Exhibit No.:
Issues: Weather Normalized Sales and Rate Design
Witness: Proctor
Type of Exhibit: Direct
Sponsoring Party: MoPSC Staff
Case No.: GR-93-172

MISSOURI PUBLIC SERVICE COMMISSION

POLICY & PLANNING DIVISION

DIRECT TESTIMONY

OF

MICHAEL S. PROCTOR

FILED
MAY 28 1993
PUBLIC SERVICE COMMISSION

MISSOURI PUBLIC SERVICE,

A DIVISION OF UTILICORP UNITED, INC.

CASE NO. GR-93-172

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Jefferson City, Missouri

May, 1993

DIRECT TESTIMONY

OF

MICHAEL S. PROCTOR

MISSOURI PUBLIC SERVICE,

A DIVISION OF UTILICORP UNITED, INC.

CASE NO. GR-93-172

Q. Please state your name and business address.

A. My name is Michael S. Proctor and my business address is P. O. Box 360, Jefferson City, Missouri 65102.

Q. What is your present position with the Missouri Public Service Commission?

A. I am Chief Economist in the Economic Analysis Department.

Q. Will you please review your educational background and work experience.

A. I have Bachelors and Masters of Arts Degrees in Economics from the University of Missouri at Columbia and a Ph.D. in Economics from Texas A&M University. My previous work experience has been as an Assistant Professor of Economics at Purdue University and at the University of Missouri at Columbia. Since being on the Staff of the Missouri Public Service Commission from June 1, 1977, I have presented testimony on class cost-of-service, rate design, load forecasting, capacity expansion planning, and phase-in.

Q. What were your areas of responsibility in Case No. GR-93-172?

A. I supervised the work of several analysts from the Economic Analysis Department. I also was responsible for coordinating that work with the Accounting and Energy Departments. In addition, I am responsible for the Staff's proposed rate design.

Q. With respect to the work of the Economic Analysis Department, what are the specific areas of rate case responsibility?

A. The Economic Analysis Department is responsible for normalization of natural gas sales over the test year. The analysts working on this task are Mr. James Gray and Mr. Henry Warren. Mr. Gray normalized sales for the residential and commercial firm customers, and Mr. Warren normalized sales for the industrial firm, interruptible sales and transportation customers. In addition, we are responsible for conducting a class cost-of-service study which is the basis for our proposed rate design. Ms. Eve Lissik developed class allocation factors for mains and service lines. Ms. Anne Ross developed the other allocation factors and applied all of the allocation factors to their associated functional costs to determine the cost responsibility for each class.

Q. What is the purpose for the normalization of natural gas sales?

A. The primary emphasis is on weather normalization, the details of which are explained by Mr. Gray and Mr. Warren in their direct testimony. In addition, when working with the industrial firm, interruptible and transportation customers, there are adjustments made to test year sales for non-weather related changes. Schedule 1, attached to my direct testimony, includes an accounting for both weather and non-weather related adjustments.

Q. What specific adjustments were made for the industrial firm, interruptible and transportation customers?

A. The first page of Schedule 1 shows the adjustments made because of rate switching which occurred during the test period. As the footnotes indicate, there were some minor adjustments made to customer bill counts for what I believe to be prorated bills. If a customer changes rate classes in the middle of a billing month, that customer's bill is prorated. That can result in either too high or too low of a customer count. Since our department works with individual customer data, we know exactly the number of customers involved and can therefore make the appropriate adjustments.

On the second page of Schedule 1 are shown the changes caused by the mismatch in timing between when the transportation customers are booked for their

transportation volumes and their sales volumes. The adjustment has two parts. First, the Staff's total volumes for transportation customers reflect the actual volumes going through the customer's meter during the test period. Second, Missouri Public Service is currently balancing for its transportation customers, but in the near future, the pipelines will take over that function. Thus, the volumes sold for balancing to these customers were transferred from sales to transportation.

Q. What do you mean by balancing for a transportation customer?

A. As Mr. Warren's analysis indicates, several of these customers are weather sensitive, and faced with the uncertainty of weather conditions, they must nominate volumes a month in advance. If they nominate more gas than they use, then their balance increases. If they nominate less gas than they use, their balance decreases. If their balance goes negative, then the transportation customer is charged for sales gas by the Company.

Q. What other adjustments are shown on the second page of Schedule 1?

A. There are three annualizations made for customers whose volumes are known to be changing from their test year levels. One customer has gone off; another customer will experience decreased usage due to a plant slowdown; while a third customer's volumes will increase

due to a substantial increase in planned plant production. The third adjustment shown on that same page is due to normalization for weather and days.

Q. What is a normalization for days?

A. Most billing periods over which customer meters are read are close but not equal to 365 days. For the weather sensitive portion of the customers' use, the weather normalization accounts for this discrepancy by using normal heating degree days. But for the non-weather sensitive component, an additional adjustment is required.

Q. What is on the third page of Schedule 1?

A. There is a special declining block provision in MPS natural gas tariffs for customers using over 300,000 MCFs per year. There are five such customers. Because our department has the individual customer data, we blocked the normalized usage of these customers and calculated their revenues. This information, along with the remaining normalized volumes shown in the lower right hand table of this Schedule were provided to Mr. Larry Cox of the accounting department. One of his responsibilities is to determine a customer annualization factor for the residential and commercial firm classes and to calculate the appropriate level of test year revenues.

Q. What classes were specified for the rate design?

A. There are currently three rate classes for non-gas cost (margin) rates: residential; general service; and interruptible/transportation. The Staff's proposed rate design will also have three rate classes: residential, general service; and large volume.

Q. What is the difference between the current interruptible/transportation and large volume rate classes?

A. The current tariffs put a customer on the interruptible/transportation tariff when they reach 3,000 MCFs per month in any one month. The Staff's proposed large volume tariff applies to all transportation and interruptible customers as well as firm customers who use 15,000 MCFs per year. The designation of transportation or interruptible are needed for purposes of gas costs, but are not needed for the purpose of setting margin rates. Therefore, the label "large volume" is used rather than "interruptible/transportation".

Q. Does the large volume rate class include the same customers currently on the interruptible/ transportation tariff?

A. Yes, it does. In addition, five large commercial firm and two large industrial firm customers have been added to that class.

Q. Are the cost-of-service classes the same as the rate classes?

A. The cost-of-service classes are residential, small general service, medium general service and large volume. Moreover, for purposes of allocating costs, the general service class covers too broad of a spectrum of customers; i.e., from those as small as residential users to those that are almost as large as the large volume customers. The split between small and medium general service was made at 1,500 MCF per year. Thus, non-residential customers are divided into three groups:

MCFs/year	C-O-S Class
0 - 1,500	Small
1,500 - 15,000	Medium
Over 15,000	Large

Q. Since you split the general service class between small and medium, why didn't you have two separate rates?

A. For ease of rate application we decided to use a blocked rate structure rather than having two separate classes. The rate design for the general service class has a customer charge and four blocks:

	CCFs/month
Block 1:	0 - 600
Block 2:	600 - 1,400
Block 3:	1,400 - 2,400
Block 4:	Over 2,400

Almost all of the small general service use falls into the first three blocks.

Q. What are the average load characteristics of the four cost-of-service classes?

A. The number of customers, annual usage, peak demands and annual load factors of each class are shown on the first table of Schedule 2 attached to my direct testimony. On the second table of that same schedule are the annual usages, and peak day demands per customer. By dividing the annual usage per customer and peak day demand per customer for all classes by those of the system average, a measure of the relative difference in size for each class is obtained. Relative size and load factor are two of the major characteristics that determine cost-of-service. From these calculated ratios, it can be seen that the small general service class is approximately the size of the system average, while the medium general service class is sixteen to eighteen times larger.

Q. What are the proposed rates for each class?

A. The proposed rates for each class along with the billing units and revenues are shown on Schedule 3 attached to my direct testimony.

Q. How were the rates calculated for the residential class?

A. Ms. Anne Ross determined the direct costs of meters, service lines, meter reading, billing and customer expense. These costs are included in the customer charge. All other allocated costs are included in the commodity charge.

Q. How were the billing units developed for the residential class?

A. Staff witness James A. Gray normalized sales for the residential class, and Mr. Larry Cox determined an annualized number of customers. The customer annualization factor was applied to Mr. Gray's normalized sales to determine annual usage and annual bills.

Q. How were the billing units developed for the large volume class?

A. Staff witness Henry E. Warren normalized sales for all industrial firm, interruptible and transportation customers. Two industrial firm customers above 15,000 MCF per year were included with the interruptible and transportation customers to make up the sales for the large volume class. In addition, I normalized the sales for the five large commercial firm customers who are also included in this class.

Q. How were the rates calculated for the large volume class?

A. The customer charge and commodity charges come directly from the Staff's cost-of-service study.

Q. How were the billing units developed for the general service class?

A. The Company provided the Staff with a billing tape from the test year which included individual customer monthly usage. Ms. Janice Pyatte ran a bill frequency

program to determine the usage in each rate block for the small commercial firm and total commercial firm customers. I removed the large commercial firm usage and then applied regression analysis to determine the relationship between usage in each rate block to average usage per customer. Mr. Gray normalized the usage per customer for the commercial firm customers. I removed the large commercial firm usage from Mr. Gray's monthly normals and allocated the remainder between the small and medium classes. Using the resulting normalized levels per customer, I estimated the billing units for the small and medium commercial firm customers. In addition, I calculated the usage in each block for the normalized monthly use for each of the industrial firm customers in the general service class. Adding together these various components gives the billing units for the general service class.

Q. How were the rates calculated for the general service class?

A. The rates were calculated so that they would collect the costs allocated to the small and medium cost-of-service classes. The customer charge is set equal to the current level of $15 per month, the initial block commodity rate is set just below the residential commodity rate, and the tail block rate is set equal to the large volume commodity rate. At 60 MCF, the residential and general service rate approximately collect the same

revenues. The reason for doing this is that there are many small general service customers whose cost-of-service are equal to that of serving a typical residential customer.

Q. What revenues are recovered from the small and medium general service customers?

A. The rates, billing units and resulting revenues for small commercial, small industrial, medium commercial and medium industrial are shown on Schedule 4 attached to my direct testimony. The revenues recovered from the small and medium general service class are the cost-of-service revenue requirements from the Staff's class cost-of-service study.

Q. Does this complete your direct testimony?

A. Yes, it does.

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the matter of Missouri Public Service tariff sheets designed to increase rates for gas service provided to customers in the Missouri service area of the company.	))))	CASE NO. GR-93-172

AFFIDAVIT OF MICHAEL S. PROCTOR

STATE OF MISSOURI)
) ss
COUNTY OF COLE)

Michael S. Proctor, of lawful age, on his oath states: that he has participated in the preparation of the foregoing written testimony in question and answer form, consisting of 11 pages of testimony to be presented in the above case, that the answers in the attached written testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true to the best of his knowledge and belief.

Michael S. Proctor
Michael S. Proctor

Subscribed and sworn to before me this 27th day of May, 1993.

Judy Fritsch
Notary Public

JUDY FRITSCH
NOTARY PUBLIC STATE OF MISSOURI
COLE COUNTY
MY COMMISSION EXP AUG. 15,1993

My commission expires _____

MISSOURI PUBLIC SERVICE GAS
GR-93-172
TRANSFERS BY DISTRICTS

	Test Year			
	MCFs Sales	MCFs Trans	MCFs Total	Bills Total
800	2,442,580	0	2,442,580	317,716
801	1,121,375	0	1,121,375	37,508
802	96,714	0	96,714	302
804	848,074	0	848,074	112,706
805	443,233	0	443,233	16,188
806	54,401	0	54,401	177
812	15,158	678,467	693,625	72
817	13,705	101,209	114,914	37
818	152,754	2,066,122	2,218,876	200
Sub T	5,187,994	2,845,798	8,033,792	484,906
Int Dep	2,812	0	2,812	0
Total	5,190,806	2,845,798	8,036,604	484,906

	Transfers From			
	MCFs Sales	MCFs Trans	MCFs Total	Bills Total
800	0	0	0	0
801	(29,514)	0	(29,514)	(14)
802	(8,312)	0	(8,312)	(4)
804	0	0	0	0
805	(13)	0	(13)	(2)
806	0	0	0	0
812	0	0	0	0
817	0	0	0	(1)
818	(3,661)	(12,236)	(15,897)	(24)
Sub T	(41,500)	(12,236)	(53,736)	(45)
Int Dep	0	0	0	0
Total	(41,500)	(12,236)	(53,736)	(45)

Note: Corrects 817 to have 3 customers in January.

	Transfers To			
	MCFs Sales	MCFs Trans	MCFs Total	Bills Total
800	0	0	0	0
801	0	0	0	0
802	16,083	0	16,083	23
804	0	0	0	0
805	0	0	0	0
806	13	0	13	3
812	0	0	0	0
817	0	0	0	0
818	37,640	0	37,640	16
Sub T	53,736	0	53,736	42
Int Dep	0	0	0	0
Total	53,736	0	53,736	42

Note: Includes Prorations of -5 to 802 and +2 to 818.

	Test Year With Transfers			
	MCFs Sales	MCFs Trans	MCFs Total	Bills Total
800	2,442,580	0	2,442,580	317,716
801	1,091,861	0	1,091,861	37,494
802	104,485	0	104,485	321
804	848,074	0	848,074	112,706
805	443,220	0	443,220	16,186
806	54,414	0	54,414	180
812	15,158	678,467	693,625	72
817	13,705	101,209	114,914	36
818	186,733	2,053,886	2,240,619	192
Sub T	5,200,230	2,833,562	8,033,792	484,903
Int Dep	2,812	0	2,812	0
Total	5,203,042	2,833,562	8,036,604	484,903

Schedule 1-1

MISSOURI PUBLIC SERVICE GAS
GR-93-172
NORMALIZATIONS BY DISTRICTS

	Adjustments to Sales/Transportation			
	MCFs Sales	MCFs Trans	MCFs Total	Bills Total
800	0	0	0	0
801	0	0	0	0
802	0	0	0	0
804	0	0	0	0
805	0	0	0	0
806	0	0	0	0
812	(15,158)	62,685	47,527	0
817	(259)	6	(253)	0
818	(80,582)	89,185	8,603	0
Sub T	(95,999)	151,876	55,877	0
Int Dep	0	0	0	0
Total	(95,999)	151,876	55,877	0

	Adjustments to Customer Volumes			
	MCFs Sales	MCFs Trans	MCFs Total	Bills Total
800	0	0	0	0
801	0	0	0	0
802	(15,617)	0	(15,617)	(9)
804	0	0	0	0
805	0	0	0	0
806	0	0	0	0
812	0	0	0	0
817	0	0	0	0
818	0	276,978	276,978	0
Sub T	(15,617)	276,978	261,361	(9)
Int Dep	0	0	0	0
Total	(15,617)	276,978	261,361	(9)

	Adjustments for Weather & Days			
	MCFs Sales	MCFs Trans	MCFs Total	Bills Total
800	126,968	0	126,968	0
801	53,601	0	53,601	0
802	5,476	0	5,476	0
804	77,177	0	77,177	0
805	38,115	0	38,115	0
806	2,149	0	2,149	0
812	0	3,326	3,326	0
817	1,292	5,354	6,646	0
818	2,254	6,818	9,072	0
Sub T	307,032	15,498	322,530	0
Int Dep	0	0	0	0
Total	307,032	15,498	322,530	0

	Normalized Totals			
	MCFs Sales	MCFs Trans	MCFs Total	Bills Total
800	2,569,549	0	2,569,549	317,716
801	1,145,462	0	1,145,462	37,494
802	94,344	0	94,344	312
804	925,251	0	925,251	112,706
805	481,335	0	481,335	16,186
806	56,563	0	56,563	180
812	0	744,478	744,478	72
817	14,738	106,569	121,307	36
818	108,405	2,426,867	2,535,272	192
Sub T	5,395,647	3,277,914	8,673,561	484,894
Int Dep	2,812	0	2,812	0
Total	5,398,459	3,277,914	8,676,373	484,894

MISSOURI PUBLIC SERVICE GAS
GR-93-172
ACCOUNTING FOR LARGE BLOCK CUSTOMERS

	Removing Large Block Customer			
	MCFs Block 1	MCFs Block 2	MCFs Total	Bills Total
800	0	0	0	0
801	0	0	0	0
802	0	0	0	0
804	0	0	0	0
805	0	0	0	0
806	0	0	0	0
812	237,141	67,773	304,914	12
817	0	0	0	0
818	892,440	893,012	1,785,452	48
Sub T	0	0	2,090,366	0
Int Dep	0	0	0	0
Total	0	0	2,090,366	0

	Pricing Large Block Customer			
	Block 1 $0.5487	Block 2 $0.3029	Customer $215	Total
800	$0	$0	$0	$0
801	$0	$0	$0	$0
802	$0	$0	$0	$0
804	$0	$0	$0	$0
805	$0	$0	$0	$0
806	$0	$0	$0	$0
812	$130,119	$20,528	$2,580	$153,228
817	$0	$0	$0	$0
818	$489,682	$270,493	$10,320	$770,495
Sub T	$619,801	$291,022	$12,900	$923,723
Int Dep	$0	$0	$0	$0
Total	$619,801	$291,022	$12,900	$923,723

	Removing Large Block Customer			
	MCFs Sales	MCFs Trans	MCFs Total	Bills Total
800	0	0	0	0
801	0	0	0	0
802	0	0	0	0
804	0	0	0	0
805	0	0	0	0
806	0	0	0	0
812	0	(304,914)	(304,914)	(12)
817	0	0	0	0
818	0	(1,785,452)	(1,785,452)	(48)
Sub T	0	(2,090,366)	(2,090,366)	(60)
Int Dep	0	0	0	0
Total	0	(2,090,366)	(2,090,366)	(60)

	Normalized Totals w/o LBC			
	MCFs Sales	MCFs Trans	MCFs Total	Bills Total
800	2,569,549	0	2,569,549	317,716
801	1,145,462	0	1,145,462	37,494
802	94,344	0	94,344	312
804	925,251	0	925,251	112,706
805	481,335	0	481,335	16,186
806	56,563	0	56,563	180
812	0	439,564	439,564	60
817	14,738	106,569	121,307	36
818	108,405	641,415	749,820	144
Sub T	5,395,647	1,187,548	6,583,195	484,834
Int Dep	2,812	0	2,812	0
Total	5,398,459	1,187,548	6,586,007	484,834

USAGE AND DEMAND CHARACTERISTICS

BY COST OF SERVICE CLASS

TABLE 1: COST OF SERVICE CLASS TOTALS

COST-OF-SERVICE CLASSES	CUSTOMERS	ANNUAL USAGE	PK DMD	LOAD FACTOR
RESIDENTIAL	35,868	3,494,800	36,631	26.14%
SMALL GENERAL SERVICE	4,323	993,293	10,579	25.72%
MEDIUM GENERAL SERVICE	186	646,602	6,021	29.42%
LARGE VOLUME	32	3,538,866	18,311	52.95%
TOTAL SYSTEM	40,409	8,673,561	71,542	33.22%

Note: These numbers do not reflect the customer anualization.

TABLE 2: PER CUSTOMER AVERAGES AND RATIOS

COST-OF-SERVICE CLASSES	MCF/CUST	DMD/CUST	RATIO MCF/CUST	RATIO DMD/CUST
RESIDENTIAL	97.44	1.02	0.454	0.577
SMALL GENERAL SERVICE	229.77	2.45	1.070	1.382
MEDIUM GENERAL SERVICE	3,476.35	32.37	16.196	18.284
LARGE VOLUME	110,589.56	572.22	515.222	323.206
TOTAL SYSTEM	214.64	1.77	1.000	1.000

STAFF PROPOSED RATE DESIGN
MISSOURI PUBLIC SERVICE COMPANY
CASE NO. GR-93-172

Classes	Units	Rates	Revenues
Residential			
Bills	432,853	$9.50	$4,112,104
MCF	3,514,511	$2.1623	$7,599,427
			$11,711,531
General Service			
Bills	54,558	$15.00	$818,370
0-60	895,951	$2.1500	$1,926,294
60-140	248,173	$1.2265	$304,385
140-240	209,302	$0.5053	$105,760
GT 240	299,882	$0.2237	$67,084
Total MCF	1,653,309		**$3,221,893**
Large Volume			
Bills	381	$113.00	$43,053
MCF	3,539,620	$0.2237	$791,813
			$834,866

Schedule 3

GENERAL SERVICE CLASS BILLING UNITS

Classes	Bills	0-60	60-140	140-240	GT 240	Total
Com Sml	52,126	787,905.3	157,908.1	43,596.4	3,414.5	992,824.3
Ind Sml	192	5,336.3	2,569.7	833.8	304.9	9,044.7
GS Sml	***52,318***	***793,241.6***	***160,477.8***	***44,430.1***	***3,719.5***	***1,001,869.0***
Com Med	1,964	89,327.8	73,023.8	149,889.4	243,177.4	555,418.4
Ind Med	276	13,381.5	14,671.9	14,982.7	52,985.5	96,021.6
GS Med	***2,240***	***102,709.2***	***87,695.7***	***164,872.1***	***296,163.0***	***651,440.0***
Genl Serv	***54,558***	***895,950.8***	***248,173.5***	***209,302.2***	***299,882.5***	***1,653,309.0***

GENERAL SERVICE CLASS PROPOSED RATES

Classes	Cust Chrg	0-600	600-1,400	1,400-2,400	GT 2,400	Average
Genl Serv	***$15.00***	***$2.1500***	***$1.2265***	***$0.5053***	***$0.2237***	***$1.4538***

GENERAL SERVICE CLASS PROPOSED REVENUES

Classes	Bills	0-600	600-1,400	1,400-2,400	GT 2,400	Total
Com Sml	$781,890	$1,693,996	$193,674	$22,029	$764	$2,692,354
Ind Sml	$2,880	$11,473	$3,152	$421	$68	$17,994
GS Sml	***$784,770***	***$1,705,469***	***$196,826***	***$22,451***	***$832***	***$2,710,348***
Com Med	$29,460	$192,055	$89,564	$75,739	$54,399	$441,216
Ind Med	$4,140	$28,770	$17,995	$7,571	$11,853	$70,329
GS Med	***$33,600***	***$220,825***	***$107,559***	***$83,310***	***$66,252***	***$511,545***
Genl Serv	***$818,370***	***$1,926,294***	***$304,385***	***$105,760***	***$67,084***	***$3,221,893***

Schedule 4