

Exhibit No.:  
Issues: Revenue, Weather  
Normalization  
Witness: Henry E. Warren  
Sponsoring Party: MO PSC Staff  
Type of Exhibit: Direct Testimony  
Case No.: GR-2007-0003  
Date Testimony Prepared: December 15, 2006

**MISSOURI PUBLIC SERVICE COMMISSION**

**UTILITY OPERATIONS DIVISION**

**DIRECT TESTIMONY**

**OF**

**HENRY E. WARREN**

**UNION ELECTRIC COMPANY d/b/a AMERENUE**

**CASE NO. GR-2007-0003**

**Jefferson City, Missouri  
December 2006**

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF MISSOURI**

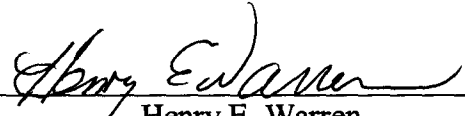
In the Matter of Union Electric Company )  
d/b/a AmerenUE for Authority to File )  
Tariffs Increasing Rates for Natural Gas )  
Service Provided to Customers in the )  
Company's Missouri Service Area. )

Case No. GR-2007-0003

**AFFIDAVIT OF HENRY E. WARREN**

**STATE OF MISSOURI** )  
 ) ss  
**COUNTY OF COLE** )

Henry E. Warren, of lawful age, on his oath states: that he has participated in the preparation of the following Direct Testimony in question and answer form, consisting of 10 pages of Direct Testimony to be presented in the above case, that the answers in the following Direct 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.

  
Henry E. Warren

Subscribed and sworn to before me this 13<sup>th</sup> day of December, 2006.



SUSAN L. SUNDERMEYER  
My Commission Expires  
September 21, 2010  
Callaway County  
Commission #06942086

  
Notary Public

My commission expires 9-21-10

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**DIRECT TESTIMONY**

**OF**

**HENRY E. WARREN**

**UNION ELECTRIC COMPANY d/b/a AMERENUE**

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**DIRECT TESTIMONY**

**OF**

**HENRY E. WARREN**

**UNION ELECTRIC COMPANY d/b/a AMERENUE**

**CASE NO. GR-2007-0003**

Q. Please state your name and business address.

A. My name is Henry E. Warren and my business address is P. O. Box 360, Jefferson City, Missouri, 65102.

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

A. I am employed by the Missouri Public Service Commission (PSC or Commission) as a Regulatory Economist in the Energy Department of the Utility Operations Division.

Q. What is your educational and professional background?

A. I received my Bachelor of Arts and my Master of Arts in Economics from the University of Missouri-Columbia, and a Doctor of Philosophy (PhD) in Economics from Texas A&M University. Prior to joining the PSC Staff (Staff), I was an Economist with the U.S. National Oceanic and Atmospheric Administration (NOAA). At NOAA I conducted research on the economic impact of climate and weather. I began my employment at the Commission on October 1, 1992 as a Research Economist in the Economic Analysis Department. My duties consisted of calculating adjustments to test year energy use based on test-year weather and normal weather, and I also assisted in the review of Electric Resource Plans for investor owned utilities in Missouri. From December 1, 1997, until May 2001, I was a Regulatory Economist II in the Commission's Gas Department, where my duties

1 included analysis of issues in natural gas rate cases and were expanded to include reviewing  
2 tariff filings, applications and various other matters relating to jurisdictional gas utilities in  
3 Missouri. On June 1, 2001 the Commission organized an Energy Department and I was  
4 assigned to the Tariff/Rate Design Section of the Energy Department. My duties in the  
5 Energy Department include analysis of issues in rate cases of natural gas and electric utilities,  
6 tariff filings, applications, and various other matters relating to jurisdictional gas and electric  
7 utilities in Missouri, including review of Electric Resource Plans and Regulatory Plans for  
8 investor owned electric utilities in Missouri. I have also served on various task forces,  
9 collaboratives, and working groups dealing with issues relating to jurisdictional natural gas  
10 and electric utilities.

11 Q. Are you a member of any professional organizations?

12 A. Yes, I am a member of the International Association for Energy Economics  
13 and the Western Economics Association.

14 Q. Have you previously filed testimony before the Commission?

15 A. Yes, I have filed testimony in the cases listed in Schedule 1 attached to this  
16 testimony.

17 **EXECUTIVE SUMMARY**

18 Q. What is the purpose of your direct testimony?

19 A. My direct testimony covers the billing unit allocation for volumes normalized  
20 for weather and meter read cycle days computed by Staff witness, Mr. James Gray, PSC  
21 Energy Department, in the test year for the General Service (GS) rate class of the Union  
22 Electric Company d/b/a AmerenUE (AmerenUE or Company). The test year volumes, the  
23 normal volumes, and computed adjustments are shown in Schedules 3.1 through 3.3, attached  
24 to my testimony.

**GENERAL SERVICE BILLING DETERMINANTS**

Q. What billing determinants in rates were established for the commodity charge for the GS class by the current rate design and how are Mr. Gray's normalized volumes allocated according to these billing determinants?

A. Billing determinants in UE's current GS rates are differentiated according to a commodity charge that is divided into two blocks for GS customers. The *first block, or initial block*, is defined as the first 7000 Ccf (hundred cubic feet) of natural gas used in the month and the *second block, or tail block*, is defined as all volumes over 7000 Ccf per month. In order for Staff witness Mr. Greg Meyer, PSC Accounting Department, to compute the revenues associated with the normal volumes, the normal volumes must be properly allocated monthly to each block. This, in turn, allows Mr. Meyer to determine the rate at which the volumes are to be computed.

Q. What data are used to compute these billing determinants?

A. The Company provided Staff with test year (June 2005 - July 2006) monthly active meters and associated volumes by block for the GS rate code and customer classes served on the GS tariff. I used the Company's test year blocked volumes to determine the percentage of usage falling into each rate block for each month in the Panhandle District, Southeast District, and Rolla District.

**PANHANDLE AND SOUTHEAST DISTRICT**

Q. How did you use that data to determine normalized billing determinants for the test year?

A. For the GS class in the Panhandle District and the Southeast District, there are two blocks. The initial block is up to 7000 Ccf per month and the tail block is all Ccf over

1 7000 Ccf. Using the monthly blocked data for June 2005 – July 2006, the monthly percent of  
2 use in the initial block is a large percentage of the total monthly usage. I grouped the lower  
3 heating months of May through October together and the heating months of November  
4 through March together because the percent in the first block is over ninety percent and shows  
5 small variation. I used a simple average of the percent in the first block in the test year  
6 months of May-October and November-March to estimate the normal percent in the first  
7 block (Schedule 2, Tables 2.1 and 2.2). I used this relationship in order to estimate normal  
8 billing units in each month. Using the Company's test year monthly customer counts and bill  
9 frequencies for the GS class, I estimated the ratio as the monthly percent use in the first block.  
10 Next, the normal monthly usage per customer, computed by Mr. Gray, was used to determine  
11 the normal monthly percent in the first block.

12 In computing the adjustment to the observed test year volumes that will yield the  
13 estimated normal volumes, the adjustment in the second block is set equal to the total minus  
14 initial block adjustment (Schedules 3.1.1 and 3.2.1). In each month the block adjustments are  
15 restricted so neither block can go in a different direction than the total adjustment. If the block  
16 adjustments initially have opposite signs, the adjustment of the volumes in the first block is  
17 set to zero. The second block adjustment is then equal to the total adjustment. All the  
18 monthly block adjustments were initially in the same direction as the total adjustment so this  
19 procedure to make adjustments consistent was not used.

20 The difference between the predicted normal volumes and test year volumes gives an  
21 estimated monthly adjustment for the first block (Schedules 3.1.2 and 3.2.2). The monthly  
22 adjustments to Test Year volumes in the blocks are in the last column of the Tables in  
23 Schedules 3.1.2 - 3.2.2. The monthly adjustments are summed into seasonal and annual

1 totals. The normal volumes in the first block are estimated to be 92% of the total and the  
2 second block 8% of the total annual volumes (Schedules 3.1.3 and 3.2.3).

3 Q. What is the Staff's recommendation for billing determinants by allocating the  
4 weather adjusted volumes computed by Mr. Gray for the GS class to the rate blocks?

5 A. Schedules 3.1.2 and 3.2.2 contain the adjustment volumes for each billing  
6 month during the test year. The total adjustment for the Panhandle GS customer class is  
7 3,226,284 Ccf and the total adjustment for the Southeast GS customer class is 344,183 Ccf.  
8 The total of these adjustments accounts for 100% of the adjustments made to both the first  
9 and second blocks. The volumes were allocated to the blocks for the GS class as shown in  
10 Schedules 3.1.3 and 3.2.3. These adjustments were supplied to Mr. Meyer for use in revenue  
11 normalization.

12 **ROLLA DISTRICT**

13 Q. What billing determinants are established for the Rolla District GS class by the  
14 current rate design and how are Mr. Gray's usage adjustments for weather allocated according  
15 to these billing determinants?

16 A. The Rolla District General Service (GS) class rates are differentiated into four  
17 blocks. The first block for the commercial and industrial classes contains usage from 0 to 600  
18 Ccf per billing cycle, the second block contains the usage from 601 to 1,400 Ccf, the third  
19 block contains usage from 1,401 to 2,400 Ccf and the fourth block, or tail block, contains all  
20 usage over 2,400 Ccf per month. My analysis of allocation of normal volumes to these blocks  
21 is only for the Rolla GS Customers. In order for Mr. Meyer to compute the revenues  
22 associated with the Rolla GS weather-adjusted Ccf, these Ccf must be properly allocated to  
23 the blocks to determine the rate at which they would be billed.



Direct Testimony of  
Henry E. Warren

1 Q. What data are used to compute these billing determinants?

2 A. The Company provided Staff with test year billed Ccf by rate block for GS  
3 customer classes and rate codes. I used the Company's monthly blocked Ccf (June 2005 -July  
4 2006) to determine the percentage of usage falling into each rate block for each month.

5 Q. How did you use that data to determine block percentages for normal Ccf for  
6 the test-year?

7 A. I applied the monthly percentage change for adjusting the test year Ccf for the  
8 Rolla GS class to normal Ccf computed by Mr. Gray to GS Commercial customers in the data  
9 supplied by the Company in the work papers of Company witness, Mr. James Pozzo. I then  
10 allocated these normal Ccf for each customer to rate blocks in each month. The percent of  
11 total Ccf each month in each block was calculated these rate block data.*(from Pozzo's*  
12 *data???)*to allocate the monthly, adjusted test-year Ccf to the blocks for the GS customers.  
13 These percentages are in Table 1 in Schedule 3.3 for the Rolla District. The normal blocked  
14 billing units for the Rolla GS class are computed by Mr. Meyer.

15 Q. What is the Staff's recommendation for weather adjusted gas usage for the  
16 Rolla GS customer class?

17 A. Adjustments to Ccf in each billing month of the test-year appear in Table 2 in  
18 Schedule 3.3. These monthly adjustments are computed for each block in each Division for  
19 the GS Commercial class. These adjustments were supplied to Mr. Meyer for use in the  
20 adjustments revenue for normal weather.

21 Q. Does this conclude your prepared Direct Testimony?

22 A. Yes, it does.

**UNION ELECTRIC COMPANY**

**d/b/a/ AMERENUE**

**CASE NO. GR-2007-0003**

**PREVIOUS CASES IN WHICH PREPARED TESTIMONY, REPORT OR**

**REVIEW WAS SUBMITTED BY:**

**HENRY E. WARREN, PhD**

<b><u>COMPANY NAME</u></b>	<b><u>CASE NUMBER</u></b>
St. Joseph Light and Power Company	GR-93-042 <sup>1</sup>
Laclede Gas Co.	GR-93-149
Missouri Public Service	GR-93-172 <sup>1</sup>
Western Resources	GR-93-240 <sup>1</sup>
Laclede Gas Co.	GR-94-220 <sup>1</sup>
Kansas City Power & Light Co.	EO-94-360
United Cities Gas Co.	GR-95-160 <sup>1</sup>
UtiliCorp United, Inc.	EO-95-187
The Empire District Electric Co.	ER-95-279 <sup>1</sup>
The Empire District Electric Co.	EO-96-56
St. Joseph Light and Power Company	EO-96-198
Laclede Gas Co.	GR-96-193 <sup>1</sup>
Missouri Gas Energy	GR-96-285 <sup>1</sup>
The Empire District Electric Co.	ER-97-081 <sup>1</sup>
Union Electric Co.	GR-97-393 <sup>1</sup>
Missouri Gas Energy	GR-98-140 <sup>1</sup>
Laclede Gas Co.	GR-98-374 <sup>1</sup>
St. Joseph Light & Power Company	GR-99-246 <sup>1</sup>
Laclede Gas Co.	GR-99-315 <sup>1</sup>
Union Electric Company (d/b/a AmerenUE)	GR-2000-512 <sup>1</sup>

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<sup>1</sup> Testimony includes computations to adjust test year volumes, therms, or kWh to normal weather.

**PREVIOUS CASES IN WHICH PREPARED TESTIMONY, REPORT OR  
REVIEW WAS SUBMITTED BY:  
HENRY E. WARREN, PhD  
(CONTINUED)**

<b><u>COMPANY NAME</u></b>	<b><u>CASE NUMBER</u></b>
Missouri Gas Energy	GR-2001-292 <sup>1</sup>
Laclede Gas Co.	GR-2001-629 <sup>1</sup>
Union Electric Co. (d/b/a AmerenUE)	GC-2002-388
Laclede Gas Co.	GC-2002-0110
Laclede Gas Co.	GR-2002-0356 <sup>1</sup>
Aquila, Inc.	GC-2003-0131
Laclede Gas Co.	GC-2003-0212
Laclede Gas Co.	GT-2003-0117
Aquila Networks (MPS and L&P)	GR-2004-0072 <sup>1</sup>
Missouri Gas Energy	GR-2004-0209
Laclede Gas Co.	GC-2004-0240
Kansas City Power & Light	EO-2005-0329
Union Electric Co. (d/b/a AmerenUE)	EO-2006-0240
The Empire District Electric Company	ER-2006-0315
The Atmos Energy Corporation	GR-2006-0387
Missouri Gas Energy	GR-2006-0422 <sup>1</sup>

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<sup>1</sup>Testimony includes computations to adjust test year volumes, therms, or kWh to normal weather.

## AmerenUE GR-2007-0003

GS Customers

Panhandle District

GS Bill Frequency Analysis, Jun 2005 - Jun 2006

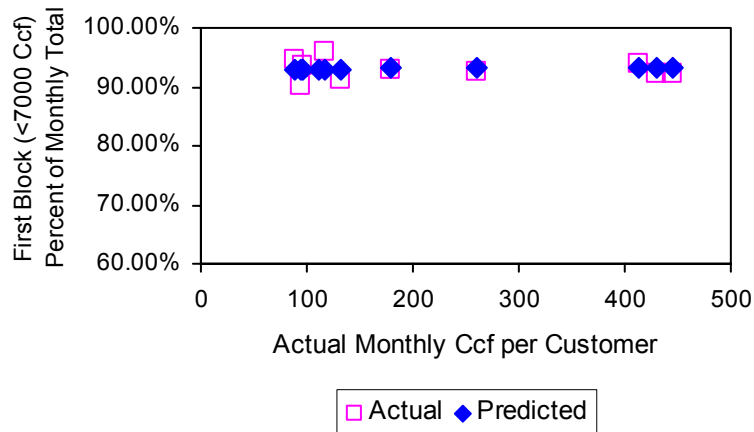


Table 2.1

## AmerenUE GR-2007-0003

GS Customers

Southeast District

GS Bill Frequency Analysis, Jun 2005 - Jun 2006

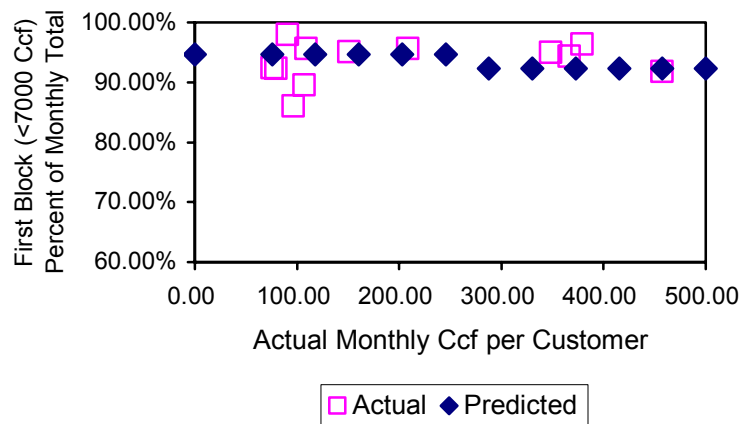


Table 2.2

**UNION ELECTRIC COMPANY d/b/a AMERENUE**  
**CASE NO. GR-2007-0003**

**PANHANDLE DISTRICT**  
**TEST PERIOD JUNE 2005 - JULY 2006**

**GENERAL SERVICE (GS)**  
**ACTUAL VOLUMES**

GS Commercial and Industrial Actual Ccf				
Month	Regular Bills to Customers	1st Block 0 - 7000 Ccf	Tail Block Over 7000 Ccf	Total Ccf
Jul	9,227	850,445	37,006	887,451
Aug	9,204	771,841	52,889	824,730
Sep	9,217	852,962	46,067	899,029
Oct	9,250	893,647	102,176	995,823
Nov	9,348	1,503,212	95,957	1,599,169
Dec	9,495	3,614,143	299,415	3,913,558
Jan	9,570	4,649,219	385,461	5,034,680
Feb	9,608	3,882,312	256,017	4,138,329
Mar	9,622	3,628,550	309,824	3,938,374
Apr	9,599	2,453,484	156,030	2,609,514
May	9,541	1,170,894	95,235	1,266,129
Jun	9,485	1,004,380	96,331	1,100,711
ANNUAL	113,166	25,275,089	1,932,408	27,207,497
%		93%	7%	

**UNION ELECTRIC COMPANY d/b/a AMERENUE**  
**CASE NO. GR-2007-0003**

**PANHANDLE DISTRICT**  
**TEST PERIOD JUNE 2005 - JULY 2006**

GENERAL SERVICE (GS)  
ADJUSTMENTS TO VOLUMES

Month	GS Commercial and Industrial Adjustment Ccf			
	Regular Bills to Customers	1st Block 0 - 7000 Ccf	Tail Block Over 7000 Ccf	Total Ccf
Jul	9,227	31,390	1,790	33,180
Aug	9,204	5,205	0	5,205
Sep	9,217	56,559	0	56,559
Oct	9,250	160,560	39,727	200,287
Nov	9,348	118,733	78,128	196,860
Dec	9,495	(209,450)	0	(209,450)
Jan	9,570	902,847	137,885	1,040,733
Feb	9,608	741,163	225,422	966,586
Mar	9,622	167,618	42,340	209,958
Apr	9,599	379,734	0	379,734
May	9,541	288,579	11,303	299,882
Jun	9,485	43,693	3,058	46,751
ANNUAL				3,226,284

**UNION ELECTRIC COMPANY d/b/a AMERENUE**  
**CASE NO. GR-2007-0003**

**PANHANDLE DISTRICT**  
**TEST PERIOD JUNE 2005 - JULY 2006**

GENERAL SERVICE (GS)  
 NORMAL VOLUMES

Month	GS Commercial and Industrial Normal Ccf			
	Regular Bills to Customers	1st Block 0 - 7000 Ccf	Tail Block Over 7000 Ccf	Total Ccf
Jul	9,227	881,835	38,796	920,631
Aug	9,204	777,046	52,889	829,935
Sep	9,217	909,521	46,067	955,588
Oct	9,250	1,054,207	141,903	1,196,110
Nov	9,348	1,621,945	174,085	1,796,029
Dec	9,495	3,404,693	299,415	3,704,108
Jan	9,570	5,552,066	523,346	6,075,413
Feb	9,608	4,623,475	481,439	5,104,915
Mar	9,622	3,796,168	352,164	4,148,332
Apr	9,599	2,833,218	156,030	2,989,248
May	9,541	1,459,473	106,538	1,566,011
Jun	9,485	1,048,073	99,389	1,147,462
ANNUAL	113,166	27,961,720	2,472,061	30,433,781
%		92%	8%	

**UNION ELECTRIC COMPANY d/b/a AMERENUE**  
**CASE NO. GR-2007-0003**

**SOUTHEAST DISTRICT**  
**TEST PERIOD JULY 2002 - JUNE 2003**

GENERAL SERVICE (GS)  
 ACTUAL VOLUMES

Month	GS Commercial and Industrial Actual Ccf			
	Regular Bills to Customers	1st Block 0 - 7000 Ccf	Tail Block Over 7000 Ccf	Total Ccf
Jul	2,730	206,790	16,843	223,633
Aug	2,721	193,061	15,750	208,811
Sep	2,718	212,519	36,902	249,421
Oct	2,724	250,473	30,886	281,359
Nov	2,740	353,772	20,441	374,213
Dec	2,766	858,700	58,537	917,237
Jan	2,783	1,223,791	105,093	1,328,884
Feb	2,793	991,422	38,439	1,029,861
Mar	2,792	972,929	48,582	1,021,511
Apr	2,786	606,289	26,067	632,356
May	2,767	295,363	13,240	308,603
Jun	2,762	242,539	5,138	247,677
ANNUAL	33,082	6,407,648	415,918	6,823,566
%		94%	6%	



**UNION ELECTRIC COMPANY d/b/a AMERENUE**  
**CASE NO. GR-2007-0003**

**SOUTHEAST DISTRICT**  
**TEST PERIOD JULY 2002 - JUNE 2003**

GENERAL SERVICE (GS)  
ADJUSTMENTS TO VOLUMES

Month	GS Commercial and Industrial Adjustment Ccf			
	Regular Bills to Customers	1st Block 0 - 7000 Ccf	Tail Block Over 7000 Ccf	Total Ccf
Jul	2,730	5,094	0	5,094
Aug	2,721	663	0	663
Sep	2,718	447	6,399	6,846
Oct	2,724	39,891	5,614	45,504
Nov	2,740	0	8,398	8,398
Dec	2,766	(92,138)	0	(92,138)
Jan	2,783	167,420	0	167,420
Feb	2,793	134,232	50,877	185,109
Mar	2,792	0	(37,448)	(37,448)
Apr	2,786	554	0	554
May	2,767	55,588	0	55,588
Jun	2,762	0	(1,406)	(1,406)
ANNUAL				344,183

**UNION ELECTRIC COMPANY d/b/a AMERENUE**  
**CASE NO. GR-2007-0003**

**SOUTHEAST DISTRICT**  
**TEST PERIOD JULY 2002 - JUNE 2003**

GENERAL SERVICE (GS)  
 NORMAL VOLUMES

Month	GS Commercial and Industrial Normal Ccf			
	Regular Bills to Customers	1st Block 0 - 7000 Ccf	Tail Block Over 7000 Ccf	Total Ccf
Jul	2,730	211,145	17,582	228,727
Aug	2,721	193,371	16,102	209,474
Sep	2,718	236,568	19,699	256,267
Oct	2,724	301,737	25,126	326,863
Nov	2,740	362,322	20,288	382,611
Dec	2,766	781,347	43,752	825,099
Jan	2,783	1,416,961	79,343	1,496,304
Feb	2,793	1,150,545	64,425	1,214,970
Mar	2,792	931,882	52,181	984,063
Apr	2,786	599,350	33,561	632,910
May	2,767	336,196	27,995	364,191
Jun	2,762	227,340	18,931	246,271
ANNUAL	33,082	6,748,765	418,985	7,167,749
%		94%	6%	

**UNION ELECTRIC COMPANY d/b/a AMERENUE  
CASE NO. GR-2007-0003**

**TEST PERIOD JUNE 2005 - JULY 2006  
GENERAL SERVICE  
ROLLA DISTRICT**

		GS Blocks				
		Percent Allocation of Actual Ccf To Rate Blocks				
Month	Bills to Customers	1st 0 - 600 Ccf	2nd 601 - 1,400 Ccf	3rd 1,401 - 2,400 Ccf	4th Over 2,400 Ccf	Total
Jul-05	472	36.3%	24.3%	25.6%	13.8%	100.0%
Aug-05	474	43.4%	27.7%	18.2%	10.8%	100.0%
Sep-05	473	44.2%	22.6%	24.2%	9.0%	100.0%
Oct-05	473	41.8%	16.3%	26.8%	15.1%	100.0%
Nov-05	475	42.3%	23.6%	18.9%	15.2%	100.0%
Dec-05	484	34.4%	20.1%	12.5%	32.9%	100.0%
Jan-06	490	26.7%	24.1%	15.8%	33.3%	100.0%
Feb-06	490	31.4%	26.3%	11.6%	30.7%	100.0%
Mar-06	491	29.3%	25.6%	13.0%	32.0%	100.0%
Apr-06	488	36.5%	25.5%	10.7%	27.3%	100.0%
May-06	487	42.8%	24.9%	18.7%	13.6%	100.0%
Jun-06	485	39.5%	27.8%	13.8%	18.9%	100.0%

Table 1

		GS Blocks -- Adjustment Ccf				
		Percent Allocation of Normal Ccf To Rate Blocks				
Month	Bills to Customers	1st 0 - 600 Ccf	2nd 601 - 1,400 Ccf	3rd 1,401 - 2,400 Ccf	4th Over 2,400 Ccf	Adjustment to Normal Ccf
Jul-05	472	1,043	697	735	396	2,871
Aug-05	474	88	56	37	22	203
Sep-05	473	389	199	213	79	880
Oct-05	473	3,976	1,549	2,545	1,435	9,506
Nov-05	475	2,104	1,175	939	759	4,977
Dec-05	484	2,337	1,367	847	2,234	6,785
Jan-06	490	3,581	3,229	2,117	4,463	13,390
Feb-06	490	21,617	18,139	7,963	21,141	68,860
Mar-06	491	1,934	1,687	858	2,113	6,592
Apr-06	488	3,386	2,371	994	2,532	9,282
May-06	487	12,252	7,121	5,344	3,893	28,610
Jun-06	485	(125)	(88)	(44)	(60)	(317)

Table 2