COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

APPLICATION OF COLUMBIA GAS OF KENTUCKY, INC. FOR AN ADJUSTMENT OF RATES	)))	**CASE NO. 2016-00162**

Direct Testimony of Kevin C. Higgins

on behalf of

Kentucky Industrial Utility Customers, Inc.

September 2, 2016

DIRECT TESTIMONY OF KEVIN C. HIGGINS

Introduction

Q. Please state your name and business address.

A. Kevin C. Higgins, 215 South State Street, Suite 200, Salt Lake City, Utah, 84111.

Q. By whom are you employed and in what capacity?

A. I am a Principal in the firm of Energy Strategies, LLC. Energy Strategies is a private consulting firm specializing in economic and policy analysis applicable to energy production, transportation, and consumption.

Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of the Kentucky Industrial Utility Customers, Inc. ("KIUC"), a group of large industrial customers taking service from Columbia Gas of Kentucky, Inc. ("Columbia" or the "Company"). The KIUC members participating in this case are AK Steel Corporation (Ashland Works) and Toyota Motor Manufacturing, Kentucky, Inc.

Q. Please describe your professional experience and qualifications.

A. My academic background is in economics, and I have completed all coursework and field examinations toward a Ph.D. in Economics at the University of Utah. In addition, I have served on the adjunct faculties of both the University of Utah and Westminster College, where I taught undergraduate and graduate courses in economics. I joined Energy Strategies in 1995, where I assist private and public sector clients in the areas of energy-related economic and policy analysis, including evaluation of electric and gas utility rate matters.

Prior to joining Energy Strategies, I held policy positions in state and local government. From 1983 to 1990, I was economist, then assistant director, for the Utah Energy Office, where I helped develop and implement state energy policy. From 1991 to 1994, I was chief of staff to the chairman of the Salt Lake County Commission, where I was responsible for development and implementation of a broad spectrum of public policy at the local government level.

Q. Have you testified previously before this Commission?

A. Yes. I testified in the Kentucky Utilities/Louisville Gas & Electric general rate cases in 2012[1] and 2008,[2] the East Kentucky Power Cooperative general rate case, in 2007-08,[3] and the Duke Energy Kentucky (Union Light, Heat and Power Company) general rate case in 2006.[4]

I also testified in Duke Energy Kentucky's energy efficiency rider proceeding in 2009[5] and in the Commission's Investigation of the Energy and Regulatory Issues in Kentucky's 2007 Energy Act in 2008.[6]

Q. Have you testified previously before any other state utility regulatory commissions?

A. Yes. I have testified in approximately 200 proceedings on the subjects of utility rates and regulatory policy before state utility regulators in Alaska,

[1] Case No. 2012-00221
[2] Case Nos. 2008-00251 and 2008-00252
[3] Case No. 2006-00472
[4] Case No. 2006-00172
[5] Case No. 2008-00495
[6] Administrative Case No. 2007-00477

Arizona, Arkansas, Colorado, Georgia, Idaho, Illinois, Indiana, Kansas, Michigan, Minnesota, Missouri, Montana, Nevada, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, Texas, Utah, Virginia, Washington, West Virginia, and Wyoming.

<u>Overview and Conclusions</u>

Q. What is the purpose of your testimony in this proceeding?

A. My testimony addresses the topics of class cost allocation, revenue allocation, and rate design for the Delivery Service ("DS") rate schedule.

Q. What are your primary conclusions and recommendations?

A. I offer the following conclusions and recommendations:

(1) The Demand/Commodity study performed by Columbia does not include a customer component in the allocation of distribution mains costs, which undermines the validity of this cost allocation approach. This method unreasonably shifts the allocation of costs from lower-load-factor customers, such as residential, to higher-load-factor customers, such as industrial.

(2) To the extent the Demand/Commodity method is used, the throughput component should be weighted by Columbia's system load factor (21%), as recommended in the NARUC Manual,[7] rather than by 50%, as used by the Company in its study.

(3) Columbia's inclusion of the Flex Provision and Special Rate customers in the DS/IS customer class is a design flaw in Columbia's class cost allocation

[7] National Association of Regulatory Utility Commissioners Gas Distribution Rate Design Manual (June 1989).

studies which adversely distorts the perceived performance of the customers in the DS class that are paying standard rates. The Flex Provision and Special Rate customers should be removed from the DS/IS customer class in the cost allocation studies and placed in their own class.

(4) In its direct filing, Columbia is proposing a 45% rate increase for standard rate DS customers,[8] which is unjustified. This level of increase is driven, in part, because Columbia includes the Flex Provision and Special Rate customers in this class for the purpose of revenue allocation. By structuring its proposed revenue allocation this way, Columbia is effectively forcing the standard rate DS customers to singlehandedly absorb the cost of holding the DS Flex Provision and Special Rate customers' rates constant. This is wrong. The justification for the Flex Provision and Special Rate discounts is that the *system* is better off with these customers remaining on it; therefore, the obligation to absorb the rate discounts falls on *all* customer classes on the system, not the standard rate DS customers alone. Just as I proposed with respect to cost allocation, the Flex Provision and Special Rate customers should be removed from the DS class and placed in their own class for revenue allocation purposes.

(5) When viewed as a standalone class (i.e., with the Flex Provision and Special Rate customers removed from the DS class), the standard rate DS class is outperforming the system as whole on a cost-of-service basis under both the Customer/Demand and Average studies, when adjusting the Demand/Commodity study to be consistent with the guidelines in the NARUC

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[8] In Columbia's response to Staff's Third Request for Information, No. 3, Attachment CKY_R_PSCDR3_NUM3_ATT_A_081916, Columbia's proposed standard rate DS increase is 41%.

Manual.[9] Consequently, the standard rate DS class warrants a materially below-average rate increase relative to the rest of the system, not a materially above-average rate increase. Specifically, I recommend that the DS, GSO/GTO/GDS, and IUS classes receive increases 5% below the average increase for schedules proposed to receive a rate increase by Columbia.

(6) I recommend that the Commission require two changes to the Company's proposed DS rate design. First, at minimum, the customer charge should be increased sufficiently to ensure that the net increases in the customer charge and the volumetric charges are proportionate relative to current rates, including the AMRP rider and Administrative Charge. Second, the Commission should consider adding additional volumetric blocks to the DS rate schedule to better capture the declining unit-costs for providing gas distribution service. The current rate design has only two blocks. I recommend an alternative that has five blocks, consistent with other gas distribution utilities in the region.

Class Cost Allocation

Q. Have you reviewed the cost allocation studies prepared by Columbia?

A. Yes, I have. Columbia's class cost allocation studies are presented by Company witness Chad E. Notestone. Mr. Notestone presents three studies, which he labels the Customer/Demand study, the Demand/Commodity study, and the Average study.

[9] Without adjusting the Demand/Commodity study to be consistent with the NARUC Manual, the standalone DS class performs right at the system average in the Average Study.

Q. Are you aware that Columbia has recently provided revised cost allocation studies in response to a Staff Request for Information?

A. Yes. It is my understanding that Columbia provided revised cost-of-service studies on August 19th in response to Staff's Third Request for Information, No. 16. Columbia characterizes the changes in cost allocation among the classes as "relatively immaterial." Due to filing timing constraints, my cost-of-service analysis utilizes the studies provided in Columbia's direct filing.[10] However, my recommended changes are applicable to Columbia's revised studies as well.

Q. Please describe Columbia's three cost allocation studies.

A. The Customer/Demand study is a type of minimum system study, which recognizes that a fundamental feature of any distribution system is to deliver gas to customers irrespective of customer size. Such studies allocate distribution costs partly on the number of customers in each class in recognition of the fact that part of the cost of the system is incurred to reach each individual customer dispersed throughout the Company's service territory. Columbia's Customer/Demand study allocates approximately 65% of distribution mains costs based on customer counts, while the remaining 35% is allocated on the basis of design day demand requirements.[11]

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[10] Columbia's Direct cost-of-service models were provided in Columbia's Response to Staff's First Request for Information, No. 29

[11] Based on Columbia's Response to Staff's First Request for Information, No. 29, Attachment CKY_R_PSCDR1_NUM29_ATT_A_061016, Min System-Mains. Columbia utilizes the Minimum System allocator to allocate the costs of FERC Accounts 374 (Land and land rights), a portion of 375 (Structures and improvements), 376 (Mains), 378 (Measuring and regulating station equipment – General), and 379 (Measuring and regulating station equipment – City gate check stations.)

The Demand/Commodity study as described by Mr. Notestone is a Peak and Average method study.[12] This method allocates the cost of distribution mains on the basis of peak design day and throughput and does not recognize the customer component as a cost causer for investment in distribution mains.

As described by Mr. Notestone, the Average study gives equal weight to the Customer/Demand and Demand/Commodity allocation factors to allocate the cost of mains.[13]

Q. Do you have any observations on the relative merits of the studies presented by Mr. Notestone?

A. Yes. As a general matter, I believe the Customer/Demand study is more representative of how the cost of distribution mains is incurred than is the Demand/Commodity study. The latter treats mains cost allocation strictly has a function of class design day demand and annual volumes without also considering that the distribution system is built to reach individual customer premises. The absence of a customer component in the allocation of mains costs under the Demand/Commodity study undermines the validity of this cost allocation approach. This method unreasonably shifts the allocation of costs from lower-load-factor customers, such as residential, to higher-load-factor customers, such as industrial.

Q, Do you have any comments on the specific cost allocation calculations presented by Mr. Notestone?

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[12] Direct testimony of Chad E. Notestone, p. 9.
[13] *Id.*, p. 9.

A. Yes. I have two comments. First, as Mr. Notestone acknowledges, the Demand/Commodity study employs the Peak and Average method. This method is described in the National Association of Regulatory Utility Commissioners Gas Distribution Rate Design Manual ("NARUC Manual"). According to the NARUC Manual, the weight given to the volumetric component in determining each class's allocator factor should be equal to the system load factor,[14] which for Columbia is approximately 21%.[15] However, Mr. Notestone weights the volumetric (i.e., throughput) component by 50%, which appears to be arbitrary. This greater weighting causes the throughput component to be over-emphasized in the allocation, which in turn shifts even more costs to higher-load-factor customers than this method otherwise shifts.

Q. Do you recommend a change in the calculation of the Demand/Commodity allocation?

A. Yes. To the extent that this method is used, the throughput component should be weighted by Columbia's system load factor, as recommended in the NARUC Manual.

Q. Have you recalculated the class cost allocations for the Demand/Commodity study using system load factor to weight the throughput component?

A. Yes, I have. The results of this recalculation are presented in Exhibit KCH-1, which shows revised class cost allocations for both the Demand/Commodity study (page 1) and the Average study (page 2).

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[14] NARUC Manual (June 1989), pp. 27-28, Average and Peak Demand Method description.

[15] Based on total throughput 23,816,711 Mcf, and design day demand of 308,200 Mcf (excludes DS-ML). $23{,}816{,}711 \div (308{,}200 \times 365) = 21.17\%$.

Q. What is your second comment regarding the specific cost allocation calculations presented by Mr. Notestone?

A. My second comment concerns the composition of the DS/IS class in both the Customer/Demand and Demand/Commodity studies. In both studies, as well as in Columbia's proposed class revenue allocation, the DS/IS class includes not only customers taking service on standard DS rates, it also includes customers taking service under special pricing arrangements, in particular customers taking service under the DS Flex Provision and a Special Rate (SC3).

Q. What is the Flex Provision?

A. The Flex Provision is designed for customers that are bypass threats. That is, their locations and gas usage volumes place them in position to economically bypass Columbia's distribution system and take service directly off an interstate pipeline. If they were to exercise this option, Columbia would be deprived of the contribution to fixed cost recovery that these customers provide. Therefore, it is considered to be in the mutual interest of the Company, the bypass-threat customer, and the remaining utility customers for the bypass-threat customers to be offered discounted rates in order to remain distribution system customers, so long as the discounted rates make a contribution to fixed cost recovery. The Flex Provision permits Columbia to offer discounted pricing to bypass-threat customers to keep them on the Columbia system.

Q. Please continue. What is the problem with including the Flex Provision and Special Rate customers in the same class as standard DS customers in the class cost allocation studies?

A. A class cost allocation study not only examines costs, it also examines the *revenues* recovered from each class in relation to those allocated costs. If a cost study includes customers receiving discounted rates in the same class as other customers paying standard rates, it will adversely affect the perceived performance of the class as to whether the class is "recovering its costs." Indeed, that is exactly the case with the DS/IS class. Columbia's Demand/Commodity study and Average study show the DS/IS class under-performing, on average, relative to the other customer classes, yet due to the inclusion of the Flex Provision and Special Rate customers in the DS/IS class, these studies tell us next to nothing about how the standard DS/IS customer class is actually performing. The inclusion of the Flex Provision and Special Rate customers in the DS/IS customer class is a design flaw in Columbia's class cost allocation studies that must be remedied if the study is to be used to draw inferences about the performance of the customers in the DS class paying standard rates.

Q. Have you re-run Columbia's class cost allocation studies with the Flex Provision and Special Rate customers removed from the DS/IS class?

A. Yes. I have re-run these studies with the Flex Provision and Special Rate customers removed from the DS/IS class and placed in their own class. I reran the studies using both the 50% weight that Columbia used for the throughput component in the Demand/Commodity study as well as the load factor weight (21%) recommended by the NARUC Manual. These results are presented in Exhibit KCH-2.

Table KCH-1 below compares the class unitized rates of return under current rates resulting from Columbia's studies with those resulting from the modified studies that I performed using (i) the load factor weight (21%) recommended by the NARUC Manual for the throughput component in the Demand/Commodity study and (ii) removing the Flex Provision and Special Rate customers from the DS/IS class and placing them into their own class.

Table KCH-1
Comparison of Unitized Rates of Return at Current Rates

	Demand/ Commodity Study		**Customer/ Demand Study**		**Average Study**	
Rate Class Grouping	KIUC	Columbia	KIUC	Columbia	KIUC	Columbia
GS-RESIDENTIAL	0.77	0.94	(0.44)	(0.44)	0.09	0.14
GS-OTHER	2.66	2.86	4.79	4.79	3.58	3.70
IUS	1.49	1.76	5.67	5.67	2.96	3.19
DS-ML	22.33	22.33	22.29	22.29	22.32	22.32
DS/IS [16]	(0.31)	(1.42)	7.14	5.42	1.66	0.19
FLEX/SC3	(2.39)	N/A	1.68	N/A	(1.36)	N/A
TOTAL COMPANY	1.00	1.00	1.00	1.00	1.00	1.00

The results summarized in Table KCH-1 show that, contrary to the perception created in the Company's studies, the standard rate DS customers are performing significantly better than the system average with respect to cost recovery under current rates in the Average study. Under each of the three studies, the standalone standard rate DS class performs better than the DS/IS class including the Flex Provision and Special Rate customers.

<u>Revenue Allocation</u>

Q. What has Columbia proposed regarding revenue allocation?

[16] KIUC's DS/IS class excludes Flex Provision and Special Rate customers, whereas Columbia's DS/IS class includes Flex Provision and Special Rate customers.

A. The Company's recommended revenue allocation in its direct filing is presented in Table 2 on page 8 in the Direct Testimony of Mark P. Balmert. As shown in that table, there are four class groupings that are proposed to receive an increase in delivery charge revenues: GSR/GTR, GSO/GTO/GDS, IS/DS, and IUS. As depicted in Mr. Balmert's Table 2, the increase for each of these classes is proposed by Columbia to fall within a highly compressed range of 35.99% to 37.87%. No increase is proposed for DS-ML.

Notably, the proposed 36.24% increase for IS/DS includes an increase of 0% for the subgroup of Flex Provision and Special Rate customers discussed above. This means that the increase for the DS standard rate customers in the class is actually proposed by Columbia to be much greater than the 36.24% "headline" increase for the "class" as a whole – 45.24% to be exact. Indeed, the Company's proposed increase for this group is much greater than for any other class of customers – and is completely unjustified.

Q. Why is the 45% increase proposed for the standard rate DS customers completely unjustified?

A. First, it is inappropriate for Columbia to be including the Flex Provision and Special Rate customers in this class for the purpose of revenue allocation. The Flex Provision and Special Rate customers are not receiving any rate increase, thus their inclusion artificially forces up the increase needed from the standard rate DS customers in order to reach the class target of 36.24%.[17] By structuring its revenue allocation this way, Columbia is effectively forcing the

[17] While Columbia's revenue allocation also includes schedules not receiving increases in the GSR/GTR and GSO/GTO/GDS groupings, these schedules are so small that their inclusion does not significantly impact revenue allocation results.

standard rate DS customers to singlehandedly absorb the cost of holding DS Flex Provision and Special Rate customers' rates constant. This is wrong. The justification for the Flex Provision and Special Rate discounts is that the *system* is better off with these customers remaining on it; therefore, the obligation to absorb the rate discounts falls on *all* customer classes on the system, not the standard rate DS customers alone. Just as I proposed with respect to cost allocation, the Flex Provision and Special Rate customers should be removed from the DS class and placed in their own class for revenue allocation purposes.

A second reason that the 45% increase proposed for the standard rate DS customers is completely unjustified is that when viewed as a standalone class (i.e., with the Flex Provision and Special Rate customers removed from the DS class), the standard rate DS class is outperforming the system as whole on a cost-of-service basis under both the Average and the Customer/Demand studies, as I demonstrated in the previous section of my testimony. Consequently, the standard rate DS class warrants a materially <u>below</u>-average rate increase relative to the rest of the system, not a materially <u>above</u>-average rate increase.

Q. Are you aware that Columbia has recently provided a revised revenue allocation workpaper in response to a Staff Request for Information?

A. Yes. On August 19th, Columbia provided a revised Schedule M workpaper, including revenue allocation and rate design changes, in response to Staff's Third Request for Information, No. 3. As is the case with Columbia's direct filing, the revised Schedule M includes Flex Provision and Special Rate customers in the DS/IS class for the purpose of revenue allocation, driving up the increase for standard rate DS customers. Columbia's revised revenue allocation appears to be slightly more favorable to DS than Columbia's direct filing, proposing a 41.48% increase rather than a 45.24% increase. However, this increase is still materially above the average rate increase for the system. I utilize Columbia's revised Schedule M as a starting point for my revenue allocation and rate design recommendations.

Q. What is your recommendation regarding revenue allocation?

A. At a minimum, the Flex Provision and Special Rate customers should be removed from the DS/IS class for both cost allocation and revenue allocation. Then, if the Company's compressed rate spread is used, the target percentage increase for the standard rate DS customers should fall *within* the specified range for classes receiving an increase, not well above it as Columbia proposes. I have recalculated the Company's rate spread proposal with this one change, i.e., removing the Flex Provision and Special Rate customers from the DS class and keeping all classes receiving an increase within a narrow bandwidth of 1.54%, similar to that proposed in Columbia's direct filing. This calculation is presented in Exhibit KCH-3, page 1 and is summarized in Table KCH-2, below.

Table KCH-2
KIUC Revenue Allocation within Narrow Bandwidth
(Showing Only Schedules Receiving Increases)
Delivery Charge Revenue Only

Description	Revenue at Current Rates	Proposed Revenue Increase	Total Proposed Revenue	Proposed Increase by Rate Schedule
GSR/GTR Residential	43,261,042	16,534,864	59,795,906	38.22%
GSO/GTO/GDS	18,733,089	6,871,442	25,604,531	36.68%
DS/SAS – Standard Rate	4,621,276	1,695,120	6,316,395	36.68%
IUS	22,521	8,261	30,782	36.68%
Total Sch. Receiving an Increase	66,637,929	25,109,686	91,747,615	37.68%

Q. In addition to your "minimum" recommendation, do you have a primary recommendation regarding revenue allocation?

A. Yes. My primary recommendation is that the standard rate DS, GS/GTO/GDS and IUS classes should receive a rate increase that is materially below the system average increase, with the Flex Provision and Special Rate customers removed from the DS/IS class and properly placed in their own class. Specifically, I recommend that the DS, GSO/GTO/GDS, and IUS classes receive increases 5% below the average increase for schedules proposed to receive a rate increase by Columbia. Based on Columbia's proposed revenue requirement, the average increase for schedules proposed to receive an increase is approximately 37.68%. Thus, I recommend that the standard rate DS/IS, GSO/GTO/GDS, and IUS classes receive increases of 32.68% under Columbia's proposed revenue requirement. I recommend that the Residential class receive an increase that is 2.70% above the average increase, or 40.38% based on Columbia's proposed revenue requirement. My preferred revenue allocation is presented in Exhibit KCH-3, page 2 and is summarized in Table KCH-3, below.

Table KCH-3
KIUC Primary Revenue Allocation Recommendation
(Showing Only Schedules Receiving Increases)
Delivery Charge Revenue Only

Description	Revenue at Current Rates	Proposed Revenue Increase	Total Proposed Revenue	Proposed Increase by Rate Schedule
GSR/GTR Residential	43,261,042	17,469,939	60,730,982	40.38%
GSO/GTO/GDS	18,733,089	6,122,118	24,855,208	32.68%
DS/SAS – Standard Rate	4,621,276	1,510,269	6,131,544	32.68%
IUS	22,521	7,360	29,882	32.68%
Total Sch. Receiving an Increase	66,637,929	25,109,686	91,747,615	37.68%

Q. Your proposed revenue allocations are calculated at Columbia's proposed revenue requirement. What do you recommend if the approved revenue requirement is less than the amount being requested by the Company?

A. If the revenue requirement approved by the Commission in this case turns out to be less than the amount being requested by the Company, then I recommend that the revenue requirement allocated to each class that is receiving an increase be reduced in proportion to each class's share of the total revenue requirement for the classes receiving an increase.

DS Rate Design

Q. Please describe Columbia's proposal for DS rate design.

A. The Company's direct rate design proposal for DS is presented in the Direct Testimony of Mr. Balmert. In a nominal sense, Columbia's direct proposal calls for the base customer charge to be increased by 45%, approximately equal to the overall increase for standard rate DS customers in the Company's direct proposal.[18] Likewise, in Columbia's revised rate design,[19] the DS customer charge is increased by 41%, consistent with the revised overall increase Columbia proposes for standard rate DS customers. On the surface, this suggests that the proposed increase will be neutral with respect to customer size within this class. However, that is not the case. The effective net increase proposed by the Company is actually much greater for larger DS customers than for smaller customers. For larger customers the proposed increase can approach

[18] See the Direct Testimony of Mark P. Balmert, p. 11, Table 4.
[19] Provided in Response to Staff's Third Request for Information, No. 3, CKY_R_PSCDR3_NUM3_ATT_A_081916.

60%. For smaller customers, the increase will be less than the average for the standard rate DS class.

Q. Why is Columbia's proposed increase much greater for larger DS customers than for smaller DS customers?

A. Currently, Columbia's DS rates include an Accelerated Main Replacement Program ("AMRP") rider that is levied as a customer charge of $449.59. However, the revenues from this surcharge are being absorbed into base rates and the rider itself is being reset to $0. In addition, DS customers are currently subject to an Administrative Charge of $55.90 per month, which Columbia has proposed to discontinue.[20] Thus, at the same time the customer charge is being increased by 41%, or $417.17 in Columbia's revised DS rate design, the AMRP rider and Administrative Charge are being reduced by more than that amount. Consequently, the net change in the customer charges is a small reduction.

Effectively, the entirety of the proposed net increase to DS occurs in the volumetric charges, with each volumetric charge being increased by over 61% in Columbia's revised DS rate design. Larger customers, for whom volumetric charges comprise a greater portion of their overall bills, will be disproportionately impacted by Columbia's proposed rate design relative to smaller customers.

Q. Is there a cost-based reason for imposing a greater increase on the larger DS customers?

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[20] Direct Testimony of Mark P. Balmert, pp. 15-16.

A. No. In fact, Columbia's own Average cost-of-service study shows DS/IS customer-based costs of $3,768.90 per month,[21] which would be significantly under-recovered in Columbia's proposed customer charge.

Q. What is your recommendation regarding DS rate design?

A. I recommend that the Commission require two changes to the Company's proposed DS rate design. First, at minimum, the customer charge should be increased sufficiently to ensure that the net increases in the customer charge and the volumetric charges are proportionate relative to current rates, including the AMRP rider and Administrative Charge.

Q. Have you prepared a rate design that meets this minimum condition?

A. Yes. I have prepared this rate design for both of the revenue allocations to DS that I presented in Tables KCH-2 and KCH-3 in the revenue allocation section of my testimony. These rate designs are presented in Exhibit KCH-4.

Q. What is your second rate design recommendation?

A. The Commission should consider adding additional volumetric blocks to the DS rate schedule. The current design has only two blocks: (1) First 30,000 Mcf per month and (2) Over 30,000 Mcf per month. It is not unusual for gas distribution utilities to have four or more volumetric blocks to capture the significantly declining unit costs of serving larger customers. I have examined the rate designs of several gas utilities in the region and have identified three utilities that utilize rate designs with four to six blocks. These tariffs are presented in Exhibit KCH-5 for comparison purposes. I have prepared DS rate designs

[21] Attachment CEN-3, page 53. KIUC's Average cost-of-service study calculates DS/IS customer-based costs of $2,521.10, with standard rate DS/IS treated as its own class the Demand/Commodity study adjusted to be consistent with the NARUC Manual.

using five blocks that are comparable to the designs used by other gas utilities. I present these alternative rate designs in Exhibit KCH-4 using the revenue allocations to DS that I presented in Tables KCH-2 and KCH-3. The five-block alternative rate designs also incorporate the customer charge recommendation I made above.

Q. What size blocks are you recommending?

A. I am recommending the following blocks: (1) First 2,000 Mcf, (2) Next 6,000 Mcf, (3) Next 22,000 Mcf, (4) Next 70,000 Mcf, and (5) Over 100,000 Mcf, per month.

I note that the first block corresponds to the minimum size customer for the DS rate schedule and the second block corresponds to the average-size DS customer (total Mcf divided by the number of bills). The third block corresponds to the break-point between the Company's current first and second blocks. And the fourth and fifth blocks are added to correspond to high-volume customers.

Q. Why do you believe that five blocks is preferable to two blocks?

A. Given the nature of the costs of a gas distribution system, which consist primarily of fixed costs, the unit cost of service declines significantly as volumes increase. This fact is recognized by many utilities that have adopted rate designs for commercial and industrial customers that incorporate several rate blocks, each of which declines significantly from the prior block. It is appropriate and reasonable for Columbia to adopt a rate design for DS with multiple declining blocks to better reflect the declining unit cost of service as volume increases.

Q. Have you considered the impact of your rate design on the smallest DS customers?

A. Yes, I have. The minimum annual usage that qualifies for service under Rate DS is 25,000 Mcf, or approximately 2,000 Mcf per month. Under my proposed rate designs, the delivery rate percentage increase experienced by a DS customer using 2,000 Mcf per would be significantly <u>less</u> than the percentage increase Columbia's rate design would impose on the largest DS customers. By increasing the overall customer charge and volumetric components equally, my proposal moderates the rate impact on differently-sized customers.

Q. How should your recommended rate design be modified if the Commission approves a class revenue requirement that is different from what you have presented in Exhibit KCH-4?

A. If the Commission adopts a class revenue requirement that is different from what I have used in Exhibit KCH-4, then each rate component (customer charge and volumetric block) shown in the "Proposed" column on page 1 of Exhibit KCH-4 should be adjusted in equal proportion to the change in the revenue target shown on line 12 of that same page.

Q. If the Commission does not accept your recommendation to adopt a five-block volumetric rate, should the Commission still adopt your first rate design recommendation regarding the customer charge?

A. Yes. Adopting this change is necessary to ensure fairness across the spectrum of DS customers, irrespective of whether the Commission approves my proposal to adopt a five-block volumetric rate design.

Q. Does this conclude your direct testimony?

A. Yes, it does.

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AFFIDAVIT OF KEVIN C. HIGGINS

STATE OF UTAH)
)
COUNTY OF SALT LAKE)

Kevin C. Higgins, being first duly sworn, deposes and states that:

1. He is a Principal with Energy Strategies, L.L.C., in Salt Lake City, Utah;

2. He is the witness who sponsors the accompanying testimony and exhibits in the document entitled "Direct Testimony of Kevin C. Higgins;"

3. Said testimony and exhibits were prepared by him and under his direction and supervision;

4. If inquiries were made as to the facts in said testimony and exhibits he would respond as therein set forth; and

5. The aforesaid testimony and exhibits are true and correct to the best of his knowledge, information and belief.

KCH

Kevin C. Higgins

Subscribed and sworn to or affirmed before me this 30th day of August, 2016, by Kevin C. Higgins.

Millicent Pichardo
Notary Public

My Commission Expires: June 6, 2018

Notary Public
MILLICENT PICHARDO
Commission #678060
My Commission Expires
June 6, 2018
State of Utah

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

APPLICATION OF COLUMBIA GAS OF KENTUCKY, INC. FOR AN ADJUSTMENT OF RATES	)))	**CASE NO. 2016-00162**

Exhibits of Kevin C. Higgins

on behalf of

Kentucky Industrial Utility Customers, Inc.

September 2, 2016

Comparison of Demand/Commodity Cost-of-Service Study Results:
A) KIUC's Recommended Load Factor Throughput Weighting and B) Columbia's 50% Throughput Weighting

		A				B					
		KIUC's Demand/Commodity Study Revenues Including Cost of Gas & other Non-Base Delivery Revenues				Columbia's Demand/Commodity Study Revenues Including Cost of Gas & other Non-Base Delivery Revenues				Difference Between Studies KIUC - Columbia	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Line No. 1	Rate Class Grouping	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)	Percentage Change to Achieve Equalized ROR (e) - (i)
2	**GS-RESIDENTIAL**	59,679,824	0.77	15,577,848	26.10%	59,679,824	0.94	14,196,259	23.79%	1,381,589	2.32%
3	**GS-OTHER**	26,685,285	2.66	2,365,716	8.87%	26,685,285	2.86	1,806,775	6.77%	558,941	2.09%
4	**IUS**	48,080	1.49	10,255	21.33%	48,080	1.76	8,516	17.71%	1,740	3.62%
5	**DS-ML**	481,735	22.33	(354,143)	-73.51%	481,735	22.33	(354,143)	-73.51%	0	0.00%
6	**DS/IS**	5,787,242	(1.00)	7,808,688	134.93%	5,787,242	(1.42)	9,750,970	168.49%	(1,942,282)	-33.56%
7	**TOTAL COMPANY**	92,682,167	1.00	25,408,378	27.41%	92,682,167	1.00	25,408,378	27.41%	0	0.00%
8		Base Delivery Revenues Only				Base Delivery Revenues Only					
9	Rate Class Grouping	Current Revenues[3]	Unitized Return at Current Rates[4]	Revenue Change to Achieve Equalized ROR[5]	Percentage Change to Achieve Equalized ROR	Current Revenues[3]	Unitized Return at Current Rates[4]	Revenue Change to Achieve Equalized ROR[5]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)	Percentage Change to Achieve Equalized ROR (e) - (i)
10	**GS-RESIDENTIAL**	43,271,501	0.77	15,492,220	35.80%	43,271,501	0.94	14,110,631	32.61%	1,381,589	3.19%
11	**GS-OTHER**	18,739,332	2.66	2,330,248	12.44%	18,739,332	2.86	1,771,307	9.45%	558,941	2.98%
12	**IUS**	22,521	1.49	10,213	45.35%	22,521	1.76	8,474	37.63%	1,740	7.72%
13	**DS-ML**	479,213	22.33	(354,144)	-73.90%	479,213	22.33	(354,144)	-73.90%	0	0.00%
14	**DS/IS**	5,756,864	(1.00)	7,797,779	135.45%	5,756,864	(1.42)	9,740,061	169.19%	(1,942,282)	-33.74%
15	**TOTAL COMPANY**	68,269,432	1.00	25,276,330	37.02%	68,269,432	1.00	25,276,330	37.02%	0	0.00%

Notes:
1. Current Revenues include Cost of Gas, Other Gas Department Revenue, Energy Efficiency & Conservation Rider, EAP Recovery, Gas Cost Uncollectible Charge, and Regulatory Adjustments ("non-base delivery revenues").
2. Revenue change includes a proposed increase to Account 487 Forfeited Discounts of $132,048. Total Company revenues differ slightly from the sum of class revenues due to rounding in the COS model.
3. Current Revenues exclude non-base delivery revenues.
4. Unitized Return as reported in the COS model.
5. Revenue change excludes increase to Forfeited Discounts.
Columbia's Demand/Commodity Study Results as Presented in Columbia's Response to Staff's First Request for Information No. 29, CKY_R_PSCDR1_NUM29_ATT_B_061016.

Comparison of Average Cost-of-Service Study Results:
A) KIUC's Recommended Load Factor Throughput Weighting and B) Columbia's 50% Throughput Weighting in Demand/Commodity Portion

Line No.		A: KIUC's Average Study with Load Factor Throughput Weighting — Revenues Including Cost of Gas & other Non-Base Delivery Revenues				B: Columbia's Average Study with 50% Throughput Weighting — Revenues Including Cost of Gas & other Non-Base Delivery Revenues				Difference Between Studies KIUC - Columbia	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1	Rate Class Grouping	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)	Percentage Change to Achieve Equalized ROR (e) - (i)
2	**GS-RESIDENTIAL**	59,679,824	0.09	22,414,069	37.56%	59,679,824	0.14	21,725,999	36.40%	688,069	1.15%
3	**GS-OTHER**	26,685,285	3.58	2,701	0.01%	26,685,285	3.70	(275,732)	-1.03%	278,433	1.04%
4	**IUS**	48,080	2.96	2,437	5.07%	48,080	3.19	1,472	3.06%	965	2.01%
5	**DS-ML**	481,735	22.32	(353,747)	-73.43%	481,735	22.32	(353,747)	-73.43%	0	0.00%
6	**DS/IS**	5,787,242	0.67	3,342,907	57.76%	5,787,242	0.19	4,310,380	74.48%	(967,473)	-16.72%
7	**TOTAL COMPANY**	92,682,167	1.00	25,408,378	27.41%	92,682,167	1.00	25,408,378	27.41%	0	0.00%
8		Base Delivery Revenues Only				Base Delivery Revenues Only					
9	Rate Class Grouping	Current Revenues[3]	Unitized Return at Current Rates[4]	Revenue Change to Achieve Equalized ROR[5]	Percentage Change to Achieve Equalized ROR	Current Revenues[3]	Unitized Return at Current Rates[4]	Revenue Change to Achieve Equalized ROR[5]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)	Percentage Change to Achieve Equalized ROR (e) - (i)
10	**GS-RESIDENTIAL**	43,271,501	0.09	22,328,441	51.60%	43,271,501	0.14	21,640,371	50.01%	688,069	1.59%
11	**GS-OTHER**	18,739,332	3.58	(32,767)	-0.17%	18,739,332	3.70	(311,200)	-1.66%	278,433	1.49%
12	**IUS**	22,521	2.96	2,395	10.64%	22,521	3.19	1,430	6.35%	965	4.29%
13	**DS-ML**	479,213	22.32	(353,748)	-73.82%	479,213	22.32	(353,748)	-73.82%	0	0.00%
14	**DS/IS**	5,756,864	0.67	3,331,998	57.88%	5,756,864	0.19	4,299,471	74.68%	(967,473)	-16.81%
15	**TOTAL COMPANY**	68,269,432	1.00	25,276,330	37.02%	68,269,432	1.00	25,276,330	37.02%	0	0.00%

Notes:
1. Current Revenues include Cost of Gas, Other Gas Department Revenue, Energy Efficiency & Conservation Rider, EAP Recovery, Gas Cost Uncollectible Charge, and Regulatory Adjustments ("non-base delivery revenues").
2. Revenue change includes a proposed increase to Account 487 Forfeited Discounts of $132,048. Total Company revenues differ slightly from the sum of class revenues due to rounding in the COS model.
3. Current Revenues exclude non-base delivery revenues.
4. Unitized Return as reported in the COS model.
5. Revenue change excludes increase to Forfeited Discounts.
Columbia's Average Study Results as Presented in Columbia's Response to Staff's First Request for Information No. 29, CKY_R_PSCDR1_NUM29_ATT_C_061016.

Comparison of Demand/Commodity Cost-of-Service Study Results:
(A) KIUC's Recommended Load Factor Throughput Weighting and Flex Provision/Special Rate Separated and (B) Columbia's 50% Throughput Weighting and Flex Provision/Special Rate included in DS/IS

		A				B					
		KIUC's Demand/Commodity Study Revenues Including Cost of Gas & other Non-Base Delivery Revenues				Columbia's Demand/Commodity Study Revenues Including Cost of Gas & other Non-Base Delivery Revenues				Difference Between Studies KIUC - Columbia	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Line No. 1	Rate Class Grouping	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)	Percentage Change to Achieve Equalized ROR (e) - (i)
2	**GS-RESIDENTIAL**	59,679,827	0.77	15,577,971	26.10%	59,679,824	0.94	14,196,259	23.79%	1,381,712	2.32%
3	**GS-OTHER**	26,685,285	2.66	2,365,727	8.87%	26,685,285	2.86	1,806,775	6.77%	558,952	2.09%
4	**IUS**	48,080	1.49	10,255	21.33%	48,080	1.76	8,516	17.71%	1,740	3.62%
5	**DS-ML**	481,735	22.33	(354,143)	-73.51%	481,735	22.33	(354,143)	-73.51%	0	0.00%
6	**DS/IS**	4,645,724	(0.31)	4,441,525	95.60%	5,787,242	(1.42)	9,750,970	168.49%	(5,309,445)	-72.89%
7	**FLEX/SC3**	1,141,516	(2.39)	3,367,039	294.96%	N/A	N/A	N/A	N/A	3,367,039	294.96%
8	**TOTAL COMPANY**	92,682,167	1.00	25,408,378	27.41%	92,682,167	1.00	25,408,378	27.41%	0	0.00%
9		Base Delivery Revenues Only				Base Delivery Revenues Only					
10	Rate Class Grouping	Current Revenues[3]	Unitized Return at Current Rates[4]	Revenue Change to Achieve Equalized ROR[5]	Percentage Change to Achieve Equalized ROR	Current Revenues[3]	Unitized Return at Current Rates[4]	Revenue Change to Achieve Equalized ROR[5]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)	Percentage Change to Achieve Equalized ROR (e) - (i)
11	**GS-RESIDENTIAL**	43,271,501	0.77	15,492,343	35.80%	43,271,501	0.94	14,110,631	32.61%	1,381,712	3.19%
12	**GS-OTHER**	18,739,332	2.66	2,330,259	12.44%	18,739,332	2.86	1,771,307	9.45%	558,952	2.98%
13	**IUS**	22,521	1.49	10,213	45.35%	22,521	1.76	8,474	37.63%	1,740	7.72%
14	**DS-ML**	479,213	22.33	(354,144)	-73.90%	479,213	22.33	(354,144)	-73.90%	0	0.00%
15	**DS/IS**	4,621,276	(0.31)	4,430,621	95.87%	5,756,864	(1.42)	9,740,061	169.19%	(5,309,440)	-73.32%
16	**FLEX/SC3**	1,135,589	(2.39)	3,367,034	296.50%	N/A	N/A	N/A	N/A	3,367,034	296.5%
17	**TOTAL COMPANY**	68,269,432	1.00	25,276,330	37.02%	68,269,432	1.00	25,276,330	37.02%	0	0.00%

Notes:
1. Current Revenues include Cost of Gas, Other Gas Department Revenue, Energy Efficiency & Conservation Rider, EAP Recovery, Gas Cost Uncollectible Charge, and Regulatory Adjustments ("non-base delivery revenues").
2. Revenue change includes a proposed increase to Account 487 Forfeited Discounts of $132,048. Total Company revenues differ slightly from the sum of class revenues due to rounding in the COS model.
3. Current Revenues exclude non-base delivery revenues.
4. Unitized Return as reported in the COS model.
5. Revenue change excludes increase to Forfeited Discounts.
Columbia's Demand/Commodity Study Results as Presented in Columbia's Response to Staff's First Request for Information No. 29, CKY_R_PSCDR1_NUM29_ATT_B_061016.

Comparison of Demand/Commodity Cost-of-Service Study Results:
(A) 50% Throughput Weighting and Flex Provision/Special Rate Separated under KIUC's Study
and (B) 50% Throughput Weighting and Flex Provision/Special Rate included in DS/IS under Columbia's Study

Line No.		A: KIUC's Demand/Commodity Study - 50% Throughput Weighting — Revenues Including Cost of Gas & other Non-Base Delivery Revenues				B: Columbia's Demand/Commodity Study - 50% Throughput Weighting — Revenues Including Cost of Gas & other Non-Base Delivery Revenues				Difference Between Studies KIUC - Columbia	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1	Rate Class Grouping	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)[3]	Percentage Change to Achieve Equalized ROR (e) - (i)
2	**GS-RESIDENTIAL**	59,679,827	0.94	14,196,809	23.79%	59,679,824	0.94	14,196,259	23.79%	550	0.00%
3	**GS-OTHER**	26,685,285	2.86	1,806,352	6.77%	26,685,285	2.86	1,806,775	6.77%	(423)	0.00%
4	**IUS**	48,080	1.76	8,516	17.71%	48,080	1.76	8,516	17.71%	0	0.00%
5	**DS-ML**	481,735	22.33	(354,143)	-73.51%	481,735	22.33	(354,143)	-73.51%	0	0.00%
6	**DS/IS**	4,645,724	(0.87)	5,893,832	126.87%	5,787,242	(1.42)	9,750,970	168.49%	(3,857,139)	-41.63%
7	**FLEX/SC3**	1,141,516	(2.59)	3,857,016	337.89%	N/A	N/A	N/A	N/A	3,857,016	337.89%
8	**TOTAL COMPANY**	92,682,167	1.00	25,408,378	27.41%	92,682,167	1.00	25,408,378	27.41%	0	0.00%
9		Base Delivery Revenues Only				Base Delivery Revenues Only					
10	Rate Class Grouping	Current Revenues[4]	Unitized Return at Current Rates[5]	Revenue Change to Achieve Equalized ROR[6]	Percentage Change to Achieve Equalized ROR	Current Revenues[4]	Unitized Return at Current Rates[5]	Revenue Change to Achieve Equalized ROR[6]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)[3]	Percentage Change to Achieve Equalized ROR (e) - (i)
11	**GS-RESIDENTIAL**	43,271,501	0.94	14,111,181	32.61%	43,271,501	0.94	14,110,631	32.61%	550	0.00%
12	**GS-OTHER**	18,739,332	2.86	1,770,884	9.45%	18,739,332	2.86	1,771,307	9.45%	(423)	0.00%
13	**IUS**	22,521	1.76	8,474	37.63%	22,521	1.76	8,474	37.63%	0	0.00%
14	**DS-ML**	479,213	22.33	(354,144)	-73.90%	479,213	22.33	(354,144)	-73.90%	0	0.00%
15	**DS/IS**	4,621,276	(0.87)	5,882,928	127.30%	5,756,864	(1.42)	9,740,061	169.19%	(3,857,134)	-41.89%
16	**FLEX/SC3**	1,135,589	(2.59)	3,857,011	339.65%	N/A	N/A	N/A	N/A	3,857,011	339.6%
17	**TOTAL COMPANY**	68,269,432	1.00	25,276,330	37.02%	68,269,432	1.00	25,276,330	37.02%	0	0.00%

Notes:
1. Current Revenues include Cost of Gas, Other Gas Department Revenue, Energy Efficiency & Conservation Rider, EAP Recovery, Gas Cost Uncollectible Charge, and Regulatory Adjustments ("non-base delivery revenues").
2. Revenue change includes a proposed increase to Account 487 Forfeited Discounts of $132,048. Total Company revenues differ slightly from the sum of class revenues due to rounding in the COS model.
3. Minor Differences in the Revenue Change for GS-Residential and GS-Other result from rounding in the COS Model.
4. Current Revenues exclude non-base delivery revenues.
5. Unitized Return as reported in the COS model.
6. Revenue change excludes increase to Forfeited Discounts.
Columbia's Demand/Commodity Study Results as Presented in Columbia's Response to Staff's First Request for Information No. 29, CKY_R_PSCDR1_NUM29_ATT_B_061016.

Comparison of Customer/Demand Cost-of-Service Study Results:
(A) Flex Provision/Special Rate Separated Under KIUC's Study
and (B) Flex Provision/Special Rate included in DS/IS Under Columbia's Study

Line No.		A: KIUC's Customer/Demand Study — Revenues Including Cost of Gas & other Non-Base Delivery Revenues				B: Columbia's Customer/Demand Study — Revenues Including Cost of Gas & other Non-Base Delivery Revenues				Difference Between Studies KIUC - Columbia	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1	Rate Class Grouping	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)[3]	Percentage Change to Achieve Equalized ROR (e) - (i)
2	**GS-RESIDENTIAL**	59,679,827	(0.44)	29,241,700	49.00%	59,679,824	(0.44)	29,241,438	49.00%	262	0.00%
3	**GS-OTHER**	26,685,285	4.79	(2,385,405)	-8.94%	26,685,285	4.79	(2,385,416)	-8.94%	11	0.00%
4	**IUS**	48,080	5.67	(6,022)	-12.52%	48,080	5.67	(6,022)	-12.52%	0	0.00%
5	**DS-ML**	481,735	22.29	(353,284)	-73.34%	481,735	22.29	(353,284)	-73.34%	0	0.00%
6	**DS/IS**	4,645,724	7.14	(1,443,520)	-31.07%	5,787,242	5.42	(1,088,357)	-18.81%	(355,162)	-12.27%
7	**FLEX/SC3**	1,141,516	1.68	354,908	31.09%	N/A	N/A	N/A	N/A	354,908	31.09%
8	**TOTAL COMPANY**	92,682,167	1.00	25,408,378	27.41%	92,682,167	1.00	25,408,378	27.41%	0	0.00%
9		Base Delivery Revenues Only				Base Delivery Revenues Only					
10	Rate Class Grouping	Current Revenues[4]	Unitized Return at Current Rates[5]	Revenue Change to Achieve Equalized ROR[6]	Percentage Change to Achieve Equalized ROR	Current Revenues[4]	Unitized Return at Current Rates[5]	Revenue Change to Achieve Equalized ROR[6]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)[3]	Percentage Change to Achieve Equalized ROR (e) - (i)
11	**GS-RESIDENTIAL**	43,271,501	(0.44)	29,156,072	67.38%	43,271,501	(0.44)	29,155,810	67.38%	262	0.00%
12	**GS-OTHER**	18,739,332	4.79	(2,420,873)	-12.92%	18,739,332	4.79	(2,420,884)	-12.92%	11	0.00%
13	**IUS**	22,521	5.67	(6,064)	-26.92%	22,521	5.67	(6,064)	-26.92%	0	0.00%
14	**DS-ML**	479,213	22.29	(353,285)	-73.72%	479,213	22.29	(353,285)	-73.72%	0	0.00%
15	**DS/IS**	4,621,276	7.14	(1,454,424)	-31.47%	5,756,864	5.42	(1,099,266)	-19.09%	(355,157)	-12.38%
16	**FLEX/SC3**	1,135,589	1.68	354,903	31.25%	N/A	N/A	N/A	N/A	354,903	31.25%
17	**TOTAL COMPANY**	68,269,432	1.00	25,276,330	37.02%	68,269,432	1.00	25,276,330	37.02%	0	0.00%

Notes:
1. Current Revenues include Cost of Gas, Other Gas Department Revenue, Energy Efficiency & Conservation Rider, EAP Recovery, Gas Cost Uncollectible Charge, and Regulatory Adjustments ("non-base delivery revenues").
2. Revenue change includes a proposed increase to Account 487 Forfeited Discounts of $132,048. Total Company revenues differ slightly from the sum of class revenues due to rounding in the COS model.
3. Minor Differences in the Revenue Change for GS-Residential and GS-Other result from rounding in the COS Model.
4. Current Revenues exclude non-base delivery revenues.
5. Unitized Return as reported in the COS model.
6. Revenue change excludes increase to Forfeited Discounts.
Columbia's Customer/Demand Study Results as Presented in Columbia's Response to Staff's First Request for Information No. 29, CKY_R_PSCDR1_NUM29_ATT_A_061016.

Comparison of Average Cost-of-Service Study Results:
(A) Flex Provision/Special Rate Separated and Load Factor Throughput Weighting in the Demand/Commodity Portion under KIUC's Study
and (B) Flex Provision/Special Rate included in DS/IS and 50% Throughput Weighting in the Demand/Commodity Portion under Columbia's Study

Line No.		A: KIUC's Average Study - Load Factor Throughput Weighting, Revenues Including Cost of Gas & other Non-Base Delivery Revenues				B: Columbia's Average Study, Revenues Including Cost of Gas & other Non-Base Delivery Revenues				Difference Between Studies KIUC - Columbia	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
1	Rate Class Grouping	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)	Percentage Change to Achieve Equalized ROR (e) - (i)
2	**GS-RESIDENTIAL**	59,679,827	0.09	22,414,194	37.56%	59,679,824	0.14	21,725,999	36.40%	688,195	1.15%
3	**GS-OTHER**	26,685,285	3.58	2,710	0.01%	26,685,285	3.70	(275,732)	-1.03%	278,442	1.04%
4	**IUS**	48,080	2.96	2,437	5.07%	48,080	3.19	1,472	3.06%	965	2.01%
5	**DS-ML**	481,735	22.32	(353,747)	-73.43%	481,735	22.32	(353,747)	-73.43%	0	0.00%
6	**DS/IS**	4,645,724	1.66	1,488,103	32.03%	5,787,242	0.19	4,310,380	74.48%	(2,822,277)	-42.45%
7	**FLEX/SC3**	1,141,516	(1.36)	1,854,673	162.47%	N/A	N/A	N/A	N/A	1,854,673	162.47%
8	**TOTAL COMPANY**	92,682,167	1.00	25,408,378	27.41%	92,682,167	1.00	25,408,378	27.41%	0	0.00%
9		Base Delivery Revenues Only				Base Delivery Revenues Only					
10	Rate Class Grouping	Current Revenues[3]	Unitized Return at Current Rates[4]	Revenue Change to Achieve Equalized ROR[5]	Percentage Change to Achieve Equalized ROR	Current Revenues[3]	Unitized Return at Current Rates[4]	Revenue Change to Achieve Equalized ROR[5]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)	Percentage Change to Achieve Equalized ROR (e) - (i)
11	**GS-RESIDENTIAL**	43,271,501	0.09	22,328,566	51.60%	43,271,501	0.14	21,640,371	50.01%	688,195	1.59%
12	**GS-OTHER**	18,739,332	3.58	(32,758)	-0.17%	18,739,332	3.70	(311,200)	-1.66%	278,442	1.49%
13	**IUS**	22,521	2.96	2,395	10.64%	22,521	3.19	1,430	6.35%	965	4.29%
14	**DS-ML**	479,213	22.32	(353,748)	-73.82%	479,213	22.32	(353,748)	-73.82%	0	0.00%
15	**DS/IS**	4,621,276	1.66	1,477,199	31.97%	5,756,864	0.19	4,299,471	74.68%	(2,822,272)	-42.72%
16	**FLEX/SC3**	1,135,589	(1.36)	1,854,668	163.32%	N/A	N/A	N/A	N/A	1,854,668	163.32%
17	**TOTAL COMPANY**	68,269,432	1.00	25,276,330	37.02%	68,269,432	1.00	25,276,330	37.02%	0	0.00%

Notes:
1. Current Revenues include Cost of Gas, Other Gas Department Revenue, Energy Efficiency & Conservation Rider, EAP Recovery, Gas Cost Uncollectible Charge, and Regulatory Adjustments ("non-base delivery revenues").
2. Revenue change includes a proposed increase to Account 487 Forfeited Discounts of $132,048. Total Company revenues differ slightly from the sum of class revenues due to rounding in the COS model.
3. Current Revenues exclude non-base delivery revenues.
4. Unitized Return as reported in the COS model.
5. Revenue change excludes increase to Forfeited Discounts.
Columbia's Average Study Results as Presented in Columbia's Response to Staff's First Request for Information No. 29, CKY_R_PSCDR1_NUM29_ATT_C_061016.

Comparison of Average Cost-of-Service Study Results:
(A) Flex Provision/Special Rate Separated and 50% Throughput Weighting in the Demand/Commodity Portion under KIUC's Study
and (B) Flex Provision/Special Rate included in DS/IS and 50% Throughput Weighting in the Demand/Commodity Portion under Columbia's Study

		A				B					
		KIUC's Average Study - 50% Throughput Weighting Revenues Including Cost of Gas & other Non-Base Delivery Revenues				Columbia's Average Study Revenues Including Cost of Gas & other Non-Base Delivery Revenues				Difference Between Studies KIUC - Columbia	
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)
Line No.											
1	Rate Class Grouping	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Current Revenues[1]	Unitized Return at Current Rates	Revenue Change to Achieve Equalized ROR[2]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)[3]	Percentage Change to Achieve Equalized ROR (e) - (i)
2	**GS-RESIDENTIAL**	59,679,827	0.14	21,726,088	36.40%	59,679,824	0.14	21,725,999	36.40%	88	0.00%
3	**GS-OTHER**	26,685,285	3.70	(275,721)	-1.03%	26,685,285	3.70	(275,732)	-1.03%	11	0.00%
4	**IUS**	48,080	3.19	1,472	3.06%	48,080	3.19	1,472	3.06%	0	0.00%
5	**DS-ML**	481,735	22.32	(353,747)	-73.43%	481,735	22.32	(353,747)	-73.43%	0	0.00%
6	**DS/IS**	4,645,724	1.03	2,211,471	47.60%	5,787,242	0.19	4,310,380	74.48%	(2,098,909)	-26.88%
7	**FLEX/SC3**	1,141,516	(1.59)	2,098,816	183.86%	N/A	N/A	N/A	N/A	2,098,816	183.86%
8	**TOTAL COMPANY**	92,682,167	1.00	25,408,378	27.41%	92,682,167	1.00	25,408,378	27.41%	0	0.00%
9		Base Delivery Revenues Only				Base Delivery Revenues Only					
10	Rate Class Grouping	Current Revenues[4]	Unitized Return at Current Rates[5]	Revenue Change to Achieve Equalized ROR[6]	Percentage Change to Achieve Equalized ROR	Current Revenues[4]	Unitized Return at Current Rates[5]	Revenue Change to Achieve Equalized ROR[6]	Percentage Change to Achieve Equalized ROR	Revenue Change to Achieve Equalized ROR (d) - (h)[3]	Percentage Change to Achieve Equalized ROR (e) - (i)
11	**GS-RESIDENTIAL**	43,271,501	0.14	21,640,460	50.01%	43,271,501	0.14	21,640,371	50.01%	88	0.00%
12	**GS-OTHER**	18,739,332	3.70	(311,189)	-1.66%	18,739,332	3.70	(311,200)	-1.66%	11	0.00%
13	**IUS**	22,521	3.19	1,430	6.35%	22,521	3.19	1,430	6.35%	0	0.00%
14	**DS-ML**	479,213	22.32	(353,748)	-73.82%	479,213	22.32	(353,748)	-73.82%	0	0.00%
15	**DS/IS**	4,621,276	1.03	2,200,567	47.62%	5,756,864	0.19	4,299,471	74.68%	(2,098,904)	-27.07%
16	**FLEX/SC3**	1,135,589	(1.59)	2,098,811	184.82%	N/A	N/A	N/A	N/A	2,098,811	184.82%
17	**TOTAL COMPANY**	68,269,432	1.00	25,276,330	37.02%	68,269,432	1.00	25,276,330	37.02%	0	0.00%

Notes:
1. Current Revenues include Cost of Gas, Other Gas Department Revenue, Energy Efficiency & Conservation Rider, EAP Recovery, Gas Cost Uncollectible Charge, and Regulatory Adjustments ("non-base delivery revenues").
2. Revenue change includes a proposed increase to Account 487 Forfeited Discounts of $132,048. Total Company revenues differ slightly from the sum of class revenues due to rounding in the COS model.
3. Minor Differences in the Revenue Change for GS-Residential and GS-Other result from rounding in the COS Model.
4. Current Revenues exclude non-base delivery revenues.
5. Unitized Return as reported in the COS model.
6. Revenue change excludes increase to Forfeited Discounts.
Columbia's Average Study Results as Presented in Columbia's Response to Staff's First Request for Information No. 29, CKY_R_PSCDR1_NUM29_ATT_C_061016.

KIUC Narrow Bandwidth Revenue Allocation Recommendation at Columbia's Proposed Revenue Requirement

GSO/GTO/GDS, DS, IUS 1% Below Average
Delivery Charge Revenue Only (Base Rates, Admin. Charge & AMRP Charge)

Line No.	Description	Revenue at Current Rates [1]	Proposed Revenue Increase	Total Proposed Revenue	Proposed Increase By Rate Sched.	Difference from Columbia's Proposal [2]
	(a)	(b)	(c)	(d)	(e)	(f)
		$	$	$	%	$
1	GSR/GTR Residential	$43,261,042	$16,534,864	$59,795,906	38.22%	$116,487
2	GSO/GTO/GDS	$18,733,089	$6,871,442	$25,604,531	36.68%	$105,198
3	DS/SAS	$4,621,276	$1,695,120	$6,316,395	36.68%	($221,882)
4	IS	$0	$0	$0	0.00%	$0
5	IUS	$22,521	$8,261	$30,782	36.68%	$197
6	IN3 Residential	$396	$0	$396	0.00%	$0
7	IN4	$0	$0	$0	0.00%	$0
8	IN5	$200	$0	$200	0.00%	$0
9	G1C	$5,994	$0	$5,994	0.00%	$0
10	G1R	$9,292	$0	$9,292	0.00%	$0
11	LG2 Residential	$212	$0	$212	0.00%	$0
12	LG2 Commercial	$249	$0	$249	0.00%	$0
13	LG3 Residential	$256	$0	$256	0.00%	$0
14	LG4 Residential	$103	$0	$103	0.00%	$0
15	DS3	$67,641	$0	$67,641	0.00%	$0
16	FX1	$224,062	$0	$224,062	0.00%	$0
17	FX2	$221,011	$0	$221,011	0.00%	$0
18	FX5	$411,572	$0	$411,572	0.00%	$0
19	FX7	$192,155	$0	$192,155	0.00%	$0
20	SC3	$666,000	$0	$666,000	0.00%	$0
21	Total Base Revenues	$68,437,072	$25,109,686	$93,546,758	36.69%	$0
22	Rate Schedules Receiving Increase	$66,637,929	$25,109,686	$91,747,615	37.68%	

Notes:
1. Current Revenue presentation consistent with Columbia's response to Staff's Third Request for Information No. 3, CKY_R_PSCDR3_NUM3_ATT_A_081916, Rate Design MPB-1 tab.
2. Compared to the revenue allocation presented in Columbia's response to Staff's Third Request for Information No. 3, CKY_R_PSCDR3_NUM3_ATT_A_081916, Rate Design MPB-1 tab.

KIUC Primary Revenue Allocation Recommendation at Columbia's Proposed Revenue Requirement

GSO/GTO/GDS, DS, IUS 5% Below Average

Delivery Charge Revenue Only (Base Rates, Admin. Charge & AMRP Charge)

Line No.	Description	Revenue at Current Rates [1]	Proposed Revenue Increase	Total Proposed Revenue	Proposed Increase By Rate Sched.	Difference from Columbia's Proposal [2]
	(a)	(b)	(c)	(d)	(e)	(f)
		$	$	$	%	$
1	GSR/GTR Residential	$43,261,042	$17,469,939	$60,730,982	40.38%	$1,051,562
2	GSO/GTO/GDS	$18,733,089	$6,122,118	$24,855,208	32.68%	($644,125)
3	DS/SAS	$4,621,276	$1,510,269	$6,131,544	32.68%	($406,733)
4	IS	$0	$0	$0	0.00%	$0
5	IUS	$22,521	$7,360	$29,882	32.68%	($704)
6	IN3 Residential	$396	$0	$396	0.00%	$0
7	IN4	$0	$0	$0	0.00%	$0
8	IN5	$200	$0	$200	0.00%	$0
9	G1C	$5,994	$0	$5,994	0.00%	$0
10	G1R	$9,292	$0	$9,292	0.00%	$0
11	LG2 Residential	$212	$0	$212	0.00%	$0
12	LG2 Commercial	$249	$0	$249	0.00%	$0
13	LG3 Residential	$256	$0	$256	0.00%	$0
14	LG4 Residential	$103	$0	$103	0.00%	$0
15	DS3	$67,641	$0	$67,641	0.00%	$0
16	FX1	$224,062	$0	$224,062	0.00%	$0
17	FX2	$221,011	$0	$221,011	0.00%	$0
18	FX5	$411,572	$0	$411,572	0.00%	$0
19	FX7	$192,155	$0	$192,155	0.00%	$0
20	SC3	$666,000	$0	$666,000	0.00%	$0
21	Total Base Revenues	$68,437,072	$25,109,686	$93,546,758	36.69%	$0
22	Rate Schedules Receiving Increase	$66,637,929	$25,109,686	$91,747,615	37.68%	

Notes:

1. Current Revenue presentation consistent with Columbia's response to Staff's Third Request for Information No. 3, CKY_R_PSCDR3_NUM3_ATT_A_081916, Rate Design MPB-1 tab.

2. Compared to the revenue allocation presented in Columbia's response to Staff's Third Request for Information No. 3, CKY_R_PSCDR3_NUM3_ATT_A_081916, Rate Design MPB-1 tab.

KIUC Recommend DS/IS Rate Design
at Columbia's Proposed Revenue Requirement and KIUC's Narrow Bandwidth Revenue Allocation

Line No	DS Rate Design	Billing Units[1]	Current Rate	Current Revenue	Proposed Rate	Proposed Revenue	Proposed Inc. (Dec.)	Percentage Increase
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1	Customer Charge Revenue	896	1,007.05	902,317	2,067.00	1,852,032	949,715	
2	Administrative Charge Revenue	896	55.90	50,086	0.00	0	(50,086)	
3	Accelerated Mains Replacement Program	896	449.59	402,833	0.00	0	(402,833)	
4	Net Customer Base Revenue		1,512.54	1,355,236	2,067.00	1,852,032	496,796	36.66%
5	First 2,000 Mcf [2]	1,438,626	0.5443	783,044	0.8769	1,261,531	478,487	
6	Next 6,000 Mcf	1,968,856	0.5443	1,071,649	0.7896	1,554,609	482,960	
7	Next 22,000 Mcf	1,577,069	0.5443	858,399	0.6472	1,020,679	162,280	
8	Next 70,000 Mcf	1,347,784	0.2890	389,510	0.3883	523,345	133,835	
9	Over 100,000 Mcf	565,532	0.2890	163,439	0.1843	104,228	(59,211)	
10	Total Mcf	6,897,867	0.4735	3,266,040	0.6472	4,464,391	1,198,352	36.69%
11	Total Revenue			4,621,275		6,316,423	1,695,148	36.68%
12	Revenue Target:	$6,316,395						
13	Target to Collect through Volumetric Charges	$4,464,363						
14	Average Volumetric Rate Target	0.6472						

Notes:
1. Mcf billing units as provided in Columbia's Response to KIUC's Supplemental Request for Information 2-5, CKY_R_KIUCDR1_NUM5_ATT_A_081916.
2. KIUC's proposed volumetric rate applicable to the first 2,000 Mcf is set equal to Columbia's proposed first block rate as provided in Columbia's response to Staff's Third Request for Information No. 3, CKY_R_PSCDR3_NUM3_ATT_A_081916, Rate Design MPB-1 tab.

KIUC Recommend DS/IS Rate Design
at Columbia's Proposed Revenue Requirement and KIUC's Primary Revenue Allocation Recommendation

Line No	DS Rate Design	Billing Units[1]	Current Rate	Current Revenue	Proposed Rate	Proposed Revenue	Proposed Inc. (Dec.)	Percentage Increase
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
1	Customer Charge Revenue	896	1,007.05	902,317	2,007.00	1,798,272	895,955	
2	Administrative Charge Revenue	896	55.90	50,086	0.00	0	(50,086)	
3	Accelerated Mains Replacement Program	896	449.59	402,833	0.00	0	(402,833)	
4	Net Customer Base Revenue		1,512.54	1,355,236	2,007.00	1,798,272	443,036	32.69%
5	First 2,000 Mcf	1,438,626	0.5443	783,044	0.8512	1,224,558	441,514	
6	Next 6,000 Mcf	1,968,856	0.5443	1,071,649	0.7664	1,508,932	437,283	
7	Next 22,000 Mcf	1,577,069	0.5443	858,399	0.6282	990,715	132,316	
8	Next 70,000 Mcf	1,347,784	0.2890	389,510	0.3769	507,980	118,470	
9	Over 100,000 Mcf	565,532	0.2890	163,439	0.1787	101,061	(62,378)	
10	Total Mcf	6,897,867	0.4735	3,266,040	0.6282	4,333,245	1,067,205	32.68%
11	Total Revenue			4,621,275		6,131,517	1,510,242	32.68%
12	Revenue Target:	$6,131,544						
13	Target to Collect through Volumetric Charges	$4,333,272						
14	Average Volumetric Rate Target	0.6282						

Notes:
1. Mcf billing units as provided in Columbia's Response to KIUC's Supplemental Request for Information 2-5, CKY_R_KIUCDR1_NUM5_ATT_A_081916.

Exhibit KCH-5

Sample of Regional Natural Gas Tariffs
with Four to Six Volumetric Blocks

PIEDMONT NATURAL GAS COMPANY, INC.
NORTH CAROLINA
Docket No. G-9 Sub 689

Effective: June 1, 2016

101 - Residential Service

	November-March	April-October
Monthly Charge	10.00	10.00
Rate/Therm	0.92251	0.88538

102 - Small General Service

Monthly Charge	Rate/Therm November-March	Rate/Therm April-October
$ 22.00	0.71529	0.68639

152 - Medium General Service

Monthly Charge	Units	Rate/Therm November-March	Units	Rate/Therm April-October
$ 75.00	First 5,000	0.67746	First 5,000	0.62142
	Over 5,000	0.65335	Over 5,000	0.59916

142 - Natural Gas Vehicle Fuel

Rate/Therm November-March	Rate/GGE * November-March	Rate/Therm April-October	Rate/GGE * April-October
0.26513	0.33406	0.26513	0.33406

Compression Charge, if applicable, is $0.40 per therm (maximum)

143 - Experimental Motor Vehicle Fuel

Monthly Charge depends on the customer-specific corresponding Rate Schedule
Rate Per Therm depends on the customer-specific corresponding Rate Schedule
Compression Charge, if applicable, is $0.40 per therm (maximum)

144 - Experimental Motor Vehicle Fuel

Monthly Charge		Rate/Therm November-March		Rate/Therm April-October
$ 75.00	First 5,000	0.45100	First 5,000	0.39496
	Over 5,000	0.42689	Over 5,000	0.37270

Compression Charge, if applicable, is $0.40 per therm (maximum)

103 - Large General Sales Service

		Units	Rate/Therm November-March	Units	Rate/Therm April-October
Monthly Charge	$ 350.00	First 15,000	0.38556	First 15,000	0.33154
Demand (Therm)	1.14584	Next 30,000	0.32769	Next 30,000	0.28799
		Next 90,000	0.30659	Next 90,000	0.27380
		Next 165,000	0.28725	Next 165,000	0.26375
		Next 300,000	0.28743	Next 300,000	0.25461
		Over 600,000	0.26171	Over 600,000	0.25311

104 - Interruptible Sales Service

Monthly Charge	Units	Rate/Therm November-March	Units	Rate/Therm April-October
$ 350.00	First 15,000	0.40101	First 15,000	0.37579
	Next 30,000	0.36725	Next 30,000	0.34689
	Next 90,000	0.34616	Next 90,000	0.33318
	Next 165,000	0.31642	Next 165,000	0.31391
	Next 300,000	0.31946	Next 300,000	0.31596
	Over 600,000	0.30612	Over 600,000	0.30107

PIEDMONT NATURAL GAS COMPANY, INC.
NORTH CAROLINA
Docket No. G-9 Sub 689

Effective: June 1, 2016

105 - Outdoor Gaslight Service

Monthly Charge		Rate/Therm November-March	Rate/Therm April-October
$ 16.50	(Per Fixture)	N/A	N/A

106 - Schedule for Limiting and Curtailing Service

	Rate/Therm November-March	Rate/Therm April-October
Emergency Service	$1.00 + gas cost	$1.00 + gas cost
Unauthorized Gas Penalty	$2.50 + gas cost	$2.50 + gas cost

108 - Negotiated Service

Actual rates under this rate schedule are negotiated. See Rate 102, 103 and 104 for maximum rates and monthly charges.

113 - Large General Transportation Service

		Units	Rate/Therm November-March	Units	Rate/Therm April-October
Monthly Charge	$ 350.00	First 15,000	0.15058	First 15,000	0.09656
Demand (Therm)	0.25564	Next 30,000	0.09271	Next 30,000	0.05301
		Next 90,000	0.07161	Next 90,000	0.03882
Standby Sales		Next 165,000	0.05227	Next 165,000	0.02877
Demand (Therm)	1.20000	Next 300,000	0.05245	Next 300,000	0.01963
		Over 600,000	0.02423	Over 600,000	0.00841

114- Interruptible Transportation Service

Monthly Charge	Units	Rate/Therm November-March	Units	Rate/Therm April-October
$ 350.00	First 15,000	0.08086	First 15,000	0.10488
	Next 30,000	0.07490	Next 30,000	0.08124
	Next 90,000	0.06440	Next 90,000	0.06882
	Next 165,000	0.04614	Next 165,000	0.04848
	Next 300,000	0.03022	Next 300,000	0.04697
	Over 600,000	0.01946	Over 600,000	0.01848

T-10 - Transportation Service to Military Installations with Contract Demand in Excess of 5,000 DT per Day

		Rate/Therm November-March	Rate/Therm April-October
Demand (Therm)	0.74183	0.12373	0.03274

12 - Service to Military Installations Located in Onslow County

Rate/Therm November-March	Rate/Therm April-October
0.53239	0.47850

T-12 - Transportation Service to Military Installations in Onslow County

Rate/Therm November-March	Rate/Therm April-October
0.29741	0.24352

ST-1 - Standby On-Peak Supply Service

Demand (Therm)	0.42600
Capacity Charge	0.12700

Summary of Rates and Charges

RATE SCHEDULE NO. AND DESCRIPTION		CHARGES (a)	
101 -	**RESIDENTIAL SERVICE**		
	Facilities Charge	$10.00	per month
	Winter Energy Charge – November through April	$0.80211	per therm
	Summer Energy Charge – May through October	$0.73448	per therm
102 -	**HIGH-EFFICIENCY RESIDENTIAL SERVICE**		
	Facilities Charge	$10.00	per month
	Winter Energy Charge – November through April	$0.75211	per therm
	Summer Energy Charge – May through October	$0.68448	per therm
115 -	**UNMETERED LIGHTING SERVICE**		
	Facilities Charge	$10.00	per month
	Winter Energy Charge – November through April	$0.73744	per therm
	Summer Energy Charge – May through October	$0.66981	per therm
125 -	**SMALL GENERAL SERVICE**		
	Facilities Charge	$17.50	per month
	Energy Charge First 500	$0.63919	per therm
	Next 4,500	$0.57883	per therm
	All Over 5,000	$0.53490	per therm
126 -	**SMALL GENERAL SERVICE - COOLING**		
	Facilities Charge	$30.00	per month
	Energy Charge	$0.52559	per therm
127 -	**HIGH-EFFICIENCY SMALL GENERAL SERVICE**		
	Facilities Charge	$17.50	per month
	Energy Charge First 500	$0.58919	per therm
	Next 4,500	$0.52883	per therm
	All Over 5,000	$0.48490	per therm
135 -	**NATURAL GAS VEHICLE FUEL**		
	Energy Charge	$0.70130	per therm
	Energy Charge	$0.884	per GGE (b)
145 -	**LARGE-QUANTITY GENERAL SERVICE**		
	Facilities Charge	$300.00	per month
	Energy Charge First 15,000	$0.41914	per therm
	Next 15,000	$0.39732	per therm
	Next 15,000	$0.37782	per therm
	Next 15,000	$0.35236	per therm
	All Over 60,000	$0.33117	per therm
150 -	**LARGE-QUANTITY INTERRUPTIBLE COMMERCIAL AND INDUSTRIAL SERVICE**		
	Facilities Charge	$600.00	per month
	Energy Charge First 15,000	$0.35261	per therm
	Next 15,000	$0.33171	per therm
	Next 70,000	$0.31085	per therm
	Next 500,000	$0.29027	per therm
	All Over 600,000	$0.26941	per therm
160 -	**SPECIAL SALES RATE**		
	Facilities Charge	$600.00	per month
	Energy Charge	See Rate Schedule No. 160	

Summary of Rates and Charges

RATE SCHEDULE NO. AND DESCRIPTION		CHARGES (a)	
165-	**SPECIAL TRANSPORTATION RATE**		
	Facilities Charge	$600.00	per month
	Energy Charge	See Rate Schedule No. 165	
175-	**FIRM TRANSPORTATION SERVICE CUSTOMERS QUALIFYING FOR SERVICE ON RATE SCHEDULE NO. 145**		
	Facilities Charge	$300.00	per month
	Transportation Charge First 15,000	$0.14542	per therm
	Next 15,000	$0.12360	per therm
	Next 15,000	$0.10410	per therm
	Next 15,000	$0.07864	per therm
	All Over 60,000	$0.05745	per therm
180-	**INTERRUPTIBLE TRANSPORTATION SERVICE FOR CUSTOMERS QUALIFYING FOR SERVICE ON RATE SCHEDULE NO. 150**		
	Facilities Charge	$600.00	per month
	Transportation Charge First 15,000	$0.10166	per therm
	Next 15,000	$0.08076	per therm
	Next 70,000	$0.05990	per therm
	Next 500,000	$0.03932	per therm
	All Over 600,000	$0.01846	per therm
Rider A -	**EMERGENCY SERVICES**		
	Limited Emergency Service	$1.00 plus cost of gas	per therm
	On-Peak Emergency Service	$1.50 plus cost of gas	per therm
	Unauthorized Gas	$2.50 plus cost of gas	per therm
MISCELLANEOUS FEE SCHEDULE			
	RETURNED CHECKS AND BANK DRAFTS	$25.00	
	RECONNECTION (c)		
	Residential – Regular Hours	$65.00	
	--After 5 p.m., weekends, holidays	$95.00	
	Non-Residential – Regular Hours	$95.00	
	--After 5 p.m., weekends, holidays	$125.00	

(a) Rates do not include applicable sales tax.
(b) The rate converts 1.26 Therms to 1 Gasoline Gallon Equivalent (GGE).
(c) All reconnections that exceed one hour shall be billed the indicated rates per hour.

CHATTANOOGA GAS COMPANY
GAS TARIFF
TRA NO. 1

SEVENTH REVISED SHEET NO.30

RATE SCHEDULE T-1

Interruptible Transportation Service

TRANSPORTATION SERVICE AGREEMENT

Interruptible Transportation Service provided hereunder shall be an annual service under a Transportation Service Agreement on an individual Customer basis.

AVAILABILITY

Available on an interruptible basis under a Transportation Service Agreement to large volume Customers provided Chattanooga Gas Company (Company) has interruptible gas delivery capacity in excess of the then existing requirements of other Customers, and further subject to the following conditions:

1. Service shall be limited to Customers consistently using a minimum of 36,500 Dths annually at a daily rate of 100,000 cubic feet or 1,000 Therms or more. A Customer may also qualify for this rate schedule on a summer seasonal basis (May-October) provided the daily usage during this period consistently meets or exceeds 100 Dths. C

2. The Customer's use under this rate shall not work a hardship on any other rate payers of the Company, nor adversely affect any other class of the Company's Customers and further provided the Customer's use under this rate shall not adversely affect the Company's gas purchase plans and/or effective utilization of the daily demands under the Company's gas purchase contracts with its suppliers subject to review by the Tennessee Regulatory Authority when such review is requested by Customer.

3. Customer must be on or adjacent to the Company's existing mains and the mains shall, in the Company's judgment, be adequate to serve the Customer's requirements without impairing service to other Customers unless the Customer pays all cost (including applicable Income Tax) to provide required facilities

4. The gas shall be delivered through a single point of delivery and shall not be resold directly or indirectly, without the approval of the Company. The Company is not authorized to give its approval if the purpose is to have two plants under common ownership, or separate ownership purchase gas through one meter.

5. Service taken under this rate shall be by contract for a term of one year. Once a qualified Customer elects service under this Rate Schedule, all service will be provided under the terms and conditions of this Rate Schedule for a term extending through the following May 31. A new Customer beginning service after May 31 shall contract for a term extending through the following May 31. Upon meeting the qualifications contained therein, a Customer may receive service under Rate Schedule SS-1 concurrent with this Rate Schedule. A Customer may elect to discontinue service under this Rate Schedule and receive service under Rate Schedule I-1 by giving written notice to the Company prior to March 1 of any year. Proper notice having been provided, the Customer shall discontinue service under this Rate Schedule effective the first June 1 following the notice. A Customer receiving service under the I-1/ T-1 Rates Schedules as of March 1, 2005 that fails to submit an executed contract will receive service under Rate Schedule I-1 through May 31, 2006 C

RATE SCHEDULE T-1 (Continued)
Interruptible Transportation Service

6. Customer agrees to install and maintain standby fuel burning facilities to enable Customer, in the event of curtailment of service, to continue operations on standby fuel, or to give satisfactory evidence of his ability and willingness to have the service hereunder interrupted or curtailed by the Company in accordance with the terms and conditions set forth in the Special Contract.

MONTHLY BASE RATE	*Net Rate	
Customer Base Use Charge	$300.00	C
System Capacity Charge Per Unit of Billing Demand	$1.35 Per Dth	N
Commodity Charge		
First 1,500 Dths Per Month	$.8064 Per Dth	C
Next 2,500 Dths Per Month	$.6891 Per Dth	
Next 11,000 Dths Per Month	$.3908 Per Dth	
Over 15,000 Dths Per Month	$.2402 Per Dth	

Other adjustments, charges and/or credits as determined in accordance with the Tennessee Regulatory Authority's Rules and Regulations and applicable taxes shall be added to the above rates.

*Company's Transportation Service Rate is in addition to all other applicable Pipeline Transportation Rates and Charges.

BILLING DEMAND

N

The billing demand shall be the greater of (a) or (b) below:

(a) The demand for the current month is always the highest demand day in any of the previous 11 billing months plus the current billing month - - bearing in mind that demand days are established only during the billing months of November, December, January, February and March

(b) The demand will be 65% of the average daily consumption for the preceding months of April through October.

Whenever a Customer commences taking service under this rate between April 1, and October 31 of any year, the billing demand for each billing month prior to the November billing shall be 6% of the monthly consumption in each such month. Commencing with the billing month of November, the billing demand shall be determined either under (a) or (b) above.

DETERMINATION OF DEMAND DAY

N

The demand day shall be determined at the option of the Company by one of the following methods:

1. By measuring the maximum volume of gas taken by the Customer in any one day through the use of volume and pressure recording and measuring equipment installed by the Company.

2. When gas is delivered to a Customer through a positive displacement meter without the use of daily recording and measuring equipment, the maximum volume of gas taken in any one day during the billing month shall be 6% of the total volume of gas used by the Customer during such billing month.