DRAFT

GAS UTILITY
COST OF SERVICE ANALYSIS

For the Period Ending
June 20, 2012

Prepared for

City of Richmond
Department of Public Utilities

February 8, 2013

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EXHIBITS

I. INTRODUCTION

Concentric Energy Advisors, Inc. ("Concentric") was retained by the Department of Public Utilities' ("DPU") of the City of Richmond to perform a cost of service study and analysis for the Gas Utility. Over the past several months, Concentric worked with the DPU to develop the data used in the cost of service model. The Cost of Service ("COS") study is based upon June 30, 2012 test year data, June 30, 2013 budget data and June 30, 2011 adjusted revenues and volumes. The study was prepared using traditional cost allocation and rate design methodologies that are consistent with those currently utilized in the industry.

II. SUMMARY OF GAS COS RESULTS

The 2011-2012 Gas utility cost of service study results show a total gas utility rate base of approximately $308 million and a total return on rate base of approximately $18.0 million. This represents a system-wide return of 5.84%.

III. OVERVIEW OF THE COS STUDY

The costs to serve the customers of any utility company consist of operating expenses, taxes, and capital costs. Cost of service is traditionally performed using either a historical test period or some modified future test period. In this case, we relied on both a historical test period for certain inputs and a projected test period for other inputs. The purpose of the COS study is to provide a measure of the cost responsibility of each of the City's rate classes based on cost causation principles. The basic methodology that is relied on in a fully allocated embedded cost of service studies includes: functionalization, classification, and allocation. The functional groups that are typically considered for a natural gas distribution company include production, purchased gas, storage, distribution, customer accounting and customer service. Classification then groups costs based on the function for which they are incurred; customer, demand, and commodity classifications. Finally, the costs are assigned or allocated to the various classes. The result of the study is a detailed breakdown of the costs of serving each customer class. This approach provides the objective basis, which allows costs to be recovered from customers based on the resources that are required to provide service to that customer class.

IV. RATE CLASSES

The following is a list of DPU Gas Utility's Rate Classes that were identified in the study:

- Residential
- General Service

- Commercial and Industrial Service ("CIS")
- Large Volume Sales ("LVS 1")
- Very Large Sales ("LVS 2")
- Flex
- Transportation
- Municipal

V. DATA ASSUMPTIONS

The data used in the study was compiled in a joint effort with the DPU staff and has been verified by DPU staff members.

Plant Data

Net plant, rate base adjustments, depreciation expense, interest and taxes other an income were derived from 2011-2012 test year data.

Operations and Maintenance

Operations and Maintenance ("O&M") data was derived from the 2013 budget to ensure that known and measurable changes in costs for the coming year were considered. Concentric categorized the O&M data from "service" accounts as provided by the DPU into Federal Energy Regulatory Commission ("FERC") accounts. In general, utility COS models use FERC account numbers and account descriptions and are allocated based on those accounts. Concentric follows the FERC accounting cost allocation methods and therefore changed the DPU O&M categories to FERC accounts.

Revenue and Volumetric Data

Finally, revenue and volume data were taken from 2010-2011 since the 2011-2012 data was not considered a normal weather year. The revenues and volumes from 2011-2012 were particularly low and therefore after a review of the 2010-2011 year revenues and volumes it was clear that that year could be considered a "normal year".

VI. OVERVIEW OF THE FUNCTIONALIZATION, CLASSIFICATION, AND ALLOCATION METHODOLOGY

The COS consists of a three-step analytical process that is facilitated by a cost study model. The following steps outline the process used to develop the COS:

Functionalization - Plant investment costs are categorized by the operational functions with which they are most closely associated. These functions include production, purchased gas, storage, distribution, and customer services. Administrative and General Costs must be functionalized to these categories depending on the purpose of the sub-accounts, i.e. what function they support.

Classification - The functionalized costs are classified by the utilization of categories that most closely match the purpose for which the cost was incurred or to which the cost is most directly correlated (i.e. to meet maximum demand, to serve each customer and to supply the commodity). The criteria used to identify the most appropriate factors were as follows:

- *Demand costs* are costs that are independent of hour-to-hour changes in throughput but are related to peak requirements.
- *Customer costs* are those costs that are required to provide service to a customer, independent of throughput or peak demand. Meters and customer billing are obvious examples of such costs.
- *Commodity costs* are those costs that are dependent on throughput. Gas cost is the primary example, but in this COS, gas costs are excluded since they are a pass through cost to the customer.

Allocation - In the allocation process, the determinants or cost causing factors of the specific investments or costs are identified and developed by class. Next, these costs or investments are assigned to customer classes based on internally or externally derived allocation factors. Internally derived factors are developed based on directly assigned costs and are used to allocate general costs such as general plant or administrative and general costs. Externally derived factors are based on data such as the commodity use by class, the peak demand by class, the number of customers, revenue by class, etc.

VII. ALLOCATION OF COSTS

A. Rate Base

The following outlines the methodology used in the allocation process after functional categories are assigned to each investment and expense account.

- Production plant and storage plant investment costs are generally classified as demand-related and allocated to customer classes based on class contribution to peak day demand. The peak day demand by customer class was not available for this study; therefore, the coldest month (peak month) demand was used to develop the peak consumption-related allocations.
- The sub-accounts of distribution plant are allocated as follows:

- Mains are classified based on the minimum system classifier, discussed in detail below. Once classified, the demand component of the mains costs is then allocated to customer classes based on peak and average demand, while the customer component is allocated based on the number of customers in the class. (The peak and average demand method allocates demand-related costs based on a 50/50 weighting of each class's contribution to peak demand (coldest month) and average demand (total throughput volumes)).
    1. A portion of the mains cost was identified as being incurred exclusively to serve the industrial rates classes (CIS, LVS 1 and LVS 2). Therefore, the associated costs were directly assigned to the industrial rate classes using the mains allocation methodology. The remainder of the mains cost was allocated to all customer classes based on the minimum system analysis discussed above.
- Land and land rights, structures and improvements, and measuring and regulating equipment are classified as demand-related and allocated to classes based on the peak and average demand allocator.
- Services are allocated based on the number of services in each class for both the demand and customer components of the services costs. The allocation between demand and customer is based on the results of the weighted meter study.
- All other distribution sub-accounts are classified as customer-related costs and are allocated to the customer classes based on various internal and external allocators. These methods include direct assignment, revenues, weighted meters, weighted regulators, and services. Whenever possible, specific information detailing cost responsibilities were utilized in order to develop the allocators.

- General plant is allocated based on the internal allocator developed for gross plant.
- Accumulated reserves for depreciation for each of the rate base accounts were allocated on the same basis as the associated rate base accounts.

B. O&M Expenses

The allocation of O&M expenses are also based on cost causation principles. These allocations are described below:

- Production expenses are classified based on a determination of whether they are demand-related expenses or commodity-related expenses.

- Distribution operating expenses are classified as either demand expenses or customer expenses and are allocated to customer classes on a peak and average basis or in the case of regulators by the weighted meters study. The majority of distribution maintenance expenses are associated with mains and service. Those costs are allocated to customer classes based on the mains and services plant accounts.
- Distribution maintenance expenses are classified as demand expenses, customer expenses or like in the case of maintenance of mains and services on the minimum size classifier. Supervision and engineering is allocated based on total distribution plant. Structures and improvements is allocated based on peak and average. The maintenance of mains is allocated based on peak and average and customer while maintenance of services is allocated on a services allocation factors. Finally, meter and house regulator maintenance is allocated based on the weighted meters study.
- Customer expenses are allocated based on the number of customers. Uncollectible accounts are directly assigned based on the percentage of uncollectible revenues in each customer class. The class level allocation of uncollectible revenues used to develop these percentages was provided by the DPU staff.
- Customer assistance expenses and sales expenses are classified as a customer cost and were allocated based on number of customers.
- Administrative and General expenses are allocated based on internal allocators, largely on the basis of labor expensed and capitalized for each account in the test year. Exceptions to this are costs related to security that are allocated based on plant.

C. Labor Expenses

All labor expenses for Production, Distribution Operation Expenses, Distribution Maintenance Expenses, Customer Account, Sales Expenses, and Administrative and General are allocated using the same criteria as were used to allocate the corresponding O&M expenses.

D. Remaining Expenses

The remaining expenses include depreciation expenses and taxes other than income taxes. These costs were allocated as follows:

- Depreciation expense for each of the rate base accounts was allocated on the same basis as the associated rate base accounts.
- Taxes other than income taxes include gross receipts, real estate and personal property taxes and miscellaneous taxes.
    - Gross receipts taxes are allocated based on revenues

- Miscellaneous taxes are allocated on the basis of labor, an internal allocator.
- Real estate taxes are allocated on the basis of total plant, also an internal allocator.

- Interest Expense is allocated based on total ratebase

VIII. EXTERNAL STUDIES

While the majority of the allocators are based on data provided by the Gas Utility, more detailed analysis is required to develop the following allocators.

A. Weighted Meters Study

The weighted meters study is conducted in order to develop an external allocator that assigns costs to the customer classes based the classes' share of the total meter investment. That allocator is used in the study to assign meter costs as well as the meter-related portion of other rate base accounts such as CWIP, working capital, administrative and general expenses, general plant and construction not classified. To develop the total meter replacement cost for the residential, flex and municipal rate classes, Concentric analyzed the cost of all meters, determined the number and type of meters in each customer class, and calculated the total replacement cost of meters by customer class. Book costs for each meter type were not available; therefore, Concentric relied upon replacement cost for each meter size that was provided by the DPU. Concentric mapped each individual meter type by customer class, to the replacement meter cost categories and produced a total replacement cost of meters by customer class. The total meter replacement cost for the commercial and industrial classes was developed based on the average meter cost for the industrial and commercial classes provided by the DPU. The average meter cost was applied to the total meter count for each rate class to arrive at a total replacement cost of meters for the industrial and commercial rate classes. As shown in Exhibit II, the weighted meters study allocates 32.60 percent of the meter costs to the residential class and 57.40 percent to the general service class. Each of the remaining customer classes assumes less than 6 percent of the meter costs.

B. Weighted Regulators Allocator

Similar to the weighted meters allocator, the weighted regulators allocator is used to functionalize and allocate customer-related costs. Since sufficient data was not readily available for Concentric to conduct a study that specifically allocated the regulatory costs, Concentric relied on the weighted meter study to allocate regulator cost in the COS.

C. Weighted Services Study

Similar to the weighted meters allocator and the weighted regulators allocator, the services allocator is used to functionalize and allocate customer-related costs. Since sufficient services data was not readily available for Concentric to conduct a new study, the number of meters by meter type was linked with the corresponding customer class. The number of meters per customer class was then multiplied by an average service cost per rate class that was provided by the DPU. As shown in Exhibit III, the services study allocates 88.59 percent of the services costs to the residential class and 10.44 percent to the general service class. The remaining classes are allocated less than 1 percent of the services costs.

D. Minimum System Study

The minimum system study identifies the appropriate classification of distribution mains costs between demand and customer categories based on the minimum size of main necessary to serve the minimum load requirements of the customers. Once the cost of the minimum system or zero size main is identified, that portion of the total system mains cost is assumed to be required to serve each customer and is therefore allocated on a customer basis. The remaining costs are considered demand based and are allocated to customer classes on a peak and average basis.

In this analysis, Concentric relied on the total inventory of mains, by pipe size and the total book cost of mains that are currently included in rate base as provided by DPU Staff. Using this data, Concentric derived a per unit cost ($/ft) for each size of main in the system. That cost was compared to the actual cost of all mains to produce a percentage of main costs to be classified as customer related. The remaining percentage is classified as demand related.

As shown in Exhibit IV, the minimum system study estimates that 76.67 percent of the total mains cost was related to all customers and therefore should be distributed to all of the customers based on customer count. Because the Gas Utility's residential rate class is approximately 90.00 percent of its customer base, a significant portion of the mains costs was distributed to the residential class in the COS study. This allocation is a significant driver of the cost allocation to the residential class and results in the under-collection from the residential class. In prior COS analyses, the data was not available to conduct this study, and mains were allocated equally to customers and demand, which allocated the costs of mains more broadly across the customer classes.

E. Multiple Meter Study

The multiple meter study was conducted in order to determine if the current charges were reflective of the cost to serve customers with multiple meters on an individual account. In this analysis, Concentric analyzed the costs of individual meters and the cost to serve the multiple metered accounts. In order to estimate the cost of additional meters on customer premises, Concentric relied on the meter rate base, meter reading expense, meter depreciation expense and total meter count data provided by DPU for the remainder of the study to estimate the cost per meter. DPU provided specific account level detail for customers with multiple meters which Concentric relied on to estimate the annual cost by rate class associated with multiple meter customers that is not currently being recovered in the existing rate structure. The results of that analysis indicate that the total under collection from multiple meter customers is approximately $207,072. Based on discussions with DPU staff, it was determined that the total under collection of the costs related to multiple meters on customer accounts was not sufficient to revise the existing rate structure at this time. [THIS RESULT CHANGED BASED ON THE METER STUDY UPDATE. WE MAY WANT TO REVISIT THE CONCLUSION ON THIS STUDY]

IX. COST OF CAPITAL

The cost of capital used in the study to meet the Gas Utility's cost of debt of 4.47 percent.

X. REVENUE REQUIREMENT

The final step in the COS study is the determination of the revenue requirement and the unit cost to serve each customer. The total revenue requirement is computed as the sum of total operating expenses and total expected return on rate base, as adjusted for income taxes. Review of the 2010-2011 revenues indicates that on a system-wide basis, the Gas Utility's total distribution revenues were $69.1 million (excluding natural gas commodity costs). The net operating income to the Utility for this fiscal year was $18.0 million. Rate base as of June 30, 2012 was $308.8 million. Therefore, for FY 2012, the Gas Utility achieved a system-wide return of 5.84 percent.

Concentric understands that the Gas Utility has a target rate of return on rate base of 4.47%. Based on the results of the COS study, in order to achieve this target rate, a rate decrease would have to occur for most rate classes except for the residential rate class. As shown in Exhibit I, at a rate of return of 4.47 percent, the residential rate class was under collecting by over $5.7 million.

XI. RATE DESIGN

The rate design process begins with a review of the results of the cost of service study. As has been discussed above, in this review, Concentric seeks to determine which classes have contributed at a level above the target system return and which classes have contributed below the targeted system return. Often times the goal of the rate design process is to move rates generally toward the state wherein customer classes contribute equally to the overall system return.

While equalized rates of return are often a rate design goal, this goal is usually tempered by other influences on the rate design process. Political influences on the rate structure of the Gas Utility could include insulating certain customer classes from rate increases, attracting large industrial customers to the region, or minimizing the incentive for larger industrial customers to relocate. Alternatively, the political environment could support the movement towards equalized rates of return. Economic pressures could require that phase in periods be established to avoid hardship in certain classes. Such outside influences must be identified prior to the development of the new rate structure. Once the overall objectives are established, it is possible to develop rate design alternatives. Often times, rate design objectives conflict. As a result, it is likely that several rate design scenarios will need to be developed in order to determine the rate design that best meets the majority of the rate design goals.

The final step in the rate design process is to determine that the rate structure will recover the revenues that the Gas Utility requires in order to meet the target rate of return. This is verified using a proof of revenues analysis which calculates total revenues using actual customer level monthly consumption and currently effective rates by class. That data is aggregated to determine the contribution of each customer class to the total system return. That information is used to refine the rate design in order to achieve the social and political goals that were established for the rate design process.

The rate design process is iterative and generally requires the development of multiple scenarios to understand the effect of various rate changes on each customer class. Usually it is necessary to develop multiple scenarios to arrive at an alternative that meets the stated objectives and the desired return. Concentric uses the following approach in the rate design process:

- Review cost of service study results;
- Review of political and socioeconomic considerations;
- Benchmarking analysis;
- Detailed analysis of residential customer data
- Development of rate design alternatives;
- Review customer impacts;
- Finalize rate design; and

- Perform proof of revenue (to verify that the new rates will produce the required revenues by class, as designed).

XII. REVIEW OF THE COST OF SERVICE RESULTS

The COS provides an understanding of the projected contribution by each class to the total revenue requirement. The revenues identified above indicate that there is a need to modify the currently effective rate structure. Reviewing the class specific contributions to the rate of return, provided in the Summary schedule of the COS study (see Exhibit I), the residential, customers have significantly under-contributed to the total revenue requirement, with a return of 3.28 percent. Conversely, General Service, CIS, Large Volume, Very Large Volume, Flex, Transportation and Municipal customers provided returns in excess of 8 percent. Return on rate base from the General Service class was 11.46 percent, CIS contributed 34.41 percent, Large Volume contributed 11.57 percent, Very Large Volume contributed 8.19 percent, Flex contributed 87.54 percent, Transportation contributed 13.70 percent and the Municipal class contributed 40.45 percent.

Socio-economic and Political Considerations

Concentric understands that the DPU has a desire to equalize the rates of return across the customer classes. In addition to meeting this goal, Concentric considered other factors including; the effect of rate design on the city and county customers, the effect of rate design on lower use and higher use customers, and monthly and annual bill impacts from rate design changes.

Gradualism

Concentric recognizes that the decision to increase rates is difficult and can result in community concern. As discussed above, the under-collection of costs from the residential class is significant and cannot be resolved in a single year without large increases in costs for those customers. Therefore, Concentric's approach to designing rates considers the principle of gradualism, focusing on a five-year time horizon to achieve parity in the residential contributions to the revenue requirement. Furthermore, given the current low commodity cost environment, Concentric believes that this would be an appropriate time to begin to make progress on such a restructuring effort. Finally, since the rate designs discussed below propose changes to increase residential customer rates over several years, Concentric believes that it would be appropriate to maintain the current rate structures for all other rate classes until there is parity in the return for the residential class.

Benchmarking Analysis

In order to understand how the DPU's gas utility rates compare to other similarly situated utilities and other utilities in the region, Concentric performed a benchmarking analysis that compared the gas utility rates to

twelve regional utilities. Specifically, that study compared the distribution rates of Richmond to the distribution rates of twelve other natural gas utilities. To estimate the distribution rates of the benchmarking group, Concentric relied on sales and transportation volume and revenue data by company for the residential, commercial and industrial rate classes as published by the Energy Information Administration ("EIA")[1]. The EIA data presents total revenue, including gas costs. Because the purpose of the COSS is to establish the distribution costs, the most meaningful comparison of Richmond's costs to the benchmarking group would be exclusive of gas and gas purchasing costs. Therefore, while we have provided benchmarking results that use the EIA data as presented, Concentric also benchmarked DPU's natural gas distribution costs against estimated distribution costs for the proxy. Distribution rates can be approximated by removing an estimate of the purchased gas revenue from the reported revenue for the proxy group. In order to estimate the purchase gas revenue by rate class for the proxy companies, Concentric relied on the average unit cost of gas estimated by DPU for its customers by rate class. That purchased gas rate was applied to each proxy company's sales volume by rate class to estimate purchased gas revenue by class. Estimated purchased gas revenue was then subtracted out of total revenue to arrive at an estimate of non-gas revenue by rate class. This process was repeated for the residential, commercial and industrial rate classes of each Company. Detailed results of the benchmarking analysis for the residential, commercial and industrial rate classes are shown in Exhibit V.

As shown in Exhibit V, Concentric's analysis included the residential distribution rates for the following companies:

- Atmos (VA)
- Baltimore Gas & Electric
- Chesapeake,
- Charlottesville
- Columbia Gas (MD)
- Columbia Gas (VA)
- Danville
- Public Utilities Holding Company
- Roanoke
- Virginia Natural Gas
- Washington Gas Light (MD)
- Washington Gas Light (VA)

[1] Concentric relied on the EIA data published for 2011, which is the most recent data published by this source.

The results of that analysis demonstrate that the range of residential distribution rates excluding purchased gas cost is from $3.25 per MCF to $11.08 per MCF. Richmond's residential distribution rate is in the third quartile at $6.51 per MCF, which is approximately 11.00 percent above the average and approximately 41.00 percent below the high of the range.

In addition to the residential distribution rates excluding purchased gas cost, Concentric considered distribution rates including purchased gas cost for the residential customer class. As shown in Exhibit V, the range of distribution rates including purchased gas cost for the benchmarking group is wide, from $10.10 per MCF to $17.92 per MCF, with Richmond's residential distribution rate of $13.36 per MCF slightly above the mean of that range. Based on these results and the results from the section above, Concentric concludes that it would be reasonable to adjust the residential distribution rate in order to satisfy the shortfall in the revenue collections from this customer class.

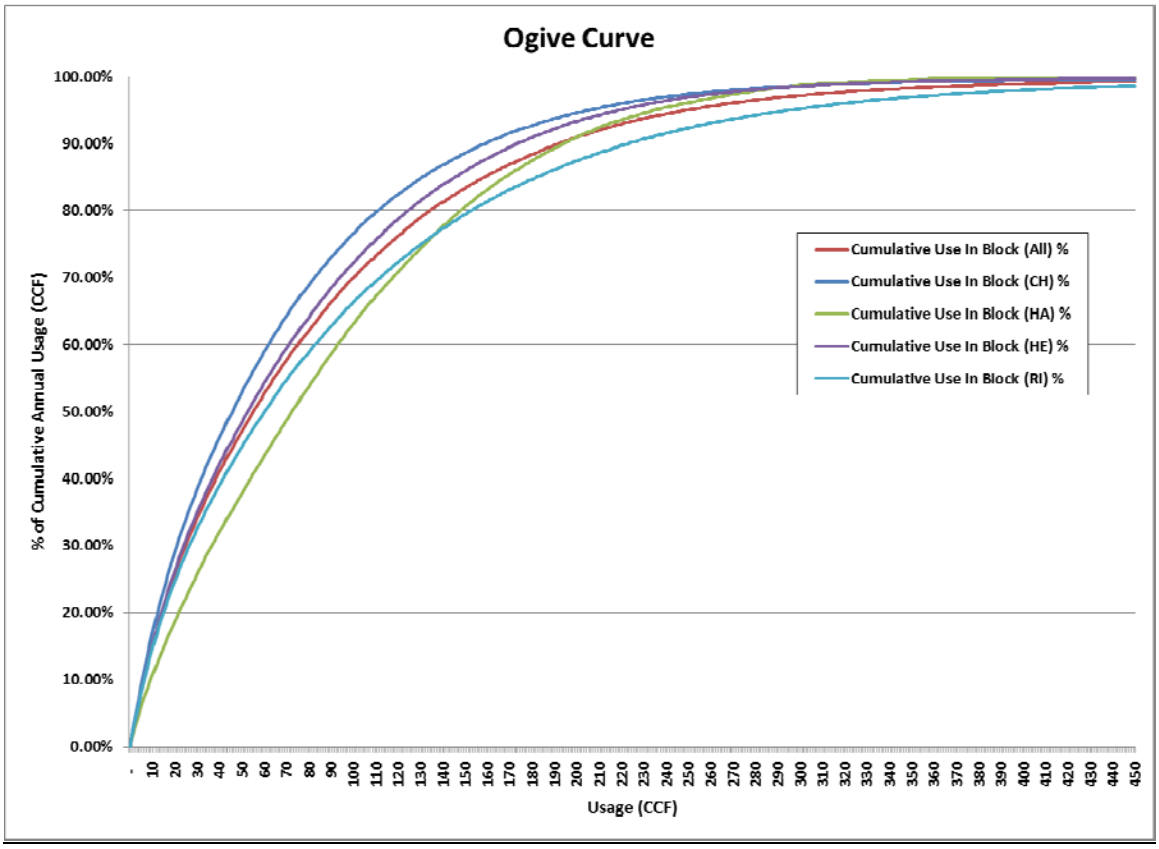
Analysis of Residential Customer Data

Developing rate design that achieves the objective of equalizing rates of return for residential customers, while taking into consideration socioeconomic considerations resulted in the need to review the usage patterns of DPU's customers at a very detailed level. Concentric worked with DPU staff to obtain residential customer usage data for all residential customers on the Richmond system in the 2011 fiscal year. Fiscal year 2011 was the most recent year that exhibited what was near a normal year in terms of weather (heating degree days), and therefore was considered the most appropriate data set on which to design rates. Concentric analyzed the data for all residential customers in this year, by county to gain an understanding of the customers' usage patterns.

In order to understand the usage patterns of the Gas Utility customers, Concentric developed a table of the cumulative use in block for the whole service territory and each county. The table represented block sizes that ranged from 1 CCF to 3,000 CCFs. By calculating the use in block for various block sizes, Concentric determined by county how much usage would be in a certain block size. For example, if the head block of the residential class was set at 100 CCFs, the table would show how much usage would be in the 100 CCF block. This analysis provides a greater understanding of the amount of gas consumed by customers within the City of Richmond and outside the county. To depict the results of the table graphically, the cumulative use in block for each block size was normalized by total usage. Therefore, the curves presented in Chart 1 depict the percentage of total usage in a particular block. As shown in the chart, residential customers within the City of Richmond would have a larger percent of annual usage in the tail block of a block rate structure. For example, if a block of 100 CCFs was used in rate design, then 65% of annual usage for the City of Richmond would fall into the 100 CCF block; however, over 72% of annual usage for Henrico would fall into

the 100 CCF block. Therefore, this analysis suggests that an increase the volumetric component of residential rates will result in a greater increase in the costs for customers that are within the City as compared with the surrounding counties.

CHART 1- OGIVE CURVE



Rate Design Alternatives

Based on the analysis of residential customer data and the benchmarking analysis, Concentric concluded that it would be beneficial to consider rate design alternatives that adjust both the customer charge and the volumetric charge. Increasing the customer charge has the advantage of allocating a portion of the incremental cost increase to every customer on the system, without respect to usage on an equal basis across all residential customers. Concentric recognizes that it is necessary to balance that objective with the understanding that increases in fixed costs result in a greater percentage increase in total distribution costs for lower usage customers. Increases in volumetric charges affect higher usage customers more than the lower usage customers, which is a consideration that must also be balanced in the final rate structure.

Block Rates

Concentric considered various forms of block rates in the rate design analysis including the Gas Utility's existing block rate design and an inverted rate structure.

1. Current Residential Block Rates

DPU's current residential rate has two blocks, with the second block beginning at a usage of 500 CCF per month. Analysis of DPU's monthly customer data indicates that only 0.49% percent of the volume is billed under the second block at a lower volumetric rate, which seems inefficient.

2. Inverted Block Rates

Inverted block rates, which would result in an increased volumetric rate at higher usage levels shifts cost increases to higher usage customers. As shown in Chart 1 above, however, in-city residential customers have higher usage than the surrounding counties. Therefore, the use of inverted block rates would allocate a greater portion of the cost increases to in-city customers.

3. Flat Rates

As shown in the bill frequency analysis provided in Exhibit VI, the majority of the Gas Utility's customers have monthly usage that is below 500 CCFs a month. This suggests that a rate structure utilizing a second block with a breakpoint of 500 CCFs in inefficient. It also indicates that few customers actually benefited from the rate structure and those that did received minimal decreases due to small $0.10 difference between the head block and tail block rates. Based on those conclusions, a flat rate structure would be a reasonable alternative to the current block rate structure. By utilizing a flat rate structure, the inefficiency of the current block rate structure would be removed and the effect on residential bills would be minimal as shown by the bill frequency analysis. Therefore, Concentric is proposing a rate design that utilizes a flat rate structure.

Bill Impact Analysis

Concentric prepared detailed bill impact analyses to determine the effect of the proposed rate design. The bill impact analysis shows the effect of the proposed rate design on a set of typical residential customers over an appropriate range of annual usage levels. More specifically, as shown in Exhibit VII, Concentric prepared monthly usage profiles for as many as 50 ranges of annual use. Based on those typical monthly usage profiles, Concentric calculated the monthly bills at current rates and at proposed rates and summed the monthly bills to get annual totals. To calculate the monthly bills at current rates, Concentric used the currently effective base rates. To calculate monthly bills at proposed rates, Concentric used the proposed rate design.[2]

[2] Some of the monthly usage profiles represent customers with a large amount of annual gas usage. For example, the largest profile represents a customer with annual usage of 16,989 CCFs. Concentric believes that this customer might be misclassified as a residential customer and might actually be a GS or CIS customer. Therefore, Concentric recommends focusing less attention on the bill impacts of the larger use customers because some maybe reclassified based on annual usage.

A. Rate Design:

The proposed rate design increases residential customer rates in annual inflation adjustments of 2.8% over the five-year phase in period. As shown in Exhibit VIII, in year 1, the customer charge would increase from $11.05 to $11.36. The volumetric rate would increase from $0.4700 to $0.4832. In this scenario, the under-recovery in year 1 for the residential class would be reduced from $3,726,769 to $2,474,652. In year three, assuming a 5.68 percent[3] increase in costs overall, the under-recovery would decline to $1,290,120 and by year five, the under-recovery would be reduced to $44,164.

Customer Impact

As shown in Table 3 and Exhibit VIII, the increases in rates would result in annual bill increases ranging from 2.8% for customers using 35 CCFs per year to 4.35% for larger customers using 16,989 CCFs per year. The rate increase for customers with average usage would be 2.8%. Under the proposed rate design, $13,465,933 will be recovered through the monthly customer charge compared to the $32,371,720, which will be recovered through the flat rate volumetric charge. The average monthly bill impact for customers with average usage would be $0.98 in the first year.

Table 3: Proposed Rate Design - Bill Impacts

Percentile	Average Annual CCF	Annual Bill				Cumul. # Customers
		Current Bill	New Bill	$ Change	% Change	
5%	35	$ 149	$ 153	$ 4	2.800%	4,548
7%	69	$ 165	$ 170	$ 5	2.800%	6,776
9%	111	$ 185	$ 190	$ 5	2.800%	9,017
20%	283	$ 266	$ 273	$ 7	2.800%	20,260
29%	394	$ 318	$ 327	$ 9	2.800%	29,237
40%	519	$ 377	$ 387	$ 11	2.800%	40,508
49%	611	$ 420	$ 432	$ 12	2.800%	49,447
60%	727	$ 474	$ 488	$ 13	2.800%	60,628
69%	827	$ 521	$ 536	$ 15	2.800%	69,659
80%	979	$ 593	$ 609	$ 17	2.800%	80,847
89%	1,157	$ 677	$ 695	$ 19	2.800%	89,805
98%	1,596	$ 883	$ 908	$ 25	2.800%	98,772
100%	16,989	$ 7,997	$ 8,345	$ 348	4.354%	101,014

[3] An annual increase of 2.80 percent per year, compounded over two years.