FILE

Columbia Exhibit No.

BEFORE
THE PUBLIC UTILTIES COMMISSION OF OHIO

In the Matter of the Application of Columbia Gas of Ohio, Inc. for Authority to Amend Filed Tariffs to Increase the Rates and Charges for Gas Distribution Service.	))))	Case No. 08-0072-GA-AIR
In the Matter of the Application of Columbia Gas of Ohio, Inc. for Approval of an Alternative Form of Regulation and for a Change in its Rates and Charges.	))))	Case No. 08-0073-GA-ALT
In the Matter of the Application of Columbia Gas of Ohio, Inc. for Approval to Change Accounting Methods.	)))	Case No. 08-0074-GA-AAM
In the Matter of the Application of Columbia Gas of Ohio, Inc. for Authority to Revise its Depreciation Accrual Rates.	)))	Case No. 08-0075-GA-AAM

PREPARED REBUTTAL TESTIMONY OF
RUSSELL A. FEINGOLD
ON BEHALF OF COLUMBIA GAS OF OHIO, INC.

- ☐ **MANAGEMENT POLICIES, PRACTICES AND ORGANIZATION**
- ☐ **OPERATING INCOME**
- ☐ **RATE BASE**
- ☐ **ALLOCATIONS**
- ☐ **RATE OF RETURN**
- ☒ **RATES AND TARIFFS**
- ☐ **OTHER**

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October 17, 2008

PREPARED REBUTTAL TESTIMONY OF RUSSELL A. FEINGOLD

Background and Qualifications

Q: Please state your name and business address.

A: My name is Russell A. Feingold and my business address is 2525 Lindenwood Drive, Wexford, Pennsylvania 15090.

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

A. I am employed by Black & Veatch Corporation as a Vice President and I lead the Rate & Regulatory Advisory Group of its Enterprise Management Solutions ("EMS") Division.

Q. Have you previously submitted direct testimony before the Public Utilities Commission of Ohio (the "Commission") in this proceeding?

A. Yes. I previously submitted direct testimony in this proceeding on behalf of Columbia Gas of Ohio, Inc. ("Columbia" or the "Company") concerning its: (1) class cost of service study; (2) proposed allocation of revenues to its classes of service; and (3) design of rates for its sales and transportation service rate schedules.

Purpose of Testimony

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

A. The purpose of my rebuttal testimony is to respond to the testimony of the Office of Ohio Consumers' Counsel (the "OCC") related to the Company's proposal to implement a Straight Fixed-Variable ("SFV") rate design for its Small General Service ("SGS") Rate Schedule. I will specifically respond to the claims made in the direct testimonies of OCC

witnesses Roger Colton and Glenn Watkins related to the impact of Columbia's proposed SFV rate design on low income customers and the alleged deficiencies in that rate design approach relative to the Company's current volumetric-based rate structure.

Summary of Findings and Recommendations

Q. Can you briefly summarize your findings and recommendations related to these parties' presentations?

A. Yes. Based on my review of the points and underlying support presented by witnesses Colton and Watkins concerning the Company's proposed SFV rate design proposal, I have reached the following findings and recommendations:

1. The Public Utilities Commission of Ohio (the "Commission") should reject the OCC rate design recommendations for the SGS rate class because they are based on incorrect analyses, faulty economics, and fail to satisfy fundamental regulatory principles that form the foundation for sound utility ratemaking.
2. This Commission should reject the contention made by Mr. Colton that the Company's proposed SFV rate design will disproportionately harm low income, low-use customers because his conclusion that income is directly related to natural gas consumption is unsupported.
3. This Commission should reject the OCC's recommendation made by Mr. Watkins that the Company's current customer charge of $6.50 per month be maintained and that any increase in the overall SGS revenue responsibility be collected from the volumetric usage charge. This proposal is seriously deficient for a number of important reasons:

a) It ignores the margin losses contributed by the Company's SGS rate class caused primarily by declining use per customer and variations in weather from normal levels;

b) It is not reflective of the true costs of serving the Company's SGS customers;

c) It will perpetuate the intra-class cross subsidies that exist within SGS class – which means that some customers will continue to overpay for gas delivery service while others will continue to underpay;

d) It will cause more customers to overpay by a greater amount for gas service during colder than normal periods because the Company's volumetrically derived commodity charges will be disproportionately increased under the OCC's rate design proposal; and

e) It will not provide an appropriate ratemaking foundation for the Company to offer energy efficiency and conservation programs for the benefit of its customers because of the disincentive the Company has to promote such programs caused by revenues and sales that are directly linked through the OCC's increased emphasis placed on a volume-based rate structure in its rate design proposal.

4. Actual customer data derived from the Company's billing records clearly indicates that its low income customers use more gas per customer, on an annual basis, than the average residential customer it serves. Therefore, under the Company's SFV rate design proposal, low income customers will receive distinct benefits as I previously described in my direct testimony.

As a result, I recommend that the Commission adopt the Company's SFV rate structure proposal for Rate Schedule SGS, which is conceptually identical to the Commission Staff's rate design proposal for this class as presented and discussed in the testimony of Staff witness Stephen Puican.

SFV Impact on Low Income Customers

Q. Do you agree with Mr. Colton's conclusion that income is directly related to natural gas consumption?

A. Absolutely not. While Mr. Colton may attempt to persuade others to adopt his conclusion based on inferences he draws from selected federal and state data on energy expenditures, income levels, and housing stock characteristics, the fact remains that he has chosen to ignore any utility-specific data on gas consumption and income, and the resulting relationship that such data actually portrays. In my opinion, his decision not to rely upon any utility-specific data in reaching his conclusion is a fatal flaw in his approach. As I will demonstrate below, the analyses that Mr. Colton has chosen to rely upon based on the above-described nationwide and statewide data are either incorrect, or far from conclusive, and do not support his contention that there is a direct relationship between income and natural gas consumption. Since his contention is unsupported, he cannot reasonably conclude that low income customers will be harmed under the Company's SFV rate design proposal.

Q. Does Mr. Colton reach a conclusion that low income customers impose a smaller heating load on the system because they live in smaller dwelling units?

A. Yes. Mr. Colton reaches that conclusion at page 32, lines 15 and 16, of his direct testimony.

Q. Is his conclusion correct?

A. No. There are a number of reasons why his conclusion is incorrect. First, while low income consumers may live in smaller dwellings, on average, these smaller dwellings are typically older, less efficient and more densely populated than larger dwellings. As discussed by the Energy Information Administration ("EIA") in its summary of the Residential Demand Module of the National Energy Modeling System, the size of the dwelling represents only one variable of a much larger set of variables used to forecast residential consumption of energy.[1] As the EIA report notes, the modeling effort uses four categories of variables to model energy consumption:

1. Economic and demographic effects;
2. Structural effects;
3. Technology turnover and advancement effects; and
4. Energy market effects.[2]

In fact, the size of the dwelling is only one of the structural effects. Structural effects also include the mix of end-use services including gas heat, gas water heating, gas cooking and drying. The mix of end-use services is a critical element since gas consumption is driven not only by space heating but the existence of other gas appliances as well. In addition, there are other factors that relate to the housing stock included in both economic and demographic effects and technology turnover and advancement effects. These other

[1] The National Energy Modeling System: An Overview 2003, Report #: DOE/EIA-0581
[2] Ibid.

factors include dwelling type (single family home, apartment, etc), occupants per household, appliance stock, and efficiency of the thermal envelope created by the dwelling's physical structure. As a practical matter, larger homes built with newer technology use less energy in total for space heating and water heating (the two largest applications of gas appliances) than do smaller older homes with less efficient appliances and a less efficient thermal envelope.[3] It is absolutely incorrect and unsupported to conclude, as Mr. Colton does, that living in a smaller home means lower energy use or a lower heating demand.

Second, factors other than house size impact gas consumption for heating. For example, the age of the occupants impacts gas consumption. Older citizens often require more heat to be comfortable in the winter. Families with younger children typically have more heat exchanges per day than average because of the number and duration of time that doors are opened by dwelling occupants. These factors or usage and demand determining variables encompass much more than house size and they contribute to differences in household consumption and demand. Thus, it is unreasonable to rely on a single and simple variable of house size (measured by number of bedrooms or number of rooms), as Mr. Colton has done, as the determinant of gas consumption or demand.

Q. Is other evidence available to support the conclusion that low income households use more gas in smaller homes than other customers do in larger homes?

A. Yes. In the Residential Energy Consumption Survey 2001 prepared by the Department of Energy, Table CE2-3e in the report provides a measure of "Space Heating Intensity." "Space Heating Intensity" is a measure of the heating cost per Heating Degree Day

[3] Natural Gas Use in American Households, EIA/DOE, release date January 16, 2001.

("HDD") times the square footage of the dwelling divided by 1000. Table 1 below provides this data.

Table 1 - Natural Gas Space Heating Intensity

Household Income	Total	Under $10,000	$10,000 to $29,999	$30,000 to $49,999	$50,000 or More	Below Poverty Level	Eligible for Federal Assistance
Heated Square Footage	1,836	1,067	1,340	1,688	2,458	1,100	1,319
Natural Gas	6.78	10.39	8.71	6.95	5.62	10.37	8.83

The data demonstrates that low income homes use more gas per square foot for a constant HDD than do larger homes owned by higher income customers. This finding demonstrates conclusively that house size alone is not a good measure of gas consumption and that other variables must be included.

Q. Does statewide natural gas expenditures data, as used by Mr. Colton, properly reflect natural gas use in the Columbia service area?

A. No. Natural gas expenditures on a statewide basis represent an unreliable source of data for drawing a conclusion for any one individual utility service area.

Q. Why is statewide natural gas expenditure data unreliable for assessing natural gas use in an individual utility service area?

A. There are a number of reasons that statewide data is not applicable to an individual utility. First, HDD vary widely across the state. Table 2 below illustrates the differences

from high to low across the state based on the National Oceanic and Atmospheric Administration ("NOAA") normal HDD for each of Ohio's major airports.

Table 2 - Ohio Heating Degree Days (HDD) by Location [(1)]

City (at Airport)	Annual HDD
Toledo	6,460
Youngstown	6,451
Akron/Canton	6,154
Cleveland	6,121
Dayton	5,690
Columbus	5,492
Cincinnati	4,841

[(1)] Calendar 2007

This table shows that HDD values differ from high to low across the state by over 1,600 HDD, or by about 25 percent. Thus, the conclusion Mr. Colton reached on page 5, lines 3-6 of his direct testimony that no specific utility service territory is different from the state overall is demonstrably wrong. Second, each utility has different rates for natural gas service, with resulting differences in expenditures for natural gas even if the same amount of gas is consumed. Schedule RAF-R-1 provides the annual bills of a typical residential customer for the major gas utilities in Ohio and demonstrates significant differences for a constant level of gas consumption. Statewide data does not control for this difference. Since the gas consumption is not the same based on HDD, the expenditure data cannot be relied upon to determine even the relationship between income and gas

consumption. The combination of a survey designed to collect data on a statewide basis, different natural gas rates for utilities, and substantially different heating requirements suggests that the statewide data is actually not representative of any one service territory, and that Mr. Colton's conclusion about data applicability to each utility is incorrect.

Q. How does the difference in HDD impact the average natural gas expenditure by region of the state?

A. Greater HDD means that natural gas bills will be greater in colder portions of the state. As discussed more fully below, reported expenditures will further understate the actual usage for PIPP customers in the normally colder portions of the state, while the average for other income groups will fully reflect the colder temperatures in their portions of the state. This means that the differences between income groups are artificially greater on a statewide basis than they would be for the customers in a more homogeneous utility service area. Further, it suggests that for a utility like Columbia with a geographically diverse service area that includes the highest HDD in the state as well as the next to lowest HDD, the bias is quite significant, particularly if the distribution of low income customers is not uniform across the state.

Q. Are low income gas customers distributed uniformly across the state?

A. No. Data on both low income customers and gas saturation is available from the American Community Survey ("ACS") for selected counties that have a large enough sample to be reported. Schedule RAF-R-2 demonstrates the differences by county assuming that

the low income customers have the same saturation of gas heating as the county as a whole.

As this Schedule illustrates, the largest portion of low income gas consumers reside in the area with the highest HDD – Toledo (Lucas County). Since these customers report natural gas expenditures (as will be discussed below) based on their greatly reduced PIPP charges, as opposed to the actual gross bill amount, low income usage will be substantially understated relative to other income groups. This fact alone invalidates any analysis attempting to conclude that there is a direct relationship between income and natural gas usage using expenditures as a proxy for natural gas usage.

Q. Are there other problems using expenditure data as a proxy for natural gas use?

A. Yes. For customers whose household income is less than 175% of the poverty level, the maximum cost for gas service equals 10% of the monthly gross income level. This means that the natural gas expenditure data used by Mr. Colton as a proxy for natural gas use is biased downward for eligible low income households because the cost of natural gas is much less than the actual gross billed amount for PIPP customers. Mr. Colton agrees with the existence of this bias as stated in his Deposition at page 48, line 21. See Colton October 2, 2008 Depo. Tr. at p. 48:21.

As I stated in my direct testimony, actual data for Columbia's PIPP customers shows that these customers consume much more gas than the Company's average residential customer. However, the related expenditure is much less than the full cost of the gas actually consumed. When these customers are included in expenditure data, the average expenditure for a group of low income customers is greatly reduced below the ac-

tual level of that group's average use. A simple example will illustrate this result. If we consider the income group below $10,000, the maximum monthly gas bill under PIPP is $83.33 per month ($1,000 divided by 12). On an annual basis, any customer whose annual bill is more than $1,000 will elect to be a PIPP customer. In addition, for customers whose annual bills exceed 10% of their annual income below $10,000, those customers will report in a survey response a monthly cost less than the amount of gas actually consumed would generate. In any case, when an average expenditure is reported, assuming accurate reporting, the existence of the PIPP program results in average expenditures far below the actual level of the bill for low income customers eligible for PIPP and for the eligible low income poverty customers as a whole. Thus, the assumed relationship between income and expenditures does not permit one to conclude that there is a direct relationship between income and usage as Mr. Colton concludes. Similarly, LIHEAP customers would report lower expenditures and further bias the expenditure data lower.

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Q. Does use of statewide data create any other bias relative to the relationship between income and usage?

A. Yes. As noted above, HDD are not uniform across the state. It is also true that the income distribution across the state, and across individual service areas, is not the same. While the ACS data used by Mr. Colton is not reported for every county in the state, it is reported for a sample of 38 counties. Using the income distribution for those counties and normal HDD from NOAA for the nearest reporting station to those counties, it is possible to develop an income weighted HDD for an individual utility service area. As one would expect, the HDD of the individual service areas differ from the state values.

Schedule RAF-R-3 illustrates the income weighted HDD for the state as a whole, Columbia, Duke Energy (Cincinnati Gas & Electric) and Vectren Energy Delivery of Ohio. Income weights were calculated as the sum of HDD for the county times the number of households in the county at each income level divided by total households. The data illustrates that statewide natural gas consumption based on natural gas expenditures is not representative of any utility service area because of differences in the income weighted HDD between the state levels and the levels for each service area. For example, Duke Energy has almost a 1,000 HDD difference from the statewide amount at the less than $10,000 income level. Both Vectren Energy and Columbia also have distributions that differ from the statewide data, albeit by smaller amounts.

In addition, as discussed above, PIPP and LIHEAP customers report lower expenditures than their gas consumption would require if they paid their full gas bills. The ACS also cautions that customers are likely to overstate their bills, albeit not for customers whose bill is 10% of their income. For the statewide, Columbia, and Vectren Energy data, the low income HDD level is greater than the high income HDD level. This suggests that the expenditure data compiled on a statewide basis further understates the low income use per customer relative to actual levels and overstates the higher income use per customer. Further, since lower income residences have higher average HDD, it is reasonable to assume that their use is likely to be higher on average as well.

Q. How much impact does a difference of 100 HDD have on low and high income customers in the Columbia service area?

A. It is not possible to say exactly the difference in use that additional HDD have on customers. The determination of the heat sensitive factor (i.e., the change in gas use associated with a change in HDD) requires information related to the efficiency of the appliance mix, the building thermal envelope efficiency, the age distribution of the household, the size of the house and other variables. However, we know generally that lower income customers have a higher heat sensitive factor than do higher income customers. Therefore, the difference in HDD contribute to more natural gas use by low income customers in proportion to higher income customers, thereby offsetting in whole or in part the difference in use associated with house size alone.

Q. Does the data from the Residential Energy Consumption Survey 2001 prepared by the Department of Energy support the proposition that residential natural gas consumption increases as income increases?

A. No. Mr. Colton presented the consumption data contained in this Survey without reviewing the tables that helped to explain that data. For example, in Table CE2-3e of the same report, there are normal HDD reported for each income level. Table 3 below provides each income group, gas consumption, and HDD.

Table 3 - Residential Natural Gas Consumption and HDD by Income Level

Household Income	Total	Under $10,000	$10,000 to $29,999	$30,000 to $49,999	$50,000 or More	Below Poverty Level	Eligible for Federal Assistance
Total Gas Usage - Mcf	70	54	63	68	81	56	64
HDD	4,255	4,167	4,247	4,378	4,206	3,986	4,277

As this data shows, the HDD data is not the same for each group's consumption data. Since the higher income groups generally have higher HDD than both customers below the poverty level and customers under $10,000 of income, one would expect lower gas consumption for the lower income customers. Mr. Colton's conclusion is not valid from review of this data and cannot be used for a utility service area where HDD are relatively constant for all customers, nor can it be used for a utility such as Columbia that encompasses multiple HDD zones since the state weighting of zones would differ from the utility weighting. This point is confirmed by the Ohio data presented above.

Q. Are Mr. Colton's objections to the use of proxies for evaluating low income gas consumption valid?

A. No. Utility-developed gas consumption and billed data is the standard for proper evaluation of income-energy usage relationships. In his testimony in the Vectren Energy Delivery of Ohio, Inc. rate case (Case No. 07-1080-GA-AIR) at page 30 lines 20-24, Mr. Colton acknowledges that an empirical study between usage and income is the best way to evaluate the low income gas consumption. See Transcript of Hearing Held on August 27, 2008 Before Attorney Examiner G. Price, Volume V at p. 30:2-24. Absent providing an approved list of all customers in a service territory who qualify for low income assistance, there is no basis other than using reasonable proxies in an empirical study for assessing the impact of SFV rate design on customers. As demonstrated above, the proxies used by Mr. Colton provide no information relevant to the question - even if we assume that all low income customers qualify for low income assistance. We know that not all low income households qualify for low income assistance and further we know that not

all low income customers are poor. Finally, the only real data available for assessing the impact of SFV rate design on customers must come from utility bills. Otherwise, the validity of the data is suspect. The key to using utility data is to recognize that data for a population of low income customers, be it PIPP or LIHEAP, contains actual use based on customers who have met a test for requiring assistance or who have been identified as low income by some statistical measure actually applicable to the utility's service area.

Q. At page 18 of his direct testimony, Mr. Colton concludes that PIPP customers are not representative of non-PIPP customers because "PIPP is targeted toward the highest usage, highest-burden households." Are all non-PIPP, low income customers under the poverty level eligible for PIPP, or any other low income assistance program?

A. No. As an example, one of the lowest median income zip codes in the Company's service area is the "43201" zip code. The Company serves 12,366 customers in this zip code and only 781 customers are PIPP customers. This means that there are 11,585 non-PIPP customers in this zip code. Yet, over 58% of the households have annual incomes under $25,000. This apparent anomaly of having so few PIPP customers living in this area, however, is easily explained. The simple explanation is that this zip code is the Ohio State University zip code. The number of low income students living around the campus certainly distorts the data used by Mr. Colton to conclude that low income customers who are non-PIPP customers also are eligible for low income energy assistance.

Based on actual annual gas usage from Company billing records, the non-PIPP customers (largely college students) average only about 66 Mcf per household while the

PIPP customers average about 114 Mcf per household. It is to be expected that low income customers who are not below the poverty level require less energy for a host of reasons related to economic, demographic and structural considerations. Yet Mr. Colton includes these low income customers that are not below the poverty level in his analysis since it is impossible to exclude them from the statewide aggregate data which he relies upon to reach his conclusions. As a result, his measure of the rate impacts on the poor includes the effects of non-poor customers as well.

Q. At page 25, lines 9-15 of his direct testimony, Mr. Colton discusses a bias in any analysis developed by a utility that uses 12 months of data. Is this conclusion of bias in the analysis correct?

A. No. Customers with partial months of service cannot be compared to customers with 12 months of service because even if they had much higher usage in the months of service and would have benefitted from SFV rate design for 12 months, the partial data would show no benefit because of the months without service. Mr. Colton fails to recognize that partial year service compared to full year service would bias any analysis as to bill impacts and to the development of reasonable comparisons of alternatives. According to the 2007 ACS data on mobility, only 27.9% or about 1.3 million households moved into their dwelling since 2005 on a nationwide basis. The other 72% had not moved during this period. Based on Census data on mobility in 2006, we know that low income mobility accounts for about 78% of all movers nationwide and have incomes under $40,000 per year. Importantly, however, about 35% of those low income movers are under the age of 24 suggesting significant mobility from students and other mobile young professionals.

Thus, for data from customers who have not moved, the data is reliable and represents the most accurate data base available to calculate average annual use to properly analyze the customer impacts of SFV.

Q. Are utilities able to identify customers who have not moved compared to those who have moved?

A. Yes. Utilities know how long service has been provided to customers based on billing history. Thus, it is possible to identify customers from a multi-year data base with actual data for twelve months that have been identified as low income eligible customers even if they are not PIPP or LIHEAP customers but have been identified from other sources of low income data.

Q. At pages 48-50 of your direct testimony, you provide specific data from Columbia and other gas utilities concerning the level of gas usage for low income customers, and the manner in which such customers would be impacted by the Company's SFV rate design proposal. Do you have any additional customer usage data from the Company that will confirm your original findings and refute those of Mr. Colton?

A. Yes. The Company recently conducted a detailed analysis of the relationship between gas usage and the income levels of its residential customers by individual zip code within its service area. The results of the Company's analysis are presented in Schedule RAF-R-4 and show that the conclusion reached by Mr. Colton that there is a direct relationship between income and natural gas consumption is simply incorrect.

Q. Please describe the nature of the analysis presented in Schedule RAF-R-4.

A. The analysis relates the actual gas consumption from Columbia's billing records for its residential customers to the household income characteristics collected from the most recent U.S Census, by individual zip code within the Company's service area. The analysis incorporated income data by zip code from the 2000 Census and the actual annual gas consumption of Columbia's residential customers recorded during the twelve months ended December 2000 to ensure a close chronological matching between data sets. In recognition of the relatively wide variation in HDD across Columbia's service area, it was deemed appropriate to segment the data into two more homogeneous sectors – a north region (North of Columbus) and south region (Columbus and South). This segmentation was accomplished by tagging each zip code in Columbia's service area as either "North of Columbus" (40.2N latitude and greater) or "Columbus and South."

Q. Please describe the results of this analysis.

A. Schedule RAF-R-4 presents two graphs, one for each geographic region, that show the resulting relationship between income and gas consumption for Columbia's residential customers. Each graph portrays a "u-shaped' income-consumption relationship indicating that household income and gas usage is <u>not</u> directly related. Instead, the lowest income customers (with a median annual household income of approximately $20,000) actually consume <u>more</u> gas than other higher income groups, and <u>more</u> gas than the average residential customer in each of the two segments of the SGS rate class. This low income group in the "North of Columbus" and "Columbus and South" regions used approxi-

mately 16% and 8% more gas, respectively, than that of the Company's average residential customer in each region.

In contrast to this analysis of actual gas usage for Columbia's residential customers and household income data for its corresponding service area, the nationwide and statewide aggregate data relied upon by Mr. Colton lead him to an incorrect conclusion regarding the relationship between income and gas usage for residential customers in Columbia's service area.

Q. Is there a bias contained in using zip code data associated with low income customers who are not poor?

A. Yes. As noted above in the example for zip code 43201, low income, non-poor customers consume less gas than the average residential customer. This means that the zip code data understates the actual gas consumption of customers living below poverty levels. If these low income, non-poor customers were excluded from the data, the annual gas consumption for low income customers below poverty levels would be higher than reported, and would further support the conclusion that these customers would benefit under the Company's SFV rate design proposal.

Q. Does a SFV rate design create a cross-subsidy from low income, poor customers to larger users as discussed by Mr. Colton at page 39 of his direct testimony?

A. No. As noted above, there is no cross-subsidy within the Company's SGS rate class under a SFV rate design since the cost to serve customers is based on average density, and for customers in more dense areas, their costs to serve are actually higher. Quite frankly,

if costs were based on all of the individual characteristics of customers within a class, it would be reasonable to allocate more costs to low income customers as compared to other customers because they require more working capital on average, impose higher default risks, require more customer service and so forth. However, rates are established on the basis of class average characteristics and the individual issues, including variations in density, do not apply to class rates.

Q. Does a SFV rate design provide benefits to low income customers who use less gas than average?

A. Yes. Lower income residential customers who use gas exclusively for space heating typically are more weather sensitive than the typical residential customer. This means that when weather is colder than normal, these customers will have much higher winter bills than the average customer if a volumetric rate design is used to recover the fixed costs of providing distribution service. By instead using a SFV rate design that fully reflects the fixed costs of providing distribution service, these customers will experience the benefit of lower total winter bills when they can least afford to make their payments. This is a customer benefit of a SFV rate design even if their annual gas distribution service bills are somewhat higher under normal weather conditions.

Q. Does the information on the home energy affordability gap for customers below the poverty level, as discussed by Mr. Colton at pages 42-43 of his direct testimony, provide a basis for rejecting the SFV rate design approach?

A. No. The analysis fails to include the impact of programs such as LIHEP and PIPP that limit the maximum impact on customers who are eligible low income customers. The upper limit of the heating burden for natural gas cannot exceed ten percent of the customers' income, thus the maximum burden is truncated for any eligible low income customer and their use is subsidized by all other customers. The use of SFV rates also caps the base rate subsidy by fixing the annual delivery charge as opposed to recovery of fixed costs in volumetric charges that, as noted above, result in higher bills under colder than normal weather.

Other Criticisms of the SFV Rate Design Approach

Q. Mr. Colton states at page 13, lines 7-9 of his direct testimony that due to higher density housing, low income customers impose lower delivery service costs on the utility. Does higher density equate to lower costs?

A. No. Mr. Colton simply makes this statement without providing any costing support whatsoever from the Company, or for that matter, from any gas utility.

Q. Please explain why Mr. Colton's statement is incorrect.

A. First, more densely populated areas tend to be served from facilities that require more expensive maintenance because of the myriad of facilities (electric conduit, cable conduit, water lines, unused steam lines and telephone conduit) that are buried near or co-located with gas distribution mains. Figure 1 below illustrates this situation for one of the Company's recent urban installations in downtown Columbus. In this Figure, the gas distribution main is the large steel pipe in the middle of the trench, running perpendicular to the telephone conduit. Throughout the installation, you can see metal bars inside the

trench running from one side to the other for shoring up the excavation area, which greatly increases the cost of such project work.

Figure 1 – Urban Conditions in Columbia's Service Area

Further, the rules and regulations applicable to service in urban areas typically impose extra costs on the utility for excavation (often requiring hand digging and removal of all materials) and monitoring of repairs. It is also common that urban areas have strict requirements related to backfill and paving and requirements that limit how and when work can be done to install, maintain, repair and replace distribution system components. As population density increases, it is typical for the safety-related requirements placed on operators of a natural gas distribution system to escalate. For these reasons, it is incorrect to assume that as population density increases there is a decrease in the cost of providing gas distribution service.

Finally, if gas rates were based on the costs for different geographic areas of the Company, rural areas that are less densely populated may be the least costly to serve

based on their proximity to the interstate pipelines that supply natural gas to the distribution system through "city gates," and the lower installation and maintenance costs associated with distribution facilities located in rural and undeveloped areas. However, utilities base rates on the average cost to serve a class of customers. For the Company's SGS customers, the fixed cost of service is the same for meter, regulator, service line, and main because the same network of distribution facilities adequately serves all eligible customers regardless of size since there is a restriction on the maximum size customer served under the rate. Thus, the correct conclusion is that distribution costs are the same per customer for all SGS customers regardless of annual gas consumption.

Q. Have you examined whether there is a connection between the costs of Columbia providing gas distribution service to its customers and population density within its service area?

A. Yes. Based on the Company's standard project costing methods used by its field engineering group for high density, urban main line installations and low density, suburban main line installations, the average cost of high density, urban projects (measured in cost per foot of installed plastic pipe) is over 2.4 times as much as for lower density, suburban projects. Moreover, when such projects require the installation of steel pipe, the cost differences between urban and suburban locations are even greater. This result is directly contrary to the conclusion reached by Mr. Colton which he made without the benefit of Company-specific cost data.

Q. Have you prepared an analysis demonstrating that the Company's costs of gas distribution service are the same regardless of size for all SGS customers?

A. Yes. I have developed the cost for various sizes of distribution main in Table 4 below. Since the Company uses a common size of two inches as the smallest size of main, I have analyzed the ability of two inch main to serve SGS customers using the system average density, the standard operating pressure, and the standard pressure drop at the house regulator. By applying pipeline flow formulas, it is possible to determine the amount of gas that would flow through the pipe under design day conditions and to estimate the maximum demand that the pipe would serve. This type of analysis recognizes that there are substantial economies of scale associated with the gas distribution infrastructure such that the unit cost of capacity for gas delivery declines with size at relatively rapid rate.

Table 4 - Economies of Scale for Distribution Mains

Size of Main (inches)	Material Cost ($ per foot)	Installation Cost ($ per foot)	Total Cost ($ per foot)	Design Day Flow Capacity (Mcfd)	Unit Cost ($ per Mcfd)
2	$1.65	$7.77	$9.42	202	$0.047
4	$4.10	$10.95	$15.05	1,111	$0.014

The design day flow in the above calculations is based on a 1,000 foot segment of main. The company serves about 14 customers per 1,000 feet of main on average based on an average density within Columbia's service area of 72 customers per mile of main.

Q. Please describe the economies of scale associated with a utility's system of distribution mains.

A. The scale economies of gas distribution systems reflect the relationship between the installed cost of pipe by size and type coupled with the increased capacity from pressure and pipe diameter. For gas distribution mains, when the size of the main is doubled, the available design day capacity of that main more than doubles. The unit cost of the larger main is less than twice the cost of the smaller size main, all else being equal. For a low pressure system, increasing pipe size from two inch to four inch allows over five times the amount of gas to flow, and under higher pressure, the flow rate increases by more than six times that of two inch pipe, all else being equal. The resulting cost causation implies that larger customers impose lower unit costs on the distribution system than do smaller customers. Further, given the customer density and standard operating pressure for the Columbia system, the minimum size of pipe installed (2 inch main) will serve the design day load characteristics of its entire size range of SGS customers.

Table 4 above illustrates the scale economies associated with two and four inch mains based on the current costs of the Company In this Table, the installed cost per foot of design day flow capacity is approximately 336 percent less for four inch pipe than for two inch pipe. Further, the two inch pipe will serve customers with a design day requirement of approximately 202 Mcf. Using a 20 percent annual load factor to estimate the annual consumption of an SGS customer with a design day requirement of 4.1 Mcf translates to 300 Mcf annually. Since customers larger than 300 Mcf annually are not eligible for the rate, this would be the highest design day load under the SGS rate. Based on an average density of 14 customers per thousand foot of main, the two inch capacity will serve a design day of 14.4 Mcf per customer, or over three times the expected design

day load of the largest customer receiving service under the SGS rate. For customers with higher annual load factors, the two inch main will serve even more customers.

Essentially, the smallest sized installed main and service will serve all of Columbia's SGS customers because the upper limit for eligibility for the rate is 300 Mcf. The design day requirements of the SGS rate class are satisfied by the smallest main installed on the system. This implies that all customers are equally responsible for Columbia's delivery service costs.

Q. Will the implementation of SFV rates shift costs to low income customers?

A. No. As demonstrated previously, Columbia's low income customers use more gas on an annual basis compared to its average SGS residential customer, so with the implementation of SFV rates, these customers will experience relatively lower charges for distribution service compared to the average SGS residential customer served by the Company. However, to the extent that some low use customers also qualify customers for rates based on poverty levels, the PIPP program creates an upper limit for the rate impact by setting an upper bound for billings equal to ten percent of the customer's gross income. Since this is the current limit, some PIPP customers will cease to be part of the Program at above average gas consumption and will experience lower bills, while some customers with lower gas consumption will find it advantageous to become PIPP customers. The net result is that no poverty-eligible customer will have an impact beyond the levels found acceptable under state policy guidelines as contained in PIPP.

Q. Have you reviewed Mr. Colton's hypothetical "simulation" of bill impacts on customers as discussed on pages 33-35 of his direct testimony and presented in Schedule RDC-12?

A. Yes.

Q. Please discuss your findings relative to his "simulation" and Schedule RDC-12.

A. As I have demonstrated, the data from the ACS statewide analysis is not a valid basis for determining the usage of low income customers. Since Schedule RDC-12 relies on invalid data, the results of Mr. Colton's hypothetical "simulation" cannot be used to demonstrate the impact of SFV rates on low income customers. Instead of increases for low income customers on average, low income customers will see bill decreases under the Company's rate proposal because their average use exceeds the system average. By correcting the usage distribution so that it is consistent with actual use, one would reach the exact opposite conclusion reached by Mr. Colton's simulation.

Q. Mr. Colton briefly discusses the concept of a Revenue Neutral Energy Efficient Feebate ("REEF") at pages 46-47 of his direct testimony. Does this concept coupled with SFV rate design provide any additional advantage for promoting energy conservation?

A. No. Since the SFV rate is cost based and also provides an economically efficient price signal to customers, the REEF as discussed by Mr. Colton provides no economic value. In addition, it is my opinion based on my cursory review of the REEF mechanism that it will create numerous problems related to rate discrimination, rate consistency, and rate

application. Overall, I believe the concept will add a high degree of subjectivity to the utility ratemaking process which runs counter to the more objective criteria that can help avoid prolonged debates on the appropriate rate design approach for a particular utility and its customers I would not recommend that the concept be adopted.

Q. At page 47, Mr. Colton recommends that if the Commission adopts SFV that it do so as a pilot, do you agree?

A. No. There is no reason to adopt SFV as a pilot program. I have demonstrated that the SFV rate design is cost-based. It eliminates intra-class subsidies. SFV promotes economic efficiency and benefits low income consumers. SFV also meets the test of providing the utility with a reasonable opportunity to recover its costs and earn the allowed return. Importantly, it meets these goals and does so with a rate that is easy for customers to understand. There is no reason to limit the applicability of the SFV rate design by calling it a pilot program. Such uncertainty is not good for utility stakeholders.

Q. At page 22 of his direct testimony, Mr. Watkins claims that the gas distribution utility industry has been able to remain "financially viable" without rate design changes such as SFV, despite being faced with the business challenges you describe in your direct testimony. How do you respond to his claim?

A. I strongly disagree with Mr. Watkins' claim and the basis upon which he attempts to support it. First, the majority of the natural gas utilities for which he presents rate of return on common equity data, on page 22 of his direct testimony, also have unregulated businesses that are not impacted financially in the same way that their regulated gas utilities

are impacted by the business challenges I presented in my direct testimony. These other businesses include gas marketing, gas production, and energy utilization services for end-use customers – which are all unregulated and benefit from higher natural gas commodity prices. As such, these rates of return levels are not indicative of the reduced levels achieved by the gas distribution utility segment of the energy industry.

Next, I disagree with Mr. Watkins' statement that "many of the Country's LDCs have not had rate increases in many years and have been able to meet these business challenges with largely volumetric based rates absent any increases in base rates." My experience is much different than that of Mr. Watkins, with many gas utilities having filed rate cases in recent times, and many of those gas utilities having filed and received regulatory approval for the implementation of a wide variety of non-volumetric rate design approaches. These approaches include SFV rate design, revenue decoupling mechanisms, and weather normalization adjustment mechanisms. Schedule RAF-R-5 presents a listing of the top twenty gas utilities in the U.S. (based on the number of customers served) with the date of each utility's last filed rate case and whether the utility has received regulatory approval to implement a non-volumetric rate design. This Schedule clearly demonstrates that Mr. Watkins' claim is simply incorrect.

Q. At page 23, lines 15-16 of his direct testimony, Mr. Watkins contends that the most efficient price signal results from using Long-Run Marginal Cost ("LRMC"). Is this a correct contention?

A. No. The most efficient price signal based on economic theory is Short-Run Marginal Cost ("SRMC") and not LRMC. SRMC is a necessary condition for economic effi-

ciency. Any sufficiently detailed discussion of economic theory is not practical within the broader context of setting utility rates. However, it is practical to point out that the only change in cost associated with a change in gas usage for the Company is fully measured by the costs included in the utility's Purchased Gas Adjustment ("PGA"). This is true for either an increase or a decrease in gas usage. For Mr. Watkins to assert that the rationale for SFV as a "pricing approach escapes me as an economist and a policy advisor," illustrates his fundamental misunderstanding of a number of economic and regulatory issues. To be clear, if a rate structure creates price signals that recover costs that do not vary with changes in use in the short-run, resource waste occurs whether it is the purchase of another unit of commodity or investment in energy conservation to reduce a unit. A utility's obligation to serve comes with a right to a reasonable opportunity to recover all costs – both fixed and variable - including the opportunity to earn its allowed rate of return. Volumetric recovery of fixed costs above marginal costs does not provide the opportunity to recover fixed costs, including a fair rate of return, because of changes in technology that reduce energy usage. Nevertheless, economists have developed a method to reach both the goal of efficient price signals and the opportunity to recover all fixed costs. The solution known as Ramsey pricing requires that the marginal price be set at marginal cost and the remainder of the revenue requirement be applied to the least elastic portion of the bill. SFV meets the requirements of Ramsey pricing, is efficient, cost-based, and provides a reasonable opportunity for the utility to earn the allowed rate of return.

Q. How does Mr. Watkins' assertion, at page 23 of his direct testimony, that regulation should be a surrogate for competition relate to Ramsey pricing?

A. The concept of Ramsey pricing evolved from the facts and circumstances surrounding the regulation of a natural monopoly exhibiting economies of scale and the desire to have the results of regulation mirror the efficiency of the competitive market. Namely, under scale economies, marginal cost is below average cost and setting rates purely on the basis of marginal cost would not permit the regulated entity to recover all of its costs. The development of Ramsey pricing represents a solution to the dilemma by pricing marginal use at marginal cost and infra-marginal use at prices above marginal cost so that the average cost of service is recovered. SFV does exactly what the competitive market standard requires. Under SFV rate design, changes in gas consumption, either increases or decreases, change revenues for the firm by the marginal cost and fixed costs are recovered in the fixed charge. This is the very outcome that competition envisions.

Q. Does the concept of regulation as a surrogate for competition mean that prices should be based solely on a volumetric basis as Mr. Watkins' concludes at pages 23-25 of his direct testimony?

A. No. As I have discussed above, SFV rate design recovers costs without intra-class subsidy meeting the test of being fair when fair is defined in relation to class cost and the price for volumetric use reflects marginal cost to promote economic efficiency. In the concluding remarks related to the issue of regulation as a surrogate for competition, Bonbright, et al, state that: "For rate regulation must necessarily **try to accomplish the major objectives that unregulated competition is designed to accomplish**; and the simi-

larity of purpose calls for a considerable degree of similarity of price behavior."[4] (emphasis added). The major objectives here include the efficient allocation of resources - and that does not occur with volumetric pricing.

Q. Do competitive markets only price services volumetrically?

A. No. Competitive markets use a variety of pricing methods depending on the nature of their costs and the types of services they provide. Understanding competitive pricing requires an understanding of the incentives and behavior of customers as well as the incentives and behavior of the firm. For example, amusement parks or major sports events charge high fixed charges for admission and monopoly price extra services such as food within the venue. Cell phone and cable TV service providers have large fixed cost networks and charge fixed prices for the use of the network. Even in the only fully-competitive natural gas market, retail customers of Atlanta Gas Light Company pay fixed charges for the regulated delivery service and, in addition, pay the gas marketers a fixed charge for the fixed services they provide such as billing.

Q. Please elaborate on the deficiencies in OCC witness Watkins' proposal to retain the status quo with regard to the Company's current monthly customer charge for its SGS rate class starting with your point that the OCC' proposal is not reflective of the true costs of serving the Company's SGS customers.

A. The OCC's rate design proposal does not reflect the true cost of serving the SGS rate class. In contrast to the OCC's rate design proposal, the Company's proposed SFV rate structure for its SGS rate class achieves a fundamental objective of ratemaking--the

[4] James C. Bonbright, et al Principles of Public Utility Rates at 158, 2nd Edition (1988)

proper alignment of costs with revenues and rates - which the OCC's proposal fails to achieve. In fact, it is my opinion that the OCC's proposal is regressive in nature in that it moves the Company's rates further away from the true cost of providing gas delivery service.

As described in my Direct Testimony, under the SFV rate structure, SGS customers will simply pay a flat monthly fee for the delivery services provided by Columbia, and will continue to pay on a volumetric basis through the PGA for the actual amount of gas commodity used each month. The SFV rate structure properly reflects the true fixed cost nature of the gas distribution business, allowing Columbia a reasonable opportunity to recover its fixed costs of providing gas delivery service, while its customers will pay for that service in an appropriate and equitable manner. Finally, the pricing of the Company's gas delivery services in this manner properly portrays to its customers: (1) the fixed nature of the underlying costs; (2) the delivery-only characteristics of the service; and (3) the fact that natural gas is the real commodity being purchased via the Company's gas delivery system.

Q. Please explain why the OCC's rate design proposal for the Company's SGS rate class will perpetuate the intra-class cross subsidies that exist within that rate class.

A. The higher Monthly Delivery Charge proposed by the Company is fairer to customers in the SGS rate class than the OCC's proposal and will cure the chronic cross-subsidy that exists between small and large SGS customers caused by the mismatch between their costs of service and base rate revenues. Under the OCC proposal, customers who have very little annual usage per month can pay less than half of their allocated delivery ser-

vice costs, while very high use customers pay well over 100%. This is because the monthly customer charge of $6.50 is substantially less than the allocated cost of service to residential customers of fixed delivery service costs, so low use customers tend to underpay for these costs. The OCC's largely volumetric rate design for SGS customers will perpetuate, and likely exacerbate, the intra-class cross subsidies that exist within the SGS rate class – some customers will continue to overpay for gas delivery service while others will continue to underpay.

Under the Company's SFV proposal, each SGS customer, regardless of gas consumption, pays the full share of allocated fixed delivery service costs, leaving none of these costs to be collected through a volumetric charge. Accordingly, a gas customer will not "overpay" or "underpay" his or her share of the delivery service costs based on the customer's consumption relative to the average consumption for the class.

Since the Company's fixed delivery service cost is just over $20.00 per month for an SGS customer, a monthly customer charge of any amount less than $20.00 per month means customers will pay either more or less than their "fair" amount, depending upon the individual customer's annual usage relative to the class average. The more the charge deviates from the cost-based amount, the more unfair the rate design becomes to the Company's customers. Compared with the Company's proposal, the OCC proposal will result in greater over and underpayment by individual SGS customers based on their relative usage - and in greater bill instability on a monthly and seasonal basis.

Q. Please explain why the OCC's rate design proposal for the Company's SGS rate class will cause more residential customers to overpay by a greater amount for gas service during colder than normal periods.

A. The OCC's largely volumetric rate design proposal for the Company's SGS rate class will cause more residential customers to overpay by a greater amount for gas service during colder than normal periods because the volumetric charge for that rate class will be disproportionately increased.

While the Company's proposed SFV rate design will increase the average customer's bills in the summer and shoulder months, when customer bills are at their lowest levels, it will decrease or moderate the increase in customer's bills in the winter months, when bills are at their highest levels. The customer bill analysis described in my Direct Testimony shows that under the Company's proposed SFV rate design, more than half of Columbia's customers will experience a bill decrease in the month of January, typically the coldest month of the year, with the remaining customers experiencing a bill increase (See Schedule RAF-7). Moreover, under colder than normal weather, these same customers will experience greater decreases in their bills, and there will be a greater number of customers who would also experience decreases in their bills under the proposed SFV rate design.

Q. Please explain why the OCC's rate design proposal for the Company's SGS rate class will not provide an appropriate ratemaking foundation for the Company to offer energy efficiency and conservation programs for its customers.

A. The OCC's rate design proposal for the SGS rate class will not provide an appropriate ratemaking foundation for the Company to offer energy efficiency and conservation programs for the benefit of its customers because of the disincentive the Company has to promote such programs caused by revenues and sales that are directly linked through the OCC's increased emphasis placed on a volume-based rate structure in its rate design proposal. The OCC's rate design proposal requires that most of the residential revenue requirement for fixed costs be recovered through volumetric rates, so that Columbia can fully recover these costs only if its customers consume a certain level of gas. Basing the Company's rates upon a set level of gas volumes creates a significant financial disincentive for it to aggressively promote energy efficiency for its customers. When Columbia's customers use less gas, the Company's financial performance suffers because recovery of fixed costs is reduced in proportion to the reduction in gas sales.

As I indicated in my Direct Testimony, the declines in gas use per customer have been substantial for Columbia over the last ten years (see Schedule RAF-1). The annual average use per customer has declined significantly in Columbia's SGS rate class. Over the last ten years, Columbia incurred margin losses in each of those years due to fluctuations in gas volumes caused primarily by declining use per customer and variations in weather from normal levels (See Schedule RAF-3). The total margin losses during that period amounted to over $340 million, or approximately $34 million per year. Under its proposed SFV rate design, the Company will be able to promote energy efficiency and conservation programs for its customers without the continual real threat of margin losses due to declining gas sales per customer.

Q. Is there a fundamental presumption underlying the position of OCC witness Watkins with regard to his proposal to leave the monthly customer charge for rate Schedule SGS at its current level?

A. Yes. A fundamental presumption of the OCC's rate design proposal for Rate Schedule SGS is that a volumetrically weighted rate design provides the most appropriate prices signals to customers related to gas consumption. In reality, however, such a rate design conveys inaccurate and improper price signals to customers, because it recovers fixed costs through the volumetric components of the utility's rate structure. As described earlier in my rebuttal testimony, this undesirable situation can: (1) increase revenue variability for the Company, (2) contribute to the instability of customer bills, and (3) needlessly inflate bills in the winter months, when customers face the greatest pressure on their household budgets from utility bills. The Company's SFV rate design proposal minimizes these undesirable effects and aligns the price signals to customers with the underlying costs of providing delivery service.

Q. Has the Company's SFV rate design proposal recognized the ratemaking principle of "gradualism" espoused by Mr. Watkins at page 32 of his direct testimony?

A. Yes. To mitigate the near-term impact of SFV rates on customers' bills and to allow customers sufficient time to adjust to this new type of rate structure, Columbia has proposed for the first year after completion of this rate proceeding that the current monthly customer charge be increased approximately half-way towards the SFV-based rate level, with the balance of the SGS revenue requirement collected through the proposed volumetric (i.e., gas consumption) charge. Twelve months after implementation of the first

phase-in of the SFV rate design, the Company's fixed costs of natural gas delivery service are proposed to be recovered from its SGS customers through a single, fixed monthly charge.

The proposed volumetric charge is set at a level to collect the balance of the proposed revenue requirement for these classes not recovered through the above-described Monthly Delivery Charge.

Q. Please summarize the reasons why this Commission should reject the OCC's rate design proposal for Columbia's SGS rate class.

A. The Commission should reject the OCC's rate design proposal for the Company's SGS rate class for the following reasons:

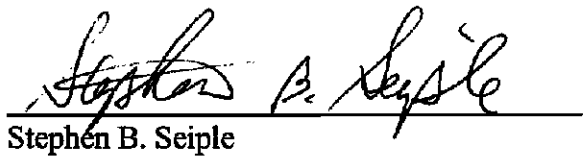
- It is not cost-based;
- It will perpetuate, and likely exacerbate, existing cross-subsidies among residential customers;
- It will cause more residential customers to overpay by a greater amount in the winter;
- It ignores the critical problem of the Company's margin revenue losses; and
- It is not supportive of important energy efficiency and conservation initiatives.

Q. Does this complete your Prepared Rebuttal Testimony?

A. Yes, it does.

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing Prepared Rebuttal Testimony of Russell A. Feingold on behalf of Columbia Gas of Ohio, Inc. was served upon all parties of record by regular U. S. mail and electronic mail this 17th day of October, 2008.



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SCHEDULE RAF-R-1

Comparison of Annual Gas Bills
Major Gas Utilities in Ohio

Annual Gas Consumption	86 Mcf

	Columbia	Dominion	Vectren	Duke
Base:				
Fixed Monthly Base Rate	$78.00	$68.40	$84.00	$254.88
Fixed Monthly IRP	$3.72	$0.00	$0.00	$16.32
Volumetric Base	$118.10	$106.25	$103.08	$92.05
Excise on Volumetric Base	$0.00	$0.00	$5.03	$0.00
TOTAL Base	$199.82	$174.65	$192.11	$363.25
Riders:				
PIPP	$34.43	$48.62	$20.44	$16.34
Uncollectible	$19.48	$40.09	$10.02	$0.00
CHOICE Sharing Credit	-$29.37	$0.00	$0.00	$0.00
Surcredit Rider	$0.00	-$0.46	$0.00	$0.00
Migration Rider	$0.00	$41.59	-$20.55	$0.00
Excise Tax Rider	$13.70	$13.70	$13.70	$13.70
Gross Receipts on Riders	$0.00	$0.00	$1.15	$0.67
TOTAL Riders	$38.24	$143.54	$24.77	$30.71
Gas Cost:				
Gas Cost	$882.09	$842.97	$856.90	$860.52
Gas Cost-Surcredit Rider Offset	$0.00	$0.46	$0.00	$0.00
Gross Receipts on Gas Cost	$43.99	$41.27	$41.79	$42.08
TOTAL Gas Cost	$926.08	$884.70	$898.69	$902.60
TOTAL Annual Bill	$1,164.14	$1,202.89	$1,115.57	$1,296.56

SCHEDULE RAF-R-2

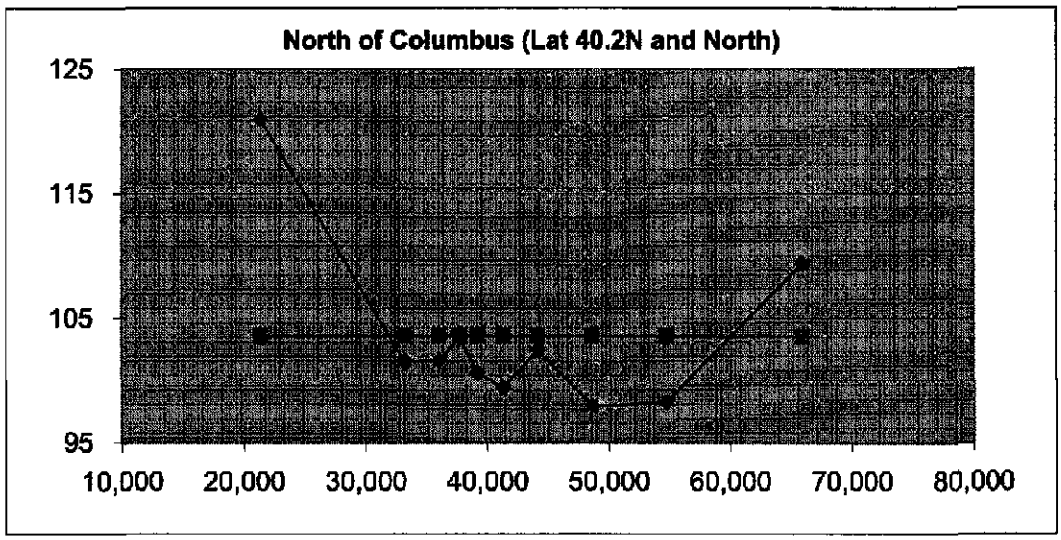
Columbia Gas of Ohio, Inc.
Low Income Gas Customers by County

County	Gas Saturation	% Below Poverty	% Low Income Gas Customers
Ohio- Statewide	74.4	13.3	9.9
Lucas	84.4	16.8	14.2
Mahoning	84.6	15.8	13.4
Cuyahoga	88.3	14.8	13.1
Franklin	79.1	16.3	12.9
Scioto	54.2	23	12.5
Ashtabula	69.6	16.7	11.6
Summit	91.4	12.4	11.3
Clark	78.7	14.4	11.3
Lorain	79.8	14	11.2
Hancock	77.5	14.1	10.9
Montgomery	73.1	14.9	10.9
Hamilton	73	14.6	10.7
Muskingum	67.5	15.7	10.6
Columbiana	59.6	17.2	10.3
Stark	81.9	12.3	10.1
Jefferson	55.3	18.2	10.1
Portage	71.2	13.8	9.8
Richland	71.4	13.2	9.4
Tuscarawas	72.4	12.7	9.2
Trumbull	81.9	11.1	9.1
Marion	75.5	11.9	9.0

County	Gas Saturation	% Below Poverty	% Low Income Gas Customers
Wood	79.4	11.3	9.0
Belmont	58.7	15.1	8.9
Allen	74.5	11.7	8.7
Wayne	72.1	11.2	8.1
Greene	66.2	11.6	7.7
Erie	73.7	10	7.4
Licking	76	9.6	7.3
Ross	42.8	16.7	7.1
Butler	57.3	11.6	6.6
Lake	86.3	6.5	5.6
Miami	67.6	7.8	5.3
Fairfield	69.6	7.5	5.2
Clermont	46.3	9.2	4.3
Medina	81.1	5.2	4.2
Warren	57.1	5.5	3.1
Geauga	54	5.5	3.0
Delaware	79	3.7	2.9
Wood	79.4	11.3	9.0

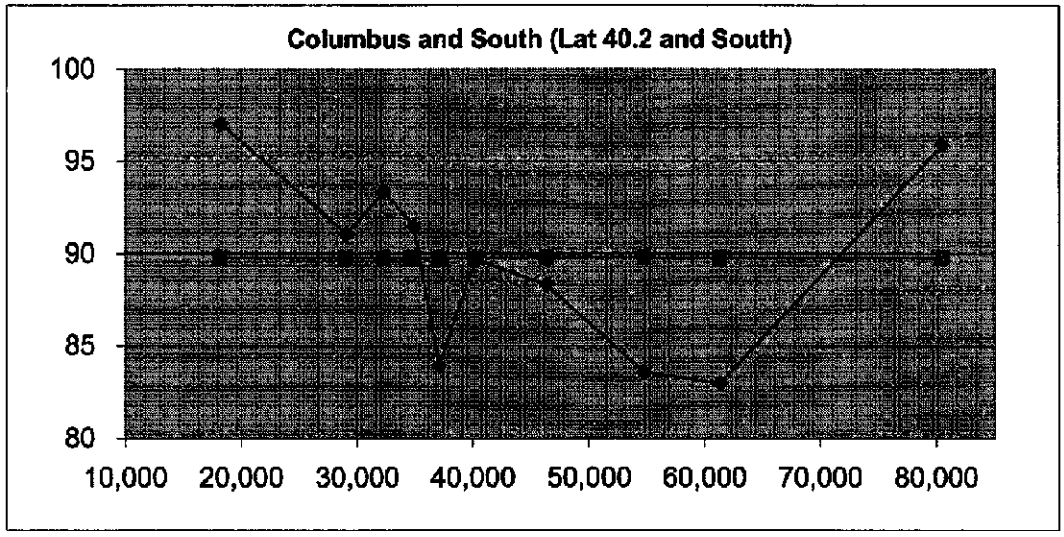
SCHEDULE RAF-R-4

Columbia Gas of Ohio, Inc.
Household Income-Gas Consumption Analysis
Residential Customers - Rate Schedule SGS



Group	MHI- Low	MHI- High	Total Customers	Total Mcf	Resid. Mcf/Cust.	Midpoint of MHI
1	58,076	73,750	56,175	6,145,268	109	65,913
2	51,651	57,711	72,253	7,094,699	98	54,681
3	45,625	51,599	65,840	6,448,430	98	48,612
4	42,690	45,615	54,833	5,615,468	102	44,153
5	39,821	42,674	67,790	6,735,256	99	41,248
6	38,500	39,811	73,883	7,433,865	101	39,156
7	36,955	38,456	67,187	6,948,562	103	37,706
8	35,104	36,925	66,446	6,748,253	102	36,015
9	31,344	35,009	63,557	6,448,064	101	33,177
10	11,507	31,177	72,897	8,815,822	121	21,342
			660,861	68,433,687	104	

Columbia Gas of Ohio, Inc.
Household Income-Gas Consumption Analysis
Residential Customers - Rate Schedule SGS



Group	MHI- Low	MHI- High	Total Customers	Total Mcf	Resld. Mcf/Cust.	Midpoint of MHI
1	65,367	95,618	56,226	5,390,021	96	80,493
2	59,918	62,793	54,114	4,489,701	83	61,356
3	50,208	59,214	59,947	5,010,866	84	54,711
4	42,547	50,040	54,809	4,840,779	88	46,294
5	37,844	42,541	57,871	5,190,721	90	40,193
6	36,336	37,752	55,882	4,690,328	84	37,044
7	33,394	36,315	62,485	5,716,354	91	34,855
8	31,548	33,048	51,083	4,768,582	93	32,298
9	26,484	31,520	63,390	5,772,714	91	29,002
10	10,469	25,972	59,750	5,797,387	97	18,221
			575,557	51,667,452	90	

SCHEDULE RAF-R-5

Top 20 Gas Utilities (by customer counts) - Rate Case History and Ratemaking Mechanisms

Source: SNL 2008

Parent Company	State	Latest Rate Case Decision	Case Identifier	Approved Ratemaking Mechanisms that Reduce Volumetric Impacts
AGL Resources Inc. (NYSE: ATG)				
Pivotal Utility Holdings Inc.	Florida	2/9/2004	D-030569-GU	Graduated customer charges based on usage
Atlanta Gas Light Co.	Georgia	6/10/2005	D-18638-U	SFV
Pivotal Utility Holdings Inc.	New Jersey	11/20/2002	D-GR-02040245	WNA and other clauses
Chattanooga Gas Company	Tennessee	12/5/2006	D-06-00175	WNA
Virginia Natural Gas Inc.	Virginia	7/24/2006	C-PUE-2005-00057	WNA (Decoupling and SFV authorized by 2008 legislation)
Atmos Energy Corp. (NYSE: ATO)				
Atmos Energy Corp.	Colorado	8/1/2003	02S-411G	None
Atmos Energy Corp.	Georgia	9/17/2008	D-27163-U	WNA
Atmos Energy Corp.	Kansas	4/23/2008	D-08-ATMG-280-RTS	WNA
Atmos Energy Corp.	Iowa	10/1/2002	Not Available	None
Atmos Energy Corp.	Illinois	10/4/2002	Not Available	None
Atmos Energy Corp.	Kentucky	7/31/2007	C-2006-00464	WNA
Atmos Energy Corp.	Mississippi	10/1/2005	Not Available	WNA and Stable Rate Adjustment Rider
Atmos Energy Corp.	Missouri	2/22/2007	GR-2006-0387	SFV
Atmos Energy Corp.	Louisiana	4/17/1996	D-U-21484	WNA
Atmos Energy Corp.	Tennessee	10/8/2007	D-07-00105	WNA
Atmos Energy Corp.	Virginia	1/7/2005	2003-00507	WNA (Decoupling and SFV authorized by 2008 legislation)
Atmos Energy Corp.	Texas	6/24/2008	GUD-9762	WNA
CenterPoint Energy, Inc. (NYSE: CNP)				
CenterPoint Energy Resources	Texas	Pending	GUD 9791	WNA
CenterPoint Energy Resources	Arkansas	10/25/2007	D-06-161-U	WNA and revenue decoupling
CenterPoint Energy Resources	Louisiana	7/22/2004	D-U-27676	None
CenterPoint Energy Resources	Minnesota	11/2/2006	D-G-008-GR-05-1380	None
CenterPoint Energy Resources	Oklahoma	12/28/2004	Ca-PUD-200400187	WNA
CMS Energy Corporation (NYSE: CMS)				
Consumers Energy Co.	Michigan	Pending	C-U-15506	None
Consumers Energy Co.	Michigan	8/21/2007	C-U-15190	None
Consolidated Edison, Inc. (NYSE: ED)				
Consolidated Edison Co. of NY	New York	9/25/2007	C-06-G-1332	Revenue Decoupling
Orange & Rockland Utils Inc.	New York	10/20/2006	C-05-G-1494	Revenue Decoupling Ordered
Dominion Resources, Inc. (NYSE: D)				
Hope Gas Inc	West Virginia	Pending	C-07-0829-GA-AIR	None
East Ohio Gas Company	Ohio	11/3/1994	C-93-2006-GA-AIR	SFV
Peoples Natural Gas Co.	Pennsylvania	8/3/1995	C-R-943252	None
Hope Gas Inc	West Virginia	10/21/2005	C-05-0304-G-42T	None
DTE Energy Company (NYSE: DTE)				
Michigan Consolidated Gas Co.	Michigan	4/28/2005	C-U-13898	None

Top 20 Gas Utilities (by customer counts) - Rate Case History and Ratemaking Mechanisms

Source: SNL 2008

Parent Company	State	Latest Rate Case Decision	Case Identifier	Approved Ratemaking Mechanisms that Reduce Volumetric Impacts
Integrys Energy Group, Inc. (NYSE: TEG)				
Michigan Gas Utilities Corp	Michigan	Pending	U-15549	None (Revenue Decoupling Legislation)
Minnesota Energy Resources	Minnesota	Pending	D-G-007,011/GR-08-835	None
Wisconsin Public Service Corp	Wisconsin	Pending	D-6690-UR-119 (gas)	None
North Shore Gas Co.	Illinois	2/5/2008	D-07-0241	Revenue Decoupling
Peoples Gas Light & Coke Co.	Illinois	2/5/2008	D-07-0242	Revenue Decoupling
Michigan Gas Utilities Corp	Michigan	3/12/2003	C-U-13470	None
Minnesota Energy Resources	Minnesota	7/29/2003	D-G-007,011-GR-00-951	None
Wisconsin Public Service Corp	Wisconsin	1/11/2007	D.6690-UR-118 (gas)	None
National Grid plc				
EnergyNorth Natural Gas Inc	New Hampshire	Pending	D-DG-08-009	None
Niagara Mohawk Power Corp.	New York	Pending	C-08-G-0609	Revenue Decoupling Ordered
Narragansett Electric Co.	Rhode Island	Pending	D-3943	WNA
Boston Gas Co.	Massachusetts	10/31/2003	DTE-03-40	Revenue Decoupling Ordered
Colonial Gas Co.	Massachusetts	8/25/1993	DPU-93-74	Revenue Decoupling Ordered
Brooklyn Union Gas Co.	New York	12/19/2007	C-06-G-1185	Revenue Decoupling Ordered
KeySpan Gas East Corp.	New York	12/19/2007	C-06-G-1186	Revenue Decoupling Ordered
Niagara Mohawk Power Corp.	New York	12/19/1996	C-95-G-1095	Revenue Decoupling Ordered
Nicor Inc. (NYSE: GAS)				
Northern Illinois Gas Co.	Illinois	Pending	D-08-0363	Revenue Decoupling Proposed
Northern Illinois Gas Co.	Illinois	9/30/2005	D-04-0779	None
NiSource Inc. (NYSE: NI)				
Columbia Gas of Ohio Inc	Ohio	Pending	C-08-0072-GA-AIR	SFV Proposed
Columbia Gas of Ohio Inc	Ohio	9/29/1994	C-94-987-GA-AIR	None
Columbia Gas of Pennsylvania	Pennsylvania	Pending	C-R-2008-2011621	None
Columbia Gas of Pennsylvania	Pennsylvania	1/12/1996	C-R-953460	None
Columbia Gas of Kentucky Inc	Kentucky	8/29/2007	C-2007-00008	WNA
Bay State Gas Co.	Massachusetts	11/30/2005	DTE-05-27	PBR (Revenue Decoupling Ordered)
Columbia Gas of Virginia Inc	Virginia	12/28/2006	C-PUE-2005-00100	None
ONEOK, Inc. (NYSE: OKE)				
Kansas Gas Service Co.	Kansas	11/16/2006	D-06-KGSG-1209-RTS	WNA
Oklahoma Natural Gas Co	Oklahoma	10/4/2005	Ca-PUD-200400610	SFV
PG&E Corporation (NYSE: PCG)				
Pacific Gas and Electric Co.	California	3/21/2007	AP-0512002 De-0703044(gas)	Revenue Decoupling
Public Service Enterprise Group Incorporated (NYSE: PEG)				
Public Service Electric Gas	New Jersey	11/9/2006	D-GR-05100845	None
Sempra Energy (NYSE: SRE)				
Mobile Gas Service Corp	Alabama	11/27/1995	D-24794	Rate Stabilization
San Diego Gas & Electric Co.	California	7/31/2008	AP-06-12-009 (gas)	Revenue Decoupling
Southern California Gas Co.	California	7/31/2008	AP-06-12-010	Revenue Decoupling

Top 20 Gas Utilities (by customer counts) - Rate Case History and Ratemaking Mechanisms

Source: SNL 2008

Parent Company	State	Latest Rate Case Decision	Case Identifier	Approved Ratemaking Mechanisms that Reduce Volumetric Impacts
Southwest Gas Corporation (NYSE: SWX)				
Southwest Gas Corp.	Arizona	Pending	D-G-01551A-07-0504	None
Southwest Gas Corp.	Arizona	2/23/2006	D-G-01551A-04-0876	None
Southwest Gas Corp.	California	Pending	A-07-12-022 (SoCalDiv)	Revenue Decoupling
Southwest Gas Corp.	California	Pending	A-07-12-022 (NoCalDiv)	Revenue Decoupling
Southwest Gas Corp.	California	Pending	A-07-12-022 (LkTah)	Revenue Decoupling
Southwest Gas Corp.	California	3/16/2004	AP-02-02-012 (So.Div)	Revenue Decoupling
Southwest Gas Corp.	Nevada	8/26/2004	D-04-3011(Southern)	None
Southwest Gas Corp.	Nevada	8/26/2004	D-04-3011(Northern)	None
Vectren Corporation (NYSE: VVC)				
Vectren Energy Delivery Ohio	Ohio	Pending	C-07-1080-GA-AIR	SFV Proposed
Vectren Energy Delivery Ohio	Ohio	4/13/2005	C-04-571-GA-AIR	Revenue Decoupling
Indiana Gas Co.	Indiana	2/13/2008	Ca-43298	Revenue Decoupling
Southern Indiana Gas & Elec Co	Indiana	8/1/2007	Ca-43112	Revenue Decoupling
WGL Holdings, Inc. (NYSE: WGL)				
Washington Gas Light Co.	District of Columbi	12/28/2007	FC-1054	None
Washington Gas Light Co.	Maryland	11/15/2007	C-9104	Revenue Decoupling
Washington Gas Light Co.	Virginia	9/19/2007	C-PUE-2006-00059	WNA
Wisconsin Energy Corporation (NYSE: WEC)				
Wisconsin Electric Power Co.	Wisconsin	1/17/2008	D-5-UR-103 (WEP-GAS)	None
Wisconsin Gas LLC	Wisconsin	1/17/2008	D-5-UR-103 (WG)	None
Xcel Energy Inc. (NYSE: XEL)				
Public Service Co. of CO	Colorado	7/3/2007	D-06S-656G	Revenue Decoupling
Northern States Power Co. - MN	Minnesota	9/10/2007	D-G-002-GR-06-1429	None (Revenue Decoupling Legislation)
Northern States Power Co. - MN	North Dakota	6/13/2007	C-PU-06-525	SFV
Northern States Power Co-WI	Wisconsin	1/8/2008	D-4220-UR-115 (gas)	None

SCHEDULE RAF-R-3

Columbia Gas of Ohio. Inc.
Income Weighted HDD for ACS Counties and Service Areas

Income Range	Statewide	Columbia	Duke Energy	Vectren Energy
Less than $10,000	5,891	6,018	4,968	5,736
$10,000 to $14,999	5,930	6,044	4,990	5,758
$15,000 to $24,999	5,917	6,035	4,985	5,739
$25,000 to $34,999	5,896	6,008	4,997	5,738
$35,000 to $49,999	5,916	6,020	5,014	5,757
$50,000 to $74,999	5,894	6,004	5,014	5,760
$75,000 to $99,999	5,881	5,986	5,042	5,763
$100,000 to $149,999	5,849	5,969	5,048	5,749
$150,000 to $199,999	5,777	5,908	5,052	5,725
$200,000 or more	5,756	5,915	5,000	5,734

Columbia Gas of Ohio, Inc.
Income and Gas Saturation Weighted HDD for Columbia Counties

	Allen County		Belmont		Clark		Columbiana		Cuyahoga		Delaware	
Total households	41,743	0.745	28,209	0.587	54,093	0.787	40,823	0.596	537,492	0.883	58,266	0.790
Less than $10,000	3,562	0.745	3,044	0.587	5,052	0.787	3,938	0.596	54,989	0.883	1,540	0.790
$10,000 to $14,999	2,419	0.745	2,112	0.587	3,898	0.787	2,619	0.596	36,346	0.883	1,735	0.790
$15,000 to $24,999	4,876	0.745	3,964	0.587	7,304	0.787	5,574	0.596	65,983	0.883	4,076	0.790
$25,000 to $34,999	5,691	0.745	4,555	0.587	6,485	0.787	5,856	0.596	60,147	0.883	4,232	0.790
$35,000 to $49,999	7,276	0.745	5,451	0.587	7,987	0.787	6,361	0.596	80,790	0.883	5,671	0.790
$50,000 to $74,999	9,294	0.745	4,408	0.587	11,248	0.787	7,627	0.596	97,267	0.883	10,049	0.790
$75,000 to $99,999	3,867	0.745	2,417	0.587	6,288	0.787	4,363	0.596	58,848	0.883	8,475	0.790
$100,000 to $149,999	3,531	0.745	1,514	0.587	4,396	0.787	3,175	0.596	50,491	0.883	11,568	0.790
$150,000 to $199,999	686	0.745	444	0.587	852	0.787	434	0.596	15,805	0.883	5,200	0.790
$200,000 or more	541	0.745	300	0.587	583	0.787	876	0.596	16,846	0.883	5,720	0.790
Median household income (dollars)	44,002		35,732		42,687		39,605		44,358		80,448	
Mean household income (dollars)	53,829		53,096		51,973		51,862		61,292		100,251	
Heating Degree Days	6315		5620		5552		6451		6,121		5,434	

Columbia Gas of Ohio, Inc.
Income and Gas Saturation Weighted HDD for Columbia Counties

	Erie		Fairfield		Franklin		Geauga		Greene		Hancock	
Total households	31,889	0.737	53,221	0.696	452,338	0.791	32,721	0.540	60,031	0.662	31,525	0.775
Less than $10,000	2,023	0.737	2,157	0.696	42,283	0.791	1,122	0.540	3,680	0.662	1,784	0.775
$10,000 to $14,999	2,190	0.737	3,232	0.696	21,899	0.791	1,066	0.540	2,122	0.662	1,929	0.775
$15,000 to $24,999	3,717	0.737	5,099	0.696	47,197	0.791	2,057	0.540	5,408	0.662	3,180	0.775
$25,000 to $34,999	2,818	0.737	4,872	0.696	53,131	0.791	2,325	0.540	6,912	0.662	3,269	0.775
$35,000 to $49,999	5,751	0.737	7,483	0.696	68,763	0.791	4,866	0.540	9,578	0.662	5,964	0.775
$50,000 to $74,999	6,288	0.737	11,128	0.696	90,582	0.791	6,887	0.540	11,413	0.662	7,241	0.775
$75,000 to $99,999	4,219	0.737	8,480	0.696	50,632	0.791	5,511	0.540	8,339	0.662	3,698	0.775
$100,000 to $149,999	3,468	0.737	7,688	0.696	44,627	0.791	5,337	0.540	7,260	0.662	3,222	0.775
$150,000 to $199,999	833	0.737	1,937	0.696	18,530	0.791	1,548	0.540	3,259	0.662	825	0.775
$200,000 or more	582	0.737	1,145	0.696	14,894	0.791	2,002	0.540	2,060	0.662	413	0.775
Median household income (dollars)	48,654		59,033		47,900		67,276		54,560		48,567	
Mean household income (dollars)	61,063		67,789		64,297		88,898		70,801		57,449	
Heating Degree Days	6209		5,887		5,492		5,831		5,690		6,592	

Columbia Gas of Ohio, Inc.
Income and Gas Saturation Weighted HDD for Columbia Counties

	Jefferson		Licking		Lorain		Lucas		Mahoning		Marion	
Total households	28,799	0.553	58,546	0.760	109,633	0.798	178,773	0.844	98,716	0.846	25,043	0.755
Less than $10,000	3,380	0.553	3,772	0.760	7,469	0.798	21,288	0.844	10,045	0.846	2,341	0.755
$10,000 to $14,999	1,846	0.553	3,293	0.760	6,587	0.798	11,148	0.844	7,841	0.846	2,421	0.755
$15,000 to $24,999	3,951	0.553	5,860	0.760	10,501	0.798	20,183	0.844	14,184	0.846	2,435	0.755
$25,000 to $34,999	3,732	0.553	6,707	0.760	12,914	0.798	20,810	0.844	12,827	0.846	3,387	0.755
$35,000 to $49,999	5,498	0.553	7,937	0.760	16,469	0.798	25,759	0.844	16,229	0.846	4,430	0.755
$50,000 to $74,999	5,005	0.553	12,282	0.760	23,419	0.798	34,079	0.844	17,949	0.846	5,444	0.755
$75,000 to $99,999	2,493	0.553	8,222	0.760	14,487	0.798	19,290	0.844	9,443	0.846	2,096	0.755
$100,000 to $149,999	2,369	0.553	8,050	0.760	12,065	0.798	17,233	0.844	7,118	0.846	1,784	0.755
$150,000 to $199,999	363	0.553	1,541	0.760	3,459	0.798	4,735	0.844	2,234	0.846	376	0.755
$200,000 or more	162	0.553	882	0.760	2,263	0.798	4,248	0.844	846	0.846	329	0.755
Median household income (dollars)	38,499		53,551		50,718		44,704		38,763		40,841	
Mean household income (dollars)	48,621		63,334		62,681		58,179		49,371		50,208	
Heating Degree Days	6,092		6,084		5,731		6,460		6,451		6,178	

Columbia Gas of Ohio, Inc.
Income and Gas Saturation Weighted HDD for Columbia Counties

	Medina		Montgomery		Muskingum		Richland		Ross		Scioto	
Total households	62,019	0.811	223,501	0.731	32,290	0.675	48,884	0.714	26,528	0.428	30,300	0.542
Less than $10,000	2,725	0.811	20,580	0.731	3,751	0.675	1,860	0.714	2,425	0.428	4,289	0.542
$10,000 to $14,999	2,713	0.811	12,809	0.731	2,315	0.675	3,203	0.714	1,356	0.428	3,119	0.542
$15,000 to $24,999	5,442	0.811	27,965	0.731	3,957	0.675	7,197	0.714	2,997	0.428	5,109	0.542
$25,000 to $34,999	8,074	0.811	28,221	0.731	4,000	0.675	6,269	0.714	4,168	0.428	3,622	0.542
$35,000 to $49,999	7,584	0.811	35,079	0.731	5,213	0.675	9,059	0.714	4,786	0.428	3,988	0.542
$50,000 to $74,999	13,009	0.811	40,586	0.731	6,390	0.675	10,468	0.714	5,486	0.428	5,338	0.542
$75,000 to $99,999	10,129	0.811	25,058	0.731	2,912	0.675	4,780	0.714	3,345	0.428	2,671	0.542
$100,000 to $149,999	9,737	0.811	22,327	0.731	2,484	0.675	4,830	0.714	1,386	0.428	1,668	0.542
$150,000 to $199,999	2,499	0.811	6,723	0.731	620	0.675	822	0.714	259	0.428	379	0.542
$200,000 or more	2,107	0.811	4,153	0.731	648	0.675	396	0.714	340	0.428	117	0.542
Median household income (dollars)	61,411		43,939		40,702		43,445		42,466		31,446	
Mean household income (dollars)	73,458		58,425		53,100		54,896		52,065		42,688	
Heating Degree Days	5,731		5,690		6,198		6,347		5,382		5,132	

Columbia Gas of Ohio, Inc.
Income and Gas Saturation Weighted HDD for Columbia Counties

	Stark		Summit		Trumbull		Tuscarawas		Warren		Wayne	
Total households	150,682	0.819	220,914	0.914	87,595	0.819	36,089	0.724	72,220	0.571	42,417	0.721
Less than $10,000	11,479	0.819	19,771	0.914	7,870	0.819	2,876	0.724	2,505	0.571	2,367	0.721
$10,000 to $14,999	9,872	0.819	13,648	0.914	6,221	0.819	2,562	0.724	2,456	0.571	1,948	0.721
$15,000 to $24,999	20,287	0.819	24,941	0.914	12,045	0.819	6,309	0.724	4,578	0.571	5,128	0.721
$25,000 to $34,999	17,449	0.819	26,103	0.914	9,868	0.819	3,978	0.724	5,934	0.571	4,970	0.721
$35,000 to $49,999	23,142	0.819	29,890	0.914	15,641	0.819	5,805	0.724	8,387	0.571	8,201	0.721
$50,000 to $74,999	31,248	0.819	43,016	0.914	16,335	0.819	6,295	0.724	14,293	0.571	8,913	0.721
$75,000 to $99,999	17,218	0.819	26,128	0.914	10,367	0.819	4,795	0.724	11,520	0.571	4,306	0.721
$100,000 to $149,999	13,386	0.819	23,065	0.914	7,054	0.819	2,984	0.724	14,145	0.571	4,440	0.721
$150,000 to $199,999	4,237	0.819	7,591	0.914	1,363	0.819	284	0.724	5,034	0.571	828	0.721
$200,000 or more	2,364	0.819	6,761	0.914	831	0.819	201	0.724	3,368	0.571	1,316	0.721
Median household income (dollars)	44,891		47,333		41,566		40,699		71,088		46,678	
Mean household income (dollars)	57,844		63,551		52,395		49,276		85,096		60,647	
Heating Degree Days	6,715		6,121		6,796		6,098		5,423		6,525	

Columbia Gas of Ohio, Inc.
Income and Gas Saturation Weighted HDD for Columbia Counties

	Wood		Total	Weighted HDD
Total households	48,917	0.794	Total	
Less than $10,000	3,738	0.794	3,004,239	6018
$10,000 to $14,999	2,728	0.794	259,727	6044
$15,000 to $24,999	5,106	0.794	179,675	6035
$25,000 to $34,999	4,825	0.794	346,612	6008
$35,000 to $49,999	7,926	0.794	346,173	6020
$50,000 to $74,999	9,365	0.794	456,966	6004
$75,000 to $99,999	6,058	0.794	582,374	5986
$100,000 to $149,999	6,501	0.794	350,477	5969
$150,000 to $199,999	1,115	0.794	308,925	5908
$200,000 or more	1,555	0.794	94,837	5915
Median household income (dollars)	50,276		78670.614	
Mean household income (dollars)	65,561			

Heating Degree Days	6,492