

FINAL REPORT



Sewer Rate Methodology and Connection Fee Study December 2013



December 30, 2013

Ms. Susan M. McGuire, CPA
Administrative Services Manager
Las Gallinas Valley Sanitary District
300 Smith Ranch Road
San Rafael, California 94903

Subject: Review of the District's Sewer Rate Methodology and Connection Fee Study

Dear Ms. McGuire:

HDR Engineering, Inc. (HDR) was retained by the Las Gallinas Valley Sanitary District (District) to provide a technical and professional review of the District's sewer rate methodology and connection fee study. In very simple terms, the District currently bills their customers on an annual basis through their property taxes and uses a flat (fixed) rate structure to bill their residential customers and a volumetric rate structure to bill the commercial customers.

The District retained HDR to provide an independent outside expert review of the District's current rate methodology and practices and to inform the District of available methodologies that are industry accepted practices, but also in use in California. The study was specifically designed to compare and contrast these methodologies with the District's existing rate structures and rate policies. The results of this study may be used during the planned rate-setting activities for fiscal year 2014/2015.

This study has been developed utilizing generally accepted sewer rate-setting techniques. The District's records and information were the key inputs into this study. It is important to note that the study conducted for the District is not a "rate study" but rather a high level review of the possible rate structures the District may consider for further evaluation during their planned 2014/15 rate setting process.

We appreciate the assistance provided by the District's management and staff in the development of this study.

Sincerely yours,
HDR Engineering, Inc.



Tom Gould
Vice President
HDR's Business Leader
of Finance and Rates



Shawn Koorn
Associate Vice President



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Executive Summary

Introduction

HDR Engineering, Inc. (HDR) was retained by the Las Gallinas Valley Sanitary District (District) to provide a technical and professional review of the District's sewer rate methodology and connection fee study. In very simple terms, the District currently bills the majority of their customers on an annual basis through their property taxes and uses a flat (fixed) rate structure to bill their residential customers and a volumetric rate structure to bill their commercial customers.

The District retained HDR to provide an independent outside expert review of the District's current rate methodology and practices and to inform the District of available methodologies that are industry-accepted practices, but also in use in California. The study was specifically designed to compare and contrast these methodologies with the District's existing rate structures and rate policies. The results of this study may be used during the planned rate-setting activities for fiscal year 2014/2015.

The District's Goals and Objectives for the Study

The District had multiple goals and objectives in evaluating their sewer rate structures. Provided below are the District's major objectives for this study:

- Inform the District of the available methodologies that are in use in the San Francisco Bay region and California for establishing sewer service charges.
- Compare and contrast these methodologies with the District's existing rate structure and rate policies. Provide advantages and disadvantages supported by case studies (examples) where practical.
- Provide recommended updates to the District's rate methodology and policies to be used for future management of the sewer user charge and connection fees. Advise the District on implementation needs and costs associated with recommended changes.
- Review the District's objectives for establishing rates for FY 2014/15, considering the recommendations that are presented in the study. Assist the District in conducting the FY 2014/15 rate setting process in a manner that is consistent with recommendations.
- Develop a methodology that can be applied to future capital budgets to determine appropriate connection fees for future development.
- Provide an effective written and oral presentation of the results of this study.
- Work closely with District management and staff, and, as a team, maximize the value of this study to the District.

In conducting this study for the District, the approach used to evaluate the various rate structures was designed specifically to meet the above goals and objectives. At the same time,

it was designed specifically to provide the District with a framework to evaluate the various rate structures.

Attributes of a Sound Rate Structure

The attributes of sound rate structures have been documented in a number of rate setting manuals. However, the foundation for evaluating rate structures is generally credited to James C. Bonbright in the *Principles of Public Utility Rates*.¹ Bonbright recognized the challenge of establishing rates and suggests that the list of attributes should be used as a reminder of the many possible considerations in the rate design process, while recognizing the overlapping and conflicting characteristics (e.g. cost-based and affordable rates). Bonbright's list of 10 attributes was used to begin to prioritize the District's rate design goals and objectives.

Review of the District's Current Rate Design Structure

The current rate design of the District consists of a fixed sanitary unit charge. The present sanitary unit is \$647/year (effective July 1, 2013). For each customer type, the sanitary unit charge is multiplied by the number of sanitary units (i.e. billing units) for a particular customer type. For residential and multi-family customers, the rate is essentially a flat or fixed charge of one sanitary unit or \$647/year. In contrast to this, commercial and industrial customers are billed based upon their water consumption history. A summary of the District's current sewer rate structure is presented below in Table ES-1.

¹ James C. Bonbright; Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates, (Arlington, VA: Public Utilities Report, Inc., Second Edition, 1988), p. 383-384.

**Table ES-1
Overview of the District's Present Sewer Rates**

Classification of Use	Sewer Service Units
(1) Residential	
Single-Family Dwelling	1.0 per living unit
Apartment house, condominium, or other multi-family dwelling	1.0 per living unit
Mobile home park or trailer court	1.0 per mobile home pad and 1.0 per trailer space
Rooming house	1.0 for up to 2 rooms used for renting, plus 0.25 for each additional room used for renting.
Motel Unit with Kitchen	1.0 per living unit
Motel Unit without Kitchen	0.5 per living unit
(2) Schools	
Public or private schools without showers or cafeteria facilities	0.01 per pupil, faculty member and employee; pupil count based upon average daily attendance
Public or private schools with showers or cafeteria facilities	0.02 per pupil, faculty member and employee; pupil count based upon average daily attendance
<p>The number of pupils shall be determined by the average daily attendance over the school year immediately preceding the annual determination of sewer service charges . . . The number of faculty members and school employees shall be that number employed at the end of such school year.</p>	
(3) Other Than Above	
(a) Domestic-strength users; commercial, office buildings, retail, churches, halls, public agencies, laundromats, service stations, medical offices, barber and beauty shops, car washes, convalescent hospitals, hospitals, and other domestic strength discharges.	1.0 per average monthly residential water consumption times strength factor of 1.0
(b) High strength users:	1.0 per average monthly residential water consumption times strength factor shown below:
Restaurants/Cafes	2.6
Bakeries	2.6
Mortuaries	2.6
Hotel with restaurant	2.0
Markets with disposal	2.6
Mixed uses (high & domestic strength)	2.0
Industry	As determined by formula
Other High-Strength	As determined by formula
<p>c) Other users: For users for whom the above methods do not equitably apply, the assignment of sewer service units shall be based upon available information reasonably applied by the District.</p>	

For the District’s residential rates, a flat annual charge is utilized. For commercial customers, the rate structure is a bit more complex. The rate structure considers both volume contributions, along with an assessment for strength of wastewater. The calculation of strength is discussed in more detail in Section 2 of this report.

The District’s approach for residential customers is very simple to administer, but does not reflect individual customer characteristics (contributions to wastewater flows). In using this approach, there is a trade-off between administrative simplicity, revenue stability and customer equity. To better understand these trade-offs, HDR worked with the District to review the current attributes of the District’s rates and the rate design goals and objectives of the District’s Board.

Overview of the District’s Rate Design Goals and Objectives

Determining a utility’s rate design goals and objectives is an important starting point for designing rates. Unfortunately, most utilities do not clearly enunciate these rate design goals and objectives. For the District’s study, the following rate design goals and objectives were considered:

1. Effectiveness in yielding the District’s total revenue requirements (note: assumes that this goal can be met for all rate design alternatives);
2. From the utility’s perspective, stability and predictability of the revenue generated from year-to-year;
3. From a customer’s perspective, stability and predictability of their bills from year-to-year;
4. Encourage efficient water use via structures which provide the customer with greater opportunities to control their bill (compared to a fixed bill);
5. Reflect all present and future costs (internalities and externalities) and benefits of providing utility service;
6. Fair allocation of total cost of service among the customer classes of service to attain equity;
7. Avoidance of undue discrimination in rate relationships;
8. Dynamic in its ability to respond to changing conditions and/or environmental concerns;
9. Rates which are accepted by customers and which are simple, easy to understand and easy to administer;
10. Freedom from controversy as to interpretation (i.e. how the customer is billed).

A presentation was made to the District’s Board on September 26, 2013 to discuss the typical rate design goals and objectives noted above. For purposes of this study, the goals and objectives needed to be prioritized. To accomplish this, individual Board members and key District management team members were asked to list their “top 5” goals. Provided below in Table ES-2 is a summary of the prioritization of these goals.

Table ES-2
Prioritization of the Rate Design Goals and Objectives
By The District's Board and District Management Team

Board Prioritization ^[1]	Rank	District Management Prioritization
Revenue Stability and Predictability	1	Revenue Stability and Predictability
Fair Allocation of Costs to Attain Equity	2	Easy to Understand and Administer
Stability and Predictability of Bills	3	Fair Allocation of Costs to Attain Equity
Simple and Easy to Understand	4	Freedom from Controversy as to Interpretation of the Rates
Avoidance of Undue Discrimination	5	Predictability of the customer bills from year to year

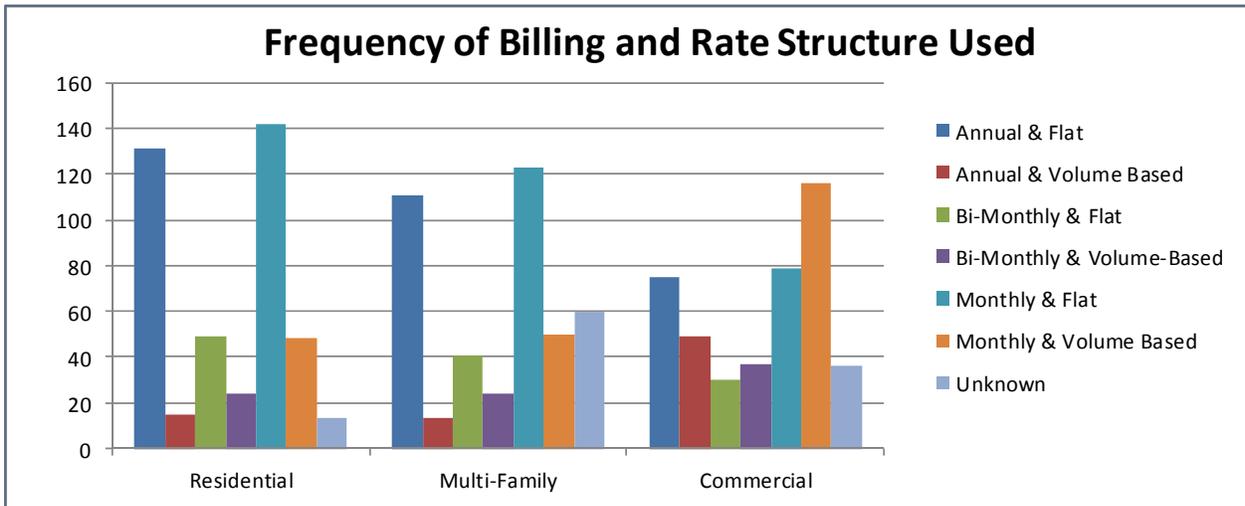
[1] – The first two rate design goals and objectives for the Board were a tie for 1st.

The above goals and objectives were used as an initial starting point for the development of alternative wastewater rate designs for the District.

Survey of Other California and Bay-Area Utilities

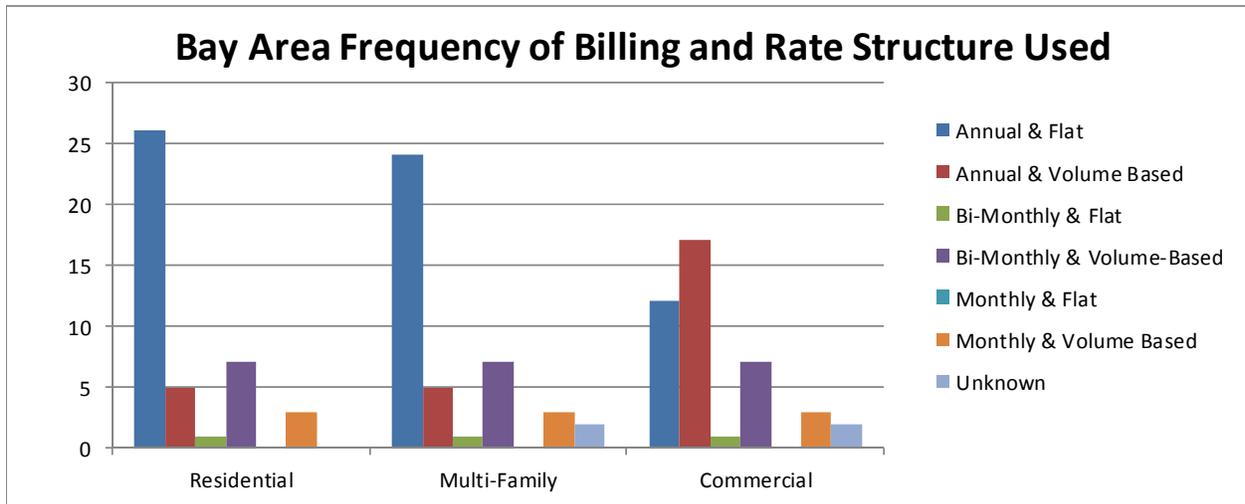
An important reference point is gaining an understanding of the rate structures and billing practices of other wastewater utilities. To that end, HDR conducted a limited review of the sewer rate practices of Bay Area and California utilities. A major source of information was a survey conducted by the State Water Resources Control Board (State Water Board). The survey conducted by the State Water Board was for Fiscal Year 2012/13 and is titled the Wastewater User Charge User Survey. The survey was sent to 759 agencies, with responses from 422 utilities.

The widest perspective of wastewater rates is the state-wide viewpoint. HDR utilized the State Water Board Wastewater User Charge User Survey to sort certain rate design and billing information contained within that survey. Of particular importance was the frequency of billing and rate structure.



Based upon the surveyed results, for residential and multi-family customers, the predominant method of billing residential customers is on a monthly basis, using a flat rate structure. The next most predominate method is an annual billing using a flat rate structure, which is the approach the District uses. For the commercial customers, the predominant method is a monthly billing frequency and a volume-based rate structure. Monthly billing and a flat rate was the next most predominant method. The District’s method of annual billing with a volume-based rate is the 3rd most predominant method.

HDR also reviewed local Bay-area utilities from Marin, Sonoma, San Francisco and San Mateo counties. For this subset of data, the results indicate that annual billings using a flat rate



structure is the most common method for residential and multi-family customers, while annual, volume-based billings were the most predominant for commercial customers. Again, this follows the current approach being used by the District to bill their residential, multi-family and commercial customers.

While billing frequency and the form of the rate structure provide some level of understanding and comparison, the other important aspect of a rate structure is the relationships established between the rates. In the case of the District, sewer service units (equivalent units) are used to establish these relationships. To gain a better understanding of the rate relationships and strength-levels used by other utilities, a limited review was undertaken of other neighboring utilities.

Locally, annual billing using a flat rate structure remains the predominate structure, but how different utilities view multi-family customers varies. In some cases, utilities will consider multi-family customers in context to the single-family rates (i.e. charge on a per living unit basis). In other cases, multi-family is treated as a commercial (non-residential) customer and likely billed on a volumetric basis. In the experience of HDR, it is not uncommon to assume the wastewater flow contributions for a multi-family customer to be in the range of 70% to 90% of a single-family residential customer. This flow contribution characteristic has rate implications for multi-family customers.

In summary, the District's rates and rate structures are within the standards of "generally accepted" industry practices. In making that statement, HDR is not implying or inferring that the District's rates and rate relationships could not be improved. Improvements can potentially be achieved in the areas of equity/fairness and administrative ease. However, any change in rates or rate structures will impact customers in different ways and hold certain advantages and disadvantages.

Rate Structure Terminology and Sewer Rate Structures

A review of the rate structures from other sewer utilities across the U.S. reveals a wide variety of structures and approaches in use today. While it may seem that there are an endless number of different rate structures to be found, the reality is that they are all based upon a few basic rate design concepts. It is how these basic concepts are applied, modified, and combined that creates what appear to be endless possibilities.

Fixed and Variable Costs – In reviewing a utility's costs, fixed costs do not vary with the collection or treatment of wastewater. Debt service is an example of a fixed cost. In contrast, variable costs tend to change with the quantity of wastewater collected or treated. Examples of variable costs are the cost of chemicals and electricity. It is important to note that for most sewer utilities, the vast majority of their costs are fixed and not variable in nature.

Fixed Charges – Fixed costs are generally collected as a base charge. This charge may be called by various names (e.g., base charge, customer charge, readiness to serve charge, etc.), but in all cases, it is intended to collect all or a portion of the fixed costs that the utility incurs, regardless of the customer's wastewater flow contributions.

Volumetric Charges - Volumetric consumption charges are generally based upon metered water use. In using water consumption data, consideration is often given to adjusting water use to attempt to only reflect the volume of water which is returned as wastewater. To address this concern, many sewer utilities measure/utilize average winter water use as the basis for the residential volumetric sewer billing. For commercial customers, monthly or annual water consumption is often used as the basis for volumetric billing. One of the major challenges or hurdles for volumetric sewer rates is access to water consumption data. For some utilities, water consumption data for certain customers may not be available due to the lack of metering. In other instances, such as the District, access to water consumption data is limited since the District provides only sewer service and water consumption data must be collected from the Marin Municipal Water District.

Review of the District’s Current Fixed and Variable Costs

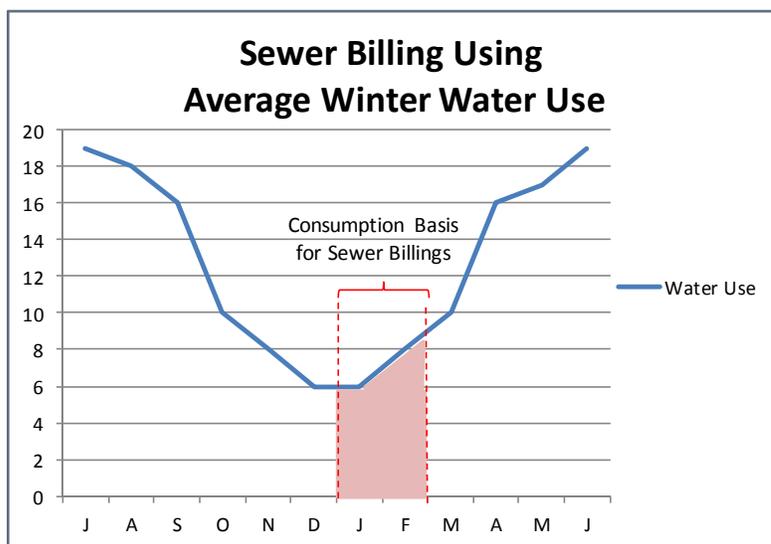
As a part of this study, HDR reviewed the District’s budget documents to gain an understanding of the current relationship between fixed and variable costs. In reviewing the District’s 2013-14 budget, HDR considered 5.1% of the District’s budget to be variable cost related. That means, from a simple fixed/variable cost perspective, there is limited cost-basis for a significant portion of the District’s rates to be billed on a variable or volumetric basis.

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Review of the Residential Conceptual Rate Structures

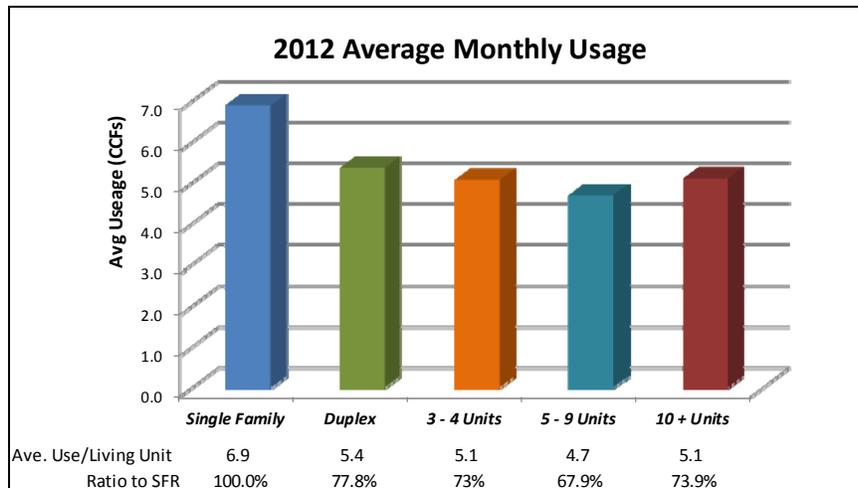
At the present time, the District’s rates are segregated between residential, schools and other (commercial). The residential customers are segregated by type of residential or living unit customer. Generally, the residential and multi-family customers are treated and billed as one (1) living unit.

In considering a movement to volumetric billing, consideration was given to the collection of volumetric consumption data. Typically, average winter water use (AWWU) is the basis for residential volumes. The winter time period is presumed to primarily reflect “indoor” use. The average winter water use may be defined in slightly different ways at different utilities, particularly when there is a limitation or constraints on the availability of



water consumption data. In the case of the District, a two month period of mid-December to mid-February is currently used to determine average winter water use, or flow contributions for residential customers.

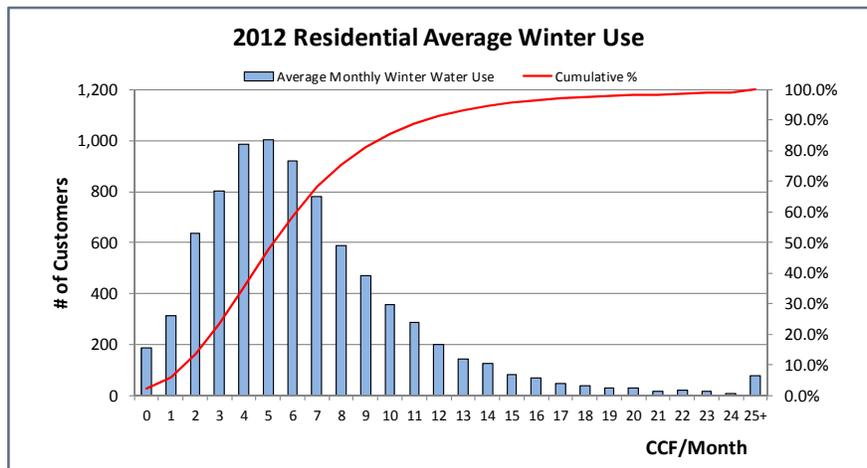
To better understand whether the current residential rate relationships reflect the wastewater contributions of these different customer types, a review was undertaken of the 2011 and 2012 water consumption data for these customers. The graph at left illustrates the general findings when both years were reviewed. As can be seen, the typical multi-family customer has a flow contribution which is 70% to 80% of a single-family residential home. This is a common finding given the differences between a single-family home and a multi-family living unit.



contributions of these different customer types, a review was undertaken of the 2011 and 2012 water consumption data for these customers. The graph at left illustrates the general findings when both years were reviewed. As can be seen, the typical multi-family customer has a flow contribution which is 70% to 80% of a single-family residential home. This is a common finding given the differences between a single-family home and a multi-family living unit.

For the residential customers, the implications of this observation is the relationships in living units (billing units) between single-family residential and multi-family residential should be further explored. At the same time, when the single-family residential customers were reviewed for their average winter water use, a large majority of customers use 10 CCF/month or less. However, there are a small group of single-family residential customers that use significant quantities of winter water use. Any movement towards a volumetric sewer rate for these single-family residential customers would likely have a significant financial (bill) impact upon them.

At the same time, when the single-family residential customers were reviewed for their average winter water use, a large majority of customers use 10 CCF/month or less. However, there are a small group of single-family residential customers that use significant quantities of winter water use. Any movement towards a volumetric sewer rate for these single-family residential customers would likely have a significant financial (bill) impact upon them.



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Given the above review of consumption patterns and usage it was determined that the following residential rate structure options should be explored in greater technical detail:

- Fixed/Variable Rate Structure; No adjustments to living unit relationships
- Fixed/Variable Rate Structure; Adjust the living unit relationships
- Fixed Rate Structure; Adjust the living unit relationships

An important aspect of any new rate structure is the issue of implementation and administration. While a rate structure may be feasible to design, it may be difficult or costly to implement or administer once it is in place. In the end, the selection of any rate structure must balance the various objectives and issues associated with the rate design, and the ability of the utility to easily implement and administer the rate.

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Review of the Commercial Conceptual Rate Structures

At the present time, the District’s commercial rate structures use a form of volumetric pricing to establish the bill. Each customer’s winter and summer average use is converted to units, which is then multiplied by the per unit rate. In essence, the District currently bills these customers on a volumetric basis. However, within our review HDR did identify two issues for the commercial rates. These two issues were related to the assumed definition of a sewer unit for billing purposes. At the present time, 10 CCF/month is defined as a sewer unit, and the residential analysis has indicated 7 CCF/month is typical usage for a single-family home. Given that, for purposes of consistency, the commercial rate should be linked to this same assumption. At the same time, this study should review the strength assumptions contained within the District’s rates. Higher strength wastewater is more costly to treat and should therefore have a higher rate or billable units to reflect this cost difference.

Technical Review of the Rate Design Options

The conceptual portion of the study noted that the following options should be explored in more technical detail:

- Fixed/Variable Rate Structure; No adjustments to living unit relationships
- Fixed/Variable Rate Structure; Adjust the living unit relationships
- Fixed Rate Structure; Adjust the living unit relationships

In developing these particular options, it attempted to isolate the rate design issues. As a part of the technical analysis, six different rate options or alternatives were explored in greater detail.

“A” Options – Only review fixed/variable and multi-family relationship. No adjustments for commercial equivalencies

- ✓ Option 1a 95% Fixed/5% Variable – Current Sewer Unit Equivalencies
- ✓ Option 2a 95% Fixed/5% Variable – Adj. Multi-Family Sewer Unit Equivalencies
- ✓ Option 3a 100% Fixed – Adjust Multi-Family Sewer Unit Equivalencies

“B” Options – Review both fixed/variable and multi-family relationship and adjustment for commercial equivalencies

- ✓ Option 1b 95% Fixed/5% Variable – Adjust Commercial Sewer Unit Equivalencies; No Change to Multi-Family Equivalencies
- ✓ Option 2b 95% Fixed/5% Variable – Adjust Multi-Family and Commercial Sewer Unit Equivalencies
- ✓ Option 3b 100% Fixed – Adjust Multi-Family and Commercial Sewer Unit Equivalencies

In essence, the technical analysis explored three key variables; fixed versus a fixed/variable structure, the adjustment of the relationship between single-family and multi-family, and the use of a common definition for a sewer equivalency. The use of the common definition for a sewer equivalency would link the definition used for single-family residential to the commercial class of service.

Each of the options will have a slightly different technical impact upon the final rate design. From a very simple perspective, moving to a fixed variable charge will reduce the fixed charge portion of the rate since a portion of the revenues is now collected via variable charges. When the multi-family relationship is changed to 80% of a single-family residential customer, the fixed charge must go up since the same total amount of revenue must be collected, but with less total billable units. The adjustment to multi-family essentially reduces the total multi-family billable units by 20%. Finally, when the definition of the commercial sewer equivalency unit is tied to the single-family residential definition the impact is more commercial billable units, which, on its own, will reduce the fixed charges since the same total level of revenue is being divided by more billable units. What is unclear from a technical perspective is the net impact or effect when these various elements are combined. Hence, the need to conduct the detailed technical analyses to understand the potential impacts to each of the major customer groups.

In section 5 of the report, a detailed discussion and bill comparisons of each option is presented. The bill comparisons illustrate the annual bill impact to different customers and over varying consumption levels. Each option impacts different customers in different ways and at varying points of consumption. As an example, under a fixed/variable rate, a low use customer may see a slight decrease in their annual bill, while a high use customer will see a large increase.

Consultant’s Observations and Conclusions

The technical analysis has indicated that there is a very limited portion of the District’s costs which are variable in nature (approximately 5%). The rate options for a fixed/variable rate structure have passed the District’s costs through in the same manner in which they are incurred (i.e. 95% fixed/5% variable). In looking at the options for a fixed/variable rate structure it appears to have a limited impact upon residential customers and most customers

“This study has highlighted for HDR the administrative and technical challenges of working with the consumption data and attempting to bill residential and multi-family customers on a volumetric basis.”

may not notice the difference in their bill when the change is only \$30 - \$40 per year. More concerning to HDR with the fixed/variable rate structure is the administrative difficulty it may impose upon the District. This study has highlighted for HDR the administrative and technical challenges of working with the consumption data and attempting to bill residential and multi-family customers on a volumetric basis. In addition, HDR noted within the review of the residential data certain customers with very high winter water consumption which would potentially result in significant sewer bills (which may or may not be justified). For those reasons, **HDR believes the District should maintain a fixed charge approach for residential and multi-family customers.** Of the rate options presented, this would be either Rate Option 3a or 3b. All other options presented were fixed/variable rates.

HDR’s review of the consumption data did highlight the issue of the rate relationship between single-family residential and multi-family customers. Based upon the limited District data reviewed (2-years), along with our own experience in working with other utilities, the equivalency relationship developed in this study (80%) is almost exactly what HDR would have predicted prior to the study. Given that, **there seems to be a strong foundational basis for establishing a differential in the equivalency relationship between residential and multi-family.** Assuming the use of a fixed charge approach (Option 3a or 3b), the impact of this recommendation would be an approximate 20% reduction in the multi-family rates and a slight increase in single-family rates which may be in the range of \$0.60 (Option 3b) to \$2.40/month (Option 3a). The impact to commercial bills will vary between the Options. Option 3a has the least impact to commercial and results in an approximate 4.4% increase. In contrast, Option 3b produces little or no impact to low use customers (< 10 CCF/month), but has large impacts to large use commercial customers (up to 40% to 50% increases).

The final portion of the technical analysis is the definition of an equivalent unit and tying that definition to the commercial rates. At the present time, the equivalency sewer unit definition used for a commercial customer is 10 CCF/month. This study has noted that an equivalent residential unit may be defined as 7 CCF/month which more closely reflects the current average single-family average winter water use. **HDR is concerned with the potential change in this definition and the impacts to large commercial customers. The District can maintain their existing definition, set the multi-family rate at 80% of the single-family rate and minimally impact the commercial customers. In short, this was Rate Option 3a (100% Fixed Charge/Adjust Multi-Family).** At a later date, the District may choose to transition to the 7 CCF/month definition (Option 3b). However, for now, it appears that attempting to adjust the single-family and multi-family relationship should be the top priority. Attempting to adjust the multi-family and the commercial equivalencies at the same time has too great of a combined impact, particularly to the commercial customers.

In the end, **the ability of the District to smoothly transition these rate changes should be of paramount importance.** While this study has identified certain rate issues the District may want to address, those can be addressed over time, and in a manner that does not create large and sudden impacts to customers. One of the key rate design goals identified by both the Board and management was stability of the rates, both from the utility’s perspective and the customer’s perspective. **The recommendations of HDR are intended to begin the move the District in the direction of achieving the recommendations contained in this report, while doing so in manner that provides stability and greater customer acceptance.**

HDR also reviewed the equivalencies for certain customers and would recommend that those be adjusted and adopted. Finally, HDR has provided some minor changes on the strength factors which will provide more equitable rates for high-strength customers, but have minimal impact upon the total overall revenues of the utility.

Review of the District’s Capital Facility Charges

Capital facility charges (also referred to as “connection fees”) are not related to the previous discussion of District’s sewer rate structures. Capital facility charges are only assessed to new customers connecting to the District’s system or existing customers requesting expanded capacity. In that sense, capital facility charges and sewer rates are unrelated. However, viewed more broadly, capital facility charges create equity between existing and new customers connecting to the system.

Capital facility charges are related to available or future capacity on the system to accommodate new customers (growth) or existing customers expanding their capacity requirements. The District currently has capital facility charges in place. At the same time, capital facility charges are generally imposed as a condition of service. The objective of a capital facility charge is not merely to generate money for a utility, but to ensure that all customers seeking to connect to the utility’s system bear an equitable share of the cost of capacity that is invested in both the existing and any future growth-related expansions.

The basic formula for developing a capital facility charge is relatively straight-forward mathematically. It is as follows:

$$\frac{\text{System Value}}{\text{System Capacity}} \times \text{New Customer Capacity Demand} = \text{Capital Facility Charge}$$

The vintage of the District’s capital facility charges did not allow for HDR to confirm the above approach. Given that, it is important to understand that there are different methodologies and approaches that may be used to establish these fees.

It is HDR’s understanding that the District is considering a major treatment plant expansion in the near future. Given that, it would seem prudent that the District consider updating their capital facility charges to best reflect the current capacity conditions. As a utility system evolves over time, the per unit value of capacity and the amount of available capacity changes. At the same time, assets are added and constantly depreciated over time. HDR is of the

opinion that it would be prudent and advisable for the District to update their capital facility charge methodology and resulting fees.

Public Meetings and Presentations

As a part of this study, three public meetings and presentations were held. The objective of these public meetings and presentations was to inform the District's Board of the various rate structure options available to them, gain their feedback, and provide to the public an opportunity to participate in the process and communicate directly with the Board their specific issues, concerns, observations and preferences. For each Board meeting, HDR prepared a detailed Powerpoint™ presentation which was provided to the Board and available to the public in advance of the meeting. In addition to the Powerpoint slides, HDR also developed handout materials for the November 14th and December 12th meeting. These handouts simply provided a summary of the various rate structure options on a single page.

During HDR's presentation, a number of questions were asked by Board members and the public. At the conclusion of HDR's presentation, the public was provided an opportunity to provide comment and feedback. For purposes of this study, there were six key issues to be resolved or to gain Board policy direction on. These key policy issues for future rate setting were as follows:

1. Rate structure (fixed vs. variable)
2. Residential and multi-family relationship (e.g. 70%, 80%, 90%, etc.)
3. Definition of an equivalent residential unit (ERU) for the commercial volume calculation
4. Transition plan for the commercial rate calculation
5. Calculation of billing units (rounding)
6. Revisions to the District's capital facilities Charges

The public meetings and the feedback/comments from the public, in summary form, the Board provided the following direction to the District's management team.

FIXED VS. VARIABLE RATE STRUCTURE – The Board determined that maintaining a fixed rate for single-family and residential customers remains appropriate.

RESIDENTIAL VS. MULTI-FAMILY RELATIONSHIP – While the Board reviewed the 70%, 80% and 90% alternative scenarios for the meeting, the Board concluded that the original 80% rate differential was a reasonable starting point for establishing the rate.

DEFINITION OF AN EQUIVALENT RESIDENTIAL UNIT (ERU) – During the course of the discussions, the difference between the “a” and “b” rate scenarios is how an equivalent residential unit is defined (i.e. the volume of wastewater contribution) and the number of units that a commercial customer is billed. the District's current connection fees (Capital Facility Charges) assume one ERU to be equal to 200 gallons/day. This translates to approximately 8 CCF/month. Given that, HDR recommended to the Board that 8 CCF/month be used to provide a clear

linkage between the capacity purchased within the connection fees and the rates being charged.

TRANSITION PLAN FOR COMMERCIAL RATE TRANSITION – HDR initially suggested that the District, from a policy perspective, may be able transition to the 8 CCF calculation since the change to the relationship with multi-family has some impact upon all customers. The District’s legal counsel had concerns with the transition of this issue under the requirements of Proposition 218. Given that, it was presumed that the commercial rate and definition of an ERU must be adjusted at the same time as the multi-family rate relationship is adjusted.

CALCULATION OF BILLING UNITS – In the past, the District has billed commercial customers in whole units and rounded up. As a part of this study, it was determined that it was administratively feasible to bill in partial units (e.g. 6.2 units). All customers will be billed a minimum of 1 ERU.

REVISIONS TO THE DISTRICT’S CONNECTION FEE – HDR discussed with the Board the linkage between the connection fee (capital facility charges) and rates. At the present time, an equivalent residential unit is defined as 200 gallons/day. If the rate for multi-family is being revised to be 80% of a single-family customer, then the connection fee should also be adjusted accordingly. When the District reviews their connection fees in the future, the District should revise the fee schedule accordingly.

The above summarizes the policy direction received from the Board during the course of this meeting. Technical Appendix G (Option 4b) provides the rate structure and bill comparisons which most closely reflect the Board’s policy direction to management.

Summary

This summarizes the technical analyses undertaken for the District of their sewer rates. This report has explored alternative sewer rate structure options for the District. A full and complete discussion of the process used to review the District’s sewer rates can be found in the following sections of the report.



1. Introduction

1.1 Introduction

HDR Engineering, Inc. (HDR) was retained by the Las Gallinas Valley Sanitary District (District) to provide a technical and professional review of the District’s sewer rate methodology and connection fee study. In very simple terms, the District currently bills the majority of their customers on an annual basis through their property taxes and uses a flat (fixed) rate structure to bill their residential customers and a volumetric rate structure to bill the commercial customers.

“The District retained HDR to provide an independent outside expert review of the District’s current rate methodology and practices and to inform the District of available methodologies that are industry accepted practices . . .”

The District retained HDR to provide an independent outside expert review of the District’s current rate methodology and practices and to inform the District of available methodologies that are industry accepted practices, but also in use in California. The study was specifically designed to compare and contrast these methodologies with the District’s existing rate structures and rate policies. The results of this study may be used during the planned rate-setting activities for fiscal year 2014/2015.

1.2 Goals and Objectives in Evaluating the District’s Rates

The District had multiple goals and objectives in evaluating the sewer rate structures. Provided below are the District’s major objectives for this study:

- Inform the District of the available methodologies that are in use in the San Francisco Bay region and California for establishing sewer service charges.
- Compare and contrast these methodologies with the District’s existing rate structure and rate policies. Provide advantages and disadvantages supported by case studies (examples) where practical.
- Provide recommended updates to the District’s rate methodology and policies to be used for future management of the sewer user charge and connection fees. Advise the District on implementation needs and costs associated with recommended changes.
- Review the District’s objectives for establishing rates for FY 2014/15, considering the recommendations that are presented in the study. Assist the District in conducting the FY 2014/15 rate setting process in a manner that is consistent with recommendations.
- Develop a methodology that can be applied to future capital budgets to determine appropriate connection fees for future development.
- Provide an effective written and oral presentation of the results of this study.
- Work closely with District management and staff, and, as a team, maximize the value of this study to the District.

In conducting this study for the District, the approach used to evaluate the various rate structures was designed specifically to meet the above goals and objectives. At the same time, it was designed specifically to provide the District with a framework to evaluate the various rate structures.

1.3 Report Organization

This report is organized as follows:

- Section 2 discusses the typical rate design goals and objectives used by utilities to establish their rates. The District's rate design goals and objectives have been prioritized as a part of this study.
- Section 3 provides a survey of wastewater rate structures and reviews wastewater rates for California and more locally in the Bay area. This helps to provide a better perspective in relation to the District's current rates and rate structures.
- Section 4 reviews the possible conceptual rate structures that the District may consider for technical review. This section of the report also reviews the estimated wastewater contributions for single-family residential and multi-family customers.
- Section 5 provides the summary of the technical analysis undertaken on rate structures and provides HDR summary observations and conclusions.
- Section 6 reviews the District's capital facility charges (connection fees) and the methodologies that may be used to establish cost-based fees.

This report is intended to be comprehensive in nature and review the various technical analyses undertaken as a part of this study.

1.4 Summary

This report will discuss the findings, conclusions and recommendations of the sewer rate and connection fee review prepared for the Las Gallinas Valley Sanitary District. The next section of the report will discuss rate design goals and objectives for the District.



2. Prioritization of the District's Rate Design Goals and Objectives

2.1 Introduction

From a very simplistic viewpoint, the District's sewer rates appear to have always functioned around the major goal of collecting sufficient revenues to meet the utility's financial (revenue) requirement. However, other rate design goals and objectives, other than simply meeting the District's revenue requirements, have been considered in establishing the adopted rates.

"The District retained HDR to provide an independent outside expert review of the District's current rate methodology and practices and to inform the District of available methodologies that are industry accepted practices . . ."

As a part of the study to review the District's rates and rate structures, HDR reviewed with the District's Board and management team's prioritization of the District's rate design goals and objectives. As the study progresses, various rate design alternatives can be compared to the District's rate design goals and objectives.

2.2 Attributes of a Sound Rate Structure

The attributes of sound rate structures have been documented in a number of rate setting manuals. However, the foundation for evaluating rate structures is generally credited to James C. Bonbright in the *Principles of Public Utility Rates*.² The manual *Principles of Public Utility Rates* provides utility managers and policymakers an understanding of pricing policies, theories and economic concepts that support various rate designs. Bonbright's list of the attributes of a sound rate structure is quoted in a number of other rate manuals and is often paraphrased and simplified in reading utility rate study reports. Bonbright certainly wasn't the first person to consider the attributes of a sound rate structure. Bonbright simply considered many of the opinions and discussions of the time and condensed them into a compact list. Bonbright offers the following thoughts concerning his list of attributes:

"The list that follows is fairly typical, although we have derived it from a variety of sources, instead of relying on any one presentation. Of the ten proposed attributes enumerated in this section, the first three relate to the provision of adequate stable and predictable revenues and rates; the next five are based on cost, efficiency, and equity considerations, and the remaining two deal with the matters of practicality and acceptability. However, the sequence in which the ten attributes are presented is not meant to suggest any order of importance. Moreover, there is, perforce, some inconsistency and redundancy in any such listing. We are simply trying to identify the

² James C. Bonbright; Albert L. Danielsen and David R. Kamerschen, *Principles of Public Utility Rates*, (Arlington, VA: Public Utilities Report, Inc., Second Edition, 1988), p. 383-384.

desirable characteristics of utility performance that regulators should seek to compel through edict.”³

Bonbright recognized the challenge of establishing rates and suggests that the list of attributes should be used as a reminder of the many possible considerations in the rate design process. However, he also noted that the list is “also useful in suggesting important reasons why problems of practical rate design do not yield readily to scientific principles of optimum pricing.”⁴ Finally, Bonbright recognized that his list of attributes lacked clear definitions (e.g. how does one define “undue discrimination”) along with overlapping and conflicting characteristics.

HDR would also note that certain rate design attributes on Bonbright’s list lend themselves well to a wastewater utility, while other attributes may not be particularly relatable or relevant. Provided below are the ten attributes to a sound rate structure as identified by Bonbright. For each of Bonbright’s attributes, HDR has tried to clarify and state the attribute in easy to understand terminology, along with providing a better definition of those attributes that may be directly applicable to the District.

Revenue-Related Attributes:

- 1. BONBRIGHT:** Effectiveness in yielding total revenue requirements under the fair return standard without any socially undesirable expansion of the rate base or socially undesirable level of product quality or safety.
RESTATED: Effectiveness in yielding the District’s total revenue requirement⁵
- 2. BONBRIGHT:** Revenue stability and predictability, with a minimum of unexpected changes seriously adverse to utility companies.
RESTATED: From the utility’s perspective, stability and predictability of the revenue generated from year-to-year.
- 3. BONBRIGHT:** Stability and predictability of the rates themselves, with a minimum of unexpected changes seriously adverse to ratepayers with a sense of historical continuity. (Compare “The best tax is an old tax”).
RESTATED: From the customer’s perspective, stability and predictability of their bills from year to year.

³ Ibid, p. 382-383.

⁴ Ibid. p. 384.

⁵ The AWWA M-1 Manual, Principles of Water Rates, Fees and Charges, discusses two “generally-accepted” methodologies for establishing revenue requirements. Bonbright refers to a “fair return standard” which typically applies to the “utility/accrual” basis of establishing revenue requirements. Under this methodology, the utility is entitled to earn a “fair” return on its investment. This is the methodology used by privately owned utilities, and some public utilities. In contrast, most municipal utilities, including the City, use the “cash-basis” methodology. Under this approach, the City sums its O&M, debt service and capital improvements funded from rate revenues to equal its revenue requirements. Over time, both methodologies should produce roughly the same revenue requirements.

Cost-Related Attributes:

4. **BONBRIGHT:** Static efficiency of the rate classes and rate blocks in discouraging wasteful use of service while promoting all justified types and amounts.
 - in the control of the total amounts of service supplied by the company.
 - in the control of the relative uses of alternative types of service by ratepayers (on-peak versus off-peak service or higher quality versus lower quality of service).

RESTATED: Encourage efficient water use via wastewater rate structures which provide the customer with greater opportunities to control their bill (compared to a fixed bill).
5. **BONBRIGHT:** Reflection of all of the present and future private and social costs and benefits occasioned by a service's provision. (i.e., all internalities and externalities).

RESTATED: Reflect all present and future costs (internalities and externalities) and benefits of providing utility service.
6. **BONBRIGHT:** Fairness of the specific rates in apportionment of total costs of service among the different ratepayers so as to avoid arbitrariness and capriciousness and to attain equity in three dimensions: (1) horizontal (i.e., equals treated equally); (2) vertical (i.e., unequals treated unequally); and (3) anonymous (i.e. no ratepayer's demands can be diverted away uneconomically from an incumbent by a potential entrant).

RESTATED Fair allocation of the total cost of service among the customer classes of service to attain equity.
7. **BONBRIGHT:** Avoidance of undue discrimination in rate relationships so as to be, if possible, compensatory (i.e. subsidy free with no inter-customer burdens).

RESTATED: Avoidance of undue discrimination in rate relationships (i.e. non-discriminatory).
8. **BONBRIGHT:** Dynamic efficiency in promoting innovation and responding economically to changing demand and supply patterns.

RESTATED: Dynamic in its ability to respond to changing conditions and/or environmental concerns.

Practical-Related Attributes:

9. **BONBRIGHT:** The related, practical attributes of simplicity, certainty, convenience of payment, economy in collection, understandability, public acceptability and feasibility of application.

RESTATED: Rates which are accepted by customers and which are simple, easy to understand and easy to administer.
10. **BONBRIGHT:** Freedom from controversies as to proper interpretation.

RESTATED: Freedom from controversy as to the application of the rate schedule to the customer and calculation of the customer's bill.

Given clearer definitions of Bonbright's attributes of a sound rate structure, these definitions can be used to review and evaluate the District's existing rate structures and identify those attributes which are being fully or partially met, and those attributes that are not being met.

2.3 Review of the District's Current Rate Design Structure

An important starting point for reviewing the attributes of the District's existing rate structure is having a good understanding of the District's current rate design and its structure. In reviewing sewer rate designs, consideration is given to both the *level* of the rates and the *structure* of the rates. *Level* refers to the amount of revenue to be collected from a specific rate design (i.e., the rate design is intended to collect \$2.0 million over a 12 month period). In contrast, *structure* refers to the way in which the \$2.0 million is collected from the customers. At this point, we are focused on reviewing structure, as opposed to the level of the rates.

The current rate design of the District consists of a fixed sanitary unit charge. The present sanitary unit is \$647/year (effective July 1, 2013). For each customer type, the sanitary unit charge is multiplied by the number of sanitary units (i.e. billing units) for a particular customer type. For residential and multi-family customers, the rate is essentially a flat or fixed charge of one sanitary unit or \$647/year. In contrast to this, commercial and industrial customers are billed based upon their water consumption history. A summary of the District's current sewer rate structure is presented below in Table 2-1.

**Table 2-1
Overview of the District's Present Sewer Rates**

Classification of Use	Sewer Service Units
(1) Residential	
Single-Family Dwelling	1.0 per living unit
Apartment house, condominium, or other multi-family dwelling	1.0 per living unit
Mobile home park or trailer court	1.0 per mobile home pad and 1.0 per trailer space
Rooming house	1.0 for up to 2 rooms used for renting, plus 0.25 for each additional room used for renting.
Motel Unit with Kitchen	1.0 per living unit
Motel Unit without Kitchen	0.5 per living unit
(2) Schools	
Public or private schools without showers or cafeteria facilities	0.01 per pupil, faculty member and employee; pupil count based upon average daily attendance
Public or private schools with showers or cafeteria facilities	0.02 per pupil, faculty member and employee; pupil count based upon average daily attendance
<p>The number of pupils shall be determined by the average daily attendance over the school year immediately preceding the annual determination of sewer service charges . . . The number of faculty members and school employees shall be that number employed at the end of such school year.</p>	
(3) Other Than Above	
(a) Domestic-strength users; commercial, office buildings, retail, churches, halls, public agencies, laundromats, service stations, medical offices, barber and beauty shops, car washes, convalescent hospitals, hospitals, and other domestic strength discharges.	1.0 per average monthly residential water consumption times strength factor of 1.0
(b) High strength users:	1.0 per average monthly residential water consumption times strength factor shown below:
Restaurants/Cafes	2.6
Bakeries	2.6
Mortuaries	2.6
Hotel with restaurant	2.0
Markets with disposal	2.6
Mixed uses (high & domestic strength)	2.0
Industry	As determined by formula
Other High-Strength	As determined by formula
<p>c) Other users: For users for whom the above methods do not equitably apply, the assignment of sewer service units shall be based upon available information reasonably applied by the District.</p>	

**Table 2-1
Overview of the District's Present Sewer Rates (continued)**

(B) For purposes of this Ordinance, the following general provisions apply:

- (1) Domestic-strength wastewater is estimated to average 175 mg/l of biochemical oxygen demand (BOD) and 175 mg/l of suspended solids (SS)
- (2) The strength factor (SF) formula for high wastewater-strength users is as follows:

$$SF = \left[0.54 + \frac{0.23 (BOD + SS)}{175} \right]$$

(3) Tabulated below are the strength factors arrived at by applying the formula in (B)(2) above

User Group	BOD (mg/l)	SS (mg/l)	SF
Residential	175	175	1.0
Commercial (General)			
Office/Retail	175	175	1.0
Hotels/Motels	175	175	1.0
Retail Shops	175	175	1.0
Halls/Churches	175	175	1.0
Other Domestic Strength	175	175	1.0
Laundromats	175	175	1.0
Service Stations/Car Washes	175	175	1.0
Medical Offices	175	175	1.0
Hospitals/Convalescent Homes	175	175	1.0
Commercial (High Sewer Use)			
Restaurants/Cafes	1,000	600	2.6
Bakeries	1,000	600	2.6
Mortuaries	800	800	2.6
Mixed Uses/Other	600	500	2.0
Hotels with Restaurants	600	500	2.0
Dry Industry	175	175	1.0
Markets with Disposals	800	800	2.6
Other Industry/High Use	As determined by District		
Public Agency:			
Schools	175	175	1.0
Offices	175	175	1.0

For the District's residential rates, a flat annual charge is utilized. For commercial customers, the rate structure is a bit more complex. The rate structure considers both volume contributions, along with strength of wastewater.

The District's approach for residential customers is very simple to administer, but does not reflect individual customer characteristics (contributions to wastewater flows). Using this

approach, there is a trade-off between administrative ease/simplicity, revenue stability and customer equity.

To better understand these trade-offs, HDR worked with the District to review the current attributes of the District’s rates and the rate design goals and objectives of the District’s Board.

2.4 Review of the Attributes of the District’s Current Rates

A comparison was undertaken of the District’s current rate design structure to the attributes of a sound rate structure listed by Bonbright. The objective of this comparison is to better understand the strengths and weaknesses of the District’s current rate design. HDR’s review of the attributes is shown below in Table 2-2.

Table 2-2 Comparison of the District’s Current Rate Structure to Bonbright’s Attributes of a Sound Rate Structure			
Rate Design Attribute	Partially Meets	Meets	Does Not Meet
1. Effectiveness in yielding total revenue requirements.		Rates can be designed to meet the total revenue requirements. Use of annual billing provides ability to yield revenue requirements.	
2. Revenue stability and predictability.		Very high revenue stability and predictability.	
3. Stability and predictability of the rates themselves.		Very high for residential. Commercial and industrial customers are based upon volumetric contribution and may have some variability in their bills, but likely not significant.	
4. Encourage efficient water use via structures which provide the customer with greater opportunities to control their bill.	Residential bill is a fixed charge and does not, but commercial and industrial is based upon volumetric water use.		
5. Reflect all present and future costs (internalities and externalities) and benefits of providing utility service.	Rates reflect internal accounting costs. Externalities likely not reflected in the District’s rates. The District’s rates will never fully reflect the full “social” or “environmental” costs and benefits of sewer collection and treatment.		

Rate Design Attribute	Partially Meets	Meets	Does Not Meet
6. Fair allocation of total cost of service among the customer classes of service to attain equity.		Use of an equivalent unit rate provides a certain level of equity in the allocation of costs. Perceptions of equity issues may arise between low use and large use volume residential customers, although the majority of the District's costs are fixed in nature.	
7. Avoidance of undue discrimination in rate relationships.	Use of a fixed rate for residential creates some possible inequities between residential customers.		
8. Dynamic in its ability to respond to changing conditions or environmental concerns.			Does not meet this attribute, but this is likely not a particularly relevant rate attribute for a sewer utility.
9. Simple and easy to understand; easy to administer.	Residential is simple, easy to understand and administer. Commercial and industrial is a bit more complex, but still fairly easy to understand and administer. Annual billing on property is very easy to administer.		
10. Freedom from controversy as to interpretation.	Residential may not have any issues. The use of water consumption and averaging for commercial and industrial may raise some issues, but nothing significant.		

In summary, it appears that the District's existing sewer rate structures partially or fully meets most of Bonbright's attributes of a sound rate structure. The key area which this study should focus on is the issue of equity between customers. As the review of the District's current rates highlighted, the rate relationships between the various customers is a function of the assumed usage and strength characteristics of certain customers.

2.5 Overview of the District's Rate Design Goals and Objectives

In establishing sewer rates, an important starting point is understanding the District's rate design goals and objectives. Typically, these goals and objectives may be items such as rates

that are easy to understand and administer and set at a level to produce sufficient revenues. While determining a utility's rate design goals and objectives is an important starting point for designing rates, unfortunately, most utilities do not clearly enunciate these rate design goals and objectives.

For the District's study, the following rate design goals and objectives were considered:

1. Effectiveness in yielding the District's total revenue requirements (note: assumes that this goal can be met for all rate design alternatives);
2. From the utility's perspective, stability and predictability of the revenue generated from year-to-year;
3. From a customer's perspective, stability and predictability of their bills from year-to-year;
4. Encourage efficient water use via structures which provide the customer with greater opportunities to control their bill (compared to a fixed bill);
5. Reflect all present and future costs (internalities and externalities) and benefits of providing utility service;
6. Fair allocation of total cost of service among the customer classes of service to attain equity;
7. Avoidance of undue discrimination in rate relationships;
8. Dynamic in its ability to respond to changing conditions and/or environmental concerns;
9. Rates which are accepted by customers and which are simple, easy to understand and easy to administer;
10. Freedom from controversy as to interpretation (i.e. how the customer is billed).

Given these potential goals and objectives, the focus shifted to prioritizing the District's rate design goals and objectives.

A presentation was made to the District's Board on September 26, 2013 to discuss the typical rate design goals and objectives noted above. For purposes of this study, the goals and objectives needed to be prioritized. To accomplish this, individual Board members and key District management team members were asked to list their "top 5" goals. Each individual was provided with a written list of the ten attributes and asked to place a "1" by their top goal, a "2" by their second goal, and so on, until they had selected their top 5 attributes. From each of the individual tallies, a final prioritization list was created based upon the weighted number of "votes" each attribute received. For a goal that received a top (1st) priority, it received 5 points for each 1st place vote. For a second place vote, the attribute received four points, and so on. The points received for each attribute were summed and the attributes were then placed in a top to bottom order. Provided below in Table 2-3 is a summary of the prioritization of these goals.

**Table 2-3
Prioritization of the Rate Design Goals and Objectives
By The District’s Board and District Management Team**

Board Prioritization^[1]	Rank	District Management Prioritization
Revenue Stability and Predictability	1	Revenue Stability and Predictability
Fair Allocation of Costs to Attain Equity	2	Easy to Understand and Administer
Stability and Predictability of Bills	3	Fair Allocation of Costs to Attain Equity
Simple and Easy to Understand	4	Freedom from Controversy as to Interpretation of the Rates
Avoidance of Undue Discrimination	5	Predictability of the customer bills from year to year

[1] – The first two rate design goals and objectives for the Board were a tie for 1st.

While this prioritization exercise is by no means “scientific” in its overall approach or tabulation methodology, it does provide some understanding of the different perspectives regarding the District’s rate design goals and objectives. It appears, for purposes of this study the alternatives should focus on revenue stability and predictability in the context of being equitable and cost-based.

“It appears, for purposes of this study the alternatives should focus on revenue stability and predictability in the context of being equitable and cost-based.”

As a closing thought, different people may interpret the meaning or emphasis of these objectives in different ways. In no way did this prioritization exercise attempt to understand the level of difference between the first through fifth priority.

2.6 Summary

This section of the review of the District’s rates has reviewed the attributes of a sound rate structure. From these attributes, a prioritized set of rate design goals and objectives was established. This prioritized set of rate design goals and objectives will be used as a reference point for any proposed changes to the District’s rate structure and rates.



3. Survey of Wastewater Rate Structures

3.1 Introduction

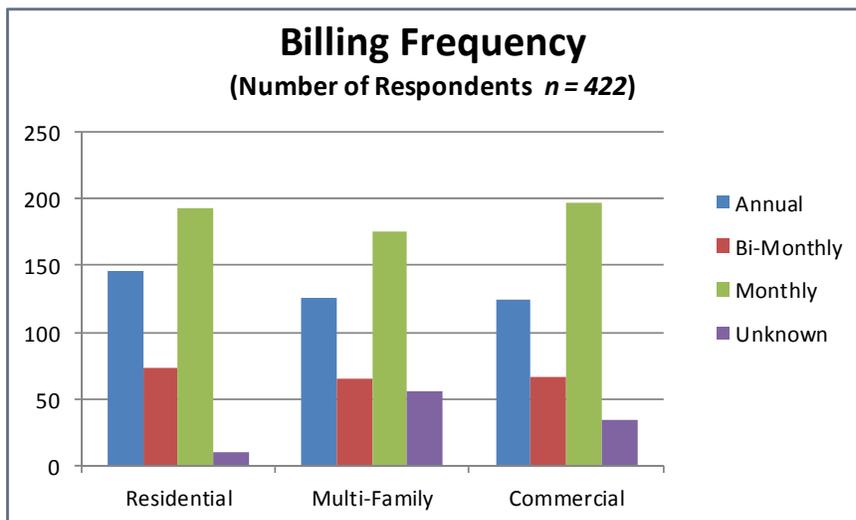
An important reference point is gaining an understanding of the rate structures and billing practices of other wastewater utilities. To that end, HDR conducted a limited review of the sewer rate practices of Bay Area and California utilities, using readily available or accessible information. This section of the report will discuss the limited survey undertaken by HDR.

3.2 Sources of Information

The intent of this survey was not to conduct a formal, detailed survey. Rather, the intent of the survey was to gain a high-level understanding of the rate structures and billing practices of California and Bay Area utilities. A major source of information was a survey conducted by the State Water Resources Control Board (State Water Board). The survey conducted by the State Water Board was for Fiscal Year 2012/13 and is titled the Wastewater User Charge User Survey. The survey was sent to 759 agencies, with responses from 422 utilities. This source was used to review California wastewater rates. It also provided a high-level source of information for Bay-area utilities. To gain a better understanding of local Bay-area utilities, rate schedule information from local utilities was downloaded from specific utility web sites.

3.3 California Wastewater Rates

The widest perspective of wastewater rates is the state-wide viewpoint. HDR utilized the State Water Board Wastewater User Charge User Survey to sort certain rate design and billing information contained within that survey. Of particular importance was the frequency of billing and rate structure.

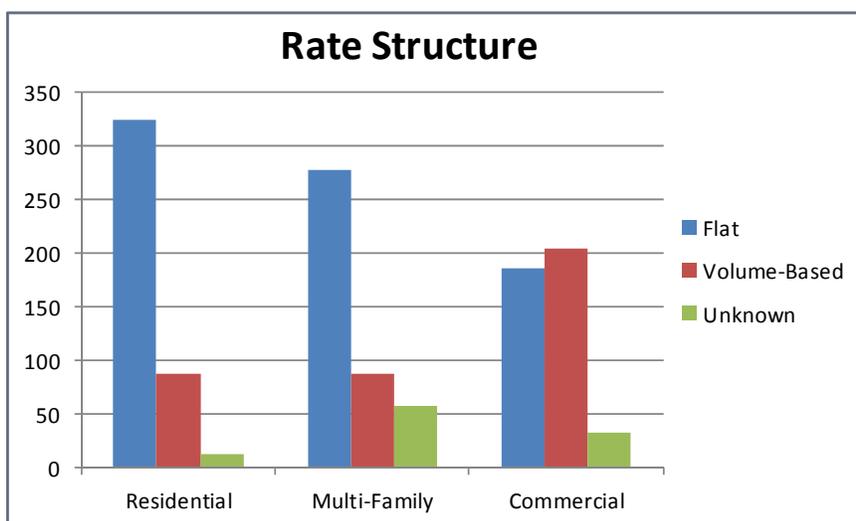


For the 422 respondents, the data was sorted to determine billing frequency for a residential, multi-family and commercial customer. These categories of customers seemed most relevant to the District's study. In viewing the graph to the left, it can be seen that the most common billing frequency is monthly. An annual billing frequency was also very

common. The District currently bills their customers on an annual basis. Bi-monthly billing is

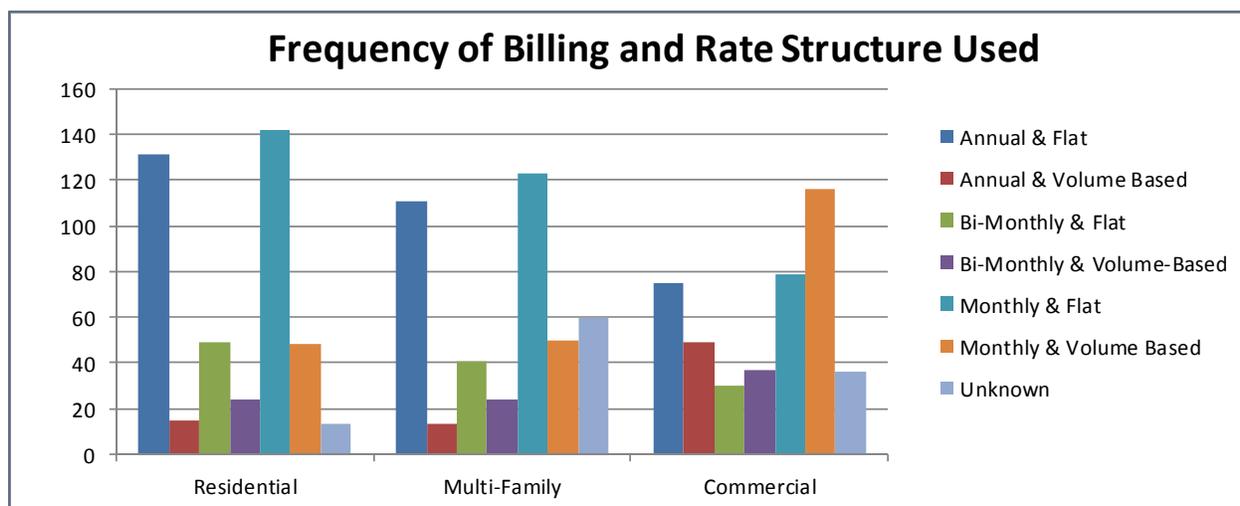
also used, but it is less common. The monthly basis for billing is likely used by utilities which are a combined water and wastewater utility. Billing for water on a monthly basis is a common water utility industry practice.

The next perspective reviewed was the rate structure used for each of the customer groups. As can be seen to the right, different rate structures are used. The survey did not provide detailed information on the rate structure other than a “flat” rate or “variable based upon water use.” In the graph to the right, the “variable based upon



water use” has been identified as “volume-based.” As can be seen in the graph, the predominate rate structure for the residential and multi-family customers is a flat rate. In contrast to this, a volume based rate is more commonly used for commercial customers, but a flat rate is also commonly used. As a point of reference, the District uses a flat rate for their residential and multi-family customers and a volume-based rate structure for their commercial customers.

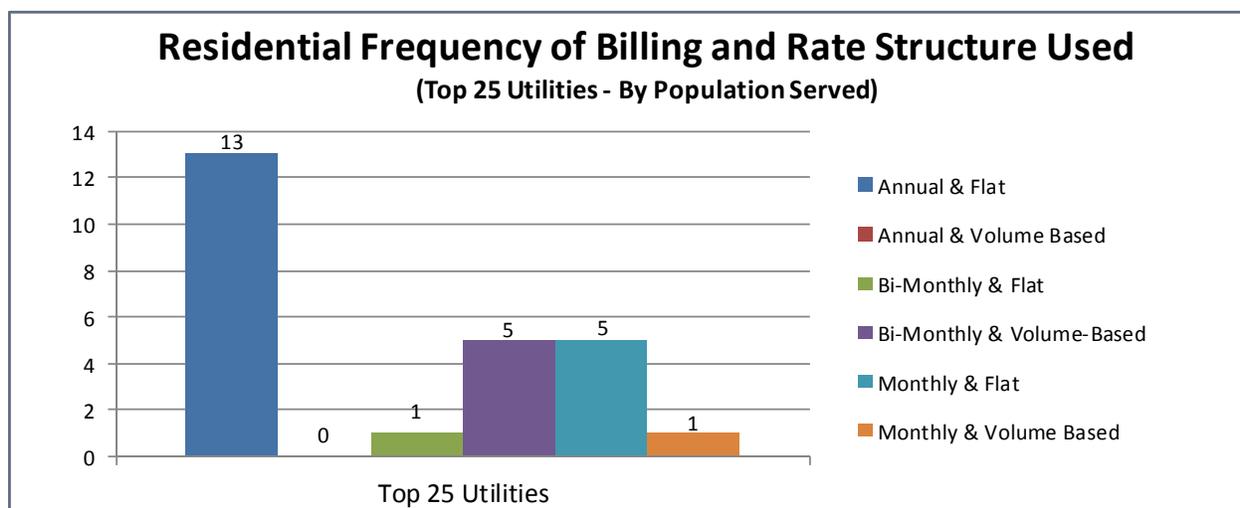
What is unclear from the graphs above is the most common approach when frequency of billing and rate structure are viewed at the same time. Provided below is a graph which views these two perspectives taken together.



For residential and multi-family customers, the predominant method of billing residential customers is on a monthly basis, using a flat rate structure. The next most predominate

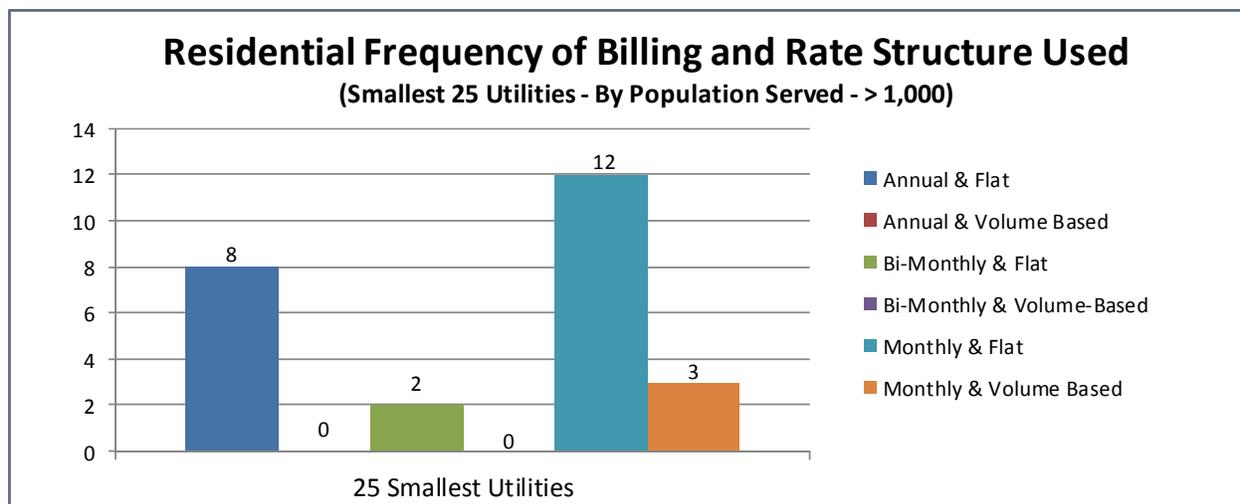
method is an annual billing using a flat rate structure, which is the approach the District uses. For the commercial customers, the predominant method is a monthly billing frequency and a volume-based rate structure. Monthly billing and a flat rate was the next most predominant method. The District’s method of annual billing with a volume-based rate is the 3rd most predominant method.

In viewing all of the above information, one might question whether the size of the utility makes any difference in the choices for billing frequency and rate structure. This may presume that a larger utility may be more “sophisticated” in their approach to billing frequency or rate structures. To gain a better perspective of this question, HDR sorted the survey for only the top 25 utilities. The “top 25” was defined by population served and did not pertain to a geographic area or particular level of service. Interestingly, the top 25 utilities serve a population of approximately 23.8 million, which equates to approximately 62% of the total population contained in the survey.



As can be seen above, the largest utilities predominately bill their residential customers on an annual basis, using a flat rate structure.

The other perspective is to view the rates for the 25 smallest agencies. In defining the smallest



agencies, HDR selected utilities that serve at least 1,000 in population. Intuitively, one would potentially suspect that a small utility may have limited resources and select the simplest method for billing (i.e. an annual, flat billing). In reality, as the graph above indicates, the predominate method of billing residential customers is on a monthly billing frequency and using a flat rate. This may suggest that the method of billing is not driven by size of the utility or level of sophistication, but rather access to necessary consumption data and administrative ease.

In summary, when viewing California utilities, the predominate approach for residential and multifamily customers is to bill on a monthly basis using a flat rate structure. Annual billing using a flat rate, similar to the District’s current practice is also very common. For the commercial customers, billing on a monthly basis using volumetric rates is the predominate approach. The District’s approach for their commercial customers, billing on an annual basis using a volumetric approach, is also fairly common.

3.4 Local Bay Area Rates

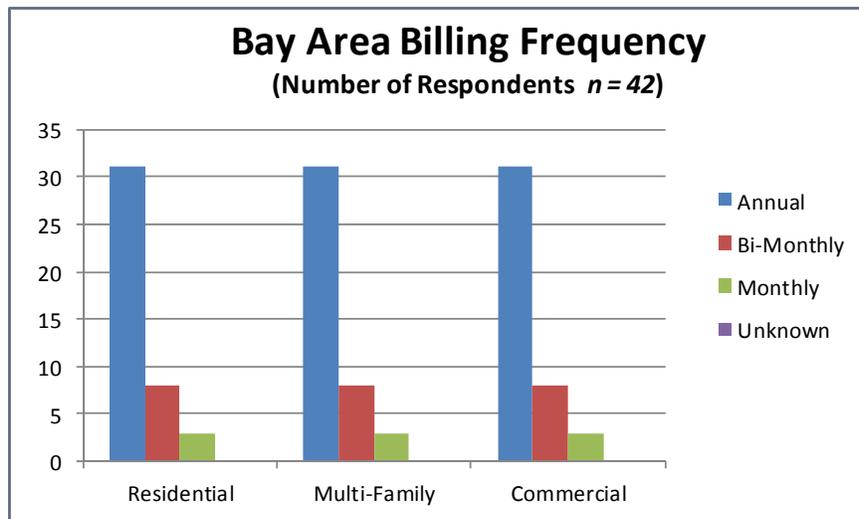
Utilizing the same survey data, HDR reviewed a number of local Bay-area utilities in the survey. In defining “local”, HDR selected the utilities from Marin, San Mateo, San Francisco and Sonoma Counties. As can be seen in Table 3-1, the District is located in Marin County.

Table 3-1 Overview of the Local Bay-Area Utilities/Agencies			
Utility/Agency	City	County	Population
Almonte Sanitary District	Mill Valley	Marin	1,400
Alto Sanitary District	Mill Valley	Marin	100,000
Central Marin Sanitation Agency	San Rafael	Marin	120,000
Las Gallinas Valley Sanitary District	San Rafael	Marin	30,000
Marin County Sanitary District No. 2	Corte Madera	Marin	12,000
North Marin Water District	Novato	Marin	400
Novato Sanitary District	Novato	Marin	52,750
Richardson Bay Sanitary District	Tiburon	Marin	10,000
San Rafael Sanitation District	San Rafael	Marin	38,000
Sanitary District No. 5 of Marin County	Tiburon	Marin	8,400
Sausalito-Marín City Sanitary District	Sausalito	Marin	10,000
Sewer Agency of Southern Marin	Mill Valley	Marin	29,000
Tamalpais Community Services District	Mill Valley	Marin	7,000
Tomales Village Community Services District	Tomales	Marin	210
San Francisco Public Utilities Commission	San Francisco	San Fran.	800,000
Bayshore Sanitary District	Brisbane	San Mateo	10,000
Belmont, City of	Belmont	San Mateo	26,147
Brisbane, City of	Brisbane	San Mateo	4,282
Burlingame, City of	Burlingame	San Mateo	30,000

Utility/Agency	City	County	Population
Devonshire County Sanitation District	Redwood City	San Mateo	2,587
Montara Water and Sanitary District	Montara	San Mateo	6,012
North San Mateo County Sanitation District	Daly City	San Mateo	102,593
Pacifica, City of	Pacifica	San Mateo	37,691
San Bruno, City of	San Bruno	San Mateo	41,114
San Carlos, City of	San Carlos	San Mateo	28,000
South San Francisco/San Bruno, City of	S. San Francisco	San Mateo	105,870
West Bay Sanitary District	Menlo Park	San Mateo	55,000
Airport Larkfield Wikiup Sanitation Zone	Santa Rosa	Sonoma	11,502
Bodega Bay Public Utility District	Bodega Bay	Sonoma	2,625
Geyserville Sanitation Zone	Santa Rosa	Sonoma	1,009
Graton Community Service District	Graton	Sonoma	1,500
Healdsburg, City of	Healdsburg	Sonoma	11,254
Occidental County Sanitation District	Santa Rosa	Sonoma	924
Penngrove Sanitation Zone	Santa Rosa	Sonoma	1,297
Petaluma, City of	Petaluma	Sonoma	62,000
Rohnert Park, City of	Rohnert Park	Sonoma	49,794
Russian River County Sanitation District	Santa Rosa	Sonoma	6,479
Santa Rosa, City of	Santa Rosa	Sonoma	169,000
Sea Ranch Sanitation Zone	Santa Rosa	Sonoma	1,109
Sebastopol, City of	Sebastopol	Sonoma	7,405
Sonoma Valley County Sanitation District	Santa Rosa	Sonoma	41,855
South Park County Sanitation District	Santa Rosa	Sonoma	14,508

Similar to the review undertaken for the California-wide utilities, HDR reviewed the bill frequency and rate structure characteristics of these local utilities.

In viewing the frequency of billing, an annual approach was the most predominant method.

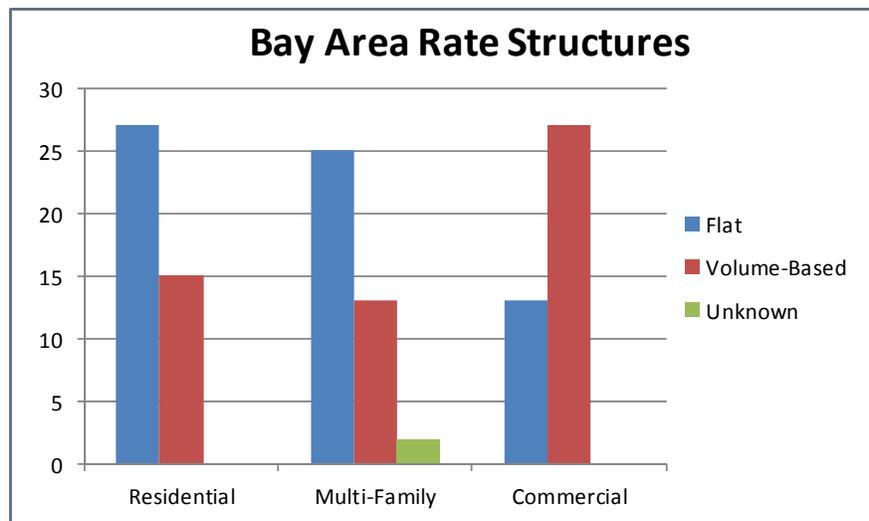


This is somewhat different than the California sample, in which monthly billing frequency was slightly more predominant than annual billing. In this case, for the local Bay-area sample, monthly billing is the least used method. The data and information within the survey does not provide a reason or clue for this result. Therefore, at least from a regional

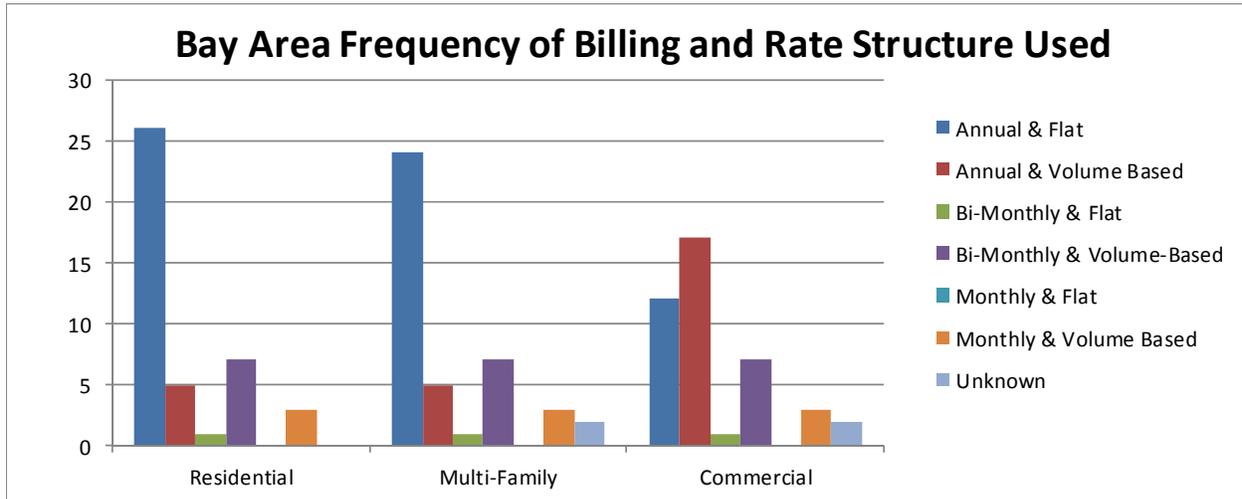
perspective, it appears that the District's annual billing approach reflects the practices of other neighboring utilities.

In viewing the form of the rate structures in use in the Bay Area, the results are similar to those

found in the wider California survey. That is, the use of a flat rate structure is predominately used for residential and multi-family customers, while a volume-based rate structure is used for commercial customers. As will be recalled, the District uses a flat rate structure for residential and multi-family customers and a volume-based rate for their commercial customers.



Finally, when both of these rate characteristics are viewed together, the results are not surprising. The results indicate that annual billings using a flat rate structure is the most



common method for residential and multi-family customers, while annual, volume-based billings were the most predominant for commercial customers. Again, this follows the current approach being used by the District to bill their residential, multi-family and commercial customers.

3.5 Detailed Review of Local Bay Area Rates

While billing frequency and the form of the rate structure provide some level of understanding and comparison, the other important aspect of a rate structure is the relationships established between the rates. In the case of the District, sewer service units (equivalent units) are used to establish these relationships.

To gain a better understanding of the rate relationships and strength-levels used by other utilities, a limited review was undertaken of other neighboring utilities. The information obtained in this review was from each utility’s web-site. In many cases, the web-site information regarding how certain customers may be handled was unclear or unavailable (e.g. mobile home parks, rooming house, etc.). This review attempted to place the rate relationships in the context of the District’s current rate schedules. Shown on Table 3-2 is a review of the rate relationships of the neighboring utilities that the District has used in the past for local rate comparisons. This review was provided to simply provide consistency between the District’s past rate comparisons and this study.

As can be seen on Table 3-2, the equivalencies for purposes of rate relationships are placed in the context of a single-family residential customer. This portion of the survey was not focused on the price (e.g. \$650/EDU/year), but rather the relationship of other customers to the single-family residential customer. For the single-family customers, a review was also undertaken of whether the single-family residential rate is based upon a flat rate or a flow-based amount, and if based upon a flow-based amount, is that amount determined using some measure of winter water use to eliminate possible outdoor or irrigation use. As Table 3-2 indicates, a flat rate is the predominate method of these local neighboring utilities, with only one utility billing single-family residential customers on the basis of winter water use..

In reviewing the rate relationships, the objective is to determine how utilities view different customer types (e.g. multi-family, hotels, motels, etc.) in relationship to a single-family residential customer. In other words, does the utility consider a multi-family living unit equal to a single-family residential customer, or something less? As can be seen, for vast majority of the utilities it was unclear how the multi-family customers are billed. In some cases, utilities will consider multi-family customers in context to the single-family rates. In other cases, multi-family is treated as a commercial (non-residential) customer and likely billed on a volumetric basis.

For motels and schools, it appears that the most common method is to treat the customer as a commercial customer and bill on an annual flow basis. For schools, the District's approach of a per student count appears to be out of step with other local agencies, although it is an industry accepted billing approach.

While Table 3-2 compared the District's rates to other Marin County utilities the District has used in the past for comparison purposes, Table 3-3 has expanded the viewpoint to a wider range of utilities. Table 3-3 uses the same survey information, but has broadened the definition of "local". In this slightly broader view, a number of utilities bill single-family residential customers using winter water use volumes. In addition, in viewing multi-family customers, a number of utilities consider these customers to have wastewater flow contributions, on a per living unit basis, which are less than a single-family residential customer. In the experience of HDR, it is not uncommon to assume the wastewater flow contributions for a multi-family customer to be in the range of 70% to 90% of a single-family residential customer. This assumption certainly has rate implications for multi-family customers.

“ . . . it is not uncommon to assume the wastewater flow contributions for a multi-family customer to be in the range of 70% to 90% of a single-family residential customer. This assumption has rate implications for multi-family customers.”

The survey also seemed to indicate that many of the rate categories used by the District are simply contained in the low-strength commercial rates at many utilities. For example, rooming houses are an unusual category and HDR found no direct reference to rooming houses in the utility's surveyed.

**Table 3-3
 Comparison of Basis of Rates and Equivalent Units for Other Bay-Area Utilities**

Rate Characteristic/Class	Las Gallinas USD	City of Rohnert Park	City of Burlingame	Dublin San Ramon Services Dist.	Novato Sanitary District	City of Petaluma	City of San Bruno	San Francisco PUC	City of Santa Rosa	West Borough Water Dist.	West Bay Sanitary Dist.	City of Palo Alto
Single-Family Dwelling	1.0	Flow-Based (1)	1.0 [3]	1.0 [5]	1.0 [8]	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Flow-Based Residential Rates?	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Flow Based Upon Winter Use?	N/A	Yes	Yes	N/A	Yes	Yes	Yes	Yes	Unclear	Yes	N/A	N/A
Apartment house, condominium, or other multi-family dwelling	1.0	Flow-Based (2)	0.94 [4]	0.58/0.68 [6]	[9]	0.87 [10]	Undefined	1.05	1.0	[11]	1.0	1.0
Mobile home park or trailer court (Per pad or space)	1.0	Flow-Based (2)	[4]	N/A	[9]	Undefined	Undefined	Undefined	Undefined	[11]	Undefined	Undefined
Rooming house												
Per Room	1.0 (2 rooms)	Flow-Based (2)	[4]	N/A	[9]	Undefined	Undefined	Undefined	Undefined	[11]	Undefined	Undefined
Additional Rooms	0.25/room	Flow-Based (2)	[4]	N/A	[9]	Undefined	Undefined	Undefined	Undefined	[11]	Undefined	Undefined
Motel Unit with Kitchen (per living unit)	1.0	Flow-Based (2)	[4]	[7]	[9]	Undefined	1.0	Undefined	1.15	[11]	Undefined	Undefined
Motel Unit without Kitchen (per living unit)	0.5	Flow-Based (2)	[4]	[7]	1.0	Undefined	1.0	Undefined	Undefined	[11]	Undefined	Undefined
Public or private schools without showers or cafeteria facilities (per pupil, facility member and employee)	0.01	Flow-Based (2)	[4]	[7]	1.0	Undefined	1.0	Undefined	Undefined	[11]	Undefined	Undefined
Public or private schools with showers or cafeteria facilities (per pupil, facility member and employee)	0.02	Flow-Based (2)	[4]	[7]	1.0	Undefined	1.0	Undefined	Undefined	[11]	Undefined	Undefined

[1] - Billing based on winter average/sewer cap
 [2] - Billing based upon actual metered use. Assumes irrigation use is separately metered.
 [3] - Billing based upon winter average/sewer cap; rate varies by customer type and in relationship to residential
 [4] - Billing based upon actual bi-monthly metered use. Rate varies between light commercial, heavy commercial and food related.
 [5] - Includes duplexes.
 [6] - Apartments are 0.58 and condominiums are 0.68
 [7] - Flow based upon potable water use, less the amount used outdoors. Rate varies by custome type to reflect differing strengths
 [8] - Residential varies based upon average use of the class - three tiers; High Use (1.8 EDU's), Average Use (1.0 EDU) and Low Use (0.6 EDU)
 [9] - Uses a square foot calculation and flow factor; District also uses a flow based upon average annual use for commercial customers
 [10] - Multi-Unit Residential is charged a lower per unit rate and a uniform volume rate equal to the residential volumetric rate
 [11] - No distinction is made between residential, multi-family and commercial customers

The final area surveyed for neighboring utilities was the issue of wastewater strength characteristics. Wastewater strength characteristics are often defined by biochemical oxygen demand (BOD) and total suspended solids (TSS). A customer's wastewater with higher strength characteristics requires greater treatment and hence, incurs greater costs to treat.

The District clearly delineates their assumptions surrounding the assumed strength characteristics of various types of customers. The source of the District's assumed characteristics by type of customer are unclear, but the assumptions used generally reflect industry literature as it relates to typical wastewater flow characteristics.

In many cases, utilities categorize customers by low, medium and high-strength and apply a uniform rate for each particular strength category. In the summary table provided, these relationships have either been shown as a low, medium, high category or in the rate relationship (e.g. a market with a disposal is charged 1.5 times the low strength customer rate).

"In general, the District's approach for commercial customers is consistent with other neighboring utilities. The approach can certainly be simplified, but it does fairly reflect the assumed and differing strength characteristics of the customer."

In general, the District's approach for commercial customers is consistent with other neighboring utilities. The approach can certainly be simplified, but it does fairly reflect the assumed and differing strength characteristics of the customer.

Provided below in Table 3-4 is a summary of the review of the commercial customers and the review of the strength characteristics.

Table 3-4
Comparison of Strength Levels for Other Bay-Area Utilities

User Group	Las Gallinas		City of Rohnert Park	City of Burlingame	Dublin San Ramon Services Dist.	Novato Sanitary District	City of Petaluma	City of San Bruno	San Francisco PUC	City of Santa Rosa	West Borough Water Dist.	West Bay Sanitary Dist.	City of Palo Alto
	BOD (mg/l)	SS (mg/l)											
	Relative Weight												
Residential	175	175	1.0	Low	Low	1.0	1.0	1.0	[3]	1.0	[4]	1.0	1.0
Commercial (General)													
Office/Retail	175	175	1.0	Undefined [1]	Low	1.0	Undefined [2]	1.0	[3]	1.0	[4]	1.0	1.0
Hotels/Motels	175	175	1.0	Undefined [1]	Low	1.0	Undefined [2]	1.0	[3]	1.0	[4]	1.0	1.0
Retail Shops	175	175	1.0	Undefined [1]	Low	1.0	Undefined [2]	1.0	[3]	1.0	[4]	1.0	1.0
Halls/Churches	175	175	1.0	Undefined [1]	Low	1.0	Undefined [2]	1.0	[3]	1.0	[4]	Undefined	1.0
Other Domestic Strength	175	175	1.0	Undefined [1]	Low	1.0	Undefined [2]	1.0	[3]	1.0	[4]	1.0	1.0
Laundromats	175	175	1.0	Undefined [1]	Low	1.4	Undefined [2]	0.93	[3]	1.0	[4]	Undefined	1.0
Service Stations/Car Washes	175	175	1.0	Undefined [1]	High	1.0	Undefined [2]	1.84	[3]	0.62	[4]	Undefined	1.0
Medical Offices	175	175	1.0	Undefined [1]	N/A	1.0	Undefined [2]	Undefined	[3]	1.0	[4]	Undefined	1.0
Hospitals/Convalescent Homes	175	175	1.0	Undefined [1]	N/A	1.0	Undefined [2]	0.93	[3]	1.0	[4]	1.0	1.0
Commercial (High Sewer Use)													
Restaurants/Cafes	1,000	600	2.6	Undefined [1]	Medium	2.2	Undefined [2]	1.42	[3]	1.32	[4]	1.25	1.55
Bakeries	1,000	600	2.6	Undefined [1]	Med./High	2.2	Undefined [2]	1.42	[3]	3.95	[4]	Undefined	1.0 [5]
Mortuaries	800	800	2.6	Undefined [1]	High	2.2	Undefined [2]	1.84	[3]	1.15	[4]	Undefined	1.0 [5]
Mixed Uses/Other	600	500	2.0	Undefined [1]	Undefined	N/A	Undefined [2]	Undefined	[3]	Undefined	[4]	Undefined	1.0 [5]
Hotels with Restaurants	600	500	2.0	Undefined [1]	Undefined	N/A	Undefined [2]	1.42	[3]	1.15	[4]	1.16	1.0 [5]
Dry Industry	175	175	1.0	Undefined [1]	Undefined	N/A	Undefined [2]	Undefined	[3]	Undefined	[4]	Undefined	1.0 [5]
Markets with Disposals	800	800	2.6	Undefined [1]	High	2.2	Undefined [2]	1.84	[3]	1.32	[4]	1.26	1.0 [5]
Other Industry/High Use	As determined by District			Undefined [1]	Undefined	N/A	Undefined [2]	TBD	[3]	Calculated	[4]	Calculated	
Public Agency:													
Schools	175	175	1.0	Undefined [1]	Low	1.0	Undefined [2]	1.0	[3]	1.0	[4]	0.99	
Offices	175	175	1.0	Undefined [1]	Low	1.0	Undefined [2]	1.0	[3]	1.0	[4]	0.99	

[1] - City has a Light Commercial, Heavy Commercial and Food-related categor, but not clear definitions on their website.

[2] - City has a Low, Medium and High-Strength rate. Low is 98% of the domestic rate, medium is 120% of the domestic rate and high-strength is 156% of the domestic rate

[3] - Rates for non-residential customers are billed based upon volume, TSS, FOG and COD. Where sampling is not available, standard parameter loadings are used.

[4] - No distinction is made on strength related characteristics

[5] - Only restaurants are defined as high-strength commercial customers. High-strength industrial may be separately calculated.

In summary, the District's rates and rate structures are within the standards of "generally accepted" industry practices. In making that statement, HDR is not implying or inferring that the District's rates and rate relationships could not be improved. Improvements can be achieved in the areas of equity/fairness and administrative ease. However, any change in rates or rate structures will impact customers in different ways and hold certain advantages and disadvantages. It is the balancing of these customer impacts, along with the advantages and disadvantages of a rate change which will be the focus of the remainder of this report.

3.6 Summary

This section of the report has provided a better understanding of the District's current rates in relationship to other California and local utilities. This review has provided an important point of view or context for considering any changes to the District's rates.



4. Review of Conceptual Rate Structures

4.1 Introduction

This section of the report is intended to provide the District with an understanding of the potential range of rate structure alternatives available. There are numerous ways in which sewer rates may be structured, and this review is not designed to eliminate alternatives, but simply understand the array of possible alternatives and the advantages and disadvantages of each.

4.2 Rate Structure Terminology and Sewer Rate Structures

A review of the rate structures from other sewer utilities across the U.S. reveals a wide variety of structures and approaches in use today. While it may seem that there are an endless number of different rate structures to be found, the reality is that they are all based upon a few basic rate design concepts. It is how these basic concepts are applied, modified, and combined that creates what appear to be endless possibilities. Provided below is a brief discussion of these basic rate design concepts.

Fixed and Variable Costs – The initial starting point in considering a rate structure is the relationship between fixed costs and variable costs. Fixed costs do not vary with the collection or treatment of wastewater. Debt service is an example of a fixed cost. In contrast, variable costs tend to change with the quantity of wastewater collected or treated. Examples of variable costs are the cost of chemicals and electricity. Sewer rate structures can be designed to contain a fixed and variable (volume) charge. While a sewer rate structure can be designed to contain a fixed charge and a volumetric (variable) consumption charge, in California the use of a fixed sewer rate for residential customers has historically been predominate for a variety of reasons. However, with recent legal requirements for residential metering, along with increasing wastewater bills, the issue of volumetric billing and customer equity is coming to the forefront. However, while there is now greater focus on volumetric sewer rates, the reality for many utilities, including the District, is the vast majority of their costs are fixed in nature.

“. . . in California, the use of a fixed sewer rate for residential customers has historically been predominate for a variety of reasons. However, with recent legal requirements for residential metering, along with ever increasing wastewater bills, the issue of volumetric billing and customer equity is coming to the forefront.”

Fixed Charges – Fixed costs are generally collected as a base charge. This charge may be called by various names (e.g., base charge, customer charge, readiness to serve charge, etc.), but in all cases, it is intended to collect all or a portion of the fixed costs that the utility incurs, regardless of the customer’s wastewater flow contributions. Fixed charges can vary by the type of

customer or be based upon an equivalent residential unit to approximate volumetric contributions. For example, a multi-family fixed charge may be set at 90% of the single-family equivalent residential unit (ERU) charge.

Volumetric Charges - While there are different approaches that can be used to collect fixed charges, the same can be said for variable or volumetric charges. Volumetric consumption charges are generally based upon metered water use. While some utilities use volumetric rate structures such as a tiered rate design, the fact remains that a uniform rate structure is the most common rate structure used for sewer utility volumetric charges. For sewer utilities, the more relevant discussion is the basis for the volume billed.

Volumes are typically billed on the basis of water consumptive use. However, in using water consumption data, consideration is often given to adjusting water use to attempt to only reflect the volume of water which is returned as wastewater. This is particularly true of residential customers in which as much as 60% of the annual use may be used for outdoor irrigation. To address this concern, many sewer utilities measure/utilize average winter water use as the basis for the sewer billing. Average winter water use is generally considered to fairly reflect indoor use and exclude outdoor irrigation use.⁶ While obviously not a perfect measurement of indoor use, measuring winter water use is considered to provide a reasonable surrogate for residential wastewater flows. For utilities which bill on a monthly or bi-monthly basis, average winter water use establishes a “cap” on the volume billed during the summer period. During the summer months, the customer is billed their winter use, or alternatively, the lessor of actual use or the average winter water use.

“Average winter water use is generally considered to fairly reflect indoor use and exclude outdoor irrigation use. While obviously not a perfect measurement of indoor use, measuring winter water use is considered to provide a reasonable surrogate for residential wastewater flows.”

For commercial customers, monthly or annual water consumption is often used as the basis for volumetric billing. In some cases, a utility will adjust the water consumption downward by a fixed factor to reflect that a gallon of water consumed does not equate to a gallon of wastewater flow. This concept may be referred to as the “return flow”. While technically more accurate, this adjustment adds a level of complexity to the rates and ultimately may not make a difference in the ultimate bill sent to the customer if the same return factor is used for commercial customers (e.g. 90%). Return factors can be developed for specific types of customers, but the return factors are simply best estimates. A utility would generally prefer for a customer to install irrigation meters if they have large areas of irrigation or low return flows.

⁶ Average winter water use is generally defined by a specific set of winter months (e.g. November – February). Each utility may define the winter months in a slightly different manner. The total water use during the winter period is divided by the number of months to establish the average winter water use (AWWU). The AWWU is generally calculated for each individual residential customer on an annual basis.

One of the major challenges or hurdles for volumetric sewer rates is access to water consumption data. For some utilities, water consumption data for certain customers may not be available due to the lack of metering. In other instances, such as the District, access to water consumption data is limited since the utility provides only sewer service and water consumption data must be collected from the local water utility.

Given this brief overview of rate design terminology and sewer rate design concepts, the focus now shifts to the District's conceptual rate structure options.

4.3 Review of the District's Current Fixed and Variable Costs

As a part of this study, HDR reviewed the District's budget documents to gain an understanding of the current relationship between fixed and variable costs. HDR reviewed the District's 2013-14 Operating and Maintenance Expense Budget. HDR reviewed each line item of the budget and classified the cost as either "fixed" or "variable" related.

"HDR considered 5.1% of the District's budget to be variable cost related. That means, from a simple fixed/variable cost perspective, there is limited cost basis for a significant portion of the District's rates to be billed on a variable or volumetric basis. "

In summary, of the total budget, HDR considered 5.1% of the District's budget to be variable cost related. That means, from a simple fixed/variable cost perspective, there is limited cost-basis for a significant portion of the

District's rates to be billed on a variable or volumetric basis.

4.4 Current Industry Thinking and Trends for Pricing of Sewer Services

At the present time, there are no specific federal or state agencies or national association requirements/regulation on sewer rate structures. The vast majority of sewer utilities follow the guiding principles of establishing cost-based rates that meet the utility's O&M and capital infrastructure requirements. The Environmental Protection Agency (EPA) provides pricing guidelines for wastewater utilities, but the focus is primarily on assuring adequate funding to maintain facilities, and not on a specific rate structure.

The California Urban Water Conservation Council (CUWCC) does have Best Management Practices (BMP) encouraging the adoption of volumetric-based sewer utilities.⁷ The CUWCC and other conservation experts believe that having volume-based sewer rates, where the billing is based upon water consumption, encourages water conservation. Whether the majority of consumers make the connection between the volumetric portion of their sewer bill and their water consumption is unclear. Simply stated, most sewer utilities do not adopt volume-based sewer rates to encourage water conservation. Rather, most sewer utilities view volumetric-based billing as a method to enhance customer equity.

⁷ The District is not a member or signatory to the CUWCC.

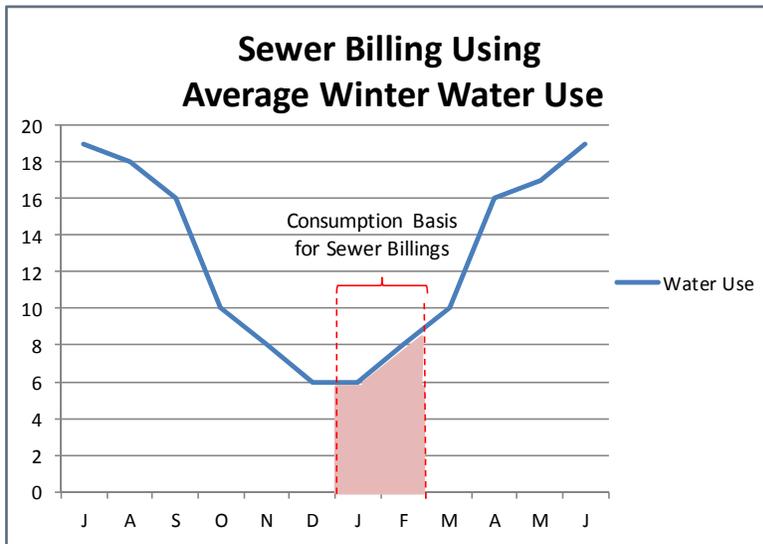
4.5 Review of the Residential Conceptual Rate Structures

At the present time, the District’s rates are segregated between residential, schools and other (commercial). The residential customers are segregated by type of residential or living unit customer. At the present time, the District has the following residential categories within their rates and associated sewer service units:

- Single-Family Dwelling 1.0 Per Living Unit
- Apartment House, Condominium or Other Multi-Family Dwelling 1.0 Per Living Unit
- Mobile Home Park or Trailer Court 1.0 Per Mobile Home Pad and 1.0 Per Trailer Space
- Rooming House 1.0 Per Living Unit
- Motel Unit with Kitchen 1.0 Per Living Unit
- Motel Unit without Kitchen 0.5 Per Living Unit

As can be seen, the existing rate structure uses a per living unit approach and generally treats the majority of residential customers as one living unit. The only exception is a motel unit without a kitchen which is treated a 0.5 living units.

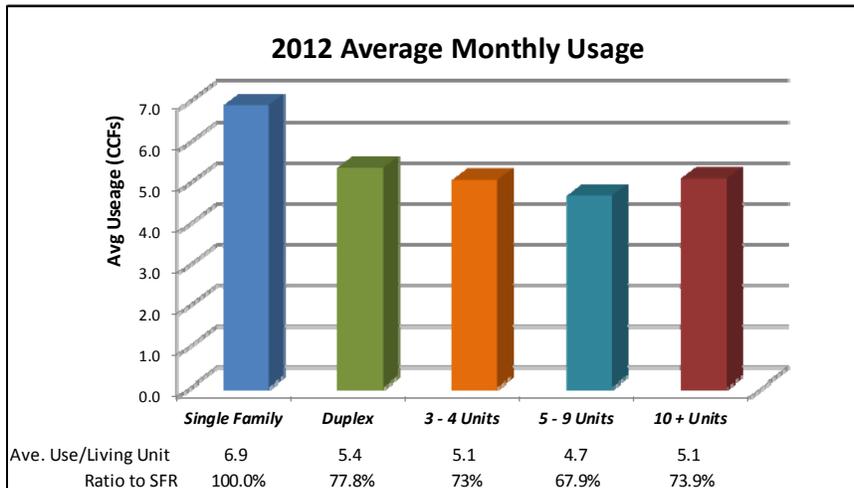
It is important to understand the basis for determining wastewater contributions (flows). As



discussed above, wastewater flows and volumetric billings for residential customers are typically based upon a customer’s average winter water use (AWWU). The concept of using average winter water use for a residential volumetric billing is to attempt to eliminate the outdoor (irrigation) water use component from the billing. The winter time period is presumed to primarily reflect “indoor” use. The average winter water use may be defined in slightly different ways at different

utilities, particularly when there is a limitation or constraints on the availability of water consumption data. In the case of the District, a two month period of mid-December to mid-February is currently used to determine average winter water use, or flow contributions for residential customers. The chart above illustrates the basis for residential volumetric billings.

To better understand whether the current residential rate relationships reflect the wastewater contributions of these different customer types, a review was undertaken of the 2011 and 2012

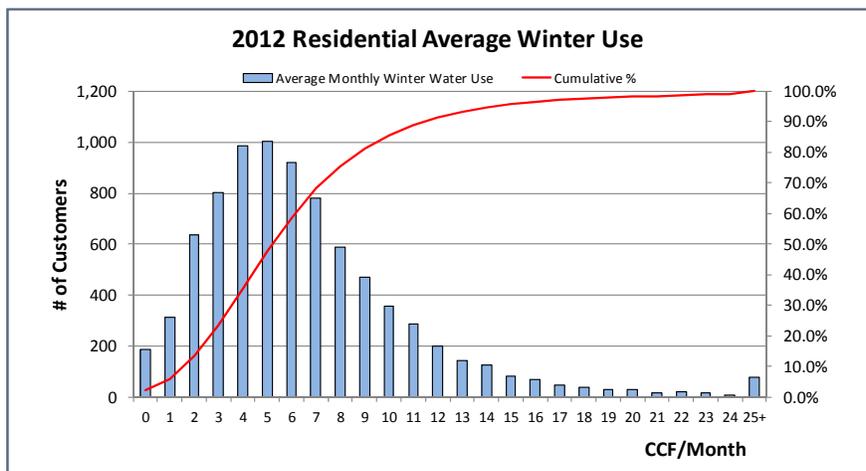


water consumption data for these customers. The graph at left illustrates the general findings when both years were reviewed. The average residential customer has a monthly wastewater contribution (flow) of approximately 6.9 hundred cubic feet (CCF).⁸ In contrast to this, on a per living unit basis, the typical multi-family customer has

a flow contribution of approximately 4.7 to 5.4 CCF per living unit. This means that on a flow basis, a multi-family customer contributes approximately 70% to 80% of a single-family residential home. This is a common finding given the differences between a single-family home and a multi-family living unit. On a per living unit basis, there may be more people in a single-family home, and certain water using devices (e.g. clothes washer, dishwashers, etc.) which may not be included within a multi-family living unit.

For the residential customers, the implications of this observation is the relationships in living units (billing units) between single-family residential and multi-family residential should be

further explored. At the same time, when the single-family residential customers are reviewed for their average winter water use, a large majority of customers use 10 CCF/month or less. However, there are a small group of single-family residential customers that use significant quantities of winter water use. Any



movement towards a volumetric sewer rate for these single-family residential customers would likely have a significant financial (bill) impact upon them. At the same time, it is difficult to imagine that these large residential customers are contributing only indoor use. It is suspected

⁸ A hundred cubic feet of water is equal to 748 gallons. A customer with 6.9 CCF/month of contribution would be equal to approximately 5,200 gallons per month.

that there is an outdoor irrigation component to this minority of customers, but that was not reviewed or confirmed as a part of this study.

Given the above review of consumption patterns and usage it was determined that the following residential rate structure options should be explored in greater technical detail:

- Fixed/Variable Rate Structure; No adjustments to living unit relationships
- Fixed/Variable Rate Structure; Adjust the living unit relationships
- Fixed Rate Structure; Adjust the living unit relationships

“While a rate structure may be feasible to design, it may be difficult or costly to implement or administer once it is in place.”

An important aspect of any new rate structure is the issue of implementation and administration. While a rate structure may be feasible to design, it may be difficult or costly to implement or administer once it is in place. In the end, the selection of any rate structure must balance the various objectives and issues associated with the rate design, and the ability of the utility to easily implement and administer the rate.

4.6 Review of the Commercial Conceptual Rate Structures

At the present time, the District’s commercial rate structures use a form of volumetric pricing to establish the bill. Each customer’s winter and summer average use is converted to units, which is then multiplied by the per unit rate. While residential rates often view average winter water use, commercial sewer rates are often billed on the monthly water use of the customers. When there is significant outdoor irrigation use for the commercial customer, a customer can install an irrigation meter which is not billed for sewer rates. In the case of the District, with the limitation of access to water consumption records, the use of a winter/summer average is a reasonable surrogate to reflect volumetric contributions. At the same time, this approach seems to be an administratively workable approach for the District. While the overall approach to estimating commercial volumes appears to be reasonable, there does appear to be at least two issues which need to be addressed as a part of the technical review of commercial rates. These two issues are noted below.

The development of the per unit rate is based upon the assumed characteristics of a single-family residential customer. As noted above, a single-family customer is assumed to use an average of 7 CCF per month. For purposes of developing volumetric billing units for commercial, the current approach assumes 10 CCF per month, per unit. Therefore, the commercial rate needs to be adjusted to reflect the assumption contained within the residential rate. The impact of this change would be two-fold. First, lowering the per unit assumption would potentially increase the number of sewer units a customer may be billed. However, at the same time, the per unit rate may be decreased since the District would be collecting the same level of revenues, but over a greater number of commercial sewer (billable volume) units.

The second commercial issue is the assumed strength characteristics of the commercial customers. The vast majority of commercial customers are assumed to be domestic (low) level strength customers. A few customers are considered to be high strength wastewater customers, with strength being measured in biochemical oxygen demand (BOD) and suspended solids (SS). As a part of the review of commercial customers, the strength parameters for the commercial customers should be reviewed and updated as appropriate.

4.7 Linkage Between Residential and Commercial Rates

As noted above, there is a certain linkage between the residential and commercial rates. In developing the alternative rate structures, it is important to understand that the fixed charges and variable charges are linked between residential and commercial customers. While the District's residential and commercial rates appear to be separate and independent of each other, the reality is they are linked for purposes of "symmetry". Much like the current rate of \$647/unit which is charged to both residential and commercial customers, any movement to a volumetric rate must have this same symmetry or linkage.

4.8 Summary

This section of the report has discussed the general concepts used in setting cost-based sewer rates. Given a review of the District's customer's and usage patterns, three conceptual residential rate structures were proposed for more detailed technical review. The next section of the report will review the detailed technical review of these conceptual rate structures.



5. Technical Review the Rate Structures

5.1 Introduction

This section of the report discusses the technical review undertaken of the various rate structures. In the case of the District, three variables were reviewed in greater detail, along with the potential bill impacts to customers.

5.2 Summary of the Rate Design Options Reviewed

In the prior section of the report, it was noted that the current fixed structure could potentially be changed to a fixed/variable rate structure to reflect the way the District incurs costs. At the same time, the section reviewed the consumptive use of residential and multi-family customers and noted that some adjustments in the relationship between residential and multi-family could occur. More specifically, the report noted that the following options should be explored in more technical detail:

- Fixed/Variable Rate Structure; No adjustments to living unit relationships
- Fixed/Variable Rate Structure; Adjust the living unit relationships
- Fixed Rate Structure; Adjust the living unit relationships

In developing these particular options, they have attempted to isolate the issues of fixed/variable rate structures from the relationships between residential and multi-family customers. At the same time, the prior section noted that the commercial rates should be “linked” to the residential and multi-family customers. This referred to how sewer equivalency units are determined. If the definition of a single-family residential is changed to 7 CCF/month to reflect the findings of this study, then the commercial definition of a sewer unit should also be changed to 7 CCF/month. This would establish consistency and equity between residential, multi-family and commercial customers in terms of how a sewer unit is defined.

For purposes of this section of the report, six different rate options or alternatives were explored.

“A” Options – Only review fixed/variable and multi-family relationship. No adjustments for commercial equivalencies

- ✓ Option 1a 95% Fixed/5% Variable – Current Sewer Unit Equivalencies
- ✓ Option 2a 95% Fixed/5% Variable – Adj. Multi-Family Sewer Unit Equivalencies
- ✓ Option 3a 100% Fixed – Adjust Multi-Family Sewer Unit Equivalencies

“B” Options – Review both fixed/variable and multi-family relationship and adjustment for commercial equivalencies

- ✓ Option 1b 95% Fixed/5% Variable – Adjust Commercial Sewer Unit Equivalencies; No Change to Multi-Family Equivalencies
- ✓ Option 2b 95% Fixed/5% Variable – Adjust Multi-Family and Commercial Sewer Unit Equivalencies
- ✓ Option 3b 100% Fixed – Adjust Multi-Family and Commercial Sewer Unit Equivalencies

To better understand the various options, Table 5-1 has provided a side-by-side comparison of the key features of the options along with an overview comparison of the technical aspects of each option.

**Table 5-1
Summary Comparisons of the Rate Design Options**

Option	Structure	Adj. Multi-Family Relationship?	Adj. Comm. Equivalency?	Impact of Adjustments	Revenue Impact [1]	Change in Total Number of Billable Units?	Rate Impact
1a	F/V	No Change	No	Creates a F/V rate; No other adjustments	None	No	Reduces the fixed charge rate since a portion of revenue is to be collected via variable rate; establishes a variable (volumetric) rate
2a	F/V	Adj. to 80% of SFR	No	Creates a F/V rate and adjusts SFR/MF relationship	None	Yes, Less Billable MF Units [2]	Less fixed billable units increases the fixed rate charge; establishes a variable (volumetric) rate
3a	Fixed	Adj. to 80% of SFR	No	Leaves structure as is & adjusts SFR/MF relationship	None	Yes, Less Billable MF Units	Increase the fixed rate share given less billable MF Units and less overall total billable units.
1b	F/V	No Change	Yes	Creates a F/V rate; does not address SFR/MF relationship; creates a common definition of a sewer unit	None	Yes, Same MF Billable Units, More Comm. Billable units	Fixed charge rate reduces as a result of the increase in commercial billable units from linkage to SFR definition of a billable unit, along with change to a portion of the rate being collected from a volumetric rate; establishes a variable (volumetric) rate.
2b	F/V	Adj. to 80% of SFR	Yes	Creates a F/V rate; addresses SFR/MF relationship & establishes a common definition of a sewer unit	None	Yes, Less MF Billable Units, More Comm. Billable Units	Fixed charge rate changes by the net impact of reduction in MF units and increase in commercial billable units from linkage to SFR definition of a billable unit, along with change to a portion of the rate being collected from a volumetric rate; establishes a variable (volumetric) rate.
3b	Fixed	Adj. to 80% of SFR	Yes	Leaves structure as is; addresses SFR/MF relationship & establishes a common definition of a sewer unit	None	Yes, Less MF Billable Units, More Comm. Billable Units	Fixed charge rate changes by the net impact of reduction in MF units and increase in commercial billable units from linkage to SFR definition of a billable unit

[1] - The total revenue impact is assumed to be \$0 since all rates are designed to collect the same overall total revenue. The revenue paid by individual classes may change

[2] - There is no change in the total living units, but there are less billable units if one MF living unit is considered .8 billable living units

As can be seen in Table 5-1, three key variables were considered in this study; fixed versus a fixed/variable structure, the adjustment of the relationship between single-family and multi-family, and the use of a common definition for a sewer equivalency. The use of the common definition for a sewer equivalency would link the definition used for single-family residential to the commercial class of service.

5.3 Understanding the Technical Impacts of the Changes

While Table 5-1 has provided an overview of the options to be explored, it is also important to understand the technical impacts of the options. In other words, why do the rates change, and in some cases a rate may increase or decrease, along with the projected bills for the customers when compared to the current rates. To better understand this aspect of the rates, the right hand side of Table 5-1 provides a simple overview of the technical impacts of each option.

As can be seen in Table 5-1, when comparing back to the District's current approach of a fixed charge rate design, each of the options will have a slightly different technical impact upon the final rate design. From a very simple perspective, moving to a fixed variable charge will reduce the fixed charge portion of the rate since a portion of the revenues is now collected via variable charges. When the multi-family relationship is changed to 80% of a single-family customers, the fixed charge must go up since the same total amount of revenue must be collected, but with less total billable units. The adjustment to multi-family essentially reduces the total multi-family billable units by 20%. Finally, when the definition of the commercial sewer equivalency unit is tied to the single-family residential definition the impact is more commercial billable units, which, one its own, will reduce the fixed charges since the same total level of revenue is being divided by more billable units. What is unclear from a technical perspective is the net impact or effect when these various elements are combined. Hence, the need to conduct the detailed technical analyses to understand the potential impacts to each of the major customer groups.

5.4 Limitations of the Technical Analysis Undertaken

The technical analysis undertaken as a part of this study is not a comprehensive sewer rate study and the rates developed as a part of this study should not be considered for direct implementation. A comprehensive sewer rate study, for purposes of establishing and adopting rates is a more detailed study, and more importantly, the billable units and consumption data is more closely audited and verified. The customer data and consumption information used within this study was obtained from a third party (MMWD) and the data is assumed to be reasonable for purposes of this study. However, when the District's establishes their rates and bills customers on an annual basis, the data from the Water District is carefully reviewed and audited to help assure that customers from the Water District file are properly coded.

The objective of this report was to view the potential policy issues and estimated rate impacts of any revision to the District's rate structures. From that perspective, the level and quality of

technical analysis conducted by HDR is appropriate to allow the District’s Board to make an informed and rational decision.

5.5 Review of the Various Rate Options

Provided below is brief discussion and summary of the rate options reviewed in more technical detail. This discussion is intended to provide an understanding of the differences between the various options, along with an understanding of the impacts to key customer groups. A more detailed set of technical exhibits is included in the Technical Appendices.

5.5.1 Option 1a: 95% Fixed/5% Variable – Current Sewer Unit Equivalencies

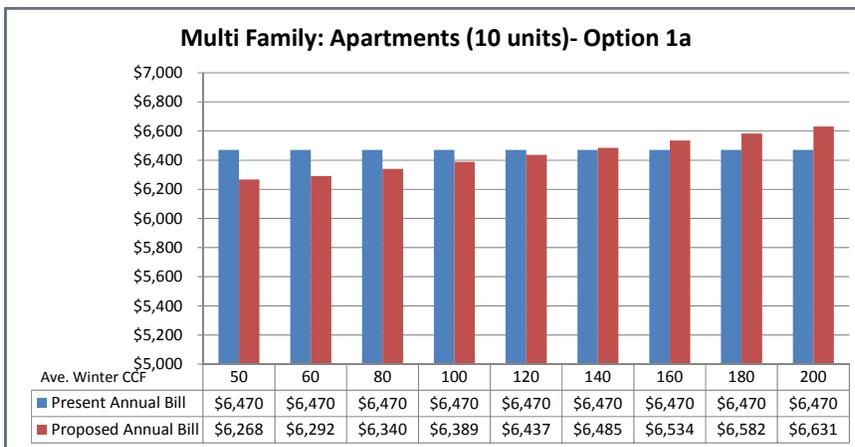
The first option is a fixed/variable rate and maintains the current sewer equivalencies. Based upon the analysis of the District’s costs, it was determined that approximately 95% of the District’s costs are more fixed in nature and 5% are variable in nature. Provided below is a summary of the rate option.

Option 1a - 95% Fixed/5% Variable – Current Sewer Unit Equivalencies		
	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$614.65/sewer unit	\$2.42/CCF
Multi-Family	614.65/sewer unit	2.42/CCF
Commercial	614.65/sewer unit	2.42/CCF

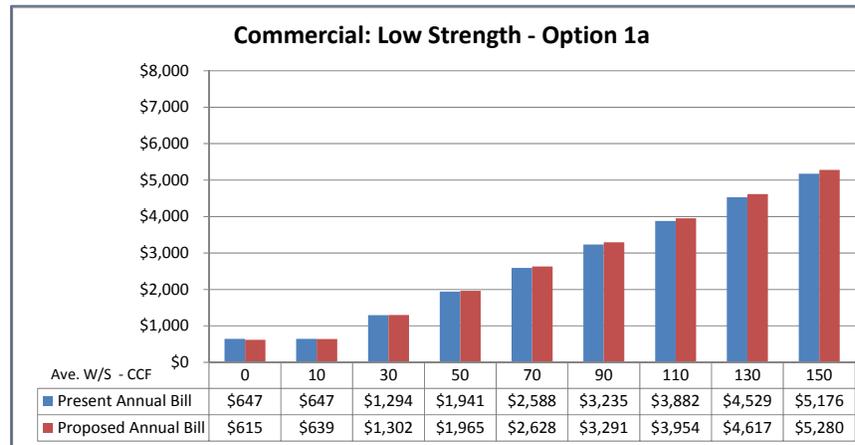
As can be seen, under this rate option, there is a fixed rate and a variable rate. The fixed rate is the annual rate per equivalent unit and the variable rate is based upon the measured volume for the two month period. The volume rate is not annualized, but multiplied by the 2-month consumption period. For residential it is the sum of the January and February time period and for commercial it is the average of the winter and summer period.



A series of annual bill comparisons were developed for the rate option. A bill comparison is intended to illustrate the impacts to various types of customers and at varying levels of usage.



As can be seen, the residential bill comparison shows the present rate at \$647/year, regardless of the volumetric use of the customers. In contrast to this, the proposed annual rate is composed of a fixed charge and a variable charge. The impact of that structure is a customer with lower use may see a slight reduction in their annual bill. In contrast to this, a customer using more than the average of 14 CCF for the two month winter period will see a slight increase in their bill. In viewing this bill comparison, it is important to remember that this bill comparison does not reflect the potential impacts to all customers. As noted in the previous section of this report, there were some



residential customers in the data set which had much higher usage than the 30 CCF shown in the bill comparison.

For the multi-family bill comparison, a 10 unit complex was selected. Similar to the residential rate structure, customers using less than the average (14 CCF winter use x 10 units = 140 CCF)

will likely have a small decrease in the annual bill and those customers with greater than average use will have a slight increase in their bill.

Finally, the commercial customers are represented by a bill comparison for low-strength customers. The vast majority of the District’s commercial customers are low-strength. As will be recalled, for commercial customers, the District essentially has a volumetric rate since the average of winter and summer usage is currently used to determine billable sewer units. While there would be some slight changes to the commercial bills under this option, it is not as large as the residential and multi-family customers which have a “true” fixed charge rate.

Contained within the Technical Appendix A are additional bill comparisons for this option for a duplex, commercial medium strength and commercial high strength customer. While this option has provided a volumetric rate, it has not addressed the issue of the volumetric relationship between single-family residential and multi-family. Option 2a addresses the issue of adjusting the multi-family sewer unit equivalencies.

5.5.2 Option 2a: 95% Fixed/5% Variable – Adjust Multi-Family Sewer Unit Equivalencies

Option 2a is designed to use a similar rate structure approach as the previous option, but better reflect the differences between single-family and multi-family sewer unit equivalencies. Shown below is the Option 2a rate design.

Option 2a - 95% Fixed/5% Variable – Adj. Multi-Family Sewer Unit Equivalencies		
	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$641.90/sewer unit	\$2.42/CCF
Multi-Family [1]	513.50/sewer unit	2.42/CCF
Commercial	641.90/sewer unit	2.42/CCF

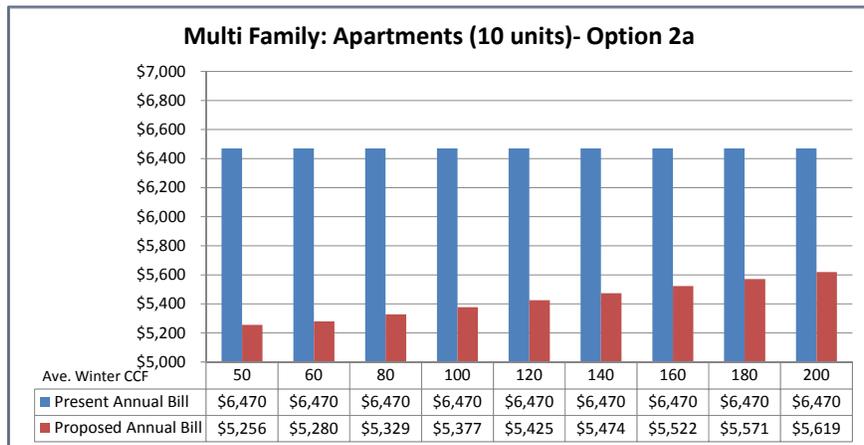
[1] – Assumes multi-family is 80% of single-family residential

In viewing Rate Design Option 2a, three items should be noted. First, the variable rate is the same as the previous option. Under this option, the variable rate still collects 5% of the District’s costs and the assumed volumes for calculation of the variable rate also do not change. The data which is used to derive the volumes already contains the multi-family average use. The second item is the fixed rate for residential and commercial is greater than Option 1a. As noted in Table 5-2, the same level of revenue must be collected, and with reduced multi-family billing units, the fixed rate must be increased to collect the same level of revenue. Finally, it should be noted that the rate shown for multi-family is less than the single-family and commercial. In this case, it has been assumed that the rate will be set at 80% of the single-family rate and for purposes of rate administration the District will simply need to count multi-family living units and multiply the number of living units by the rate. Alternatively, the District could maintain the same fixed rate for all customers, but then multiply the multi-family living units by 80% to reflect the single-family and multi-family differential.

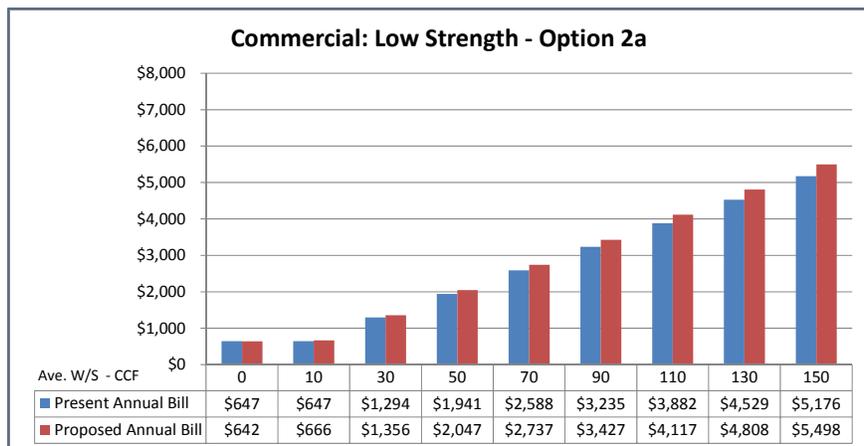
The bill comparisons developed for this option are similar to the prior option, but the bill impacts are certainly different. In the case of residential customers, the savings for low use customers compared to the existing rates are lower and the bill impacts to larger residential users are slightly greater.



For the multi-family customers, the bill comparison appears much more pronounced. In part, this is a reflection of the scale used within the graph, but obviously the adjustment to the fixed charge rate to reflect the multi-family volumes is the driving factor. In essence, assuming a relationship of 80% of single-family provides roughly a 20% reduction compared to the existing rate. It is not exactly a 20% reduction since the rate is not 100% fixed.



For commercial, and similar to the previous option, the impact of the adjustment to multi-family rates is not a significant impact to the bills, one way or the other.



Contained within the Technical Appendix B are additional bill comparisons for this option which also provide comparisons for duplex, commercial medium strength and commercial high strength. While these rate options have presented a volumetric option, during our review of the administration of the rate, the District raised concerns about the administration of a volumetric residential sewer rate. This aspect of the study is discussed in more detail at the

end of this section of the report, but as a result of those concerns, HDR developed a 100% fixed rate option which adjusts for the multi-family issue.

5.5.3 Option 3a: 100% Fixed – Adjust Multi-Family Sewer Unit Equivalencies

Option 3a utilizes the District’s existing 100% fixed rate design, but adjusts for the multi-family sewer unit equivalencies. Shown below is this rate option.

Option 3a – 100% Fixed – Adjust Multi-Family Sewer Unit Equivalencies		
	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$675.65/sewer unit	\$0.00/CCF
Multi-Family [1]	540.50/sewer unit	0.00/CCF
Commercial	675.65/sewer unit	0.00/CCF

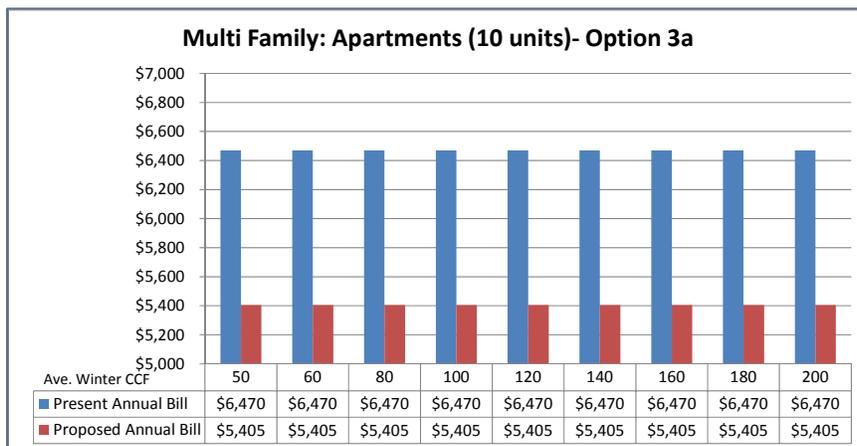
[1] – Assumes multi-family is 80% of single-family residential

This rate structure essentially increases the fixed charge rate for residential and commercial to compensate for the reduced billing units for the multi-family customers. Under this rate option, there is no variable charge. The variable rate shown in the table is simply to provide a consistent format for displaying the rates.

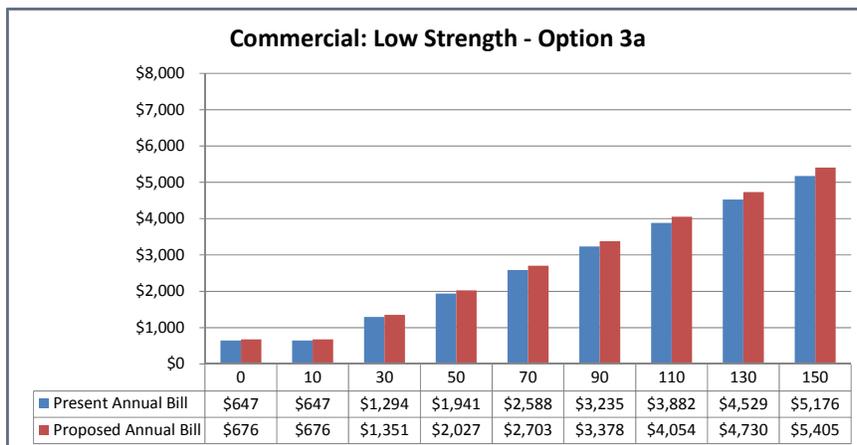
Similar to the prior rate option, the multi-family rate is shown with the reduction in the rate so the District can simply multiply the multi-family living units by the rate. It is presumed that this approach will simplify the rate administration of the multi-family customers.



The bill comparisons for this option are similar to the previous comparisons, but the results are somewhat different. For the residential bill comparison, under the proposed bill, residential customers will pay a slightly greater bill under this option. As the multi-family billing units are decreased, to maintain a revenue neutral rate, the impact is an increase in the per unit rate for residential and commercial customers.



The multi-family annual bill comparison is similar to the prior option in which multi-family will see a reduction in their bill under this option.



Finally, for low-strength commercial customers, the annual bill impacts are not significant. However, similar to the residential bill comparison it appears under this option that all commercial customers will see an increase in their annual bill. However, in most cases, it is a relatively

modest adjustment or increase.

Contained within the Technical Appendix C are additional bill comparisons for a duplex, commercial medium strength and commercial high strength customer.

While these options have explored the impacts of volumetric billing and adjusting for multi-family sewer unit equivalencies, they have not addressed the issue of the linkage between the

definition of one (1) single-family sewer unit and a commercial unit. The technical review of the “b” options explored the impacts of factoring in this final adjustment.

5.5.4 Option 1b: 95% Fixed/5% Variable – Adjust Commercial Sewer Unit Equivalencies; No Change to Multi-Family Equivalencies

Option 1b is similar to Option 1a, but the difference is the commercial volumetric use was adjusted for sewer equivalencies to reflect the single-family residential definition. For the options developed above, the definition for a single-family residential customer was 7 CCF/month or 14 CCF for the two month winter period. This rate option is shown below.

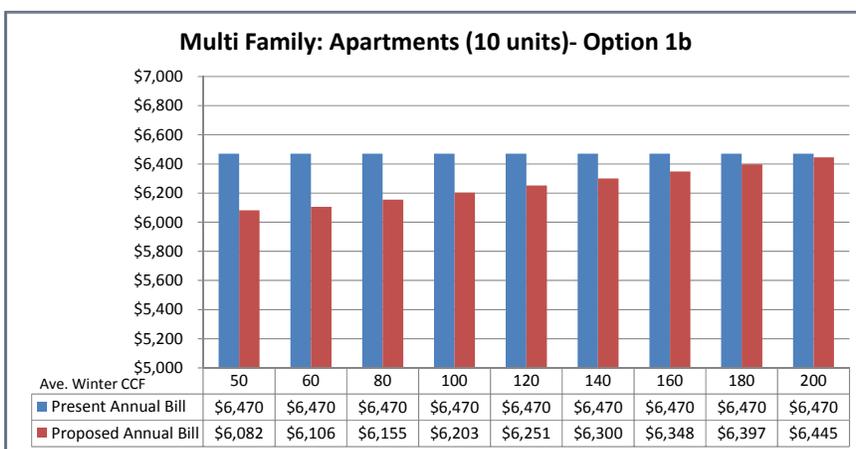
Option 1b - 95% Fixed/5% Variable – Adjust Commercial Sewer Unit Equivalencies; No Change to Multi-Family Equivalencies

	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$596.10/sewer unit	\$2.42/CCF
Multi-Family	596.10/sewer unit	2.42/CCF
Commercial [1]	596.10/sewer unit	2.42/CCF

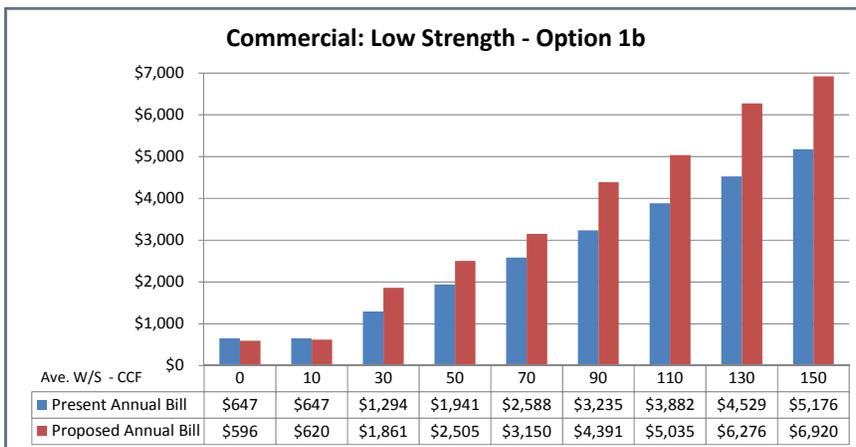
[1] – Assumes 1 commercial sewer unit = 1 residential sewer unit (7 CCF/Month)

In comparison to Option 1a, this rate option produces a greater number of commercial billable sewer units. Technically, this reduces the fixed rate by almost \$20/sewer unit when compared to Option 1a. Similar to Option 1a, no adjustment is taken into account for the single-family and multi-family relationship. Hence, this option has the same fixed charge rate for the residential and multi-family customers. The residential, multi-family and commercial low use bill comparisons for this option are shown below.

The bill comparisons for this option are different when compared to the Option 1a bill comparisons. As can be seen for residential, the impact is fairly significant in that the majority of customers would see a reduction in their annual bill under this option. Up to about 22 CCF (2 month period) may see a reduction in their annual bill. Large volume residential customers will see an increase in their annual bill, and as noted under Option 1a, this bill comparison does not include the total range of residential consumption. There are residential customers with fairly significant winter water use.



For multi-family, under the bill comparison shown, the majority of customers should see a comparable or slightly reduced bill. While this rate is a volumetric rate, the impacts to larger user customers should be minimal. A multi-family customer using the average/living unit volume will see a decrease under this rate option.



For commercial customers, the impacts may vary. With the change in the definition of a sewer unit, certain customers will likely see an increase in the number of sewer units billed, but offsetting the potential increase in the sewer units is the decrease in the actual rate paid. The majority (about 65%) of low strength customers use less than 50 CCF per month. However, there are a number of high use customers over 150 CCF per month. It is also important to

understand that the District currently calculates their commercial sewer billing units on a whole basis (e.g. 2.0 units).

Contained within the Technical Appendix D are additional bill comparisons for this option for a duplex, commercial medium strength and commercial high strength customer.

5.5.5 Option 2b: 95% Fixed/5% Variable – Adjust Multi-Family and Commercial Sewer Unit Equivalencies

Option 2b is similar to Option 2a, but has included the adjustment for commercial sewer unit equivalencies. As will be recalled, this option is a fixed/variable rate with adjustment for the multi-family customers. Shown below is this rate option.

Option 2b - 95% Fixed/5% Variable – Adjust Multi-Family and Commercial Sewer Unit Equivalencies		
	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$621.30/sewer unit	\$2.42/CCF
Multi-Family [1]	497.30/sewer unit	2.42/CCF
Commercial [2]	621.30/sewer unit	2.42/CCF

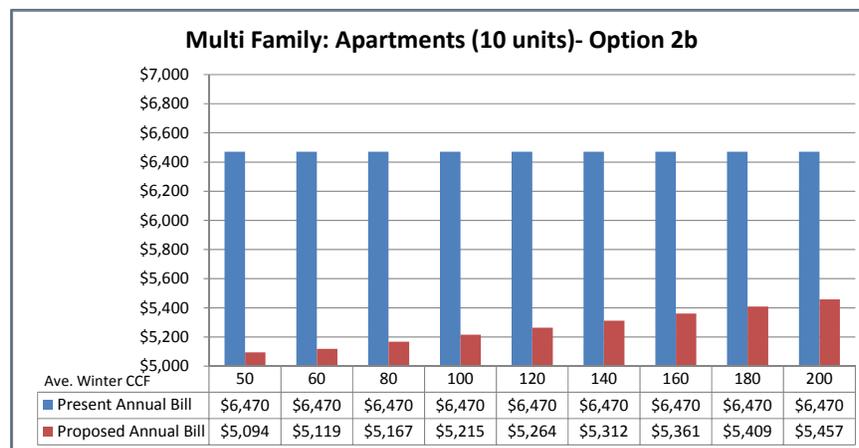
[1] – Assumes multi-family is 80% of single-family residential
 [2] – Assumes 1 commercial sewer unit = 1 residential sewer unit (7 CCF/Month)

As can be seen in the above table, compared to Option 2a, this option has reduced the fixed charge rate since there are more commercial billing units. Similar to Option 1b, the fixed charge is reduced by approximately \$20/unit compared to Option 1b. The bill comparisons for this rate option are shown below.

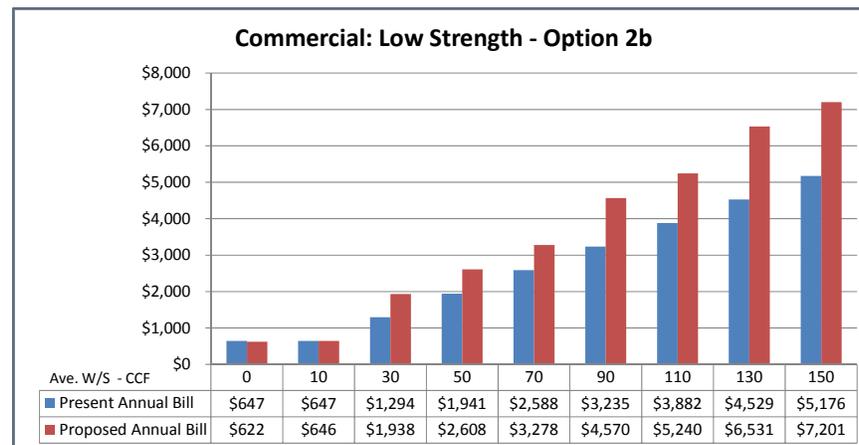
The bill comparison for the residential customer is similar to the prior option in that under the



proposed rate that some low use residential customers will see a slight reduction in their bill. A number of residential customers will likely experience a small increase in their annual bill. Similar to the concerns raised with the other residential options for a fixed/variable rate, there are a number of residential customers with high volumetric use in the winter water period which will see significant bill increases under this alternative.



For multi-family, the bill impacts will be a decrease in the overall bill. While the bill comparison graph may visually skew the difference, the impact is approximately a 20% reduction in the annual bill. The amount of the reduction is not exactly 20% for multi-family customers and will vary since it is a fixed/variable rate design.



The commercial bill comparison indicates similar impacts to the prior

commercial bill comparison (2a). Certain customers, depending upon their specific usage may not see much impact, but some larger use customers could experience significant adjustments. As noted above, the District bills in whole sewer units.

Contained within the Technical Appendix E are additional bill comparisons for this option for a duplex, commercial medium strength and commercial high strength customer.

5.5.6 Option 3b: 100% Fixed – Adjust Multi-Family and Commercial Sewer Unit Equivalencies

The final option reviews the use of a 100% fixed rate and adjusts for both the multi-family equivalencies and the commercial sewer units. This rate option is shown below.

Option 3b - 100% Fixed – Adjust Multi-Family and Commercial Sewer Unit Equivalencies

	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$654.40/sewer unit	\$0.00/CCF
Multi-Family [1]	523.50/sewer unit	0.00/CCF
Commercial [2]	654.40/sewer unit	0.00/CCF

[1] – Assumes multi-family is 80% of single-family residential
 [2] – Assumes 1 commercial sewer unit = 1 residential sewer unit (7 CCF/Month)

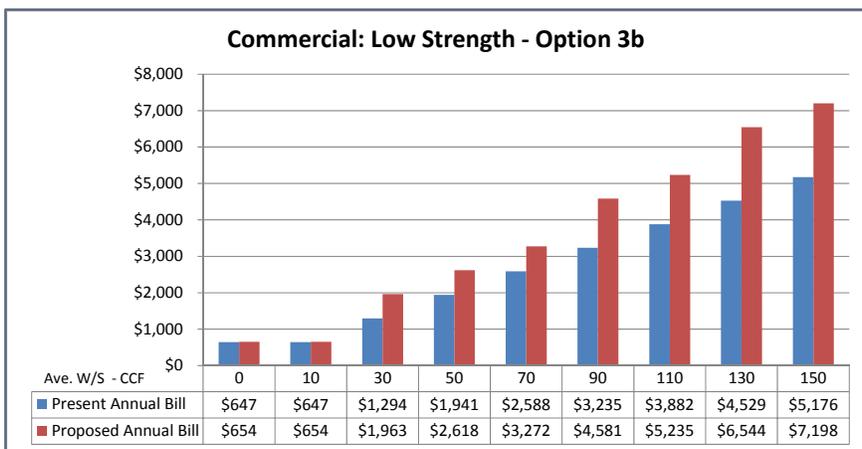
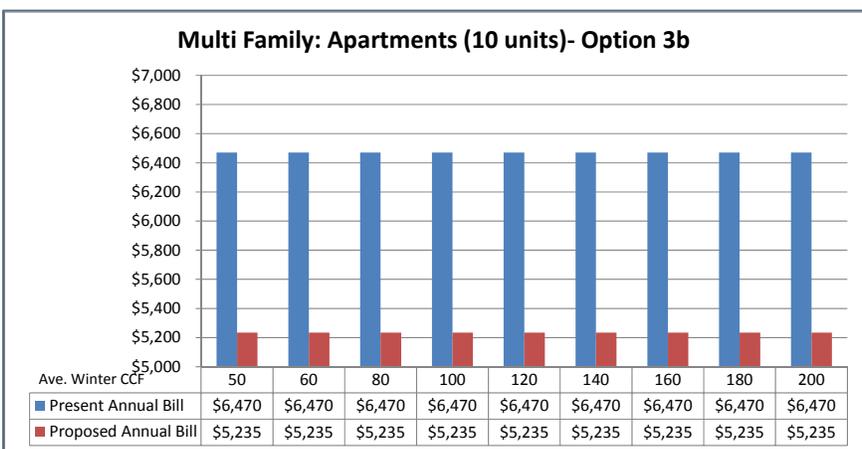
In thinking about this rate, it is essentially the District’s existing rate structure with adjustments to reflect the issues raised for the multi-family and commercial sewer equivalencies. Interestingly, with these adjustments, the fixed rate is slightly greater than the current \$647.00 rate. For the multi-family customers, the rate has been adjusted to be set at 80% of the single-family residential rate. Similar to the other options, the multi-family rate has been adjusted to reflect the relationship. This approach should create greater ease of administration for the District and avoid confusion over multi-family living units and billable living units. Under this approach, both are the same. It is the rate which produces the differential between single-family residential and multi-family.

Similar to the other rate design options, the bill comparisons for the residential, multi-family and commercial low strength customers are shown below.

For this final rate option, the residential bill comparison indicates that there will be minimal impact to the residential customers. Given that this is a 100% fixed rate option, there is no concern about the impacts to large volume winter users.

For the multi-family rate design, the impacts are similar to the other multi-family rate options in which the relationship is adjusted to reflect the 80% differential. While the multi-family graph may distort the results, the typical reduction to the annual multi-family bill will be approximately 20%.

The commercial fixed rate is roughly the same as the existing \$647/unit rate. However, as noted previously, the change in the definition of a sewer equivalency unit has significantly impacted certain commercial customers. For example, a customer that has been 10 units in the past may become 14 or 15 units under the change in definition of an equivalent unit. As noted above, the District bills in whole sewer units.



Contained within the Technical Appendix F are additional bill comparisons for this option for a duplex, commercial medium strength and commercial high strength customer.

This concludes the review and discussion of the various rate design options.

5.6 Comparison of the Rate Options Advantages and Disadvantages

The District requested a comparison of the advantages and disadvantages of the various rate options. In providing this list or comparison, it is important to note that what may be perceived as an advantage by one person, may be viewed as a disadvantage by another. For example, maintaining the existing rate structure may be viewed as an advantage administratively, but a disadvantage from a customer equity perspective. In that sense, the following comparative table should not be construed as fixed or “cast in concrete”. Rather, it is intended to provide some important points of reference for purposes of comparison and each individual should place their own value structure on the importance of each advantage and disadvantage. Finally, due to space limitations, there are obviously other advantages and disadvantages that may not be listed on this table. This is not intended to be all encompassing of every possible advantage and disadvantage.

Provided below in Table 5-3 is a comparative table of the advantages and disadvantages as perceived by HDR during the course of our technical review.

**Table 5-3
Summary of the Advantages and Disadvantages of the Rate Options**

Option	Structure	Adj. Multi-Family Relationship?	Adjust Comm. Equiv.?	Advantages	Disadvantages
1a	F/V	No	N	<ul style="list-style-type: none"> • Reflects volumetric use • Minimal impact to MF and commercial • Reflects the District's F/V cost relationship 	<ul style="list-style-type: none"> • Possible high bill impacts to large user SFR • No change in SFR/MF relationship • No change in sewer unit definition • Difficult/costly to administer SFR/MFR volume billing (feasibility?) • Minimal variable costs
2a	F/V	Yes	No	<ul style="list-style-type: none"> • Reflects volumetric use • Greater equity for MF • Minimal impact to commercial • Reflects the District's F/V cost relationships 	<ul style="list-style-type: none"> • Possible high bill impacts to large user SFR • No change in sewer unit definition • Difficult/costly to administer SFR/MFR volume billing (feasibility?) • Minimal variable costs
3a	Fixed	Yes	No	<ul style="list-style-type: none"> • Administrative ease (feasibility) • Greater equity for MF • Minimal impact to commercial 	<ul style="list-style-type: none"> • No change in sewer unit definition • No change in SFR/MF fixed structure (equity?)
1b	F/V	No	Yes	<ul style="list-style-type: none"> • Reflects volumetric use • Links to 7 CCF/month definition of a unit • Reflects the District's F/V cost relationships 	<ul style="list-style-type: none"> • High bill impacts to large user SFR & comm. • No change in SFR/MF relationship • Difficult/costly to administer SFR/MFR volume billing (feasibility?) • Minimal variable costs
2b	F/V	Yes	Yes	<ul style="list-style-type: none"> • Reflects volumetric use • Links to 7 CCF/month definition of a unit • Greater equity for MF • Reflects the District's F/V cost relationships 	<ul style="list-style-type: none"> • High bill impacts to large user SFR & comm. • Difficult/costly to administer SFR/MFR volume billing (feasibility?) • Minimal variable costs
3b	Fixed	Yes	Yes	<ul style="list-style-type: none"> • Administrative ease (feasibility) • Greater equity for MF • Links to 7 CCF/month definition of a unit 	<ul style="list-style-type: none"> • High bill impacts to large user SFR & comm. • No change in fixed structure (equity?)

In viewing Table 5-3, HDR has highlighted in bold certain advantages and disadvantages. From HDR's perspective, those items highlighted in bold appeared to be the most compelling and important considerations when HDR was trying to select between the options. Again, this is a subjective judgment on the part of HDR as to what we believe to be critical items to consider.

5.7 Administrative Considerations

While the above discussion has provided an overview of the potential rate structures for the District, it has not considered or taken into account the administrative issues associated with determining billing units and billing customers. One of the major priorities of the District's management team is a rate which can be administered utilizing the District's existing resources.

One of the unique aspects of a stand-alone wastewater utility is access to water consumption data and information. This is the basis for volumetric billing. While it is very easy to say that all the District needs to do is obtain the consumption information from the local water utility, in this case the Marin Municipal Water District (MMWD), the reality is far more complicated. At the same time, the billing process is, in part, shaped by the property tax process.

HDR discussed with the District the process used to obtain the water consumption data from MMWD and eventually produce a bill for placement on the customer's property taxes. Once the District receives the data from the District, it must individually and manually review each account to match the water consumption data to the tax rolls. The District stated that there historically have been discrepancies in the data.

During the course of this study, HDR noticed problems and challenges with the consumption data. As an example, for certain residential customers there were very large consumption values, beyond what would normally be considered residential consumption levels. Under a billing scenario, these "high read" accounts would need to be individually reviewed and adjustments made where appropriate. In this particular study there were a number of residential accounts which had high reads as a result of a water leak. In addition to this issue, one of the more challenging areas of reviewing the data was to match the data up to relevant billing units. The data files have limited information and parcel numbers, service addresses and a simple customer description make it difficult to sort or understand the type of customer and their service characteristics (e.g. mobile home parks and the number of spaces.). Simply stated, HDR found that working with the available water consumption data was not impossible, but it was certainly challenging and would require additional resources to implement, particularly when placed in the context of utility billing.⁹

"Simply stated, HDR found that working with the available water consumption data was not impossible, but it was certainly challenging, and would require additional resources to implement particularly when placed in the context of utility billing."

⁹ Utility billing requires a level of accuracy which is entirely different than the level of accuracy needed to conduct this rate structure evaluation study. Where certain short-cuts and assumptions could be used for purposes of this study, in the context of utility billing, those same short-cuts or assumptions can not be used. The utility bill must be accurate and correct.

At the current time, there are a limited number of commercial accounts and reviewing the data on an individual customer basis is manageable. However, if this were to expand to include residential customers, the District would likely need to develop an alternative billing approach (e.g. use prior year data) or add an additional person to staff to address the additional workload required to check and verify each individual account. In the end, this would be additional costs to the District and have an impact upon rates.

The other main administrative consideration is the timing of the billing process. Provided below is an overview of the timing associated with this year’s billing process.

- April District receives water data from MMWD
- July 12th District receives the initial property tax billing from the County (upload file)
- July 19th Make changes/corrections to file and submit to County for processing
- July 31st Receive the review report from County
- August 2nd Changes to review report due back to County

As can be seen from the above schedule, there is roughly two weeks from the time when the District receives the upload file to input the changes, to when it is finalized and due to the County. If a volumetric rate structure is adopted for residential customers then the District will clearly need to have additional personnel to meet this time commitment. This timing issue is not simply isolated to the District. HDR is aware of a California utility that has to retain an outside consulting firm to assist in the review and validation of data.

5.8 Defining Other Miscellaneous Customer Groups

The District serves a variety of customers. Over time, the District has created certain specific categories to address unique and specific customer groups. Provided below is a discussion of each of these unique categories.

Mobile Home Park or Trailer Court – At the present time, mobile home parks or trailer courts are charged as follows:

- Current Mobile Home Park or Trailer Court 1.0 Per Mobile Home Pad and 1.0 Per Trailer Space

Based upon a review of this category, HDR would recommend that mobile home parks or trailer courts be maintained at their current levels. HDR conducted an analysis of the average use of these customers and the results indicated the appropriateness of the current approach.

Rooming House – The District has a category for rooming houses. HDR would recommend that this category be eliminated and renamed as Accessory Dwelling Units (ADU). An ADU is typically not set at a full living unit. ADU’s are often within the range of 0.5 to 0.8 living units.

Motels – Motels are divided between units with kitchens and without kitchens. Motels are currently charged as follows:

- Motel Unit with Kitchen 1.0 Per Living Unit
- Motel Unit without Kitchen 0.5 Per Living Unit

HDR would recommend that this category be eliminated and these customers be moved to the commercial class of service and be treated as a low-strength customer. The advantage of moving this group of customers to commercial is it eliminates the issue of with and without kitchens, but it also places them on more comparable footing with hotels, which are also treated as a commercial customer.

Schools – Schools are currently charged on the basis of student enrollment. There are two common methods used to bill schools; using student enrollment and billing on a volumetric basis. HDR reviewed the schools using the volumetric basis (commercial rate) and determined that the existing student enrollment approach is reasonable, and for that reason, the District can maintain the existing approach.

5.9 Review of Commercial Strength Factors

HDR undertook a review of the District’s strength factors to determine whether the factors currently in use were still reasonable and relevant. In providing this review, the wastewater strengths were not sampled to determine a measured strength. Rather, HDR recently provided a comparable review of wastewater strength levels for commercial customers for a major municipal wastewater utility. In conducting that review, HDR reviewed the strength levels found in various technical publications, along with the strength levels used by other wastewater utilities. Two major sources for that strength data was East Bay MUD and the City of Portland, Oregon.

In providing this review, it is important to understand that strength levels are not a finite value, but rather, a range of values one may typically see in a particular type of customer. The other aspect which is important to understand is the description of the type of customer may be very broad and some customers may need to be individually assessed to fairly categorize their strength levels.

Provided below in Table 5-3 are the suggested revisions to the strength levels. Any changes to the current strength charges are highlighted or shaded in green.

**Table 5-1
Overview of the Revised Strength Factors**

User Group	BOD (mg/l)	SS (mg/l)	SF
Residential	175	175	1.0
Commercial (General)			
Office/Retail	175	175	1.0
Hotels/Motels	175	175	1.0
Retail Shops	175	175	1.0
Halls/Churches	175	175	1.0
Other Domestic Strength	175	175	1.0
Laundromats	175	175	1.0
Service Stations/Car Washes	175	175	1.0
Medical Offices	175	175	1.0
Hospitals/Convalescent Homes/Assisted Living	175	175	1.0
Commercial (High Sewer Use)			
Restaurants/Cafes	750	650	2.4
Bakeries	1,150	900	3.2
Mortuaries	650	450	2.0
Mixed Uses/Other	600	500	2.0
Hotels with Restaurants	600	500	2.0
Dry Industry	175	175	1.0
Markets with Disposals	800	800	2.6
Other Industry/High Use	As determined by District		
Public Agency:			
Schools	175	175	1.0
Offices	175	175	1.0

The first proposed change is simply the addition of assisted living facilities. HDR was not aware of any conditions or situations that may suggest they would be a high strength customer.

Restaurants and Cafes were slightly adjusted downward. Under the current strength levels, restaurants and cafes were a 2.6. In reviewing the data for restaurants and cafes, there is a wide variation of strength levels. Given that, HDR attempted to fairly balance this range by adjusting the BOD and SS levels to a relative mid-point of the data.

Bakeries are generally thought of as high-strength customers and the strength data from the industry and other utilities bear this out. Given that, HDR adjusted the strength levels for both BOD and SS upward. As with the restaurants and cafes, HDR did not select the top of the range, but attempted to find a relative mid-point.

Mortuaries were reduced downward from a high-strength customer to a mid-level strength customer. Mortuaries are obviously a very limited customer class.

5.10 Consultant's Observations and Conclusions

The technical analysis has indicated that there is a very limited portion of the District's costs

"This study has highlighted for HDR the administrative and technical challenges of working with the consumption data and attempting to bill residential and multi-family customers on a volumetric basis."

which are variable in nature (approximately 5%). The rate options for a fixed/variable structure have passed the District's costs through to the rate in the same manner in which they are incurred. In looking at the options for a fixed/variable rate structure it appears to have a limited impact upon residential customers and most customers may not notice the difference in their bill when the change is only \$30 - \$40 per year. More concerning to HDR with the fixed/variable rate structure is the administrative difficulty it may impose upon the District. This study has highlighted for

HDR the administrative and technical challenges of working with the consumption data and attempting to bill residential and multi-family customers on a volumetric basis. In addition, HDR noted within the review of the residential data certain customers with very high winter water consumption which would potentially result in significant sewer bills (which may or may not be justified). **For those reasons, HDR believes the District should maintain a fixed charge approach for residential and multi-family customers.** Of the rate options presented, this would be either Rate Option 3a or 3b. All other options presented were fixed/variable rates.

HDR's review of the consumption data did highlight the issue of the rate relationship between single-family residential and multi-family customers. Based upon the limited District data reviewed (2-years), along with our own experience in working with other utilities, the equivalency relationship developed in this study (80%) is almost exactly what HDR would have predicted prior to the study. **There seems to be a strong foundational basis for establishing a differential in the equivalency relationship between residential and multi-family.** Assuming the use of a fixed charge approach (Option 3a or 3b), the impact of this recommendation would be an approximate 20% reduction in the multi-family rates and a slight increase in single-family rates which may be in the range of \$0.60 (Option 3b) to \$2.40/month (Option 3a). The impact to commercial bills will vary between the Options. Option 3a has the least impact to commercial and results in an approximate 4.4% increase. In contrast, Option 3b produces little or no impact to low use customers (< 10 CCF/month), but has large impacts to large use commercial customers (up to 40% to 50% increases).

The final portion of the technical analysis is the definition of an equivalent unit and tying that definition to the commercial rates. At the present time, the definition used for a commercial customer is 10 CCF/month. This study has noted that an equivalent residential unit may be defined as 7 CCF/month which more closely reflects the current average single-family average winter water use. **HDR is concerned with the potential change in this definition and the impacts to large commercial customers. The District can maintain their existing definition, set the multi-family rate at 80% of the single-family rate and minimally impact the**

commercial customers. In short, this was Rate Option 3a. At a later date, the District may choose to transition to the 7 CCF/month definition (Option 3b). However, for now, it appears that attempting to adjust the single-family and multi-family relationship should be the top priority. Attempting to adjust the multi-family and the commercial equivalencies at the same time has too great of a combined impact, particularly to the commercial customers.

In the end, the ability of **the District to smoothly transition these rate changes should be of paramount importance.** While this study has identified certain rate issues the District may want to address, those can be addressed over time, and in a manner that does not create large and sudden impacts to customers. One of the key rate design goals identified by both the Board and management was stability of the rates, both from the utility's perspective and the customer's perspective. **The recommendations of HDR are intended to begin the move the District in the direction of achieving the recommendations contained in this report, while doing so in manner that provides stability and greater customer acceptance.**

HDR also reviewed the equivalencies for certain customers and would recommend that those be adjusted and adopted. Finally, HDR has provided some minor changes on the strength factors which will provide more equitable rates for high-strength customers, but have minimal impact upon the revenues of the utility.

5.11 Summary

This section of the report has provided a technical review of the various rate structure options. This review has helped to understand and highlight the differences between these options and clarify the strengths and weaknesses of each design. In the end, the selection of a rate structure is the balancing of the technical aspects of the rate design along with the overall goals and objectives of the District.



6. Review of the District's Capital Facility Charges

6.1 Introduction

This section of the report is intended to provide a review of the District's wastewater capital facility charges (also referred to as "connection fees"). Capital facility charges are not related to the previous discussion of District's sewer rate structures. Capital facility charges are only assessed to new customers connecting to the District's system or existing customers requesting expanded capacity. In that sense, capital facility charges and sewer rates are unrelated. However, viewed more broadly, capital facility charges create equity between existing and new customers connecting to the system. This aspect of the District's capital facility charges are discussed in more detail below.

6.2 Defining Capital Facility Charges

An important starting point for reviewing the District's capital facility charges is simply understanding their purpose and objective. Capital facility charges are related to available or future capacity on the system to accommodate new customers (growth) or existing customers expanding their capacity requirements. The District currently has capital facility charges in place. These types of fees may be called a variety of names (e.g. capacity fee, plant investment fee, impact fee, system development charge, etc.). Regardless of the name used for the fee, the intent or purpose of the fee is the same. That is, these charges are intended to provide funds to the utility to finance all or a part of the capital improvements needed to serve (accommodate) new customer growth.

One definition of a capital facility charge or system development charge is as follows:

"System development charges (capital facility charges) are one-time charges paid by new development to finance construction of public facilities needed to serve them."¹⁰

Simply stated, capital facility charges are a contribution of capital to either reimburse existing customers for the available capacity in the existing system, or to help finance planned future growth-related capacity improvements.

6.3 Economic Theory and Capital Facility Charges

Capital facility charges are generally imposed as a condition of service. The objective of a capital facility charge is not merely to generate money for a utility, but to ensure that all customers seeking to connect to the utility's system bear an equitable share of the cost of capacity that is invested in both the existing and any future growth-related expansions.

¹⁰ Arthur C. Nelson, System Development Charges for Water, Wastewater, and Stormwater Facilities, Lewis Publishers, New York, 1995, p. 1.

Through the implementation of cost-based and equitable capital facility charges, existing customers will not be unduly burdened with the cost of new development. By establishing cost-based capital facility charges, the District will be taking an important step in assuring adequate infrastructure to meet growth-related needs, but more importantly, providing this required infrastructure to new customers in a cost-based, fair and equitable manner

The establishment of a cost-based capital facility charges is a function of “generally accepted” methodologies, along with any legal or legislative constraints. These “generally accepted” methodologies provide a technical or analytical framework against which SDCs or capital facility charges may be reviewed.

6.4 Review of the District’s Existing Capital Facility Charges

The District currently has in place capital facility charges. In summary form, the District’s current capital facility charges are as follows:

Capacity Fee	Capital facility charge
1. For New Construction Per Living Unit [1]	\$6,200.00
2. For Additions to Capacity Per Plumbing Fixture Unit [1]	\$75.00
3. Annexed Areas Per Acre of Annexed Area	\$1,300.00

[1] – Defined within Title 2, Chapter 1 of the Las Gallinas Sanitary Code.

The application or administration of the wastewater capital facilities charge is delineated in Title 2, Chapter 1 of the District’s Sanitary Code. In part it reads as follows:

“Section 807. Wastewater Capital Facilities Charge.

- A) Applicants desiring connection to the wastewater facilities of the District shall pay a capital facilities charge to the District prior to connection.*
- B) For purposes of this Ordinance, all applicants shall pay a capital facilities charge based upon the number of Equivalent Sewer Units (E.S.U.) determined as follows:*

<i>User Category</i>	<i>Sewer Unit Equivalent</i>
<i>1) Single-family residence</i>	<i>1 per living unit</i>
<i>Condominium</i>	<i>1 per living unit</i>
<i>Townhouse</i>	<i>1 per living unit</i>
<i>Trailer Park</i>	<i>1 per trailer space</i>
<i>Mobile Home Park</i>	<i>1 per mobile home pad</i>

- | | |
|--|--|
| 2) <i>Multiple Dwelling Units</i> | <i>1 per first 20 or fewer Plumbing Fixture Units (PFU's) plus 0.05 for each PFU over 20</i> |
| 3) <i>Commercial, industrial, public agency, or other (domestic strength or flow or less</i> | <i>1 per first 20 or fewer PFU's plus 0.05 for each PFU over 20</i> |
| 4) <i>Commercial, industrial, public agency, or other (flow or strength higher than domestic)</i> | <i>Based on information obtained or estimated by District and as compared to wastewater flow and strength of an average residential user, Equivalent Sewer Units may, at District's option, be assigned according to the Equivalent Sewer Unit formula</i> |
| 5) <i>Additional or alternations of existing structures (other than high flow or high-strength) shall be charged a sewer connection fee (sometimes referred to as Wastewater Capital Facility Charges . . ."</i> | |

As can be seen, the approach used to assess the capital facilities charges is structured in the same manner as the District's rates. Therefore, given any changes in the relationships within the rates, the District capital facility charges should be adjusted accordingly.

Focusing back on Table 6-1, the basic formula for developing the capital facility charge is relatively straight-forward mathematically. It is as follows:

$$\frac{\text{System Value}}{\text{System Capacity}} \times \text{New Customer Capacity Demand} = \text{Capital Facility Charge}$$

The vintage of the District's capital facility charges did not allow for HDR to confirm the above approach. However, in viewing the level of the capital facility charges (i.e. \$6,200.00/living unit) HDR is of the opinion that this amount is within the range of capital facility charges typically used. In making that statement, it is important to note that the basis for the fee is the value of the District's current/future capacity, and not the value or fee charged by other utilities.

In establishing capital facility charges it is important to understand that there are different methodologies and approaches that may be used to establish these fees. In the case of the District, an initial key question is the valuation of system capacity embedded within the District's capital facility charges. There are different methodologies that may be used to establish cost-based capital facility charges, and each methodology is dependent upon the utility's unique and specific circumstances.

Regardless of the methodology used in the determination and establishment of the capital facility charges, a number of different criteria are often utilized. The criteria often used by utilities to establish capacity fees are as follows:

- Customer understanding
- System planning criteria
- Financing criteria, and
- State/local laws

With regard to customer understanding, most sewer capital facility charges are based upon either meter capacity or a living unit approach. Either of these approaches provides for relatively easy customer understanding and is clear and concise in its calculation of the amount of infrastructure necessary to provide service. The use of plumbing fixture counts is sometimes used, but administratively, it requires more time and effort to count fixtures and determine a total count. Next, the use of system planning criteria is one of the more important aspects in the determination of the capital facility charges. System planning criteria provides the linkage

“The use of system planning criteria is one of the more important aspects in the determination of the capital facility charges. System planning criteria provides the linkage between the amount of infrastructure necessary to provide service and the charge to the customer.”

between the amount of infrastructure necessary to provide service and the charge to the customer. In simplified terms, there should be a connection (nexus) between new development and the new or expanded facilities required to accommodate new development. The financing criteria for establishing capital facility charges relates to the method used to finance infrastructure on the system and is intended to avoid having customers pay twice for infrastructure – once through the capital facility charge paid and again through rates (i.e. debt service). Finally, California has

specific legal requirements¹¹ for impact fees that require the use of a proportional methodology and which reasonably relates to the burden development has placed upon capacity. In California, there is no specific legal requirement on the frequency for updating capital facility charges. However, HDR generally recommends an update to capital facility charges at the time of the development of a new master or comprehensive plan (i.e. the system planning criteria and infrastructure needed to support the plan). For most systems, this may imply an update every five or six years. Between updates, the capital facility charges should be adjusted for inflation using a cost index such as the Engineering News Record (ENR) Construction Cost Index.

There are a number of different “generally-accepted” methodologies that may be used to establish capital facility charges. Each method may have certain advantages and disadvantages and they need to be applied in a manner which reflects the specific and unique circumstances

¹¹ The laws for the enactment of connection fees in California are codified in California Government Code sections 66013, 66016, and 66022, which are interspersed within the ‘Mitigation Fee Act.’ The Mitigation Fee Act is comprehensive legislation dealing mainly with development impact fees, although the above sections set forth the various requirements for imposition of capital facility charges in California.

and conditions of the utility. For example, the AWWA M-1 Manual discusses three generally-accepted methods;

- “The *buy-in method* is based on the value of the existing system’s capacity. This method is typically used when the existing system has sufficient capacity to serve new development now and into the future.
- The *incremental cost method* is based on the value or cost to expand the existing system’s capacity. This method is typically used when the existing system has limited or no capacity to serve new development now and into the future.
- The *combined approach* is based on a blended value of both the existing and expanded system’s capacity. This method is typically used where some capacity is available in parts of the existing system (e.g. source of supply), but new or incremental capacity will need to be built in other parts (e.g., treatment plant) to serve new development at some point in the future.”¹²

As an example, a utility which has significant capacity in their existing system and can accommodate future growth to build-out would likely use the buy-in method. In contrast to this, a utility with no existing capacity and requires expansion of capacity to accommodate growth could potentially use the incremental method. For utilities that have some existing available capacity to serve a portion of new development, but must build additional capacity to serve all future development, the combined approach may be most appropriate.

For the District, and depending upon current circumstances, it would seem that either the incremental or combined method for valuation and determination of the capital facility charges would be appropriate. It is HDR’s understanding that the District is considering a major treatment plant expansion in the near future. Given that, it would seem prudent that the District consider updating their capital facility charges to best reflect the current capacity conditions. The incremental and combined methodology does allow for the inclusion of future capacity projects. These projects should be a part of an adopted master or comprehensive plan.

For HDR, the key item related to the review of the District’s capital facility charges are the vintage of the development of the fees and the expansion of the existing plant on the near horizon. As a system evolves over time, the per unit value of capacity and the amount of available capacity changes. At the same time, assets are added and constantly depreciated over time. Given that, it would be prudent and advisable for the District to update their capital facility charge methodology and resulting fees.

6.5 Summary

This section of the report has reviewed the District’s capital facility charges. The District’s use of capital facility charges is a generally accepted utility practice. However, the vintage of the District’s fees resulted in a recommendation to review and update the capital facility charges to

¹² AWWA M-1 Manual, p 6th Edition, p. 265-266.

reflect current conditions and costs. In conducting the review and update of the capital facility charges, the District should strongly consider the use of an “incremental” or “combined” methodology since the District is in the process of considering the expansion of their current treatment plant.



7. Public Meetings and Presentations

7.1 Introduction

As a part of this study, three public meetings and presentations were held. The objective of these public meetings and presentations was to inform the District's Board of the various rate structure options available to them, gain their feedback, and provide to the public an opportunity to participate in the process and communicate directly with the Board their specific issues, concerns, observations and preferences. The purpose of this section of the report is to briefly discuss the public meetings and presentations which took place and summarize the policy direction provided by the Board.

7.2 Public Meetings and Presentations

HDR provided three public meetings as a part of this study. The meetings were held on the following dates at the regularly scheduled time for the District's Board meetings:

- September 26, 2013
- November 14, 2013
- December 12, 2013

For each Board meeting, HDR prepared a detailed Powerpoint™ presentation which was provided to the Board and available to the public in advance of the meeting. In addition to the Powerpoint slides, HDR also developed handout materials for the November 14th and December 12th meeting. These handouts simply provided a summary of the various rate structure options on a single page. Provided below is a more detailed discussion of each of the meetings and the policy direction provided by the Board.

September 26, 2013 Public Meeting – The first meeting with the District's Board was intended to provide an overview of the study and gain feedback on the Board's rate design goals and objectives. No public (interested parties) attended this meeting. As a part of the meeting, HDR reviewed with the Board the following items:

- Goals and Objectives (Purpose) of the Study
- Review the Study Approach (Methodology to be Used)
- Review Rate Structure Attributes (Rate Design Goals and Objectives)

The main focus of discussion for this meeting was the prioritization of the rate structure attributes. This topic and the resulting prioritization of the rate structure attributes are summarized in Section 2 of this report.

The presentation made by HDR on September 26th lasted approximately 60 minutes and at the end of the meeting, each Board member provided to HDR their prioritized list of the rate structure attributes.

November 14, 2013 Public Meeting – The November 14th meeting with the District’s Board was designed to cover a number of different topics. This meeting was attended by approximately ten or twelve citizens. The topics discussed during this meeting included the following:

- Reviewed the District’s Current Rate Structures and Rates
- Reviewed the District’s Prioritized Rate Structure Attributes
- Reviewed a Survey of California Sewer Rate Structures
- Reviewed Conceptual Rate Structures
- Reviewed the Technical Analysis and Rate Options Developed
- Reviewed the District’s Capital Facility Charges (CFCs)

The review of the current rate structure was intended to provide the Board and audience with an understanding of the current rate structure and rates. Section 2.3 of this report provides this background material. Next, the prioritization of the District’s rate attributes was reviewed, which indicated that revenue stability and predictability was the highest priority of both the Board and management team of the District. Next, the survey of rate structures used by California utilities was reviewed. This survey indicated that the District’s approach is similar to other sewer utilities in California, and particularly in the Bay Area. It did identify that a flat rate structure is commonly used, but also noted that there are often a range of approaches for the rate relationship between residential and multi-family customers.

The review of the conceptual rate structures discussed the issue of fixed and variable costs. As a part of this study, HDR did examine the District’s costs and concluded that only 5% of the District’s costs were purely variable in nature (e.g. chemicals, electricity, etc.). HDR also discussed the conceptual basis for volumetric sewer billings (winter water use) and the difficulty HDR encountered working with the District’s consumption data which is obtained from the local water utility. Most importantly, HDR did review the consumption data between residential and multi-family and noted that multi-family consumptive use, on a per living unit basis, was in the range of 76% to 86% of single-family residential (See Section 4.5). This provided the basis for the Board to consider conceptual rate structures which varied between single-family residential and multi-family residential.

From the conceptual review, HDR discussed with the Board a number of rate structure options which were technically analyzed by HDR. There were three main variables which were explored; a fixed rate vs. fixed/variable rate structure, the rate relationship between single-family and multi-family and the definition of an equivalent residential unit (ERU). These various options were discussed in Section 5 of the report. In addition to the rate structure discussion, HDR also reviewed the other rate design issues, including the definition of customer equivalencies and strength factors.

During HDR’s presentation, a number of questions were asked by Board members and the public. At the conclusion of HDR’s presentation, the public was provided an opportunity to provide comment and feedback. Among the comments received from the public in attendance were the following:

- Support and thanks to the Board and District’s management for conducting the study
- Acknowledgment that there is some difference in the relationship between single-family and multi-family on a volumetric basis (i.e. they are not the same, but also not a precise difference that can be easily set)
- Recognition that relative equity can be achieved between residential and multi-family customers without having to implement a volumetric rate
- General support for creating the rate differential between single-family and multi-family
- Recognition and acceptance of the administrative and technical difficulty in implementing a volumetric rate structure for single-family and multi-family customers

With that feedback, the Board provided to HDR some general direction for the next meeting. The Board felt that staying with a fixed rate structure for single-family and multi-family was reasonable and prudent, but the Board wanted to examine the issue of the relationship between single-family and multi-family and requested rate designs for 70% and 90% multi-family relationships.

The meeting with the Board lasted approximately 2 hours. At the end of the meeting, HDR had initial direction from the Board to help begin to narrow down the various options. The Board was leaning towards options which were most like Option 3a or Option 3b (See Subsection 5.5.3 and 5.5.6). The additional scenarios (70% and 90%) for the next meeting were to be run based upon the 3a and 3b structures.

December 12, 2013 Public Meeting – The meeting in December with the District’s Board was intended to review the discussions from the prior meeting, review the additional rate design options and then attempt to gain closure with the Board on the key rate design issues associated with the study. The meeting was attended by approximately a dozen individuals. For the most part, the individuals that attended this meeting were not the same individuals that attended the prior month’s meeting.

To help those individuals in the audience that had not attended the first meeting, HDR provided an overview of the prior discussions and the conclusions which were reached from that prior meeting. From that introduction, HDR then noted that there were six key issues to be resolved or to gain Board policy direction on. These key policy issues for future rate setting were as follows:

1. Rate structure (fixed vs. variable)
2. Residential and multi-family relationship (e.g. 70%, 80%, 90%, etc.)
3. Definition of an equivalent residential unit (ERU) for the commercial volume calculation
4. Transition plan for the commercial rate calculation
5. Calculation of billing units (rounding)
6. Revisions to the District’s capital facilities Charges

Similar to the previous meeting, the Board and the public asked questions and provided comments during the meeting. HDR facilitated the meeting to work through each of the above issues. In summary form, the Board policy direction was as follows on the above rate structure issues:

FIXED VS. VARIABLE RATE STRUCTURE – The Board determined that maintaining a fixed rate for single-family and residential customers remains appropriate. Variable costs appeared to be a very small component of the overall revenue requirement (budget) of the District, and the approach presented to create a rate differential between single-family and multi-family residential reasonably mimics the volumetric differences between customers.

RESIDENTIAL VS. MULTI-FAMILY RELATIONSHIP – While the Board reviewed the 70%, 80% and 90% alternative scenarios for the meeting, the Board concluded that the original 80% rate differential was a reasonable starting point for establishing the rate. There was a member of the audience which believed that no differential should be established. However, on the whole, the majority of the public which spoke during the meetings supported the creation of the multi-family rate differential.

DEFINITION OF AN EQUIVALENT RESIDENTIAL UNIT (ERU) – During the course of the discussions, the difference between the “a” and “b” rate scenarios is how an equivalent residential unit is defined (i.e. the volume of wastewater contribution) and the number of units that a commercial customer is billed. Commercial customers are billed on a volumetric basis, so a commercial customer that uses 50 CCF in month is currently billed 5 units because a unit is currently defined as 10 CCF/month. During the course of this study, HDR had discussed changing the ERU definition to 7 CCF/month to reflect the current consumption levels (See Section 4.5). During the November meeting, HDR discussed this issue with the Board and the public, but no determination or direction was provided by the Board. Between the November meeting and the December meeting, HDR noted that the District’s current connection fees (Capital Facility Charges) assume one ERU to be equal to 200 gallons/day. This translates to approximately 8 CCF/month. Given that, HDR recommended to the Board that 8 CCF/month be used to provide a clear linkage between the capacity purchased within the connection fees and the rates being charged. The Board agreed with the use of the 8 CCF/month definition. The potential bill impacts to commercial customers from that change was discussed by HDR. The customer using 50 CCF in a month would no longer be billed for 5 units, but would now be billed for 7 units (assuming a rounding up of units). The issue of commercial customer bill impacts was discussed in the next two items for Board policy direction.

TRANSITION PLAN FOR COMMERCIAL RATE TRANSITION – HDR initially suggested that the District, from a policy perspective, may be able transition to the 8 CCF calculation since the change to the relationship with multi-family has some impact upon all customers. The District’s legal counsel had concerns with the transition of this issue under the requirements of Proposition 218. Given that, it was presumed that the commercial rate and definition of an ERU must be adjusted at the same time as the multi-family rate relationship is adjusted.

CALCULATION OF BILLING UNITS – In the past, the District has billed commercial customers in whole units and rounded up. As a part of this study, the District inquired as to their ability to bill in partial units (tenths) and it was determined that was administratively feasible. Therefore, it was recommended, and the Board concurred, that commercial customers will be billed in partial units (e.g. 6.2 units). All customers will be billed a minimum of 1 ERU.

REVISIONS TO THE DISTRICT'S CONNECTION FEE – HDR discussed with the Board the linkage between the connection fee (capital facility charges) and rates. At the present time, an equivalent residential unit is defined as 200 gallons/day. If the rate for multi-family is being revised to be 80% of a single-family customer, then the connection fee should also be adjusted accordingly. When the District reviews their connection fees in the future, the District should revise the fee schedule accordingly.

The above summarizes the policy direction received from the Board during the course of this meeting. One question from the public which was raised after the discussion of the key issues was the definition used for mobile home parks and trailer courts. HDR did review that issue as a part of the report (Section 5.8) and discussed it at the November meeting. HDR's review of the data indicated no difference in volumetric contributions from these customers and a single-family residential customer and therefore recommended no change. As an add-on to that discussion, it was noted that additional work will be needed to more clearly define multi-family customers and how they will be billed under a rate differential approach.

While many of the comments received during this meeting were similar to those received during the November meeting, particularly as they related to support for the movement towards a multi-family rate differential, there were some additional and different comments. Among them were the following:

- Disagreement that single-family should pay more than multi-family and that the use of winter water to determine that relationship was a flawed assumption. As explained, some single-family customers have outdoor use, even in the winter period, which may explain the differential and the study did not consider that.
- Disagreement that the administrative issues/additional costs resulting from volumetric billing should not dissuade the District from moving to volumetric billing for single-family and multi-family residential customers
- Concern that this study did not explore the experiences of other sewer utilities that have transitioned to volumetric billing
- Concern that individual multi-family living units were not examined for differences in usage

In total, this meeting lasted approximately 2 hours and at the end of the meeting, the Board had provided sufficient policy direction to allow District management to move forward with their rate study. Technical Appendix G (Option 4b) provides the rate structure and bill comparisons which most closely reflect the Board's policy direction to management.

7.3 Summary

The rate structure study conducted by the Board has provided policy direction for the District as it examines their rates in the future and develops revised rates for adoption. Nothing within this study has changed, altered or committed the District to a specific rate design. Simply put, this study has provided the technical basis for the District to establish revised rates using the rate structures developed herein. Any revisions to the District's rates are subject to a Proposition 218 hearing process.

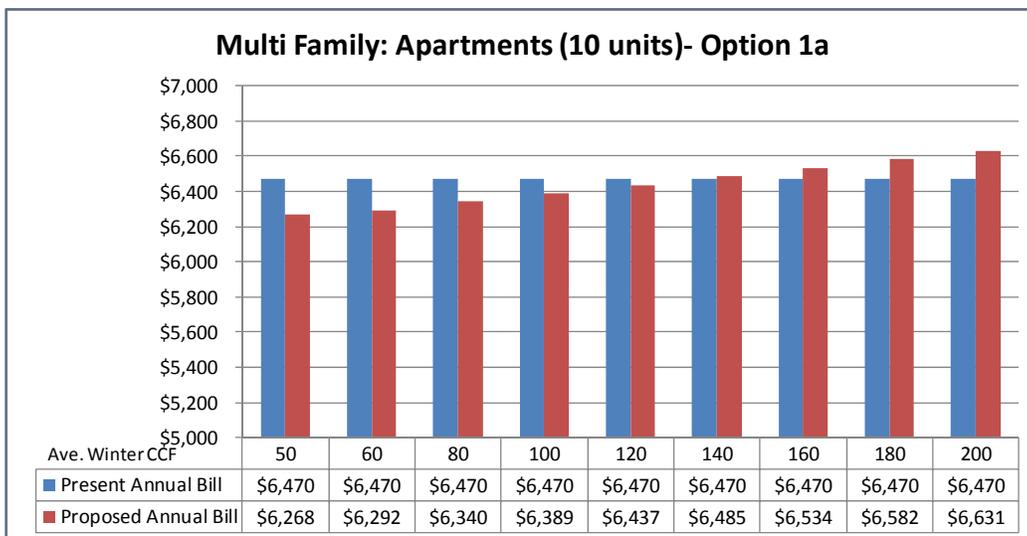
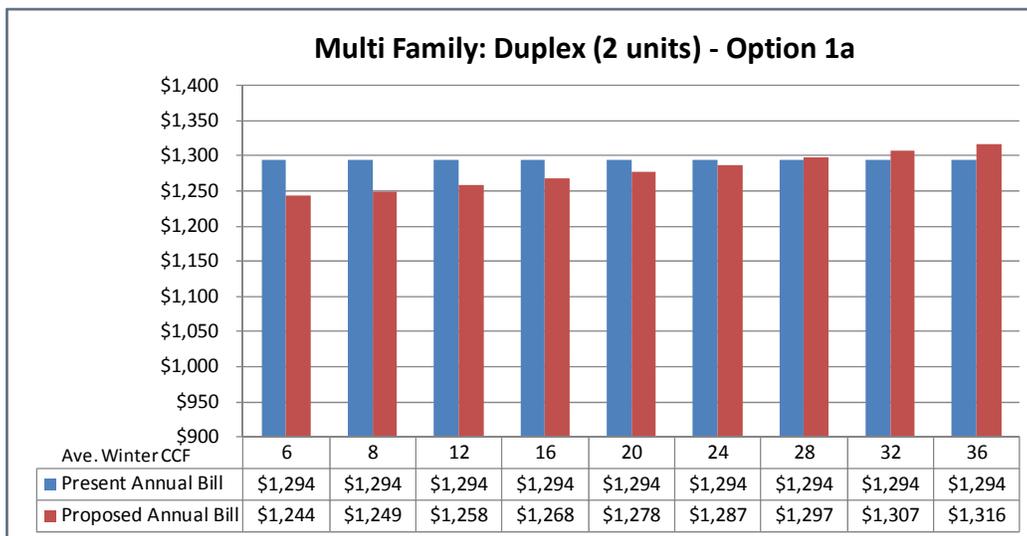


Technical Appendix A

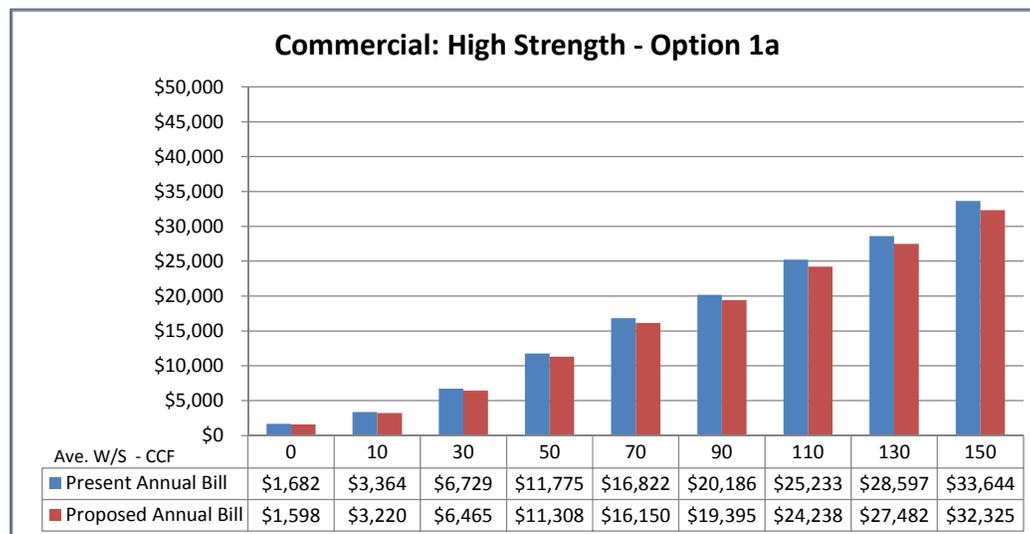
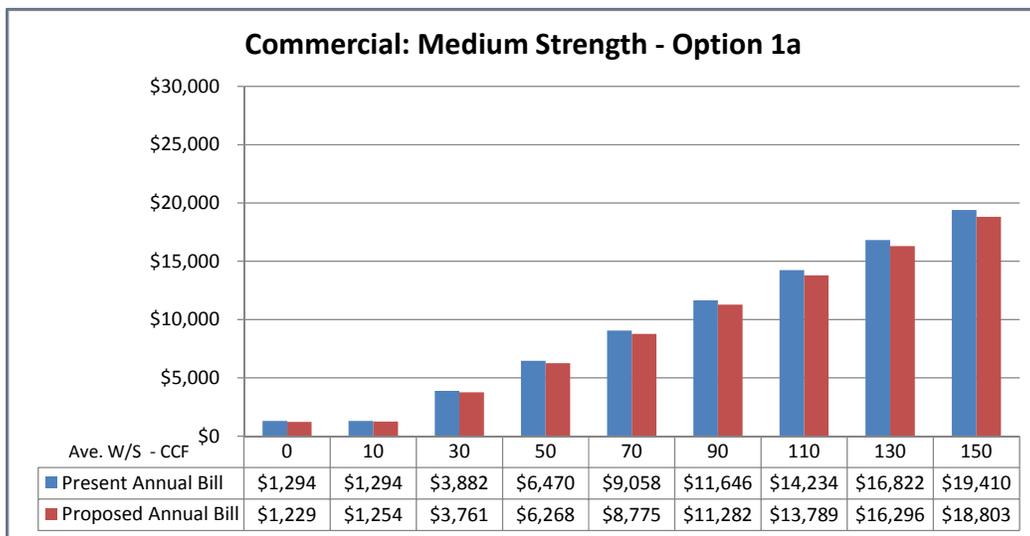
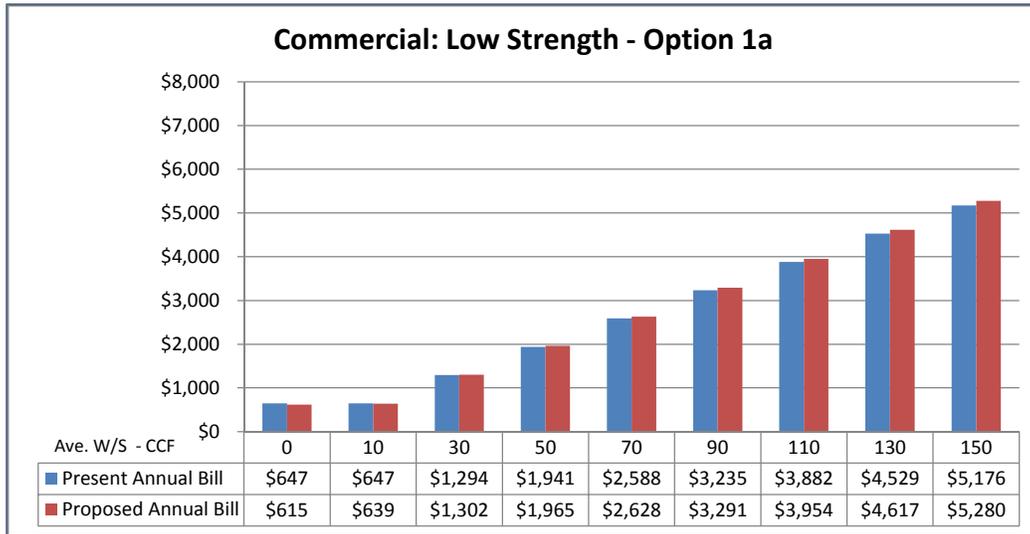
Option 1a - 95% Fixed/5% Variable – Current Sewer Unit Equivalencies

	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$614.65/sewer unit	\$2.42/CCF
Multi-Family	614.65/sewer unit	2.42/CCF
Commercial	614.65/sewer unit	2.42/CCF

Option 1a Annual Bill Comparisons 95% Fixed/5% Variable – Current Sewer Unit Equivalencies



Option 1a Annual Bill Comparisons (continued)
95% Fixed/5% Variable – Current Sewer Unit Equivalencies





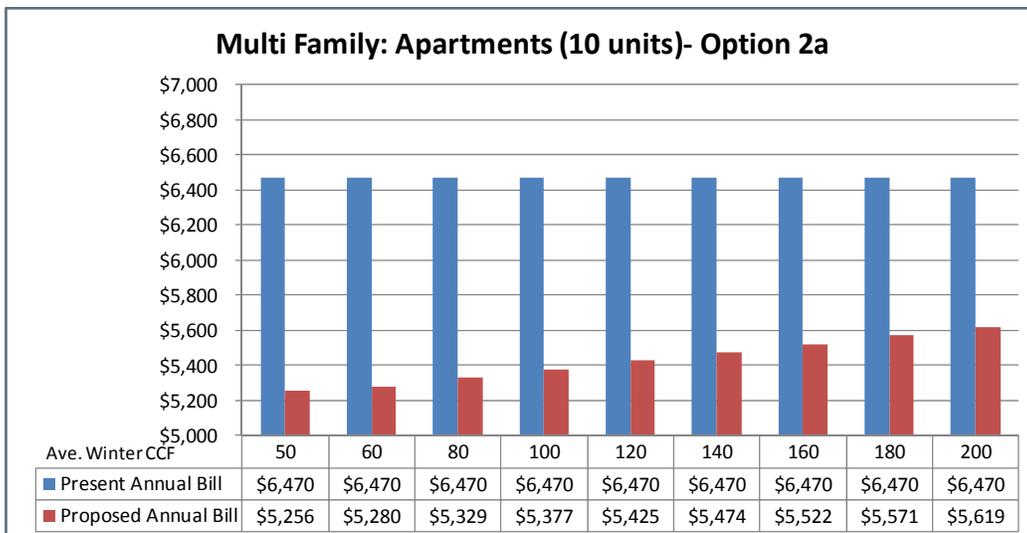
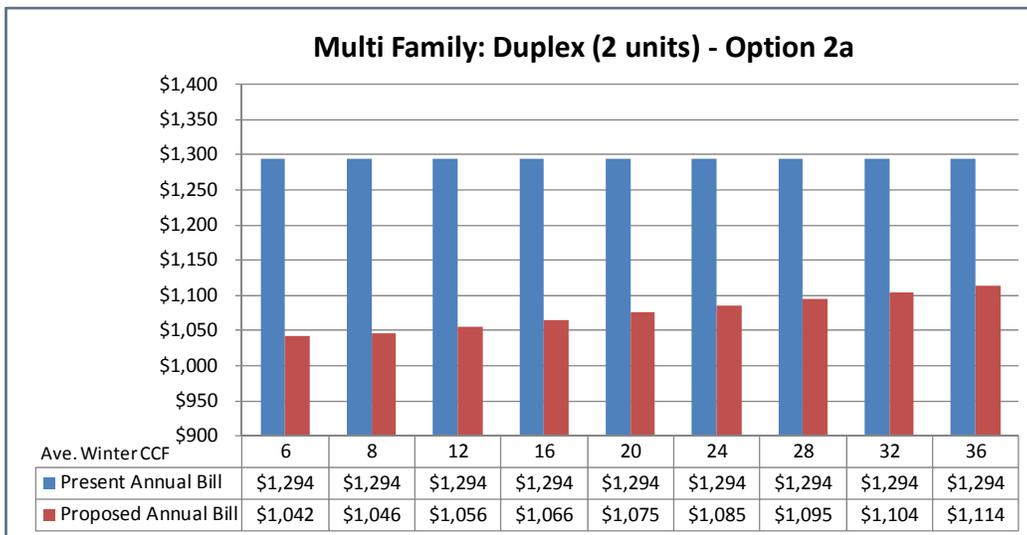
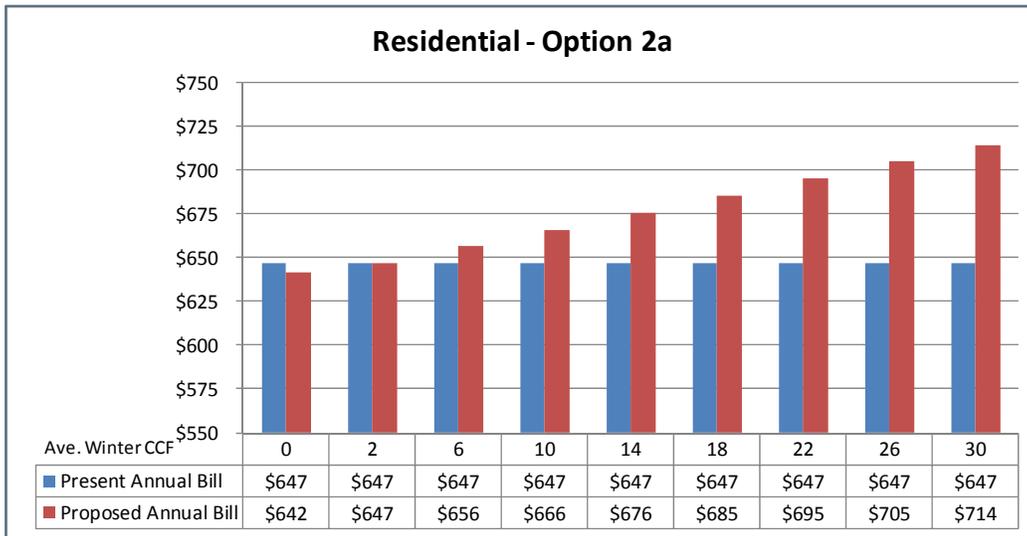
Technical Appendix B

Option 2a - 95% Fixed/5% Variable – Adj. Multi-Family Sewer Unit Equivalencies

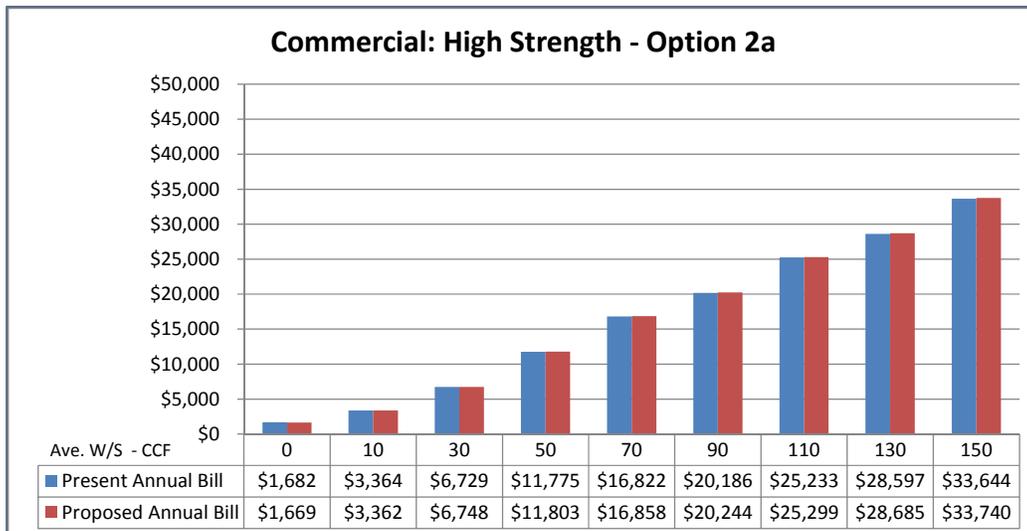
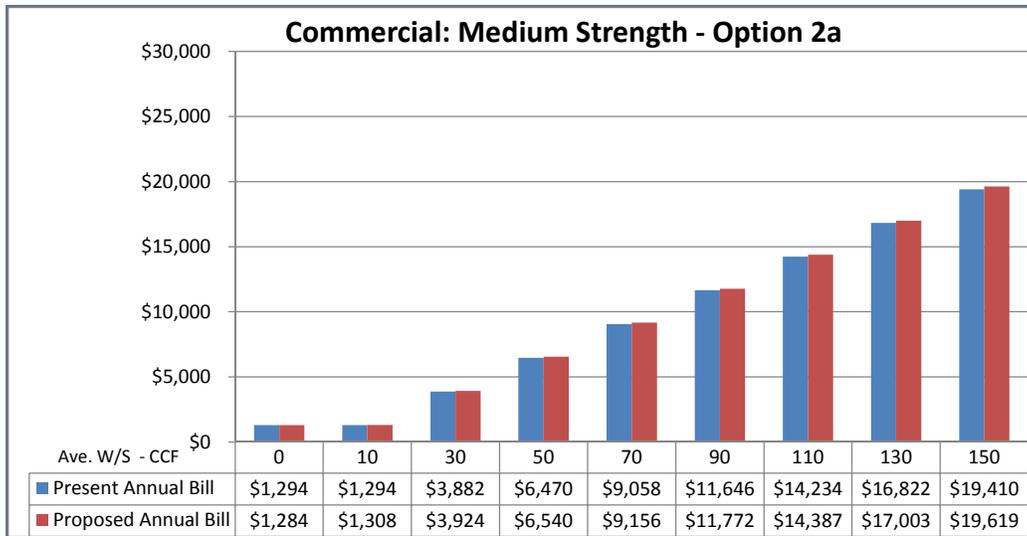
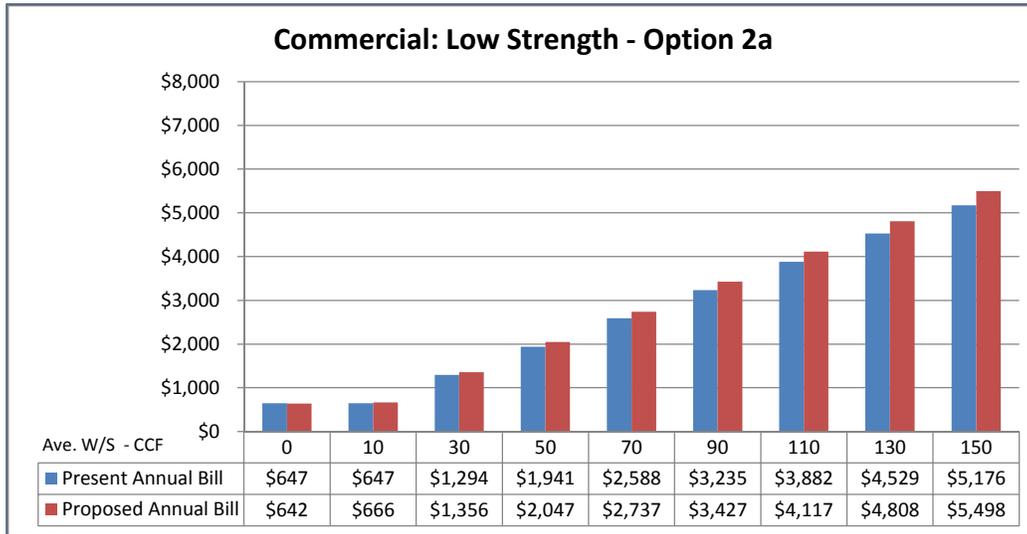
	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$641.90/sewer unit	\$2.42/CCF
Multi-Family [1]	513.50/sewer unit	2.42/CCF
Commercial	641.90/sewer unit	2.42/CCF

[1] – Assumes multi-family is 80% of single-family residential

Option 2a Annual Bill Comparisons 95% Fixed/5% Variable – Adjust Multi-Family Equivalencies



Option 2a Annual Bill Comparisons (continued)
95% Fixed/5% Variable – Adjust Multi-Family Equivalencies





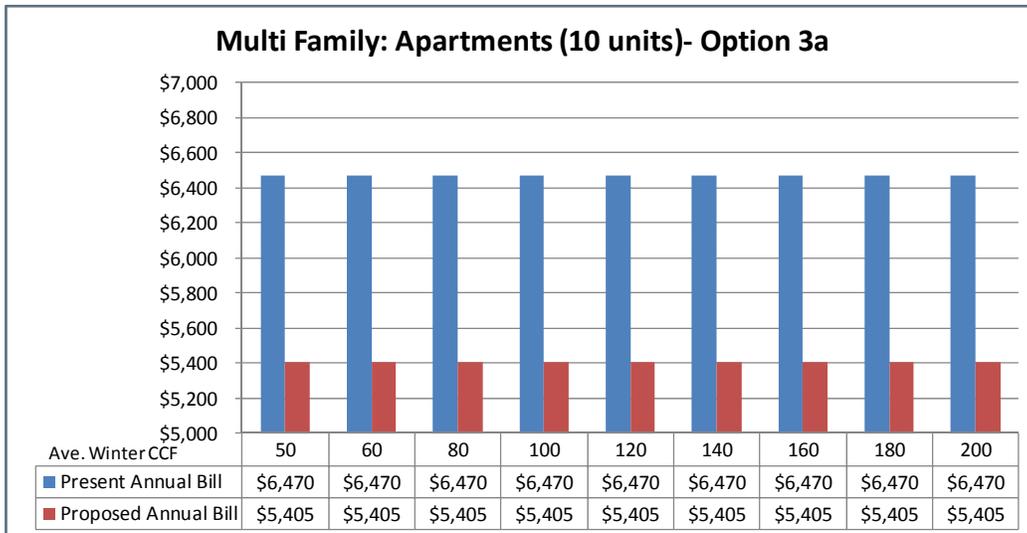
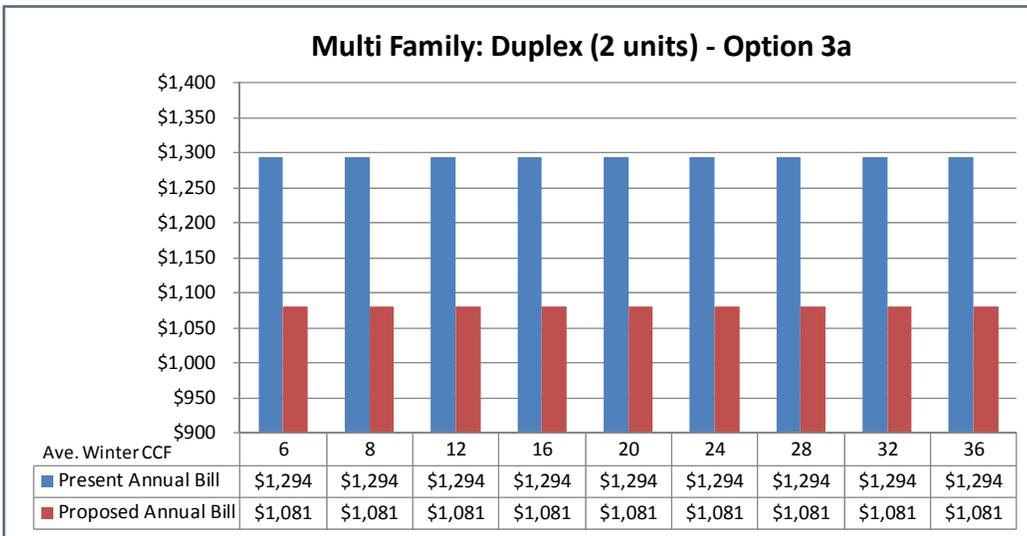
Technical Appendix C

Option 3a – 100% Fixed – Adjust Multi-Family Sewer Unit Equivalencies

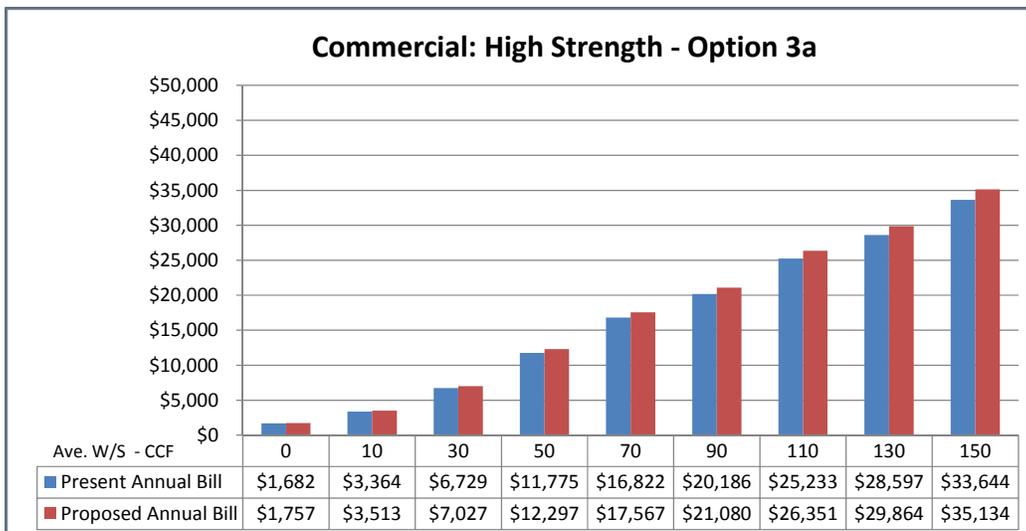
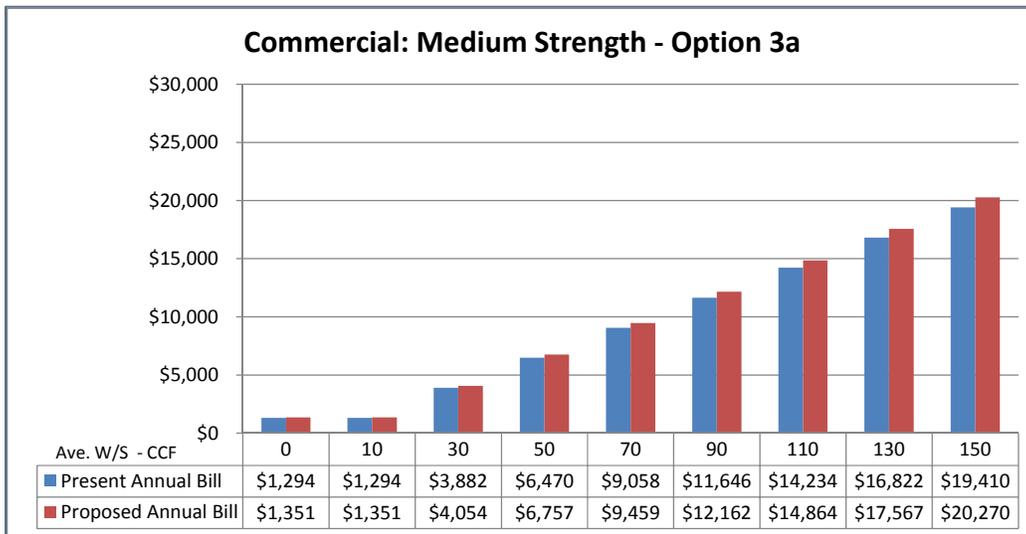
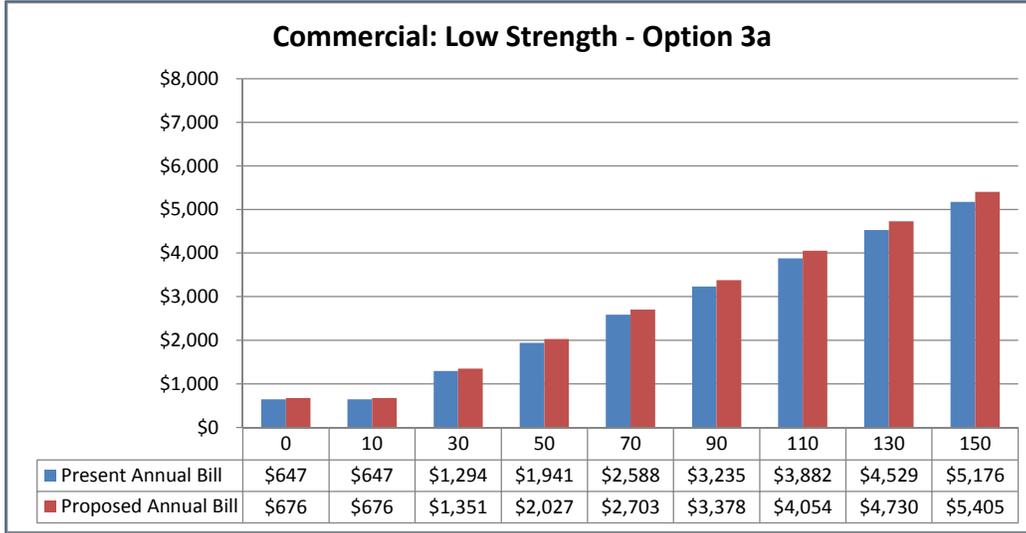
	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$675.65/sewer unit	\$0.00/CCF
Multi-Family [1]	540.50/sewer unit	0.00/CCF
Commercial	675.65/sewer unit	0.00/CCF

[1] – Assumes multi-family is 80% of single-family residential

Option 3a Annual Bill Comparisons 100% Fixed – Adjust Multi-Family Equivalencies



Option 3a Annual Bill Comparisons (continued)
100% Fixed – Adjust Multi-Family Equivalencies

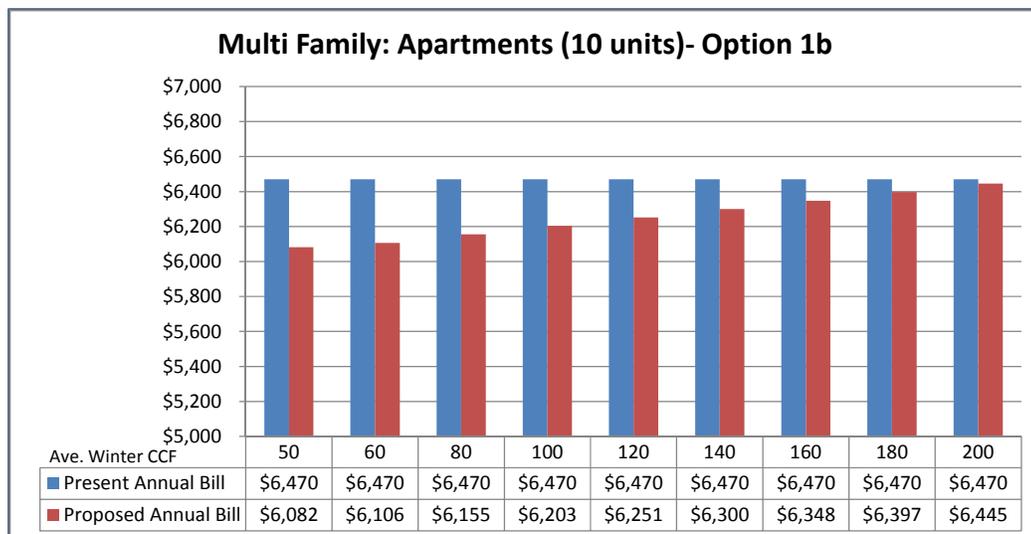
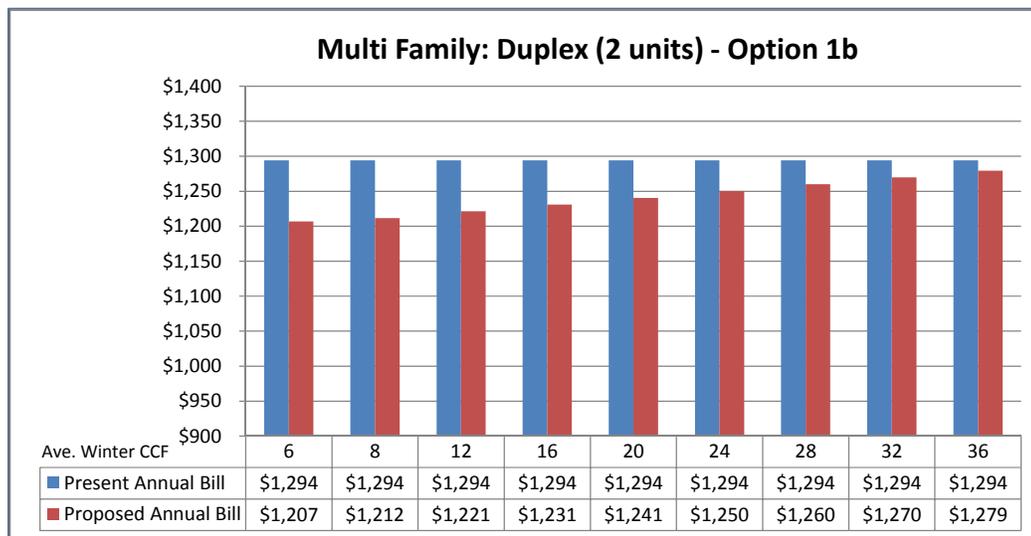


Option 1b - 95% Fixed/5% Variable – Adjust Commercial Sewer Unit Equivalencies; No Change to Multi-Family Equivalencies

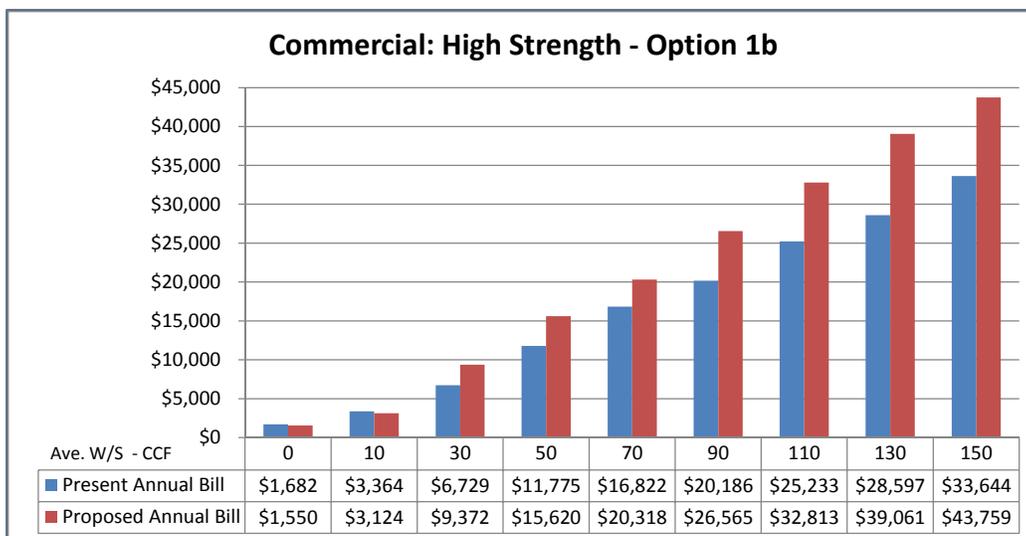
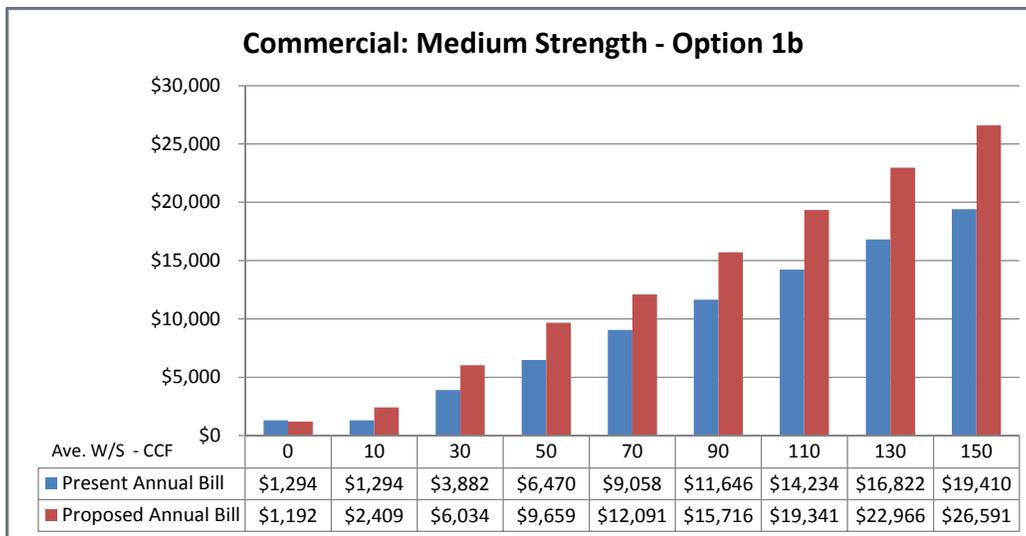
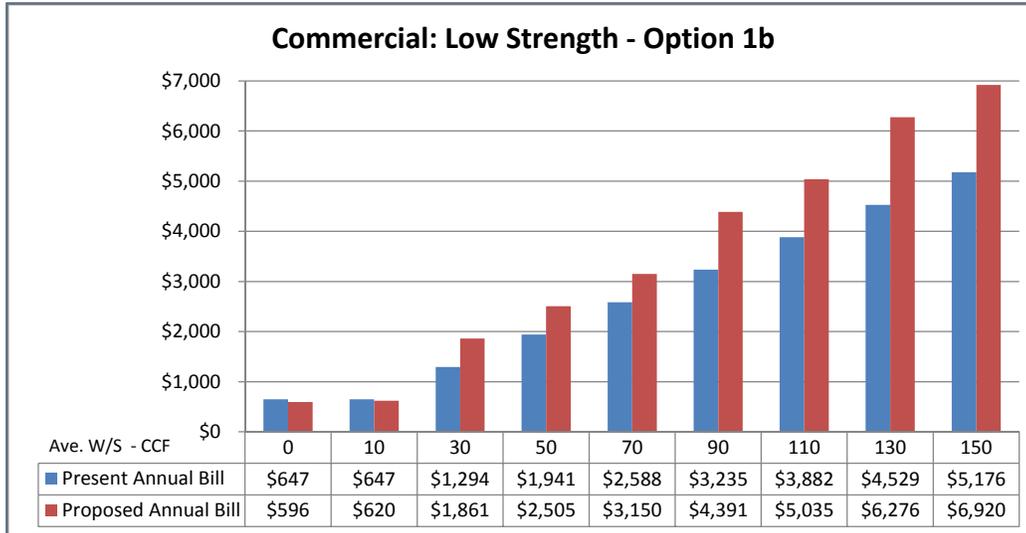
	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$596.10/sewer unit	\$2.42/CCF
Multi-Family	596.10/sewer unit	2.42/CCF
Commercial [1]	596.10/sewer unit	2.42/CCF

[1] – Assumes 1 commercial sewer unit = 1 residential sewer unit (7 CCF/Month)

Option 1b Annual Bill Comparisons
95% Fixed/5% Variable – Current MF Equivalencies; Adjust Commercial



Option 1b Annual Bill Comparisons (continued)
95% Fixed/5% Variable – Current MF Equivalencies; Adjust Commercial





Technical Appendix E

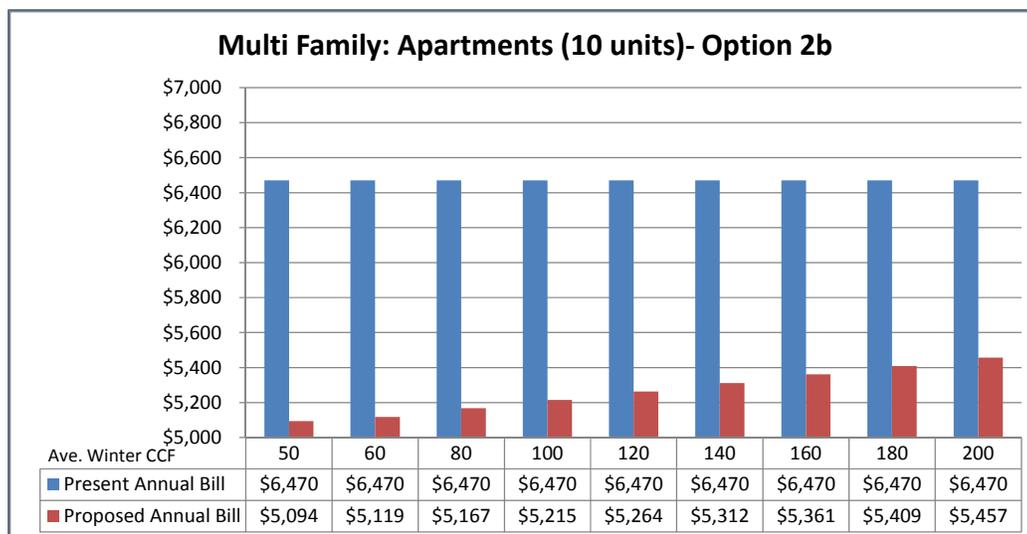
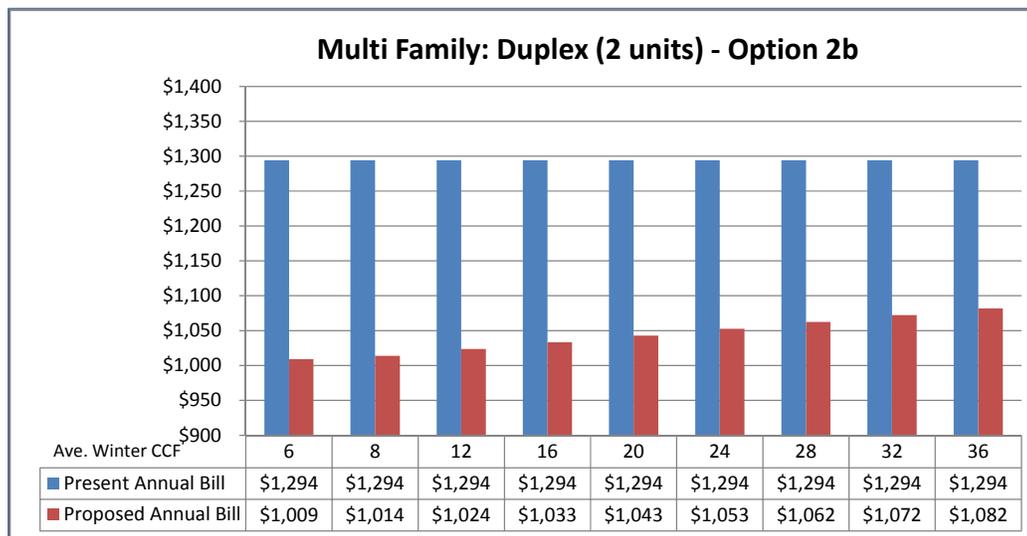
Option 2b - 95% Fixed/5% Variable – Adjust Multi-Family and Commercial Sewer Unit Equivalencies

	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$621.30/sewer unit	\$2.42/CCF
Multi-Family [1]	497.30/sewer unit	2.42/CCF
Commercial [2]	621.30/sewer unit	2.42/CCF

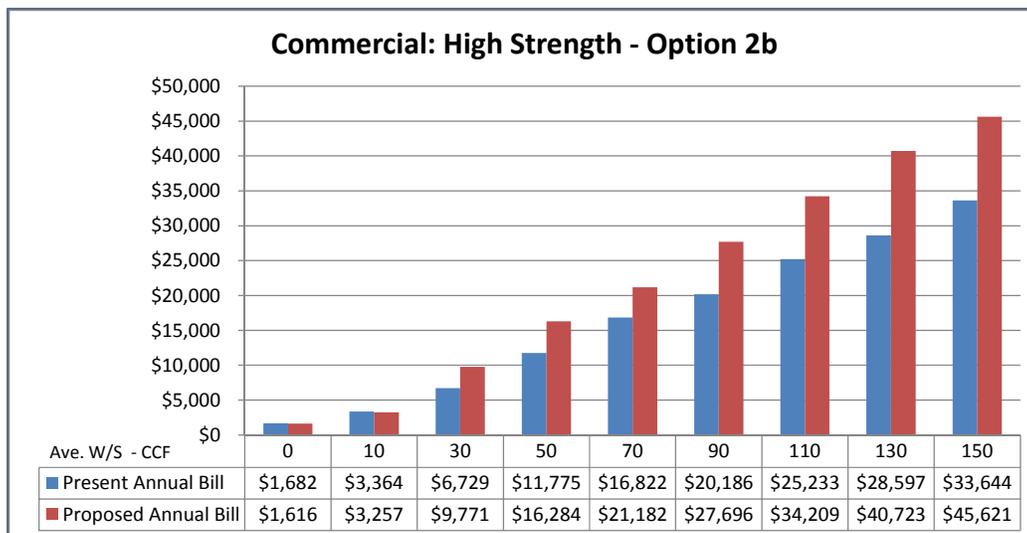
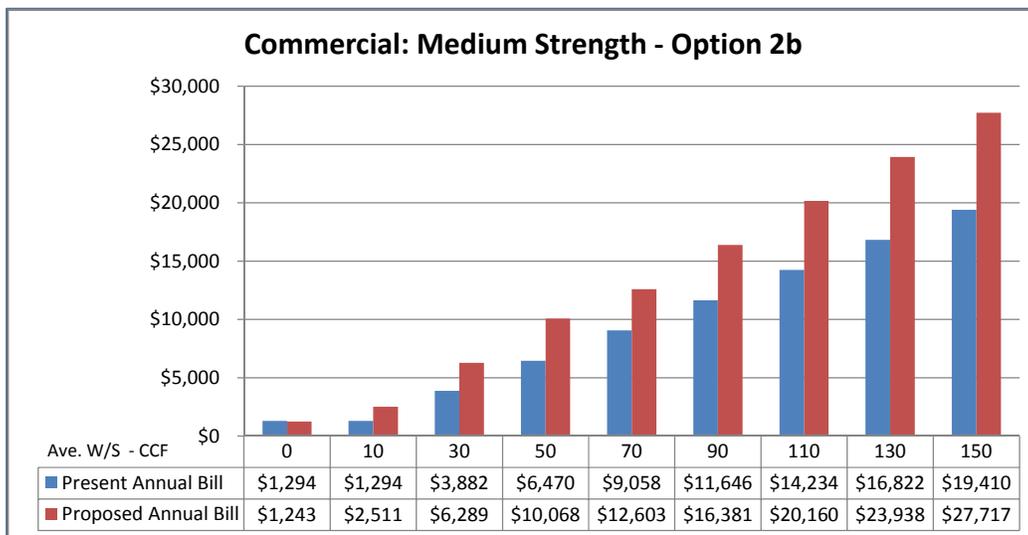
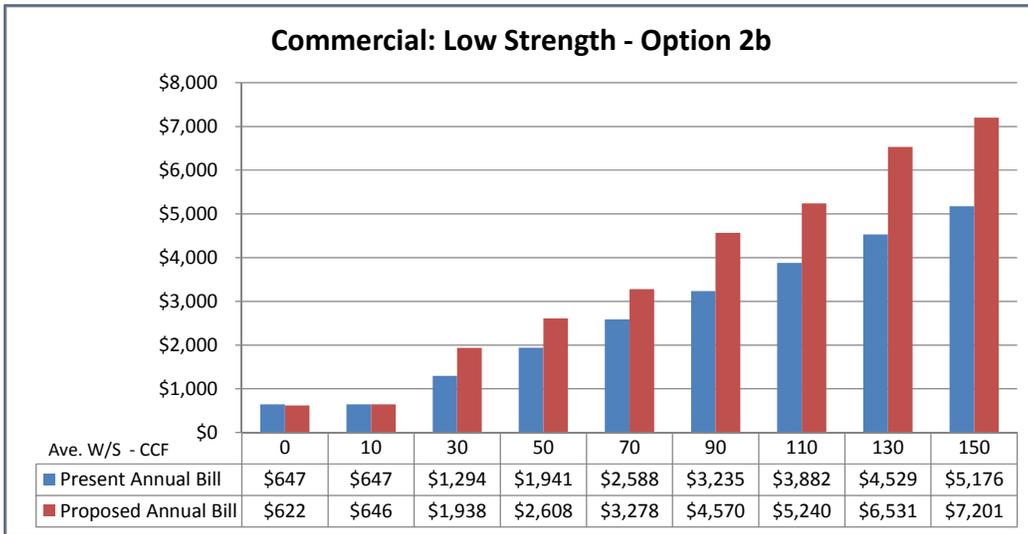
[1] – Assumes multi-family is 80% of single-family residential

[2] – Assumes 1 commercial sewer unit = 1 residential sewer unit (7 CCF/Month)

Option 2b Annual Bill Comparisons 95% Fixed/5% Variable – Adjust Multi-Family & Commercial Equivalencies



Option 2b Annual Bill Comparisons (continued)
95% Fixed/5% Variable – Adjust Multi-Family & Commercial Equivalencies





Technical Appendix F

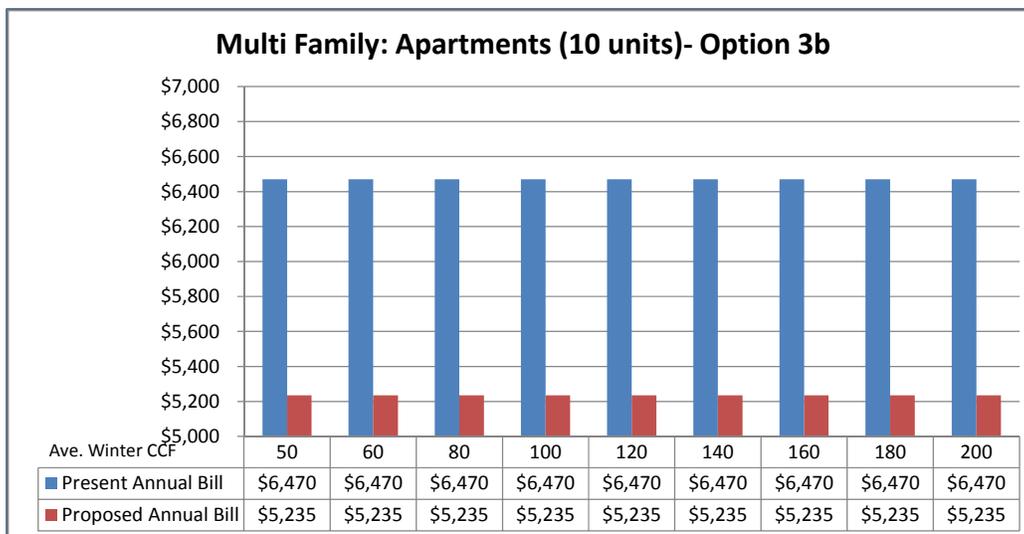
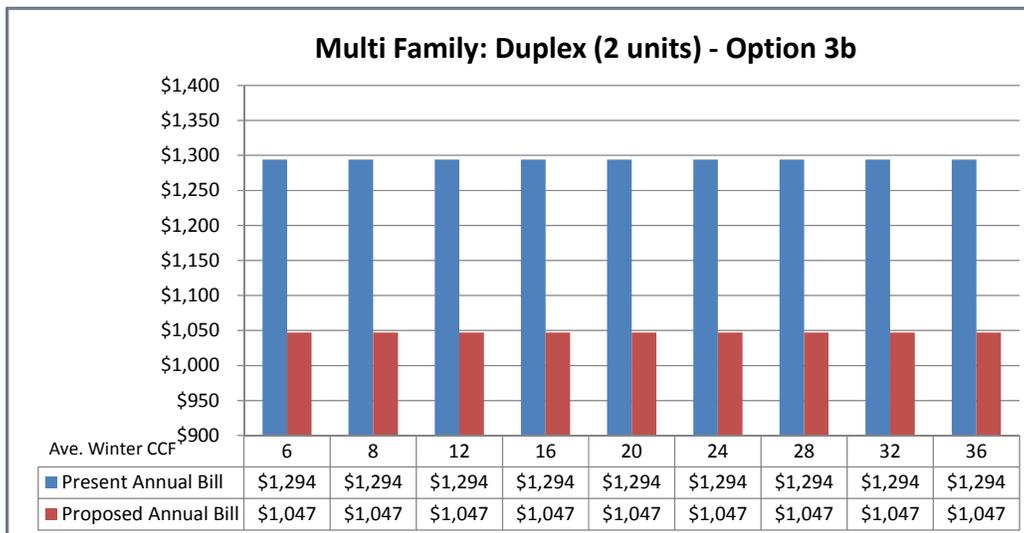
Option 3b - 100% Fixed – Adjust Multi-Family and Commercial Sewer Unit Equivalencies

	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$654.40/sewer unit	\$0.00/CCF
Multi-Family [1]	523.50/sewer unit	0.00/CCF
Commercial [2]	654.40/sewer unit	0.00/CCF

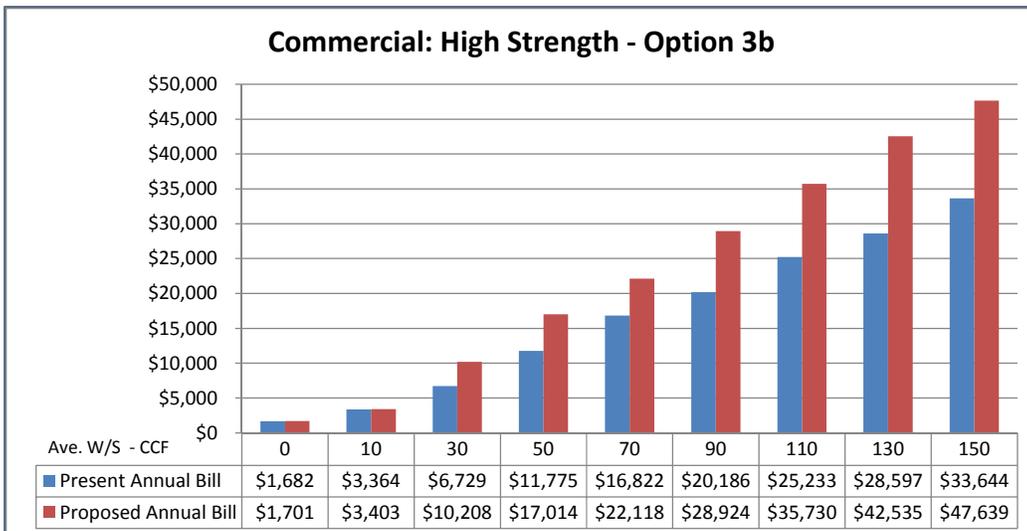
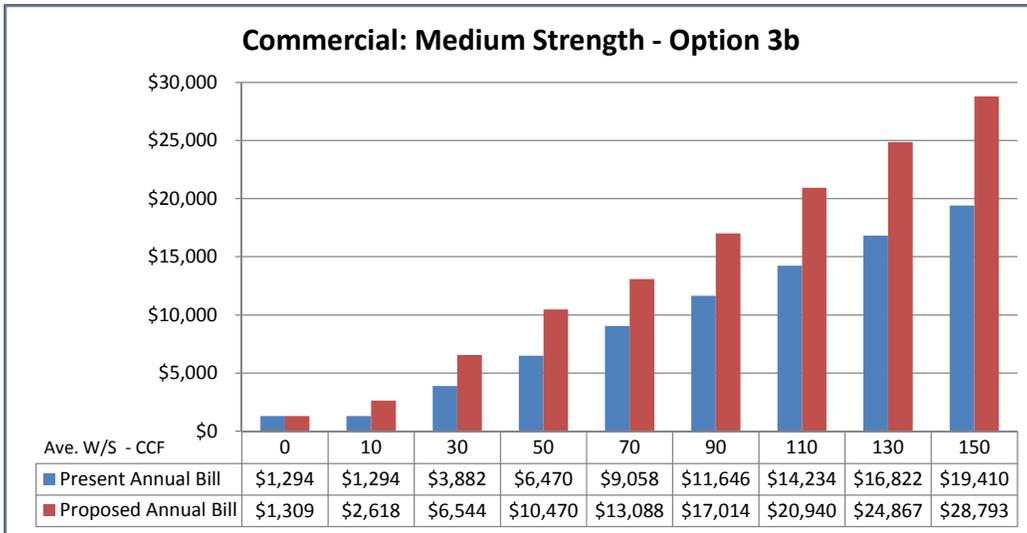
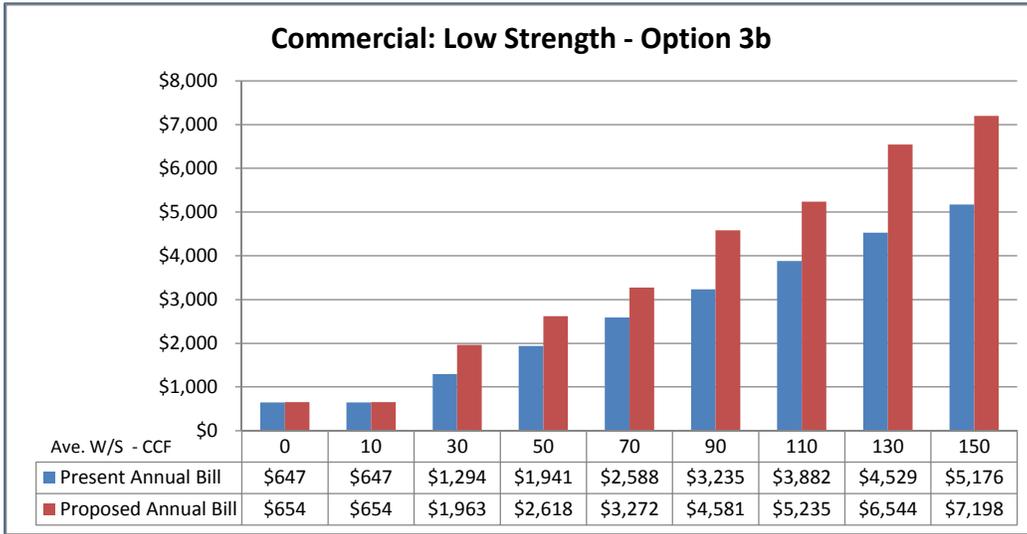
[1] – Assumes multi-family is 80% of single-family residential

[2] – Assumes 1 commercial sewer unit = 1 residential sewer unit (7 CCF/Month)

Option 3b Annual Bill Comparisons 100% Fixed – Adjust Multi-Family and Commercial Equivalencies



Option 3b Annual Bill Comparisons (continued)
100% Fixed – Adjust Multi-Family and Commercial Equivalencies





Technical Appendix G – Board’s Preferred Option

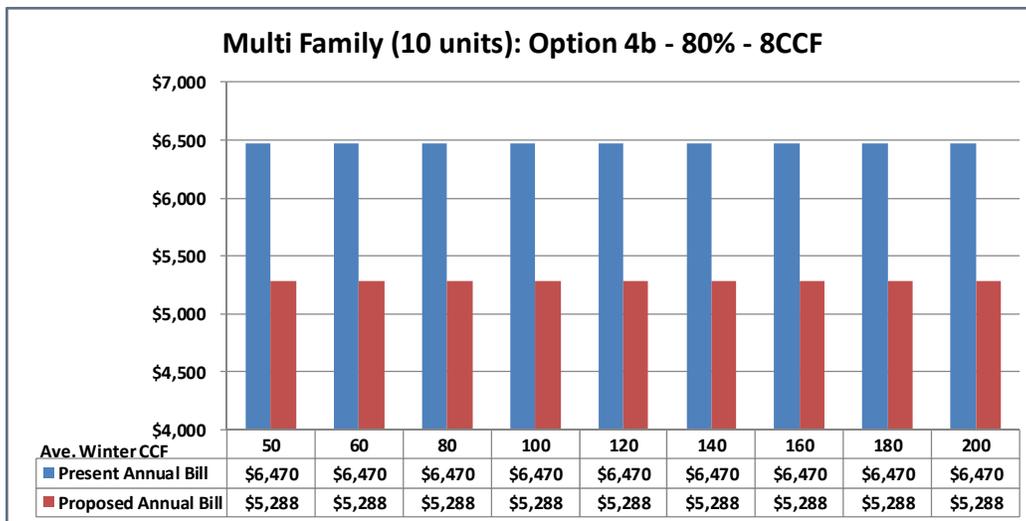
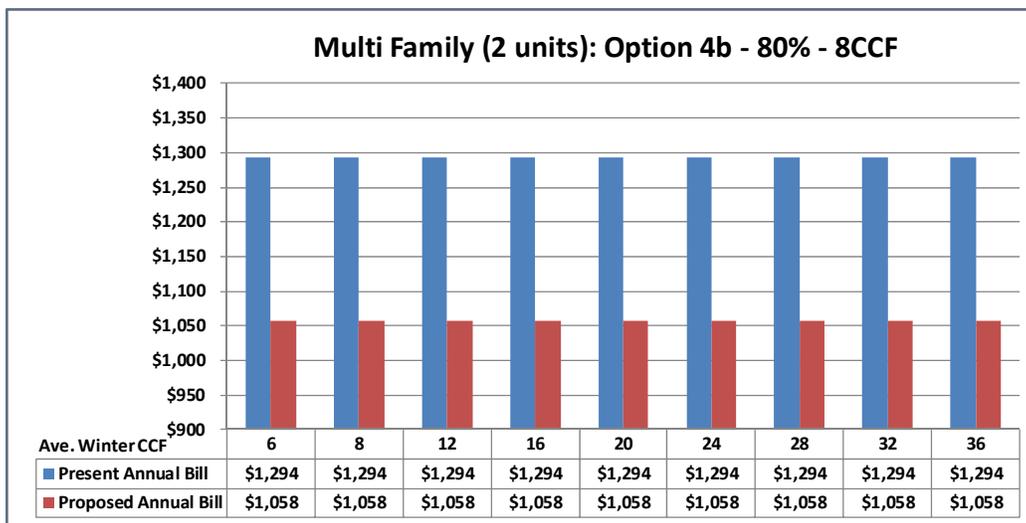
Option 4b - 100% Fixed – Adjust Multi-Family and Commercial Sewer Unit Equivalencies

	<u>Fixed Rate</u>	<u>Variable Rate</u>
Residential	\$661.00/sewer unit	\$0.00/CCF
Multi-Family [1]	528.80/sewer unit	0.00/CCF
Commercial [2]	661.00/sewer unit	0.00/CCF

[1] – Assumes multi-family is 80% of single-family residential

[2] – Assumes 1 commercial sewer unit = 1 residential sewer unit (8 CCF/Month)

Option 4b Annual Bill Comparisons 100% Fixed – Adjust Multi-Family and Commercial Equivalencies (8 CCF)



Option 4b Annual Bill Comparisons 100% Fixed – Adjust Multi-Family and Commercial Equivalencies (8 CCF)

