1. Designing the Sewer Service Charge

- **The Public Utilities Commission adopted sewer service charge increases in FY 2004-2005 to meet an 11 percent increase in FY 2004-2005 Clean Water Enterprise Fund revenue requirements. The Public Utilities Commission will have to consider additional sewer service charge increases in the coming fiscal years to pay for projected increases in Clean Water Enterprise Fund operating and maintenance expenses, debt service payments, and interim capital needs.**

- **In FY 2004-2005, the Rate Fairness Board and the Public Utilities Commission are considering both the need for sewer service charge increases to meet Clean Water Enterprise Fund revenue requirements in the coming fiscal years and alternative sewer service charge rate structures. The Rate Fairness Board is considering the elimination of the residential lifeline, or base, rate, which is applied to the first three units of service, because the lifeline rate neither recovers the costs of providing service nor meets the Rate Fairness Board's policy goal of providing an income-based rates for low-income residential customers.**

- **In considering alternative sewer service charge rate structures, the Rate Fairness Board and the Public Utilities Commission need to consider how the alternative rate structures impact the stable flow of revenues to the Clean Water Enterprise Fund, promote water conservation, and overall impact the combined water and sewer service bill of residential customers. Projected increases in both water and sewer service charges in the next few fiscal years to pay for necessary capital improvements to water and clean water facilities and increased revenue requirements will have a large impact on the combined monthly water and sewer bill for residential customers.**

- **The Public Utilities Commission Financial Services staff should continue to evaluate and present information to the Rate Fairness Board on the impact of alternative rate designs on residential sewer service customers. The analysis should include how alternative rate structures affect water conservation, ensure stable revenues to the Clean Water Enterprise Fund, and minimize the impact to customers of combined increases in the water and sewer service charges over the next few fiscal years.**

Implementation of New Sewer Service Charges

The Public Utilities Commission Clean Water Enterprise program provides sewer collection and wastewater treatment services for the City of San Francisco and some non-City customers. The operating costs of sewer and wastewater treatment services and debt service costs for capital improvements are paid almost entirely by sewer service charge revenues. The Public Utilities Commission implemented new sewer service charges on July 15, 2004, after eight years without a rate increase.

When the San Francisco voters approved Proposition H in June of 1998, which froze the sewer service charges, sewer service charges had not been increased since 1996. In November of 2002, the voters of San Francisco approved Proposition E[1], which authorized the Public Utilities Commission:

- To set sewer service charges sufficient to meet and maintain the operation, maintenance, and financial needs of the wastewater collection and treatment system. Under Proposition E, the sewer service charges set by the Public Utilities Commission are subject to rejection within 30 days of submission by resolution of the Board of Supervisors. If the Board of Supervisors fails to act on proposed increases to the sewer service charges, the sewer service charges take effect.

- To issue revenue bonds to fund capital improvements to clean water facilities and services, upon a two-thirds vote of the Board of Supervisors.

Proposition E also established a Rate Fairness Board to oversee the sewer service charges and water rates and required the Public Utilities Commission to retain an outside consultant to assist the Public Utilities Commission with setting rates for sewer services every five years.

The Public Utilities Commission approved an increase in the FY 2004-2005 sewer service charge to meet an 11 percent increase in Clean Water Enterprise Fund revenue requirements. The Board of Supervisors did not act on the proposed FY 2004-2005 sewer service charge increase, and therefore, the sewer service charge increase became effective without Board of Supervisors action.

The Wastewater Rate Study and the Rate Fairness Board

Prior to implementing the new sewer service charges on July 15, 2004, an independent consultant, Black and Veatch, submitted their *San Francisco PUC Clean Water Enterprise Wastewater Rate Study* ("Wastewater Rate Study") to the Public Utilities Commission. The Wastewater Rate Study recommended an immediate 30 percent increase in sewer service rates to cover the operating, maintenance, capital and other

[1] Proposition E includes both sewer service charges and water rates. The impact of Proposition E on water rates will be discussed in Phase III of the management audit.

costs of providing sewer and wastewater treatment services, based on the projected FY 2004-2005 costs of sewer and wastewater treatment services.

The Public Utilities Commission Financial Services staff presented an alternative proposal to the Rate Fairness Board, which recommended three incremental sewer service charge increases to meet 11 percent increases in revenue requirements annually from FY 2004-2005 through FY 2006-2007, resulting in a cumulative increase over a three year period of 36.8 percent. According to the February 23, 2004 *Preliminary Report on Sewer Rates Fiscal Year 2005*, prepared by Public Utilities Commission Financial Services staff, the staff proposed to increase rates by an average of 11 percent in each fiscal year from FY 2004-2005 through FY 2006-2007 to fund operations and provide appropriate debt service coverage.

The Rate Fairness Board agreed with the Financial Services staff recommendation to increase sewer service charges to meet an 11 percent increase in revenue requirements in FY 2004-2005, but recommended postponement of further rate increases until the Rate Fairness Board had the opportunity to analyze and discuss alternative rate structures and rate components. The Public Utilities Commission adopted the sewer service charge increase to meet the 11 percent increase in FY 2004-2005 revenue requirement.

San Francisco Sewer Service Customers

The Water Pollution Control Division provides sewer collection and wastewater treatment services to residential, commercial, industrial, and municipal customers. Both single family residence and multiple family residence customers are charged the residential rate. Commercial, industrial, and municipal customers are charged the commercial and industrial rate. Residential customers make up 87.2 percent of all sewer service customers. Commercial and municipal customers make up 12.7 percent, and industrial customers make up 0.1 percent.

Table 1.1

The Number of Sewer Service Customers and Annual Payments by Type as of June 30, 2004

Customer Type	Number of Accounts	Percent of Total Accounts	Total FY 2003-2004 Sewer Service Charge Payments	Percent of All Payments
Commercial	20,931	12.40%	$48,533,304	37.60%
Industrial	108	0.10%	681,401	0.50%
Municipal	1,690	0.30%	5,868,597	1.10%
Multiple family residential	38,477	22.70%	44,762,841	34.60%
Single family residential	109,121	64.50%	33,836,080	26.20%
Total	**170,327**	**100%**	**$133,682,223**	**100%**

Source: Public Utilities Commission Customer Services Division

Components of the Sewer Service Charge

In San Francisco, sewer service charges are based upon the volume of water used by the customer and the amount of pollutants in the wastewater.

Volume Flow Factor and Discharge of Pollutants

Volume Flow Factor

Because not all water that is used by the customer is discharged to the sewer system, the sewer service charges are based on an estimated percentage of the metered water volume that is returned to the sewer, or "flow factor". The sewer service charge per unit of service[2] for residential and nonresidential customers includes the flow factor. For example, under the Schedule of Sewer Service Charges adopted by the Public Utilities Commission on June 15, 2004, the sewer service charge for nonresidential customers is $4.42 per 100 cubic feet, or one unit of service. This sewer service charge of $4.42 per 100 cubic feet assumes that for every unit of water that is used by the nonresidential customer, 90 percent of the water is returned to the sewer.

Discharge of Pollutants or Wastewater "Strength"

Sewer service charges are also based on the concentration of pollutants, or "strength", of the wastewater discharged into the sewer system, which includes oil and grease, suspended solids, and oxygen demand from the break down of biologic material. The costs of wastewater treatment for residential and nonresidential customers vary by the concentration of oil and grease, suspended solids, and biologic oxygen demand in the wastewater discharge. In setting sewer service charges, the same wastewater strength, or concentration of pollutants, is assigned to all single family and multiple family residential customers. Nonresidential customers are assigned wastewater strength, based on property use, as discussed below.

The sewer service charge per unit of service equals the volume charge per unit of service plus the strength charge per unit of service.

The sewer service bill equals the total number of units of service times the sewer service charge per unit of service. Components of Single Family Residence Customers' Sewer Service Charges.

Single family residential customers pay sewer service charges based on (i) a 90 percent flow factor, which assumes that 90 percent of the water used by the customer is discharged to the sewer, plus (ii) the estimated wastewater strength, or concentration of oil and grease, suspended solids, and biologic oxygen demand, in domestic wastewater discharge. If a larger percentage of the customer's water use does not discharge to the sewer, such as water used for irrigation of lawns and gardens, then the customer may request a flow factor of less than 90 percent

[2] A unit of service equals one hundred cubic feet or approximately 748 gallons.

Components of Multiple Family Residence Customers' Sewer Service Charges

Multiple family residential customers pay sewer service charges based on (i) a 95 percent flow factor, plus (ii) the estimated wastewater strength in domestic wastewater discharge. Prior to the implementation of the new sewer service charges, multiple family residential customers had a 90 percent flow factor. The Wastewater Rate Study report, presented by Black and Veatch, found that multiple family residential customers discharged most of their wastewater to the sewer system. The Public Utilities Commission approved an increase in the flow factor to 95 percent for multiple family residential customers.

Components of Commercial and Industrial Customers' Sewer Service Charges

Commercial, including municipal, and industrial customers pay sewer service charges based on both the flow factor and the amount of pollutants in the wastewater. The default flow factor for commercial and industrial customers is 90 percent, although this can be adjusted based on the actual percentage of wastewater discharged to the sewer system.

Classifying Wastewater Strength for Commercial and Industrial Customers

Commercial and industrial customers are grouped into classes, or Standard Industrial Classification codes, based on the commercial or industrial use of the property. Because different property uses result in different wastewater strength, the sewer service charge is based on the wastewater strength for the specific Standard Industrial Classification code. For example, restaurants discharge a high volume of oil and grease and the sewer service charge is based on a higher strength of oil and grease than other commercial uses. Many commercial and industrial users are charged for sewer services based on the standard strength for their Standard Industrial Classification code.

Industrial customers that discharge high volumes of wastewater or high concentrations of pollutants are charged for sewer services based on the actual amount of pollutants that they discharge into the sewer system. The Pretreatment, Pollution Prevention, and Storm Water Program of the Bureau of Environmental and Regulatory Management classifies industrial users into (i) federal categorical industrial users, (ii) significant industrial users, and (iii) minor industrial users.

The Pretreatment, Pollution Prevention, and Storm Water Program regularly inspects federal categorical and significant industrial users, samples the wastewater discharge, and assigns wastewater strength based on the specific strength of their wastewater discharge. In calendar year 2003, the Pretreatment, Pollution Prevention, and Storm Water Program identified 593 minor industrial users, which includes veterinary hospitals, wholesale bakeries, commercial printing, and other miscellaneous industrial uses. Of these minor industrial users, only a small number are sampled during the course of the year.

Volume-based Sewer Service Charges vs. Fixed Charges

In San Francisco the costs of providing sewer services are distributed across residential and nonresidential sewer system users. As noted above, San Francisco sewer system customers pay for sewer services based on their metered water volume times a flow factor, plus the wastewater strength, or concentration of pollutants, in their wastewater discharge.

Most California agencies charge fixed rates for sewer and wastewater treatment services for residential customers instead of rates based on the volume of water used and a flow factor. According to the California Water Resources Control Board, more than 77 percent of California agencies charge fixed rates for sewer services to residential customers. However, city systems that serve large populations tend to charge sewer service rates based on volume. Of the six largest California jurisdictions, the cities of Sacramento and San Jose charge a fixed rate but the cities of Los Angeles, San Diego, San Francisco, and Oakland base their sewer service charges on volume.

Historically, utilities began charging for services without the benefit of metering water volume, and therefore, utilities charged a fixed rate or fee for water and sewer services. Agencies which do not provide both water and sewer services do not have direct access to water volume data and can more easily charge fixed rates for sewer services than volume-based rates.

Fixed rates and volume-based rates each have advantages and disadvantages, and different rate structures achieve different goals. Fixed rates based on equivalent dwelling units, as discussed below, are simple in design, and generate more stable revenues. Because revenues are based on the number of dwelling units (i.e., single family residences) rather than volume, reductions in volume resulting from water conservation or other causes do not result in revenue reductions.

On the other hand, volume-based rates can contribute to the sewer service customer's decision to reduce water use. Although decisions to reduce water consumption are based primarily on the individual's water use, the sewer service charge in San Francisco is the larger component of the combined monthly water and sewer service bill. If sewer service charges are volume-based, increases in the volume of water consumption lead to corresponding increases in volume-based sewer service charges and, in the combined water and sewer bill, provide a cost incentive to customers to reduce water consumption.

Because the Public Utilities Commission is a combined water and wastewater utility, it has direct access to meter reading and water volume data. While many wastewater agencies adopt fixed rates because they do not have easy access to meter reading and water volume data, the Public Utilities Commission has meter reading and water volume data in the billing system, simplifying the billing for sewer services based on volume.

The Clean Water Enterprise Program's Fixed and Variable Operating Expenses

Sewer service system costs are largely fixed in the short term. Labor and fringe benefit costs, which comprise the largest share of the Clean Water Enterprise's operating and maintenance expenditures, are fixed in the short term. In FY 2002-2003, salary and fringe benefit costs comprised approximately 45.1 percent of the Clean Water Enterprise program's operating expenditures.[3]

In San Francisco, the major short-term variable costs for changes in wastewater flow are electricity, chemicals, and contractual costs for sludge removal. In FY 2002-2003, the Clean Water Enterprise program spent $2.7 million for the sludge hauling contract, $3.9 million for chemicals, and $9.3 million for electricity costs. Electricity, chemicals, and sludge hauling comprised approximately 24.3 percent of the FY 2002-2003 Clean Water Enterprise program operating expenditures.

Because sewer service system costs are largely fixed in the short term, reductions in wastewater volume do not result in corresponding reductions in costs. Also, because the San Francisco sewer service system includes storm water as well as wastewater, reductions in water consumption affect wastewater flow but not storm water flow. For example, in FY 2001-2002, Clean Water Enterprise Fund revenues declined due to a 3 percent decline in water consumption.[4] Although sewer service charge revenues declined from $136.8 million in FY 2000-2001 to $129.9 million in FY 2001-2002, operating expenditures increased from $59.9 million in FY 2000-2001 to $62.9 million in FY 2001-2002.[5]

Fixed Rates Based on Equivalent Dwelling Units

During FY 2004-2005, the Rate Fairness Board will consider alternatives to the current structure of San Francisco's sewer service charges. Many California agencies base the sewer service charges on the expected amount of wastewater flow for a single family dwelling. This base amount is considered the "equivalent dwelling unit". The amount of wastewater flow for the single family residence is often based on water consumption during the winter months, when residents do not irrigate gardens, and therefore, most water is returned to the sewers. Sewer system customers that discharge larger volumes of wastewater or higher levels of pollutants, or "strength", may be billed for sewer services based on a multiplier of the equivalent dwelling unit. In many agencies, residential

[3] According to the Public Utilities Commission Financial Services staff, salary and fringe benefit expenditures were $29.6 million of total Clean Water Enterprise program operating expenditures of $65.5 million. These expenditures do not include Public Utilities Administration overhead expenditures allocated to the Clean Water Enterprise Fund, debt service payments, revenue-funded capital expenditures.

[4] FY 2001-2002 Clean Water Enterprise Fund audited financial statement.

[5] Revenue and expenditure data was provided by the Public Utilities Commission Financial Services. Operating expenditures include all Clean Water Enterprise program operating expenditures, but exclude Public Utilities Commission Administrative overhead allocated to the Clean Water Enterprise Fund, debt service payments, and revenue-funded capital expenditures.

customers are billed based upon the equivalent dwelling unit but commercial and industrial customers are metered and billed accordingly..

Equivalent dwelling unit rates are based on the costs of service and the estimated average flow per equivalent dwelling unit. According to Black and Veatch, the typical design flow for a single family residence is approximately 240 gallons per day, which is equivalent to 10 one hundred cubic feet per month or 10 units per month. However, the Public Utilities Commission considers the average monthly water consumption for single family residences in San Francisco to be 7 one hundred cubic feet or 7 units.

Residential rates based on equivalent dwelling units can be set in a number of ways:

- Rates could be established for a single family residence based on the costs of service for average water consumption and the estimated flow factor. The estimated flow factor could remain at 90 percent or be calculated in some other manner, such as on winter usage.

- Rates could be established for consumption blocks: for example, (a) the top 20 percent of water consumers would pay higher than median costs, (b) the middle 60 percent of water consumers would pay median costs, and (c) the bottom 20 percent of water consumers would pay less than median costs.

- Water and sewer rates could be combined, with a fixed flat rate representing fixed costs and a variable rate representing the variable costs of operations. Wastewater collection and treatment has high fixed costs, and decreases in volume do not result in corresponding decreases in costs. Therefore, if 85 percent of costs are fixed, the flat rate would represent 85 percent of costs and the variable rate, based on volume, would represent costs which vary with volume.

If the Public Utilities Commission were to adopt a residential sewer service charge based on equivalent dwelling units and average monthly water volume for all customers, rather than the current structure based on volume, the monthly sewer bill would increase for low volume customers and decrease for high volume customers. To the extent that sewer system costs are fixed, billing all residential customers for average costs is reasonable. However, residential customers would lose their current discretion to reduce the amount of the combined water and sewer service bill, of which the volume based sewer service charge is the larger component, by reducing water use. If the Public Utilities Commission were to consider adopting fixed rates based on equivalent dwelling units, the Public Utilities Commission could mitigate the impact on low volume customers of implementing fixed rates by adopting rates based on consumption blocks, as in the second example above.

Alternative Volume-based Rate Structures for Residential Customers

Volume-based charges can be structured in several different ways. Most jurisdictions group residential customers into one rate class, assuming that the wastewater strength, or the wastewater concentration of oil and grease, oxygen demand from the breakdown of biological matter, and total suspended solids, do not vary greatly among residential customers.[6]

Volume-based sewer service charges are generally set as a charge per one hundred cubic feet, or one unit, consumed. Agencies can apply these sewer service charges in several ways:

- Charges can be applied uniformly across all units of service. For example, if the sewer service charge equals $1 for every unit of service, then the total sewer service bill would be $3 if the customer consumed three units of service, $5 if the customer consumed five units of service, and so forth. According to the American Water Works Association, uniform charges are simple, generally perceived as equitable because all rate payers pay the same price for each unit of use, provide relatively stable revenues, and facilitate conservation because the customer's total costs increase with increased use.

- Units of service can be divided into separate blocks with different rates applied to different blocks. "Declining" rate structures charge a higher rate for the first block of units of service and lower rates for subsequent blocks of units of service. These rate structures can be used for overall economic development purposes to provide incentives for large industrial customers to locate in a certain jurisdiction. Because the cost per unit of service declines as consumption increases, this rate structure is contrary to a rate structure that would promote water conservation.

- "Inclining" rate structures charge a lower rate for the first block of units of service and higher rates for subsequent blocks of units of service. Inclining rates promote conservation because the cost per unit of service increases with increased consumption.

Rate Structures Implemented by Other Agencies

Agencies providing sewer services can be configured in many different ways. Often larger cities have public utilities that provide both water and sewer services, and sewer services include both collection systems and wastewater treatment plants. These cities most resemble San Francisco in delivering services. Because water and sewer services are combined within one jurisdiction, basing sewer services on water consumption is

[6] San Francisco sewer service charges include the costs of oil and grease in the wastewater. Although most California agencies include the costs of oxygen demand (which is caused by the discharge of biological products) and suspended solids, not all agencies include the costs of oil and grease.

easier to implement because water consumption data is readily available and the billing structure is in place.

Uniform Residential Charges

The City of Los Angeles uses uniform rates in charging its residential customers for sewer services. Los Angeles allocates administrative overhead, operations and maintenance, and capital costs to the dollar amount charged per unit of service. Based on the evaluation of costs, the City of Los Angeles has set the actual sewer service charge per unit of service to be 0.84 percent higher than the cost per unit to offset the cost of the low-income discount provided to eligible customers.

In FY 2004-2005, the Public Utilities Commission adopted a 15 percent low-income discount for eligible sewer service customers. According to the Public Utilities Commission Financial Services staff, approximately 5,600 single family residence customers qualify for the 15 percent low-income discount, with an estimated cost of $281,534 per year. According to Financial Services staff, implementation of the low-income discount will result in very small increases in the sewer service charge per unit of service in FY 2005-2006.

Base Rates to Cover Fixed Costs

Agencies that base sewer service charges on the volume of water use often apply a base rate in addition to the volume rate to the sewer service charge to recover customer service and administrative costs. For example, the City of San Diego has a base rate that includes all administrative overhead, such as customer service, financial services, and other administrative costs and a volume rate per unit of service, with a cap of 10 units.

The City of Portland, Oregon, charges a base sewer service fee to cover the cost of customer services, such as meter reading and billing, plus a volume rate per unit of service, with no cap. The City does not include other administrative overhead costs in the base sewer service fee to avoid high fixed fees for low volume customers.

While San Francisco does not have a base rate for sewer service charges, the water bill includes a $4.00 charge for meter reading for 5/8 inch meters, with higher charges for larger meters.

Setting Rates Based on Winter Water Use

Some agencies determine how much of the water that is consumed is returned to the sewer by monitoring water use during the winter months, when most water is consumed for household use rather than outdoor use. Both the City of Los Angeles and the City of San Diego incorporate the use of water during the winter into their rate structure. The sewer service charge during the year is tied to consumption of water during the winter months rather than the consumption of water during each billing period. In Los Angeles, the flow factor for all residential customers is determined by the lowest water usage during the previous winter, or rainy season, which results in a higher flow factor than

might otherwise be applied.[7] In San Diego, each customer pays for service during the year, based on the lowest service units consumed by that customer during the winter. Therefore, customers with low water consumption during the winter pay lower sewer service charges during the course of the year. According to the City of San Diego, this method has served as an incentive to reduce consumption, resulting in lower sewer outflows than had originally been projected.

In the Wastewater Rate Study, Black and Veatch analyzed winter water use in San Francisco and found that the advantages of billing residential customers for winter water use was minimal because of San Francisco's temperate climate. Under their analysis, the single family residence flow factor would be an estimated 93.5 percent based on winter water use alone, compared to the 90 percent flow factor in the Schedule of Sewer Service Charges.

San Francisco's Lifeline Rates

San Francisco sewer service charges for residential customers incorporate two levels of volume charges: lifeline and excess of lifeline rates. The lifeline rate is charged for the first three units of consumption and the excess rate is for consumption greater than three units. The lifeline rate is applied to all residential customers and is set at less than the cost of service. The revenue loss, resulting from the lifeline rate, is recouped in the residential excess of lifeline charges and in nonresidential charges.

In their May of 2004 report, the Rate Fairness Board stated that the "lifeline" rate should more appropriately be called a "baseline" rate, because it is applied to all residential accounts without regard to income or economic need. According to the May of 2004 report, the existing lifeline rate, which does not include capital costs, is based solely on long standing practice by the Public Utilities Commission. The Rate Fairness Board recommended the implementation of discounts to offset sewer service charge costs for eligible low-income residents, but is continuing to discuss alternatives to the current structure of the lifeline rate.

Implementation of Low Income Discounts to Replace the Existing Lifeline Rates

The FY 2004-2005 sewer service charges provide a 15 percent discount for low-income single family residents who meet the economic criteria. The Rate Fairness Board was not able to devise a plan in FY 2004-2005 to apply low-income discounts to multiple family residential customers, which generally have master metering, or one meter and one sewer service charge, for multiple families. Cities that provide low-income discounts to single family residences often do not have a method for providing discounts to families living in multiple family residential customers. The City of Los Angeles low-income discount program applies only to single family residences because, according to their sewer service charge notice, it was not feasible to extend the discount to multiple family dwellings. The City of Portland, Oregon, conducted a one-year pilot program to provide

[7] According to the Black and Veatch Wastewater Rate Study, most California agencies use a flow factor of 60 to 70 percent, but the Los Angeles flow factor ranges from 80 percent in dry winters to 92 percent in wet winters.

vouchers to low-income residents of multiple family residences, but did not implement an ongoing voucher program because of the poor results from the pilot project.

The City's rent control ordinance covers the occupants of most multiple family residences in San Francisco. Annual rent increases are capped at 60 percent of the Consumer Price Index, unless the property owner petitions the Rent Arbitration Board for additional rent adjustments due to increased costs. To petition the Rent Arbitration Board, the property owner must prove that aggregate increased costs over the prior two-year period exceed 60 percent of the Consumer Price Index. Tenants can file a hardship petition if additional rent adjustments, exceeding 60 percent of the Consumer Price Index, increase their rental costs to more than 30 percent of their income. If increases in sewer service charges do not increase the property owner's aggregate costs by more than 60 percent of the Consumer Price Index, or if low income tenants succeed in filing a hardship petition, low-income tenants would have some protection against increased costs through the Rent Arbitration Board in the absence of a low-income discount for multiple family residences.

Options for Alternative Sewer Service Charge Structures

The Public Utilities Commission has adopted a FY 2004-2005 sewer service charge increase to meet an 11 percent increase in FY 2004-2005 revenue requirements. The Rate Fairness Board is further evaluating the sewer service charge prior to further rate increases in FY 2005-2006 and FY 2006-2007.

Table 1.2 provides a comparison of projected average monthly sewer service charges for single family residence customers in FY 2006-2007, based on (i) lifeline and excess of lifeline rates, (ii) uniform rates, and (iii) inclining rates. The projected lifeline and excess of lifeline rates are based on the February 23, 2004 Public Utilities Commission Financial Services staff report estimate of FY 2006-2007 lifeline and excess of lifeline rates to meet projected FY 2006-2007 revenue requirements. The Budget Analyst has projected FY 2006-2007 uniform and inclining rates to meet estimated FY 2006-2007 revenue requirements, including increases in debt service payments in FY 2006-2007, 3 percent annual increase in operating and maintenance expenses, and 0.5 percent annual increase in service.

Table 1.2

Comparison of Projected Average Monthly Sewer Service Charges for Single Family Residences, Based on Different Rate Structures in FY 2006-2007

Number of Units of Service	Current San Francisco Rate Structure with Lifeline and Excess of Lifeline Rates	Uniform Rate to Achieve Full Cost Recovery for all Units of Service	Percent Increase in Uniform Rate Compared to Lifeline Rate	Inclining Rate to Achieve Full Cost Recovery for all Units of Service	Percent Increase in Inclining Rate Compared to Lifeline Rate
3 units	$8.94	$17.49	96%	$15.17	70%
5 units	$22.78	$29.15	28%	$28.33	24%
6 units	$29.70	$34.98	18%	$34.90	18%
7 units	$36.62	$40.81	11%	$41.48	13%
Projected revenue in FY 2006-2007	$99,501,323	$116,381,281		$116,381,281	

As noted in Table 1.2, the current sewer service charge structure with lifeline rates captures less revenue than alternative uniform and inclining rates. These revenues are recouped in nonresidential rates.

Comparison of Lifeline, Uniform and Inclining Rates

Because the lifeline rate does not cover all costs for the first three units of service, the projected revenue from the rates is less than the estimated costs of residential sewer services, resulting in a shifting of costs to residential customers paying excess of lifeline rates and nonresidential customers. The uniform rate and the inclining rate are designed to recover sufficient revenues to cover the costs of service. The inclining rate is based on a 30 percent differential between the rate for each of the first three units of service and the rate for each successive units of service.

The largest impact of eliminating the lifeline rate and replacing it with a uniform or inclining rate is to customers with low consumption. Because the inclining rate is designed to encourage conservation, the impact of changing from a lifeline rate to an inclining rate is high for low consumption customers but is less than the impact of changing to a uniform rate. The monthly sewer bill for low volume customers who use three units of service each month would increase by 96 percent if the sewer service charge were based on a uniform rate and by 70 percent if the sewer service charge were based on an inclining rate.

Based on FY 2003-2004 Customer Services Division data, single family residence customers use approximately seven units of service each month. At seven units of service, the impact of replacing the lifeline rate with the uniform rate or inclining rate is less severe. The single family residence customer's monthly bill would increase by 11 percent per month if uniform rates were adopted and 13 percent per month if inclining rates were adopted.

Conservation Issues in Redesigning Rates

The Rate Fairness Board has stated that retaining the lifeline rate for all residential customers does not meet the policy goal of an income-based lifeline rate and maintains the subsidy of residential customers by nonresidential customers. In FY 2004-2005, the Rate Fairness Board is evaluating alternative rate designs to the existing sewer service charge design. Because Proposition E requires that the Rate Fairness Board evaluate and seek to implement utility rates that encourage conservation, the Rate Fairness Board has included the rate impact on water conservation in its discussions of alternative rate designs.

In the May of 2004 report, the Rate Fairness Board discussed the impact of sewer service rate designs on water conservation. The Rate Fairness Board noted that designing sewer service rates to meet water conservation goals raises two problems. First, according to the Rate Fairness Board May of 2004 report, a consumer's decision to utilize sewer services generally depends on decisions to use drinking water and water rate structures, rather than sewer rate structure, more readily meet water conservation goals. Second, because sewer service systems have high fixed costs, decreases in volume spread the fixed costs over fewer units of service, resulting in a higher cost per unit of service. Therefore, if the customer reduces water use, resulting in reduced wastewater volume, the units of sewer service will decline but the cost per unit of sewer service will increase, resulting in little or no decrease in the total sewer service bill.

The Public Utilities Commission Financial Services staff are analyzing the impact of rate design on conservation and the cost impact of reduced consumption. Sewer service charges based on volume, in which the total sewer bill increases with increased use of water, more readily meet the requirement of Proposition E to implement utility rates that promote water conservation. However fixed rates based on equivalent dwelling units that include consumption blocks may also provide price savings to low volume consumers and some incentive to conserve. The rate of residential water consumption in San Francisco tends to be lower than in other California jurisdictions, and therefore, rate structures intended to further encourage conservation, such as inclining rates, may have little impact on further conservation.

Based on analysis provided by the Public Utilities Commission Financial Services staff, the Rate Fairness Board and the Public Utilities Commission need to evaluate the effectiveness of fixed rates based on equivalent dwelling units, uniform rates based on volume, and inclining rates based on volume in achieving the Proposition E conservation requirements.

Applying Residential Rates to Single Residence Occupancy Hotels

The discussion to eliminate the lifeline rate has been tied to proposals to implement low-income discounts for residential customers. Currently, San Francisco's sewer service charges provide a reduced rate for hotels, motels, and boarding houses that participate in the City's Community House Program. Under the Community House Program, implemented in 1994, participating hotels, motels, and boarding houses that provide services to homeless and low-income individuals, receive a 50 percent reduction in the sewer service charge, prorated for the percentage of occupants that are low-income. In January of 2004, 22 hotels, motels, and boarding houses were participating in the program.

According to the Public Utilities Commission Financial Services staff, in 2001 the staff evaluated the impact of reclassifying all Single Residence Occupancy hotels from commercial properties to residential properties, thus making those properties eligible to be billed at the lower residential lifeline rate. At that time, Financial Services staff estimated that the Clean Water Enterprise Fund would lose approximately $1.3 million annually in sewer service charge revenues from reclassifying Single Residence Occupancy hotels from commercial to residential. The Financial Services staff also concluded that the Public Utilities Commission could not ensure that sewer service charge savings to Single Residence Occupancy hotels would be passed through to the occupants as reduced rent.

The Rate Fairness Board and the Public Utilities Commission considered but did not include potential sewer service charge reductions to Single Residence Occupancy hotels in formulating FY 2004-2005 rate recommendations. The Public Utilities Commission Financial Services staff should continue to assess and present the option of reclassifying the Single Residence Occupancy hotels as residential customers during the FY 2004-2005 discussions of alternative sewer service rate structures.

Impact of Increasing Water and Sewer Service Charges on the Monthly Bill for Single Family Residences

The Public Utilities Commission issues combined bimonthly bills for water and sewer service charges to its customers. When the San Francisco voters passed Proposition E in November of 2002, the voters also passed Proposition A, which gave the Public Utilities Commission authority to issue revenue bonds for water system capital improvements. Issuance of the water revenue bonds is expected to increase water rates by approximately 5 percent to 12 percent annually, beginning in FY 2005-2006. Table 1.3 provides a comparison of the average water and sewer bill for single family residents in FY 2004-2005 compared to an estimated average water and sewer bill in FY 2006-2007, resulting from estimated increases in sewer and water rates.

Table 1.3

Comparison of Average Monthly Water and Sewer Bills for Single Family Residents in FY 2004-2005 and FY 2006-2007 [1]

	FY 2004-2005 Lifeline Rates			FY 2006-2007 Uniform Rates, Based on 11 Percent Increase in FY 2004-2005 through FY 2006-2007			
Units of Service	**Water Rates**	**Sewer Rates**	**Total**	**Water Rates**	**Sewer Rates**	**Total**	**Percent Change between FY 2004-2005 and FY 2006-2007**
3 units	$8.47	$6.45	$14.92	$9.01	$17.49	$26.50	78%
5 units	$11.45	$17.19	$28.64	$12.34	$29.15	$41.50	45%
6 units	$12.94	$22.56	$35.50	$14.01	$34.98	$49.00	38%
7 units	$14.43	$27.93	$42.36	$15.68	$40.81	$56.50	33%

[1] Sewer rates are based on the Budget Analyst's estimate of uniform sewer rates in FY 2006-2007, as shown in Table 1.2, and an estimated increase in water rates of 12 percent in FY 2006-2007 compared to FY 2004-2005.

If the Public Utilities Commission adopts uniform sewer service charges, low volume customers will have an estimated 78 percent increase in their monthly water and sewer service bill in FY 2006-2007 compared to FY 2004-2005. The increase in the water and sewer service charges for higher levels of consumption is less severe. To mitigate the customer's costs resulting from combined increases in sewer and water rates, the Public Utilities Commission should consider phasing in sewer service charge increases resulting from uniform rates by gradually increasing the lifeline rate or by implementing an interim inclining rate.

Consideration of Other Components of the Sewer Services

The Public Utilities Commission Financial Services staff are evaluating two other cost components of sewer services, for consideration by the Rate Fairness Board and the Public Utilities Commission.

Removing Storm Water Charges from the Sewer Service Charges

The Federal Clean Water Act requires local jurisdictions to control the amount of pollutants entering the storm drains. In San Francisco the storm drainage system is combined with the sewer system and the combined storm water and sewer flow are treated in both the primary treatment and secondary treatment plants. However, the cost of collecting and treating storm water is not associated with specific residential, commercial, or industrial customers. In many California jurisdictions, storm water flow

is managed by a separate agency from the wastewater agencies. Often the storm water charge is a fixed charge to property owners which is added to the property bill.

In San Francisco, the costs for collecting and treating storm water are mingled with the costs of collecting and treating wastewater. These costs are allocated to all customers in the sewer service charge and are therefore associated with the volume charges paid by the customers. The Public Utilities Commission Financial Services staff have recommended a study of the options for charging for storm water collection and treatment, including the effect of separating the storm water charge from the sewer service charge. To separate the storm water charges, the Financial Services staff would have to determine what part of the costs are attributable to storm water collection and treatment. Once the costs are separated, the Financial Services staff would have to evaluate and recommend policies for allocating the costs of the storm water system to the Public Utilities Commission.

In assessing alternative structures for storm water fees, the Public Utilities Commission needs to consider the relative advantages and disadvantages of the current storm water structure, in which storm water charges are included with volume-based sewer service charges. Although the costs of collecting and treating storm water are not associated with specific residential and nonresidential customers, the sewer and storm water systems are combined and therefore, combined sewer service and storm water costs must be segregated to charge separate storm water rates.

If the Public Utilities Commission considers alternative proposals to include the storm water program charge in the sewer service bill or in the property tax bill, the Public Utilities Commission needs to consider the advantages and disadvantages of each alternative. Proposals to allocate storm water program charges to the property bill rather than the sewer service bill would shift the frequency of charges from bimonthly sewer service bills to annual property tax bills and shift responsibility for payment from the sewer service account customer to the property owner, which may not be the same person.

Implementing Capacity Fees

Most California jurisdictions charge a fee for the development of new properties, requiring water and sewer services. Because of the sewer service charge freeze imposed by Proposition H in 1998, San Francisco has not implemented a fee, charging the developers of new properties to use the sewer system. The California Government Code allows local jurisdictions to charge a "connection" fee for the physical installation of lateral connections to sewer mains or a "capacity" fee to cover the costs associated with increased flow to the sewer collection and wastewater treatment system from new development. In San Francisco, the sewer service system is largely built out with excess capacity and can accommodate new development without construction of new sewer or treatment plant capacity. The capacity fee, therefore, would be a charge to developers to buy into the equity in the existing sewer collection and wastewater treatment system.

In the Wastewater Rate Study, Black and Veatch calculated a proposed capacity fee of $1,012 per equivalent dwelling unit, based on the capital investment in sewer and

wastewater treatment plants. The Public Utilities Commission Financial Services staff have implemented a work plan to evaluate introduction of a capacity fee, which will be considered by the Rate Fairness Board during FY 2004-2005.

Conclusion

Based on recommendations by the Public Utilities Commission Financial Services staff and the Rate Fairness Board, the Public Utilities Commission adopted sewer service charge increases in FY 2004-2005 to meet an 11 percent increase in FY 2004-2005 revenue requirements but postponed the decision to increase sewer service charges in FY 2005-2006 and FY 2006-2007. During FY 2004-2005, the Rate Fairness Board is considering alternatives to the existing structure of the sewer service charges. In considering further increases in sewer service charges to meet the Clean Water Enterprise Funds revenue requirements, the Rate Fairness Board is considering elimination of the existing lifeline residential rate for the first three units of service. Because the lifeline rate does not recover the costs of sewer services, these costs are currently recouped through the residential excess of lifeline rate and nonresidential rates.

During FY 2004-2005, the Rate Fairness Board will consider various alternative sewer service charge designs. The existing sewer service charges are based on the volume of water used by the customer. As the volume of water used increases, sewer service charges also increase. Conversely, reduced water use results in lower sewer service volume and reduced sewer service charges. Because the costs of providing sewer services are largely fixed, reductions in sewer service volume and sewer service charge revenues do not result in a corresponding reduction in sewer service system costs.

The Rate Fairness Board will consider alternative fixed rate and volume based designs in FY 2004-2005. Many sewer collection and wastewater treatment agencies implement fixed sewer service charges because they do no have ready access to water volume data. In San Francisco, however, the Public Utilities Commission, which has oversight over both the water and the wastewater systems, already has water volume and sewer service charge data in the billing system, and does not have administrative or billing limitations in basing sewer service charges on volume.

Fixed rate designs offer simplicity and, because they do not vary with changes in volume, offer stable revenues. However, because customers pay a fixed rate regardless of water consumption, fixed rates do not promote water conservation, although some alternative fixed rate designs can provide price incentives to reduce water consumption, including designs in which residential customers are grouped into different blocks based on consumption and each block pays a different percentage share of total sewer service charges.

The Rate Fairness Board has acknowledged the limitations in designing sewer service charges to meet water conservation goals. However, because the sewer service charge is a large component of the combined water and sewer service bill, increases in total monthly sewer service charges based on volume will have some impact on the customer's water use decisions. If the Rate Fairness Board considers recommending volume-based sewer

service charges to the Public Utilities Commission, the Rate Fairness Board needs to consider the relative impact of uniform and inclining rates. Because the rate of residential water consumption in San Francisco tends to be lower than in other California jurisdictions, rate structures intended to further encourage conservation, such as inclining rates, may have little impact on further conservation.

In the Budget Analyst's comparison of alternative rate structures, sewer service charges based on uniform rates, combined with potential increases in the water bill, will have significant impact on the single family residential customer's combined water and sewer service bill, especially at lower volumes of consumption. If the Rate Fairness Board considers recommending and the Public Utilities Commission considers adopting sewer service charges based on uniform or inclining rates, the combined impact of increased water and sewer service charges needs to be assessed. If the Rate Fairness Board considers recommending and the Public Utilities Commission considers adopting volume-based rates, then the Rate Fairness Board and the Public Utilities Commission need to consider proposals to phase-in changes in the sewer service charge rate structure to minimize the impact.

The Public Utilities Commission Financial Services staff should continue to analyze and present information on the impact of rate design on residential sewer service customers, sewer service charge revenues, and water conservation, including (i) the relative advantages and disadvantages of fixed rates based on equivalent dwelling units that incorporate different consumption blocks, volume-based uniform rates, and volume-based inclining rates in providing stable revenues and promoting conservation, and (ii) the relative impact, including projected combined monthly water and sewer service bill increases, of fixed rates based on equivalent dwelling units that incorporate different consumption blocks, volume-based uniform rates, and volume-based inclining rates on sewer service customers.

Recommendations

The Director of Financial Services should:

1.1 Continue to analyze and present information to the Rate Fairness Board on the impact of alternative sewer service rate designs on residential sewer service customers, sewer service charge revenues, and water conservation, including:

(i) the relative advantages and disadvantages of fixed rates based on equivalent dwelling units that incorporate different consumption blocks, volume-based uniform rates, and volume-based inclining rates in providing stable revenues and promoting conservation, and

(ii) the relative impact, including projected combined monthly water and sewer service bill increases, of fixed rates based on equivalent dwelling units that incorporate different consumption blocks, volume-based uniform rates, and volume-based inclining rates on sewer service customers.

1.2 Continue to evaluate and present to the Rate Fairness Board alternative scenarios for phasing-in new rate structures to mitigate the impact of future combined water and sewer service charges.

1.3 Continue to assess and present to the Rate Fairness Board the option of reclassifying the Single Residence Occupancy hotels as residential customers during the FY 2004-2005 Rate Fairness Board discussions of alternative sewer service rate structures.

1.4 Continue to assess and present to the Rate Fairness Board alternative structures for storm water charges, including the relative advantages and disadvantages (i) of the current storm water structure and of dis-aggregating storm water and sewer system charges, and (ii) of including storm water charges on the sewer service bill or the property tax bill, including the impact of shifting the frequency of charges from bimonthly sewer service bills to annual property tax bills and shifting charges from sewer service customers to property owners, to the extent that the two are not the same.

Costs and Benefits

The Public Utilities Commission Financial Services staff would continue to analyze and present sewer service charge alternatives and impacts to the Rate Fairness Board and the Public Utilities Commission. The Public Utilities Commission would continue to have necessary information to assess alternative sewer service charge rate structures that address the goals of (a) providing stable revenue to the Clean Water Enterprise Fund, (b) equitably distributing the costs of sewer services to the users of the system, and (c) promoting conservation.