BEFORE THE PUBLIC SERVICE COMMISSION OF UTAH

In the Matter of the Application of Questar Gas Company for: an Increase in Rates and Charges	:	**Docket No. 02-057-02**
		PREFILED DIRECT TESTIMONY OF
	:	**ANTHONY J. YANKEL**
	:	**FOR THE COMMITTEE OF**
	:	**CONSUMER SERVICES**

August 30, 2002

INTRODUCTION

Q. **PLEASE STATE YOUR NAME, ADDRESS, AND EMPLOYMENT**.

A. I am Anthony J. Yankel. I am President of Yankel and Associates, Inc. My address is 29814 Lake Road, Bay Village, Ohio, 44140.

Q. WOULD YOU BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE?

A. I received a Bachelor of Science Degree in Electrical Engineering from Carnegie Institute of Technology in 1969 and a Master of Science Degree in Chemical Engineering from the University of Idaho in 1972. From 1969 through 1972, I was employed by the Air Correction Division of Universal Oil Products as a product design engineer. My chief responsibilities were in the areas of design, start-up, and repair of new and existing product lines for coal-fired power plants. From 1973 through 1977, I was employed by the Bureau of Air Quality for the Idaho Department of Health & Welfare, Division of Environment. As Chief Engineer of the Bureau, my responsibilities covered a wide range of investigative functions. From 1978 through June 1979, I was employed as the Director of the Idaho Electrical Consumers Office. In that capacity, I was responsible for all organizational and technical aspects of advocating a variety of positions before various governmental bodies that represented the interests of the electrical consumers in the State of Idaho. Since that time, I have been an energy consultant. I am a registered Professional Engineer in the states of Ohio and Idaho. I have presented testimony before the

Federal Energy Regulatory Commission (FERC), as well as the State Public Utility Commissions of Idaho, Montana, Ohio, Pennsylvania, Utah, and West Virginia.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of the Utah Committee of Consumer Services (Committee or CCS).

SUMMARY

Q. PLEASE GIVE A SUMMARY OF YOUR TESTIMONY AND RECOMMENDATIONS IN THIS CASE.

A. I have reviewed Questar Gas's (the Company) proposed cost allocation and rate design methodologies in this case. Based on my analysis, I have concluded that there are significant problems with the Company's cost allocation and rate design methodologies. These problems result in severe inequities in both class cost assignment and rate design. These inequities have been in place for a substantial period of time. I do not recommend that all of these inequities be corrected in this case, but that significant movement is made to allocate the Company's revenue requirement in a manner more consistent with cost causation. My principal recommendations in this case are:

1. The GS-1 customers are not only paying above the present system average rate of return, but above the rate of return being sought by the Company in this case. Steps must be taken to remedy the subsidy that is flowing from the GS-1 customer class to other major customer classes. If a revenue requirement increase is ordered by the Commission in this case, I recommend that none of that increase be allocated to the GS-1 customers. If a revenue requirement decrease is granted, I recommend that entire decrease be distributed to the GS-1 customers.
2. Regarding the GS-1 rate design, the tailblock rate should be increased by one third (33%) to move towards a more flat rate structure for this customer class.

The extra revenues produced by this increase should be used to lower the rate for the first block.

3. A Task Force should be initiated in early 2003 to identify and address significant issues relating to Questar Gas's cost allocation and rate design methods. A task force report, setting forth issues, conclusions and recommendations, should be filed with the Commission by August 1, 2003.

4. Questar Gas should be required to file a cost-of-service (only) case by November 1, 2003, so that the Commission can further redistribute the Company's revenue requirement in a manner that is more directly reflects cost causation.

Q. **WHAT ARE THE KEY ISSUES AND CONCERNS ADDRESSED IN YOUR TESTIMONY?**

A. 1. **General concerns with Questar Gas's cost allocation and rate design methodology based on comparisons with other companies.**

My testimony begins with a comparison of Questar Gas's rate design and rate spread among rate schedules to those of other gas utilities that Questar Gas considers comparable. This comparison reveals two things. First, the rate differential between residential customers and large customers on other gas utilities is not nearly as severe as on the Questar Gas system. This leads me to the conclusion that too many costs are allocated to the GS-1 class. This conclusion is supported by the fact that the methodology used by Questar Gas to allocate costs is inappropriate as well as outdated. Second, these other gas utilities do not have residential rates that are as steeply declining as Questar Gas proposes for the GS-1 class. Furthermore, there is no institutional memory (nor analytical support) for how the GS –1 rate design was developed in the first place.

2. **Service Lines**

My testimony contains an extensive review of the Company's Sample of 600 study that serves as the foundation for the majority of costs, including Service Lines, that are allocated. This study is 17 years old and no longer reflects the system that is in place today. In fact, some Service Lines included in the Sample of 600 study no longer even exist. While the Company's proposal to allocate 99% of costs related to Service Lines to GS-1 customers appears to be extremely disproportionate, I make no specific recommendation or adjustment at this time. However, I do believe that a serious problem exists and that a new study needs to be conducted to support the allocation of costs associated with Service Lines.

3. **Mains**

The allocation of costs associated with Mains based upon the Sample of 600 study suffers from the same problem of being extremely outdated. However, an additional (and more significant) problem with the Company's allocation of Mains is the assumption that the design of Mains is solely based on the customer in question. In fact, Mains are designed to meet the collective need of all customers receiving natural gas from the Main. The use of data from the Sample of 600 study is not only outdated, it is fundamentally flawed. Thus, I recommend that Mains be allocated on the same basis as the Company presently allocates Large Diameter Mains—distribution level throughput.

4. **<u>High-Pressure Feeders</u>**

My testimony points out that there are many cases where High-Pressure Feeders are extended miles to serve just one or two customers. These pipes operate like high-pressure services that should be directly assigned to the specific customers being served or to the specific customer class involved. However, the Company presently allocates these costs to the entire system. Although I do not make a specific adjustment in this case to address this problem, I recommend that a study be done to quantify the magnitude of High-Pressure Feeder lines and Mains that are dedicated to specific customers. Once such a study is completed, the percentage of dedicated lines can be removed from the costs assigned to other customers.

5. **<u>Committee Cost-of-Service Study</u>**

The cost-of-service study used by the Company to allocate costs between rate schedules simply lumps costs into a few categories and then makes an assignment of costs based upon composite allocators. The Company makes virtually no attempt to allocate costs on the basis of individual FERC accounts or subaccounts. I have prepared a cost-of-service study that follows the Company's revenue requirement model line for line. I have also added a number of lines so that it is possible to break out rate base by FERC account. I modify the allocation of Mains in my study, but otherwise generally follow the Company's allocation method. Based upon this more detailed cost-of-service study that allocates Mains differently than the Company, it can be demonstrated that the GS-1 customers are paying a return on rate base of 10.99%[1], which greatly exceeds the overall rate of return that the Company is seeking in this rate case.

6. **GS-1 Rate Design**

My testimony concludes with a review of the basis for the declining block rate structure used for the GS-1 class. In its testimony, Questar Gas has provided no Company specific data or study to support its proposed rate structure. A separation of the usage data for the residential customers and the business customers in the GS-1 class reveals that residential customers have a better load factor (heating load requirement) than business customers. On an interim basis I recommend that the GS-1 tailblock rate be increased one third of the way between the existing tailblock and the first block rate. This will have the effect of lowering rates for residential customers and raising rates for commercial customers. Finally, issues pertaining to GS-1 rate design should be further analyzed within the Task Force I recommend be established at the conclusion of this case.

[1] Questar Gas proposes 10.38% (Exhibit 4.7 of Gary Robinson).

OVERVIEW OF COST-OF-SERVICE PROBLEMS

Q. BASED UPON YOUR EXPERIENCE IN THE UTILITY REGULATORY FIELD OVER THE LAST THREE DECADES, DO THE DISTRIBUTION (BASE) RATES FOR GS-1 CUSTOMERS GIVE THE APPEARANCE OF BEING APPROPRIATE WHEN COMPARED WITH THE OTHER RATES BEING CHARGED ON THE QUESTAR GAS SYSTEM?

A. Definitely not. There are a number of interrelated problems:

- First, the size of the GS-1[2] class for allocation and cost-of-service purposes is not only extremely large, but heterogeneous as well. The GS-1 rate class includes residential and commercial customers, as well as large industrial firm sales customers.
- Second, the GS-1 rate has two blocks with the second block rate being less than 50% of the first block rate. Often times a declining block rate structure will be justified on the basis of not collecting all customer-related costs in the customer charge. Such a claim cannot be made here where the customer charge is moderate and the first rate block goes all the way up to 45 Decatherms (Dth). The Company's proposed blocks for GS-1 would have the tailblock priced at 40% of the first block for the summer months and at 44% of the first block for the winter months.
- Third, the proposed first block rate for GS-1 is unrealistically high compared to the rates proposed for other rate schedules. For example, the first block of the FT-2 tariff is priced at $0.22725 per Dth. The initial block in the winter for

the GS-1 customers (essentially the rate paid by all residential customers) is 9.9 times this value and the summer rate is 8.4 times this value. With the FT-2 tailblock rate being 7.34 times the initial block rate, residential customers in the winter are paying rates over 70 times[3] more for delivery of a Dth of gas than is a large customer taking FT-2 service.

Q. WHAT EVIDENCE HAS THE COMPANY SUPPLIED TO COMPARE ITS BLOCK RATE STRUCTURES?

A. In a data request[4], the Company was asked if it was aware of similar sized gas utilities that had declining block rate structures. Questar Gas listed six gas utilities that had declining block rates for residential and small commercial customers. This is not to say that Questar Gas is unaware of gas utilities with flat rate (or even inverted block rate) structures because there are utilities that fit these criteria as well.

Q. PLEASE IDENTIFY THE SIX GAS UTILITIES THAT THE COMPANY INCLUDED IN ITS DATA RESPONSE AS BEING THE ONES FOR WHICH IT WAS AWARE THAT HAD DECLINING BLOCK RATES FOR RESIDENTIAL AND SMALL COMMERCIAL CUSTOMERS.

A. These six utilities are as follows:

Southwest Gas--Arizona – Nevada
Southwest Gas--Arizona – Arizona
Intermountain Gas – Idaho

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[2] Unless otherwise specified, references to GS-1 will include GS-1 as well as GSS service.
[3] 9.9 x 7.34 = 72.6
[4] See CCS Request 14.54.

Peoples Gas Light & Coke – Illinois
Citizens Gas & Coke Utility – Indiana
Bay State Gas – Massachusetts

Q. HAVE YOU REVIEWED THE RESPECTIVE RATE STRUCTURES OF THESE SIX UTILITIES AND COMPARED THEM TO QUESTAR GAS'S GS-1 RATES?

A. Yes, I have.

Q. HOW DO QUESTAR GAS'S RATES FOR LOW USAGE (RESIDENTIAL) COMPARE WITH THOSE OF SOUTHWEST GAS?

A. Both the Arizona and Nevada jurisdictions of Southwest Gas have similar rate schedules with some minor numerical differences that would be expected between jurisdictions. For ease of comparison, I will only address winter rates and just use the Arizona jurisdictional rates.

	Questar Gas			Southwest Gas--Arizona		
Block 1	First 45 Dth	$2.25	229%	First 4 Dth	$4.88	121%
Block 2	Excess Dth	$0.98		Excess Dth	$4.03	

When comparing the residential rates of Southwest Gas to those of Questar Gas, the Commission should be aware of two important differences:

- The first block on Questar Gas's GS-1 rate includes almost all residential usage—very few residential customers will see monthly bills that are greater than 45 Dth. On the other hand, the first block of the Southwest Gas--Arizona rates ends at 4 Dth (2 Dth in the summer), which effectively means that this is more like a customer or basic service charge.

- Questar Gas's rates sharply decline with the first block being over twice or 229% of the second. By comparison, the Southwest Gas--Arizona first block (which only includes 4 Dth) is 121% higher than the first block rate. In other words, almost all of the residential customers enjoy the lower prices on the second block.

Q. ARE THERE OTHER COMPARISONS THAT CAN BE MADE BETWEEN THE SOUTHWEST GAS – ARIZONA RATES FOR RESIDENTIAL CUSTOMERS AND THOSE OF QUESTAR GAS?

A. Yes, two other comparisons can be made. First, one can compare the cost of residential service with the cost of supplying a much larger commercial/industrial sales customer—for example one with a monthly usage level of 1,000 Dth.[5] A comparison of winter residential usage versus a customer using 1,000 Dth for each utility is as follows:

	Questar Gas			Southwest Gas--Arizona		
Residential	45 Dth	$2.25	229%	45 Dth	$4.03	148%
Commercial	1,000 Dth	$0.98		1,000 Dth	$2.72	

From the above it can be seen that a residential customer on the Questar Gas system would be paying over double (2.29 times) the variable rate paid by a larger

[5] It should be noted that Southwest Gas--Arizona does not have a declining block rate structure for its commercial/industrial General Service customers, but it does have three separate rates that decline, depending upon the annual usage of the customer. A 1,000 Dth per month customer would be considered a medium-size customer and qualify for a flat rate of $2.72 per Dth.

commercial/industrial customer using 1,000 Dth on the Questar Gas system. By contrast, even though Southwest Gas--Arizona residential customers also have a declining block rate, they pay only 1 ½ times the variable rate paid by a customer on that system using 1,000 Dth. This suggests that the cost burden placed upon small users on the Questar Gas system is significantly greater than that placed upon smaller users on the Southwest Gas system—in spite of the fact that they both have declining block rates.

The second comparison that should be made involves residential rates on each system with firm transportation rates. A comparison of winter residential usage versus a customer using at least 1,500 Dth[6] for each utility is as follows:

	Questar Gas			Southwest Gas--Arizona		
Residential	45 Dth	$2.25		45 Dth	$4.03	
Firm Transport	first 10,000 Dth	$0.23	991%	All Usage	$1.76[7]	195%
	Next 112,500 Dth	$0.21	1068%	All Usage	$1.76	195%
	Next 477,500 Dth	$0.14	1607%	All Usage	$1.76	195%
	Over 600,000 Dth	$0.03	7268%	All Usage	$1.76	195%

There are several things that are worth noting. First, Southwest Gas--Arizona does not have a declining block rate for its transportation customers. There is a rate differential between small, medium, and large customers, but once customers are in a given category, their rates are flat. Second, even though the above transportation rates are the lowest on the Southwest Gas--Arizona system (because these rates

[6] 1,500 Dth is the minimum requirement for being treated as a "large" general service customer on the Southwest Gas--Arizona system and subject to the lowest transport rates of that system.

[7] Assumes a monthly load factor (annual usage divided by peak month usage divided by 12) of 80% for calculating demand component of rate.

apply to the largest-sized customer), the residential rates are only twice (195%) this rate. By contrast, the residential rate on Questar Gas is 10 times (991%) the first block FT-2 rate. The last declining block rate on Questar Gas's proposed FT-2 rate schedule is so low that the residential rate is over 70 times (7268%) greater than the FT-2 tailblock rate paid by some customers.

The comparison shows that firm transportation rates on the Questar Gas system are significantly below the rates charged for residential. The relationship between residential and large volume transportation rates on the Southwest Gas system does not demonstrate this magnitude of difference. Instead of the declining block rates on the Southwest Gas--Arizona system providing some support for the level of Questar Gas's residential (GS-1) rates, the rates of Southwest Gas raise serious questions regarding Questar Gas's rate structure and cost assignment to the residential class. It suggests that far too many costs are being recovered from the GS-1 class and the smaller GS-1 customers in particular.

Q. **REGARDING THE REMAINING FIVE UTILITIES THAT QUESTAR GAS IDENTIFIES AS HAVING A DECLINING BLOCK RATE STRUCTURE FOR RESIDENTIAL CUSTOMERS, DO THEY SHOW A SIMILAR PATTERN AS DEMONSTRATED BETWEEN QUESTAR GAS AND SOUTHWEST GAS-ARIZONA?**

A. Yes. Essentially all of the utilities which Questar Gas identifies as having declining block rates for residential customer support the above findings:

1. Some of the six utilities did not even have declining block rates for residential customers during the winter.[8]
2. For those utilities that did have declining block rates, the second step came at 10-20% of the usage level in Questar Gas's rates.[7]
3. Out of the six utilities listed by Questar Gas, only one had a larger percentage declining block rate spread than Questar Gas.[7]
4. When comparing residential rates to commercial/industrial rates at the 1,000 Dth usage level, the relative spread on the Questar Gas system is significantly greater than that found on any of the other six gas utilities. As a matter of fact, one of the utilities had a rate at this usage level that was greater than that for residential customers.[9]
5. When comparing residential rates to firm transportation rates, it can be seen that only one of the six gas utilities had a declining block for transportation rates.[10]
6. When comparing residential rates to firm transportation rates, it can be seen that the relative spread on the Questar Gas system is significantly greater than that found on any of these six gas utilities.[9] For example, the residential rate is 10 times that of the first block of the FT-2 rate (73 times that of the tail block) while the other six gas utilities have residential rates that are generally only 2-3 times larger than the firm transportation rates.

It should be remembered that these six utilities were not chosen by another party as a means of challenging Questar Gas—these were Questar Gas's own examples.

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[8] See Exhibit CCS-5.1 page 1 of 3
[9] See Exhibit CCS-5.1 page 2 of 3

The vast difference between the rate structures of Questar Gas and the rate structures of the six gas utilities points to the existence of underlying problems with Questar Gas's class cost-of-service study and rate design. Although changes in rate spread and rate design should not be solely based upon comparisons among utility rate structures, this information points out the need to review the cost causation underlying Questar Gas's rates and the need to correct any problems that may be found.

Q. HAVE YOU IDENTIFIED THE SOURCE OF ANY PROBLEMS THAT WOULD LEAD TO THIS DISCREPANCY IN RATE SPREAD AND RATE DESIGN? AND IF SO, HOW CAN THEY BE CORRECTED?

A. The primary problem is that the Company's cost-of-service study inappropriately allocates a disproportionate share of costs to the GS-1 customer class. Additionally, the structure of rates must be better designed to reflect the actual cost causation on the system. It is my understanding from conversations with the Company that the central allocation factor responsible for spreading over half of the distribution related costs is based upon a study that was conducted 17 years ago. As will be pointed out later in my testimony, this study is not only stale, but it is unable to realistically function as a basis for allocating costs today. Furthermore, there appears to be no institutional memory of the basis for the design of the declining block rate structure being used for the GS-1 customers.

These problems did not materialize overnight. It will take time and effort on the part of all parties to address and correct all of the problems. It is my intention to

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[10] See Exhibit CCS-5.1 page 3 of 3

point out some of the more significant problems in this case and to begin to gather the data and propose changes to rates such that they more accurately reflect cost of service.

SAMPLE OF 600

Q. PLEASE PROVIDE A GENERAL DESCRIPTION OF THE COMPANY'S COST-OF-SERVICE STUDY IN THIS CASE.

A. The Company's cost-of-service study in this case primarily consists of the 21 lines found on Exhibit QGC 5.5 page 2 of 4 plus the 22 lines on page 4 of 4 that develop the allocation factors used. This is by far the most abbreviated cost-of-service study that I have ever encountered. By way of contrast, PacifiCorp's cost-of-service study in its last rate case consisted of 1,192 lines of data (used for allocating alone). PacifiCorp's cost-of-service study (with allocation factors) consists of over 200 pages of data that often contains 40-60 lines per page.

Q. HOW CAN QUESTAR GAS'S COST-OF-SERVICE STUDY BE SO ABBREVIATED?

A. In order to develop an accurate portrayal of cost causation, allocation factors should be applied to individual FERC accounts and subaccounts where possible. Questar Gas's cost-of-service study is greatly abbreviated because it simply lumps almost all rate base and expense accounts under a single category for purposes of applying a single allocation factor.

For example, the first line of the Company's cost-of-service study on Exhibit QGC 5.5 allocates "On Premise Services" (FERC Account 879) totaling $0.5 million. The second line of the Company's cost-of-service study lumps five separate FERC Accounts (901-905) under a single allocator to spread $14.9 million in expense.

This includes such accounts as “Meter Reading”, “Customer Records”, “Collections”, and “Uncollectibles”. The third and fourth lines allocate $7 million in FERC Account 759 costs (Gathering by Others). However, over half ($127.1 million) of the Company’s entire revenue requirement is amalgamated and then allocated on line 5 based upon what is referred to as “Network Cost.” This is a catch-all that includes most of the rate base, depreciation, taxes, and Operations & Maintenance expenses associated with the vast majority of the Mains, all of the Services, all of the Meters, and General Plant. The lumping of so many diversified costs under the heading of “Network Cost” greatly reduces the accuracy and, therefore, validity of the Company’s study. A detailed breakdown by FERC accounts is more appropriate. The $50 million of Administrative & General costs that are listed on line 11 of the Company’s cost-of-service study is another example of lumping a host of different costs for purposes of applying a single allocation factor.

Q. HOW IS THIS CATCH-ALL ALLOCATION FACTOR FOR “NETWORK COST” DEVELOPED?

A. Network Costs (which makes up 54% of the Company’s revenue requirement) is a composite of all of the return and O&M expense associated with Mains, Services, Meters, and other miscellaneous facilities. The Company allocates these amalgamated costs on what it terms the “Distribution Plant” allocator, which itself is a composite of the plant-in-service amounts for Mains, Services, and Meters[11]. Although this approach has some intuitive appeal, upon closer inspection it should

[11] Mains does not include what the Company defines as Feeders or Large Diameter Mains.

be recognized that any inaccuracies in the development of any portion of this composite allocator have an impact on all costs being allocated.

Q. HOW IS THE COMPANY'S COMPOSITE ALLOCATION FACTOR FOR "DISTRIBUTION PLANT" DERIVED?

A. The foundation for the Company's Distribution Plant allocator is what I will refer to as the "Sample of 600". This is a sample of 629 customers that was designed to statistically reflect the amount and type of Mains, Services, and Meters utilized by various customers. Customers are grouped by meter size (MRating) and then an average cost of Mains or Services is calculated for all customers within the Sample of 600 for that meter size.

For example, the smallest meter has an MRating of 175 (175 cubic feet of gas per hour). There are 56 customers in the Sample of 600 that have a meter with an MRating of 175. The Sample provides data for each of these customers regarding the size (diameter) of the Service and the length of the Service. Current cost data ($/foot) for each diameter Service is derived separately[12] and then combined with the data from the Sample to determine a "current" cost for each of the 175 MRated meters in the Sample. An average "current" cost per Service for customers with MRatings of 175 is then calculated. In a separate calculation, this average "current" cost for 175 MRating customers is then multiplied by the number of 175 MRating customers on a given rate schedule. This process is repeated for each MRating and the results are added together to determine the cost of all Services for each rate schedule and ultimately, a total current cost of all Services.

A similar process takes place for Mains, except that the density of customers around the sample customer on the Main is taken into account. For example, if the Main on which the sample customer is located has 9 other customers within a stretch of 1,000 feet, then the sample customer gets assigned 100 feet (1,000 ft. / (1 + 9) = 100 ft.) of the adjacent size Main. If the Main has 49 other customers within a stretch of 1,000 feet, then the sample customer gets assigned 20 feet (1,000 ft. / (1 + 49) = 20 ft.) of the adjacent size Main.

Q. **IS THIS SAMPLE OF 600 AND THE METHOD USED BY THE COMPANY TO ALLOCATE $127 MILLION OF ITS "NETWORK COSTS" APPROPRIATE?**

A. No. The data used in this Sample of 600 Study is extremely outdated and is unable to serve as a sound basis upon which to reflect cost causation. Furthermore, at a minimum, the methodology itself is flawed with respect to using it for purposes of allocating Mains.

Q. **HOW OLD IS THE SAMPLE OF 600?**

A. Generally speaking, the original Sample of 600 is about 17 years old. An additional 33 customers were added to that original sample a number of years ago. These additional 33 samples represent customers with meters in the 2000 MRating class. This class of meters did not even exist on the Questar Gas system at the time of the original sample.

[12] See Exhibit CCS-5.2.

Q. **OTHER THAN THE OBVIOUS AGE OF THE SAMPLE, WHAT OTHER EVIDENCE LEADS TO THE CONCLUSION THAT THE SAMPLE OF 600 IS OUTDATED AND UNABLE TO SERVE AS A BASIS FOR ALLOCATION PURPOSES?**

A. There are numerous problems with respect to development of the dollar value of Services assigned to each rate schedule that demonstrates the limitations of this old data. Exhibit CCS-5.2 is a copy of a Company workpaper[13] in this case that lists the cost and length of Services that are on the Company's books and records. In the summary table there are two hand-drawn arrows; one pointing from the 3/4 inch line to the 5/8 inch line, while the second points from the 6 inch line to the 5 inch line. This indicates that the Company is not using the price per foot that comes from its books and records for the 5/8 inch and the 5 inch Service lines, but the price per foot that comes from one size larger. Both of these sizes have extremely low footage so the overall impact would be expected to be minimal. However, this expectation is not based upon knowledge of the 17-year old data found in the Sample of 600.

When one applies this data to the Sample of 600, the age of this sample shows. In the Sample of 600 alone, there are 5 customers that have 5/8 inch Services for a total of 285 feet. At the present time, the Company's books and records only show a total of 100.3 feet of 5/8 inch Services on the entire current system. Likewise, there are 2 customers listed in the Sample of 600 with 5 inch Services for a total of 1,440 feet. The Company's books and records only show a total of 25 feet of 5 inch Services on the entire current system.

Aside from the problem that the Sample of 600 no longer reflects the mix of facilities used on the Questar Gas System today, the fudging of this Sample to make it fit today's data causes distortions. As mentioned above, the data from the Sample of 600 is broken down by meter size and then combined with current cost data for each size Service used in the Sample of 600 to derive an average "current" cost per foot of Service and an average total cost of Services to supply customers of each meter size. The substitution of the data brings on major swings in the average total costs attributed to certain meter sizes and ultimately certain customer rate schedules.

Q. **WHAT IMPACT DOES THIS SUBSTITUTION HAVE ON THE CALCULATION OF THE AVERAGE COST OF SERVICES BY METER SIZE?**

A. The smallest meter size used by Questar Gas has an MRating of 175. There are 56 of these meters in the Sample of 600. Only two of these 56 meters in this category had 5/8 inch Services. However, the Company uses a price for these Services of $3.78 per foot (the price of a ¾ inch Service) instead of the actual booked value of -$32.87 per foot. This results in a major difference in the costs that are assigned to customers with MRatings of 175. Using the Company's substituted value (for just 2 out of the 56 samples in this category) results in an assignment of $340 as the average cost of Services for MRating 175 customers (Exhibit CCS-5.3 page 1). If the actual booked value had been used for these 2 customers (as it was for the other 54 customers with MRatings of 175 in the Sample), the average value of Service Lines assigned to the MRating 175 customers would have been about two thirds lower or $236 (Exhibit CCS-5.3 page 2).

[13] Response to DPU Request 1.2-BLM, Attachment 4 to Allocation Factor #6.

Q. **AFTER THE COMPANY COMBINES ITS SAMPLE OF 600 WITH CURRENT COST DATA, DOES THE DERIVED COST EQUATE TO THE ACTUAL TOTAL COST OF SERVICES (FERC ACCOUNT 380) ON THE COMPANY'S BOOKS?**

A. No. After going through the procedures described above, the Company multiplies the average cost of Services by the number of customers on each rate schedule for each meter rating. The end result comes out 8% higher than the booked cost. All of the derived average Service costs are then equally adjusted down in order to reflect this error. Since the Company is now allocating 99% of Service costs to GS-1 customers, any error that occurs is for all practical purposes being placed upon the GS-1 customers. If that 8% error occurred because too many costs were being assigned to the GS-1 class (because of the substitution of cost data for the 5/8 inch Services or for other reasons) this could make a noticeable increase in the costs being assigned to GS-1, while decreasing the costs to other customer groups.

Q. ARE YOU ADVOCATING THE USE OF ALL OF THE BOOKED VALUES IN COMBINATION WITH THE COMPANY'S SAMPLE OF 600 STUDY?

A. No. The substitution of data by the Company is clearly causing distortions, but the true source of the problem is the age of the Sample of 600 study. The sample that was collected 17 years ago was performed on a system that is vastly different today. The Sample of 600 study should not be used for allocation purposes.

Q. GIVEN THE OUTDATED NATURE OF THE SAMPLE OF 600 STUDY, WHAT DO YOU RECOMMEND BE DONE IN THIS CASE TO ALLOCATE SERVICES AND RELATED COSTS?

A. I have not developed an allocation procedure to replace the method used by the Company in this case for Services. However, it should be recognized that the present composite allocation of 99% of all Service costs (as well as 99% of Mains and Meters) to the GS-1 customers is inappropriate. I recommend that a new study be initiated as soon as possible in order to collect data upon which the cost of Services can be based. Until that time, I recommend using the Service portion of the present composite allocation factor to allocate Services. This temporary allocation factor assigns 99.28% of Services to GS-1—even higher than the Company's composite allocator.

Q. YOU INDICATED THAT IN ADDITION TO THE SAMPLE OF 600 STUDY BEING OUTDATED, THERE IS A FUNDAMENTAL PROBLEM USING THIS STUDY FOR THE ALLOCATION OF MAINS. WHAT IS THAT FUNDAMENTAL PROBLEM?

A. Before addressing this fundamental problem, it should be made clear how Mains are addressed in the Company's cost-of-service study using the Sample of 600 study. Essentially, Questar Gas breaks FERC Acct 376 (Mains) into three groups: Feeders; Large Diameter Mains; and Mains. The following distinctions and plant-in-service values are assigned to each category:

Feeders	(high pressure Mains)	$129 million
Large Diameter Mains	(low pressure, greater than 6 inch)	$ 10 million
Mains	(low pressure, 6 inches or less)	$278 million

For purposes of this case, I simply accept (without analysis) the Company's allocation treatment of Feeders and Large Diameter Mains. It is the largest category (that is simply referred to as Mains) that is addressed by the Sample of 600 study.

As pointed out above, the use of the Sample of 600 study for assigning the average cost of Mains to various MRatings is the same as that for Services, except there is a step associated with the calculation of the density of customers on a given stretch of Main (usually the number of customers per 1,000 feet). This overall procedure for assigning costs of Mains is fundamentally unsound; this density calculation highlights this problem.

Even without this density calculation, the use of the Sample of 600 study (or any more recent study) would be flawed for the use of assigning the cost of Mains to any given customer group. Unlike Services, Mains provide gas to different types of customers. There may be large customers at the end of the pipe and therefore, the size of the Main remains large all the way to the end. Should the smaller customers at the beginning of the pipe be assigned the full cost of the larger pipe that is needed to serve the large customers at the end? There may be large customers at the beginning of the pipe and a smaller pipe size to serve the customers at the end of the line. Should the small customers at the end of the line be assigned costs as if they were served by the small pipe the whole length of the Main or should there be some economies of scale reflected as actually occurs in practice?

The Company's method only assigns costs on the basis of the Main that is most immediately connected to the customer, as if that customer was solely responsible (or in combination with the number, not usage, of the customers within his 1,000 feet of Main) for the cost of that Main. This one-on-one assignment of cost responsibility may be appropriate for Services that are customer specific, but it is not appropriate for assigning the shared cost of Mains that are designed for a wide range of customers with different usage levels.

Q. **HOW DOES THE COMPANY'S DENSITY CALCULATION FURTHER COMPLICATE THIS COST ALLOCATION PROBLEM?**

A. Although the addition of the density calculation gives the appearance of assigning cost responsibility appropriately (the more customers per foot of pipe, the lower the average cost per customer), density calculations have gained very little favor in the regulatory community. The problem is that a density calculation does not take into account usage of the various customers within the area. If all customers in the Sample of 600 and on the system used the same amount of gas, then a density calculation would at least have some meaning. However, on the same Main, there can be vastly different types and sizes of customers. A density calculation with respect to Mains is just as inappropriate as a density calculation would be for assigning cost responsibility for an electric utility.

Q. **IF THE COMPANY'S METHOD OF ALLOCATION MAINS IS FUNDAMENTALLY FLAWED, HOW DO YOU RECOMMEND THESE COSTS BE ALLOCATED?**

A. The Company uses an equal weighting of volumetric throughput and peak day usage to allocate its high-pressure Feeders. It uses straight volumetric throughput to allocate Large Diameter Mains. There is an obvious line of demarcation between what the Company calls Feeders and that which it calls Mains (no matter what the diameter). That line of demarcation is based upon much higher pressures and operation over long distances (on the order of tens or even hundreds of miles).

There is no similar distinction that separates what the Company refers to as Large Diameter Mains and what is simply referred to as Mains. The Company's line of demarcation is arbitrarily set at anything over 6 inches in diameter being considered a Large Diameter Main. However, there is no major pressure differential between Large Diameter Mains and Mains. In fact, some Mains could operate at higher pressures than Large Diameter Mains. Likewise, there is no distinction as to what size or type of customer can be found on any size Main.

For example, ¾-inch is essentially the smallest diameter Main on the Questar Gas system. The Sample of 600 listed six customers on Mains that were ¾ inch in diameter. The breakdown is as follows:

Customers	Rate Schedule	MRating
1	GS-1	175
4	GS-1	250
1	IT	30,000

Likewise, in the Sample of 600, there are GS-1 customers with MRatings of 250 that were on 10 inch and 16 inch Mains (which the Company classifies as Large Diameter Mains).

Clearly, there is no strict relationship between the size of the customer and the size of the Main from which gas is taken. Because the Company's present allocation method for Mains is fundamentally flawed and because there is not a true distinction between the use of pipes (other than what may exist between Feeders and non-Feeders), I recommend that Mains be allocated in the same manner as the Company presently allocates Large Diameter Mains. This allocation method is throughput at the low-pressure distribution level (excludes volumes that only flow on Feeders). I recommend this approach be used for this case only as a transitional step to get us moving in the right direction. Given the Company's allocation procedures and cost-of-service studies require thorough review, this allocation factor should be included in the review as well.

Q. ARE THERE OTHER CONCERNS REGARDING THE COMPANY'S CLASSIFICATION OR ALLOCATION OF COSTS IN ITS COST-OF-SERVICE STUDY?

A. Yes. At a minimum, there is a large amount of high pressure Feeder footage that is for all practical purposes dedicated to only one or two entities. Essentially, these Feeders or sections of Feeders are functioning as Service lines for individual customers and not Feeders for the entire system. These Feeders or sections of Feeders that are primarily supplying one or two entities should not be allocated in the same manner as the majority of Feeders on the System. These lines should be either directly assigned to the customers involved or at least the rate schedule to which these customers belong. These costs should not be allocated to all other customers as presently occurs in the Company's cost-of-service study.

Q. **CAN YOU GIVE SOME SPECIFIC EXAMPLES OF FEEDER LINES THAT ARE, IN FACT, DEDICATED TO ONLY ONE OR TWO ENTITIES?**

A. Yes, I will give several examples. First, Company Feeder #70 is a high pressure Feeder/Main that is approximately 22 miles long that goes from Tremonton to Thiokol. It is my understanding that there are only 732 customers being served from that Feeder. However, there are only 4 customers/entities served in approximately the last 12 miles of this Feeder—those 4 customers are all ThioKol facilities. (See Exhibit CCS-5.4) Obviously, most of this Feeder/Main is actually a dedicated facility for Thiokol. This last 12 miles of pipe is acting as a high pressure Service that is only used for one entity (Thiokol) in a manner similar to a Service that is supplying only one house. It is inappropriate for the costs of these facilities to be picked up by the rest of the system. To the extent that Thiokol is taking service under an interruptible tariff, the Company's cost allocation methodology would not only assign a very limited amount of plant to Thiokol and/or its customer group, it would assign 0% of the demand component of this plant that is <u>dedicated only</u> to serve its needs.

Second, Company Feeder #51 is a high pressure Feeder/Main that is approximately 11 miles long and runs west of Ogden. It is my understanding that there are only 39 customers served from that Feeder. The last customer on that Feeder/Main is Great Salt Lake Mineral (IMC Kalium). (See Exhibit CCS-5.5) A mile away is the second to the last customer on that Feeder is Western Zirconium

(Westinghouse). This means that over a mile of this high pressure Feeder/Main is dedicated to only IMC Kalium. The third to the last customer on this line is another mile away, which means that the last 1-2 miles of this Feeder/Main only serves two customers (IMC Kalium and Westinghouse). To the extent these customers are taking service under an interruptible tariff, the Company's cost allocation methodology would not only assign a very limited amount of plant to these customers, it would assign 0% of the demand component of this plant. Third, Company Feeder #38 is a high pressure Feeder/Main that serves 2,033 customers. It has a lateral that is over 3 miles long that is used to only serve American Salt Company. (See Exhibit CCS-5.6) Essentially, the lateral off of this Feeder/Main is actually a dedicated facility for American Salt Company. It is acting as a high pressure Service that is only used for one entity in a manner similar to a Service line that is supplying only one house. It is inappropriate for the costs of these facilities to be picked up by the rest of the system.

These are just three examples. There are many other cases that look similar from a review of the general map of Questar Gas's Feeder system.

Q. CAN THE COSTS OF THESE DEDICATED FACILITIES BE SIMPLY ASSIGNED TO THE CUSTOMERS OR CUSTOMER RATE SCHEDULES INVOLVED?

A. No. For the most part, these dedicated facilities are fully depreciated. However, for decades, <u>all of the customers on the system</u> have been paying for the O&M, A&G, Return, Taxes, and Depreciation associated with these facilities. It would be an injustice to now take this dedicated, but fully depreciated, plant and assign it to customers that have not historically paid for the Return, O&M, and Depreciation reserves associated with this plant.

A far more appropriate solution would be to determine the distances of all dedicated Feeders and Mains, calculate the ratio of dedicated facilities to total Feeders and Mains, and then apply that ratio in order to directly assign/allocate an appropriate share of associated costs to the customers or rate schedules involved. Additionally, it would certainly be appropriate to begin to directly assign plant costs in the future that are so dedicated.

Q. **ARE YOU PROPOSING ANY ADJUSTMENT IN THIS CASE THAT SPECIFICALLY ASSIGNS/ALLOCATES THE COSTS ASSOCIATED WITH THESE DEDICATED LINES TO THE CUSTOMERS OR CUSTOMER GROUPS INVOLVED?**

A. No. However, I recommend that the Commission recognize this bias in the data when it considers the spread of the revenue requirement between rate schedules (less costs should be assigned to the GS-1 class as they are not the recipients of such line extension treatment). I further recommend that the Company be required to file a report with the Commission that identifies all instances where a customer, single entity or small group of customers is at the end of a Feeder or even a Main and isolated from other customers. Such a report should detail the distance and cost of the “dedicated” facilities and describe the general surroundings so that the Commission and other parties can also analyze where the “dedicated” facilities should start.

Where Feeders and Mains are obviously extended long distances to serve only one of two entities (plus some possible incidental load), it would be more appropriate to directly address the costs associated with those facilities (and related expense) to specific customers or customer classes. This is in addition to the Company's policies regarding Contributions In Aid of Construction. The Company should not only be collecting for facilities that are put in place in order to serve a limited number of customers, but should be assigning rate treatment of those costs to that same customer group.

COST-OF-SERVICE STUDY

Q. **PREVIOUSLY, YOU TOOK EXCEPTION TO THE BREVITY OF THE COMPANY'S COST-OF-SERVICE STUDY IN THIS CASE. DO YOU HAVE AN ALTERNATIVE STUDY YOU WISH TO PROPOSE?**

A. Yes. The Company's cost-of-service study in this case lacks the depth of detail that this Commission routinely experiences in PacifiCorp cases. Questar Gas's study is so abbreviated that it is a stretch to even put it in the same category as PacifiCorp's cost-of-service study.

I have attempted to develop a more detailed cost-of-service study, based upon the Company's revenue requirement model. I have attempted to maintain, or expand upon, many of the rate base line items found in that revenue model. A copy of my model is found in my workpapers and an electronic copy will be provided to each of the parties in this case.

Q. **IS THE MODEL ITSELF INTENDED TO CHALLENGE ANYTHING PRESENTED BY THE COMPANY?**

A. No, not the model itself. The model is designed to make an analysis of the classification and allocation of costs easier and more defined for all parties. The model is simply a tool and nothing more. I do not claim that this particular model is the best or easiest way to perform the classification and allocation of costs, simply a way for all parties to understand the impacts of cost assignment and allocation. I hope that superior models will be developed for Questar Gas that will enable all parties to gain a better understanding of cost causation on the Company's system.

Q. **HAVE YOU USED YOUR MODEL TO DEMONSTRATE THE IMPACT OF YOUR PROPOSED CHANGE IN THE ALLOCATION OF MAINS (6-INCHES OR LESS) ON THE COST-OF-SERVICE OF THE VARIOUS CUSTOMER CLASSES?**

A. Yes. As pointed out above, there are serious problems with the use of the Sample of 600 study or purposes of allocating the costs of Mains and Services. There is also a problem with Feeders being allocated to all customers when some Feeders are obviously dedicated to only one or two entities. In my cost-of-service study, I have only attempted to correct the problem of inappropriately allocating the Mains of 6-inches or less in diameter. Other corrections will have to wait for a time when more data is available.

Q. **ARE THERE OTHER CHANGES YOU MADE IN YOUR COST-OF-SERVICE STUDY?**

A. Yes, mostly of a minor nature. As pointed out earlier, in the Company's cost-of-service study over half of the costs are lumped together and allocated on a single allocation factor. When these costs are disaggregated into several individual FERC accounts, certain obvious allocation factors appear. For example, Account 872 (Compressor Station Labor) and Account 873 (Compressor Station Fuel) are obviously related to throughput and were thus allocated based upon the Company's throughput allocator. Account 870 (Operation Supervision) relates to supervising the activities under Accounts 871-878 and should be allocated on the composite spread of costs within these accounts. Once again, the only significant change I made was to allocate the smaller Mains (6 inches and less) on the same basis as the Company allocated Large Diameter Mains (greater than 6 inches).

Q. **WHAT ARE THE RESULTS OF YOUR MODEL RUN WHEN THIS CHANGE IN THE TREATMENTS OF MAINS IS INCORPORATED INTO THE MODEL?**

A. Where possible, I have run my model with the exact same revenue requirement, classifications, and allocation factors used by the Company, except that I have allocated the smaller diameter Mains consistent with how the Company allocated Large Diameter Mains. A summary table is provided as Exhibit CCS-5.7. A comparison of the rates of return on rate base for each rate schedule based upon this cost-of-service study and using the above-mentioned changes is as follows:

GS-1	10.99%
F-1	-8.33%
F-3	63.78%
FT-2	-16.43%
I Sales	-17.43 %
I Trans	-18.74%
Total Company	7.88%

As can be seen from the above, the GS-1 class is returning substantially more than the system average rate of return of 7.88%. In fact, the GS-1 rate schedule is presently returning more than the rate of return of 10.38% that the Company is seeking in this case.

Q. BASED UPON YOUR ANALYSIS OF COST-OF-SERVICE, WHAT RECOMMENDATIONS DO YOU MAKE WITH RESPECT TO THE SPREAD OF THE RATE INCREASE IN THIS CASE?

A. The cost-of-service study that I produced provides far more detail than that which has been utilized by the Company for years. I have only proposed one major change in my cost-of-service study from that used in the Company's (the allocation of all non-feeder Mains on the same basis). There are other major allocation problems in the Company's study that still need to be addressed—the resolution of which will further lower the cost assignment to the GS-1 rate schedule. When comparing at the relative rates between Questar Gas's smallest customers versus its largest customers, Questar Gas's rates are significantly out of line with those charged by utilities that the Company offers for comparison. Finally, even Questar Gas's own cost-of-service results and recommendations support the fact that GS-1 and F-3 rates are paying an above average return, while the other rate schedules are paying substantially less than the system average.

If a revenue requirement increase is ordered by the Commission, my recommendation is to assign none of the increase to the GS-1 and F-3 rate schedules. If the Commission orders a revenue requirement decrease, it should all be assigned to the GS-1 and F-3 schedules. Based on this rate spread proposal, GS-1 customers would continue to pay over the average system return as measured by the limited change in allocation factors proposed here. It is obvious that further study and corrections to the cost assignment to various rate schedules will lead to a need to further lower the rates for the GS-1 class while increasing the revenue responsibility to other rate classes.

Q. DO YOU HAVE ANY SPECIFIC RECOMMENDATIONS REGARDING FUTURE RATE CHANGES?

A. Yes. In addition to the major problems regarding the data and methodology used by the Company to assign cost responsibility, I found other areas where smaller problems or at least differences of opinion exist. I have not addressed these for fear of losing sight of the forest for the trees. Other parties may have other ideas on some issues. I have been involved in Commission directed Task Force studies in the past that have gone a long way to addressing many technical questions such as have been raised here. I recommend that such a Task Force be established in order to look into all aspects of Questar Gas's cost-of-service and rate design methodologies and assignment of class revenue responsibility.

With this approach the work of the Task Force can be more focused and the issue of cost-of-service can be addressed in isolation. At the conclusion of that case, it would be appropriate to change rates and/or set a schedule to phase-in new class revenue requirements and rate design. I further recommend that Questar Gas be ordered to file a cost-of-service case by November 1, 2003.

GS-1 RATE DESIGN

Q. PREVIOUSLY YOU DEMONSTRATED THAT QUESTAR GAS'S GS-1 RATES WERE STEEPLY DECLINING WHEN COMPARED TO OTHER UTILITIES THAT QUESTAR GAS LABELED AS COMPARABLE. HAS THE COMPANY PROVIDED ANY JUSTIFICATION FOR ITS DECLINING BLOCK RATES FOR THE GS-1 CUSTOMERS IN THIS CASE?

A. The justification provided by Questar Gas for the declining block rate structure of GS-1 was extremely limited. The Company stated[14]

> The Company has had a declining block rate structure for at least 50 years and it is an accepted and approved rate design. It best matches the cost incurred to provide gas service.

The Company further went on to quote the American Gas Association's (AGA) publication "Gas Rate Fundamentals":

> A substantial portion of the capacity and customer costs may be covered by the charge for the initial block. This is the most widely accepted form of rate because of its simplicity, its avoidance of certain areas of discrimination and its reflection of <u>the quantity discount concept</u> with which customers are familiar in their other business dealings. … Since the competitive situation and <u>the desire to promote gas sales are very important considerations</u>, the prices in the first block are usually set higher to cover varied combinations of low-consumption appliances and the prices of the terminal <u>blocks are set to encourage the use of additional gas service</u>. (Emphasis added)

It should be noted that the AGA is not directly supporting the declining block rate structure, merely explaining why it is used. It is quite revealing that the focus of the justification provided is the "desire to promote gas sales." It is one thing to justify a declining block rate structure on the basis of cost causation, but it is quite another to justify it on the basis of promoting sales. This Commission has generally moved in the direction of eliminating promotional electric rates and it should do the same with promotional natural gas rates as well.

Q. **HAS QUESTAR GAS SUPPORTED ITS POSITION THAT THE DECLINING BLOCK RATE STRUCTURE "BEST MATCHES THE COST INCURRED TO PROVIDE GAS SERVICE"?**

A. No. There has been no study or analysis presented to justify declining block rates for the GS-1 or any other rate schedule. During my conversations with the Company, it was indicated that there was no institutional memory (20 years) of any study that justified the current declining block rates.

Q. IS DATA AVAILABLE THAT SUGGESTS THAT THE GS-1 RATE SHOULD BE FLAT OR EVEN INVERTED?

A. Yes. Questar Gas provided 24-months of billing records for all of its customers. These records are divided by class (Residential, Apartment, Trailer, Mobile Home, and Business) and by rate schedule (GS-1, F1, Ft-2, IT, etc.). By taking only the GS-1 customers and separating them into essentially a residential class (Residential, Apartment, Trailer, Mobile Home) and commercial (Business) group, it is possible to identify certain patterns. The first is to confirm that residential customers typically use less than 45 Dth per month. I found that less than 1,000 residential customers have an average usage greater than 45 Dth per month. By contrast, over 10,000 GS-1 business customers used more than 45 Dth per month. Furthermore, the average usage of those exceeding the 45 Dth per month threshold

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[14] Response to CCS Request 14.52

is also greater for business customers. Thus, as would be expected, most of the usage over 45 Dth per month involves business customers.

The second load characteristic that I was able to identify was not as readily obvious. As it turns out, the GS-1 business customers are more heat sensitive than the residential customers are. On average, the ratio of January usage to annual usage for GS-1 business customers was 5.1% greater than the January/annual ratio for residential customers. Thus, GS-1 business customers have a worse load factor and, therefore, contribute more to capacity costs on the system.

Upon closer examination, this result is quite understandable. GS-1 business customers are not the entire commercial/industrial group. The Company has an F-1 sales rate that includes only high load factor, large users. The FT and IT rates include very large customers that also tend to have a high load factor. What is left for the GS-1 class is the low load factor, business customers. Furthermore, it should be recognized that business customers tend to have more heat generating equipment than do residences, so that there is little or no call for space-heating during shoulder months, but high space-heating requirements during the coldest days.

Q. WHAT IS YOUR RECOMMENDATION WITH RESPECT TO RATE DESIGN FOR THE GS-1 RATE SCHEDULE?

A. Similar to my recommendations with respect to cost allocation, issues relating to GS-1 rate design should be further addressed in a Task Force and later in a formal hearing. For purposes of this case, I recommend that the Commission begin to move the GS-1 rate toward a flat rate structure. I recommend that the rate of all usage over 45 Dth be increased by one third, with the extra revenue used to lower the first block rate.

Q. **WOULD SUCH A SHIFT IN RATE DESIGN CAUSE RATE SHOCK?**

A. In this case where only one component of the rate is being changed, the impact of such change is greatly minimized. For example, the present winter rates for the GS-1 class are:

First 45 Dth	\$2.00986 per Dth
Over 45 Dth	\$0.87609 per Dth

Elevating the tail-block rate by one third of this difference would mean an increase of \$0.37792 per Dth[15]. Although this is a 43%[16] increase in the tail-block Distribution Non-Gas rate, a customer will not actually experience this percentage change. First, the initial block rate would be lowered, thereby serving as an offset to this increase. Second, the GS-1 customers pay a Supplier Non-Gas Cost as well as a Commodity Cost. When added together, the total tail-block rate paid by a GS-1 customer is presently \$4.65532 per Dth. An increase of \$0.37792 per Dth to this total rate is effectively only an increase of 8.1%[17].

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

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[15] (\$2.00986 – \$0.87609) / 3 = \$0.37792
[16] \$0.37792 / \$0.87609 = 43%
[17] \$0.37792 / \$4.65532 = 8.1%