notably lower than that needed to serve a office or apartment building. For that reason the proposed general facility charges are calculated on a per equivalent residential unit (ERU) basis, which is based on a 5/8” by 3/4” meter being one ERU. The meter flow factors shown below and established by the American Water Works Association (AWWA) were used to establish charges by meter size:

- **1.0** – 5/8” and 3/4” meters
- **2.5** – 1” meters
- **5.0** – 1.5” meters
- **8.0** – 2” meters
- **16.0** – 3” meters
- **25.0** – 4” meters
- **50.0** – 6” meters
- **80.0** – 8” meters

– **125.0** – 10" meters

An example of how these meter flow factors were used to establish the GFC by meter size is illustrated by starting with the District's current GFC for all meter sizes. If the new GFC for a 5/8" x 3 /4" meter was the same as the District's current GFC of $1,500, then the charge for a 1" meter would be 2.5 times that amount or $3,750, the charge for a 1.5" meter would be 5 times that amount or$7,500, and so forth.

The growth in the number of water (ERUs) was based on assuming the 150 new homes planned for construction around the golf course would occur in 2006 through 2008. From 2009-2010, no growth was assumed and after 2010 a minimum placeholder amount of growth was assumed at a rate of about one half of one percent per year.

B. Computation of GFC

There are several different methods that can be used to compute a GFC. For this analysis, the following approaches were used for the District to consider.

1. **Average Cost Method -** This method recognizes that, in general, all facilities include components that serve both existing and future customers and views the system as a whole – serving all existing and planned customers. Consequently, both existing and future components of the charge are computed by considering all customers. For the same reason R&R projects are included with growth related projects in the future component of the charge.

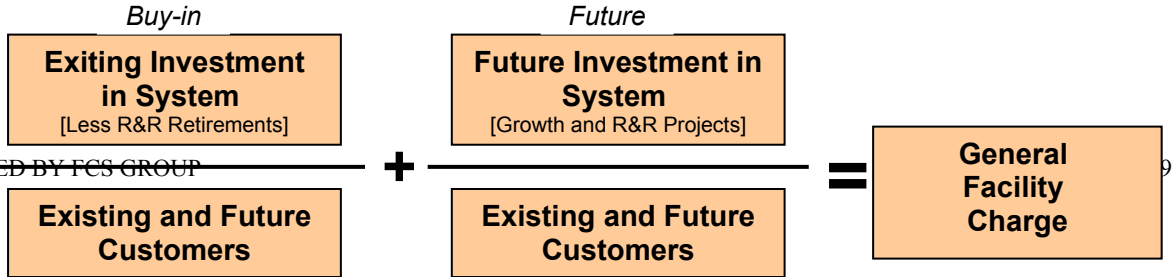
2. **Buy-in Plus Growth Method –** This method treats the new customers as distinct from the existing customers and computes the future component by assuming all planned capacity increasing costs should be paid for by new customers only (this is where the phrase "growth pays for growth" originates). R&R capital projects are not used in the future computation of the charge in this method because there is an assumption that R&R projects are only for the benefit of the existing customers and should be paid for by rates. The existing component for the Buy-in Plus Growth Method is computed in the same manner as under the Average Cost Method.

3. **Buy-in Only Method –** This method is similar to the buy-in component of both the Average Cost Method and the Buy-in Plus Growth Method but instead of using existing and future customers, only existing customers are used as the denominator in the computation of the charge. This method is used for Districts that are essentially "built out", do not have an approved capital improvement plan, or want to establish a lower transitory rate before adopting a higher average cost or buy-in plus growth GFC.

1. Average Cost Method *(Only applicable if the capital improvement plan is adopted in an approved comprehensive plan.)*

Application of the Average Cost Method is illustrated in **Exhibit 24** below.

EXHIBIT 24 AVERAGE COST GFC COMPUTATION



The GFC components are derived as follow:

Buy-in Component - The existing facilities cost share of the GFC is based on the original cost of the system, reduced by any system assets that were contributed to the District and will be replaced in the future component. Per state statute, up to ten years of interest is added to this base amount. Outstanding debt principal, net of available cash reserves, is also deducted from the plant-in-service because the new customers will bear a share of the debt service through rates.

The outcome of these steps is then divided by the number of existing and projected future customers (ERUs) (through 2015) in the utility to determine the pro rata share of costs for the existing system.

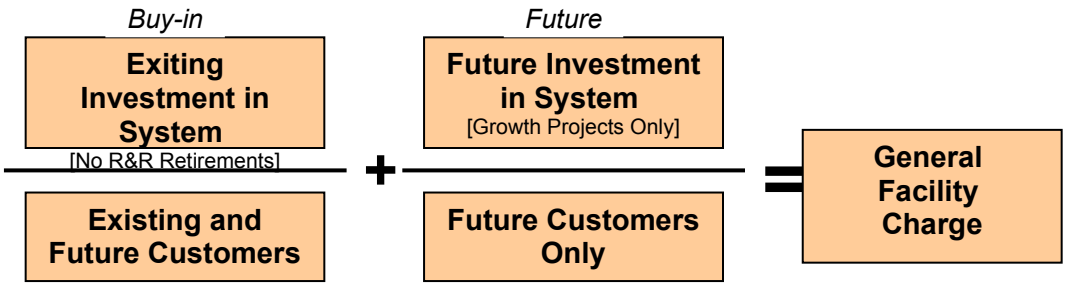
Future Component - The future component in the Average Cost Method is calculated by dividing the total cost of the planned projects (both R&R and capacity–increasing) by the total number of existing and projected future customers (ERUs).

Since both expansion and R&R projects are included, a reduction must be made to account for R&R project replacements in the existing plant-in-service. In addition, the interest charge on the assets to be replaced also needs to be adjusted to prevent double counting of interest.

2. Buy-in Plus Growth Method *(Only applicable if the capital improvement plan is adopted in an approved comprehensive plan.)*

Application of the Buy-in Plus Growth Method is illustrated in **Exhibit 25** below.

EXHIBIT 25 BUY-IN PLUS GROWTH GFC COMPUTATION



Buy-in Component – For the Buy-in Plus Growth Method, the buy-in or contribution towards existing investment in the system is the same as with the Average Cost Method except that the provision for retirement of future replaced assets and corresponding interest is not included because future replaced assets are not included in the future component of the charge.

Future Component – For the Buy-in Plus Growth Method, only the cost for expansion or growth projects is included in the future component so, first the District's planned projects were allocated between the following categories:

Rehabilitation/Replacement

Expansion or Growth

The allocation between a replacement and rehabilitation project and an expansion or growth project was based on each project's existing capacity and assumed provision for future growth. The assumption is that if there were no further growth, expansion wouldn't be necessary. Therefore, the cost of expansion projects should be allocated solely to future customers. This results in a smaller base of projects as R&R projects are excluded. However, the customer base over which costs are spread is also smaller because it only includes future customers rather than both existing and future customers as are used under the Average Cost Method.

3. Buy-in Only Method

Application of the Buy-in Plus Growth Method is illustrated in **Exhibit 26** below.

EXHIBI*T Buy-in* -IN ONLY GFC COMPUTATION

Exiting Investment in System / **Existing Customers** = **General Facility Charge**

POINT ROBERTS GENERAL FACILITY CHARGE 2005 for 2006	Average Cost Method	Buy-In + Growth Method	Buy-In Only
CONTRIBUTION TOWARDS EXISTING INVESTMENT IN SYSTEM - BUY-IN			
1. District-Built Plant-in-Service			
Historical Cost of Existing Plant-in-Service	$ 7,777,634	$ 7,777,634	$ 7,777,634
Less: Grant Funded and Developer Donated Facilities	(3,992,326)	(3,992,326)	(3,992,326)
Less: Historical Costs for Replacement Projects *(average cost method only)*	(372,431)		
Less: Outstanding Debt Net of Cash Reserves	(281,267)	(281,267)	(281,267)
Total District-Built Plant-in-Service	**$ 3,131,609**	**$ 3,504,041**	**$ 3,504,041**
2. Cumulative Interest on Plant-in-Service	1,682,991	1,682,991	1,682,991
Total Equity in District-Built Plant-in-Service	**$ 4,814,600**	**$ 5,187,031**	**$ 5,187,031**
3. Customer Base (ERUs)			
Current or Future (10 yrs) Customer Base	**2,419**	**2,419**	**2,212**
EXISTING INVESTMENT PER ERU [1 + 2 divided by 3]	**$ 2,000**	**$ 2,150**	**$ 2,340**
CONTRIBUTION TOWARDS FUTURE INVESTMENT IN SYSTEM			
4. Future District-Built Capacity Expanding Capital Projects (10 future years)	**$ 4,880,782**	**$ 3,239,208**	**n/a**
5. Future Customer Base *(Total ERUs in 10 years)*	**2,419**	**207**	**n/a**
FUTURE INVESTMENT PER ERU [4 divided by 5]	**$ 2,020**	**$ 15,650**	**n/a**
TOTAL CAPITAL FACILITY CHARGE PER ERU	**$ 4,020**	**$ 17,800**	**$ 2,340**

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The GFC is increased by the size of the meter as a method to recover more costs from customers expected to place higher demands on the District's system. **Exhibit 28** shows the general facility charges by meter size.

EXHIBIT 28 GFC BY METER SIZE

Meter Size	Flow Factor	AVERAGE COST	BUY-IN + GROWTH	BUY-IN ONLY
5/8"x3/4"	1	$4,020	$17,800	$2,340
3/4"x3/4"	1.5	$6,030	$26,700	$3,510
1"	2.5	$10,050	$44,500	$5,850
1.5"	5	$20,100	$89,000	$11,700
2"	8	$32,160	$142,400	$18,720
3"	16	$64,320	$284,800	$37,440
4"	25	$100,500	$445,000	$58,500
6"	50	$201,000	$890,000	$117,000
8"	80	$321,600	$1,424,000	$187,200
10"	125	$502,500	$2,225,000	$292,500

Given the very high general facility charges computed under the Buy-in Plus Growth Method, this method is not recommended. It is recommended that the District implement the general facility charges computed using the Average Cost Method *(highlighted)* but to postpone doing so until the CIP is adopted through an approved comprehensive plan. As an alternative the District could adopt the GFC computed with the Buy-In Only Method for 2006 and adopt a revised GFC using the Average Cost Method in 2007 after the CIP is approved.

V. CONCLUSION

This concludes the report of methodology, findings, and recommendations for the cost-of-service rate and GFC study conducted by FCS GROUP for the Point Roberts Water District. The rates have been proposed for 2006, and estimated from 2007 through 2012. We have endeavored to apply the best available estimates of future economic conditions that affect these findings. However, regular review of actual utility performance should be an integral part of the successful use of the products of this study.

FCS GROUP recommends that Point Roberts Water District:

- Accept the rate study and related fiscal policies.
- Adopt general facility charges based on the Average Cost Method as shown in Exhibit 28 after the CIP is adopted through and approved comprehensive plan.
- Adopt the phased cost-of-service water rates as shown in Exhibit 22 *(third column):*
    - Meter based fixed rate for all water customers
    - 3-block inclining volume rate for single-family water customers after a usage allowance of 5 ccf bi-monthly
    - 1-block volume rate for all other water customers with no usage allowance
- Monitor the long-term rate strategy through regular reviews and periodic updates.