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SOUTHWEST GAS CORPORATION

Andrew W. Bettwy, Assistant General Counsel

August 23, 2005

Arizona Corporation Commission
Attention: Docket Control
1200 West Washington Street
Phoenix, Arizona 85007

Re: Filing of Rebuttal Testimony and Exhibits
Docket No. G-01551A-04-0876

Dear Docket Control Representative:

Accompanying this letter are the original and fourteen (14) copies of the Rebuttal Testimony and Exhibits of Southwest Gas Corporation in the above-referenced Docket.

Please accept the original and thirteen (13) of the copies for filing, and date/time stamp the remaining copy and return it to me in the stamped, self-addressed envelope [or prepaid packaging], which also accompanies this letter.

Thank you for the courtesy.

Sincerely,

Andrew W. Bettwy

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ORIGINAL

SOUTHWEST GAS CORPORATION

Docket No. G-01551A-04-0876

2004 ARIZONA GENERAL RATE CASE

REBUTTAL TESTIMONY

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August 23, 2005

SOUTHWEST GAS CORPORATION

ARIZONA GENERAL RATE CASE
G-01551A-04-0876

REBUTTAL TESTIMONY

LIST OF WITNESSES

Steven M. Fetter

Frank J. Hanley

Theodore K. Wood

Lisa E. Moses

Christina A. Palacios

Robert M. Johnson

Randi L. Aldridge

Robert A. Mashas

William N. Moody

Marti Marek

Vivian E. Scott

A. Brooks Congdon

Edward B. Gieseking

FETTER

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
Rebuttal Testimony
of
STEVEN M. FETTER

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REBUTTAL TESTIMONY OF STEVEN M. FETTER PRESIDENT, REGULATION UnFETTERED ON BEHALF OF SOUTHWEST GAS CORPORATION DOCKET NO. G-01551A-04-0876 BEFORE THE ARIZONA CORPORATION COMMISSION

INTRODUCTION/BACKGROUND

Q. 1 Please state your name and business address.

A. 1 My name is Steven M. Fetter, and my business address is P.O. Box 475, Rumson, New Jersey 07760.

Q. 2 By whom are you employed and in what capacity?

A. 2 I am President of REGULATION UnFETTERED, an energy advisory firm I started in early April 2002.

Q. 3 Does this rebuttal testimony follow upon earlier direct testimony that you filed in this proceeding?

A. 3 Yes it does.

Q. 4 What is the purpose of this rebuttal testimony?

A. 4 In this rebuttal testimony, I respond to positions taken by Arizona Corporation Commission ("Commission") Staff and intervenors that I believe, if adopted by the Commission, will maintain Southwest Gas Corporation ("Southwest" or "Company") at its current inadequate level of financial health. Specifically, I find fault with the outright rejection by Commission Staff and virtually all intervenors of Southwest's effort to structure a mechanism to provide recovery of revenues the Company has lost and will continue to lose due to

customer conservation, called a conservation margin tracker ("CMT"). I further dispute the positions taken by Staff and intervenors in opposition to additional rate design modifications proposed by Southwest, either in concert with the CMT or by themselves, to help the utility achieve financial returns consistent with Commission-authorized levels. In fact, Staff, RUCO and SWEEP/NRDC not only reject Southwest's proposed margin-protection mechanism and alternative rate design proposals, but each of them advances rate design proposals that would exacerbate the Company's problems by placing an even greater amount of Commission-authorized revenue at risk for recovery (as explained in the rebuttal testimony of Company witnesses Edward Gieseking and Brooks Congdon). I conclude that if the Commission were to reject the CMT and maintain the status quo with regard to other aspects of Southwest's current rate design, the Company will continue to function with a weak financial profile, one or two notches away from the below-investment grade threshold, and this status will negatively affect Southwest's access to the capital markets to the detriment of both customers and investors.

RECENT DEVELOPMENTS

Q. 5 In your direct testimony, you discussed the "meeting of the minds" that occurred between the American Gas Association (AGA) and the Natural Resources Defense

Council (NRDC) on the issue of decoupling core revenues from the impact of conservation on sales volumes. Those two groups overcame their traditionally adversarial relationship to reach an understanding on the issue that has also received the endorsement of the National Association of Regulatory Utility Commissioners ("NARUC"). Have there been any other developments at the national level with regard to this issue?

A. 5 Yes there have been two major developments since I filed my direct testimony. First, the recently-enacted National Energy Policy Act of 2005 requires the U.S. Secretary of Energy, in consultation with state utility regulators and state energy policy officials, to conduct a study of policies that promote cost-effective programs to reduce energy consumption. Significantly, the law directs the Energy Secretary to consider methods of "removing disincentives for utilities to implement energy efficiency programs."[1] This is precisely what Southwest is attempting to do both with the proposed CMT as well as with its other alternative rate design modifications

Q. 6 And the second development?

A. 6 In addition to the AGA, NRDC, and state regulatory and energy officials, certainly another key interested stakeholder is the financial community. In June 2005, Moody's, one of the three major global credit rating

1 The National Energy Policy Act of 2005, Sec. 139: Energy Efficient Electric and Natural Gas Utilities Study, August 8, 2005.

agencies, published a report (Rebuttal Exhibit No. (SMF-1)) on the subject of conservation margin mechanisms in which it built upon the earlier efforts of the AGA, NRDC and NARUC and explained how ratemaking mechanisms intended to provide gas LDCs with recovery for revenues lost to conservation resulted in utilities with stronger financial profiles.[2]

Q. 7 Did the Moody's analysis track the thinking that went into the earlier agreement between the AGA, NRDC and NARUC?

A. 7 Yes it did. Moody's echoed the earlier statements of those groups by noting that:

> Conservation is an important part in balancing the national gas supply and demand equation but under traditional regulatory frameworks in many states, few gas utilities have the incentive to actively encourage gas conservation and promote education in gas usage efficiencies among their customers.

However, Moody's noted that, in its own survey of 34 gas LDCs, it found that 18 companies could quantify losses in customer volume consumption due to conservation, but that only four of the 18 had ratemaking mechanisms in place to recover those lost margins.

Q. 8 Did Moody's see a solution for the problem?

A. 8 In a way. The rating agency was encouraged that more LDCs were considering applying for such mechanisms or

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2 Moody's Special Comment: "Impact of Conservation on Gas Margins and Financial Stability in The Gas LDC Sector," June 2005.

other appropriate rate design changes, but that:

> Whatever the reasons, it is clear that in some states the factor of conservation is fully understood and accepted into the gas utility rate-setting regime while in others the educational process is slower and more difficult due to historical differences between the utility on the one hand vs. public advocates and utility commission staff on the other, often viewing each other as traditional adversaries operating in a zero-sum environment.

Moody's concluded that a concerted effort is needed, such as serious consideration of the Southwest proposal by the Commission in this proceeding, because:

> ...the utilities that have established the appropriate ratemaking mechanisms in place first are usually the ones that fare the best in terms of financial earnings stability and credit strength, [but that such] status [has] been consciously achieved in cooperation with their regulators rather than being merely fortuitous or coincidental.

Q. 9 Based upon your experience as a state utility regulator and head of the utility ratings practice at a major credit rating agency, do you agree with Moody's assessment of the situation?

A. 9 Yes I do, totally. In my direct testimony, I explained in detail Southwest's weak credit profile and its pressing need to improve its status to be able to access the capital markets upon reasonable terms so as to be able to meet its operational responsibilities to its customer base on a timely basis. I endorsed the

Company's proposed CMT as a key first step the Commission could take to allow the Company to begin to arrest its margin erosion and move toward the authorized return on equity ("ROE") that will be determined in this proceeding, a status I note that the Company has not experienced since **1998**. To increase the likelihood of achieving such a fair and positive result, the Company supplemented its proposed CMT with a range of rate design modifications which would increase the likelihood that the ROE that is determined in this case will be both Southwest's authorized *as well as actual* ROE going forward. Unfortunately, the Commission Staff and intervenors, in addition to objecting to the proposed CMT, also found fault with these alternative proposals, while failing to propose any other remedies.

SOUTHWEST'S CMT AND RATE DESIGN PROPOSALS

Q. 10 Is this opposition to the CMT and other rate design modifications at odds with the Staff's and other intervenors' goal of encouraging additional conservation efforts by the Company?

A. 10 Yes. Virtually all parties to this proceeding opposed the CMT -- the Arizona Utility Investors Association was alone in not opposing the CMT and SWEEP/NRDC argued that the CMT or similar mechanisms should receive further consideration by the Commission, either within a formal proceeding or a less formal collaborative effort

involving interested stakeholders. While I view delay of approval of the CMT in order to undertake further study as an inadequate step in view of the difficult financial circumstances Southwest faces (as described in my direct testimony), I view such an action as preferable to outright rejection of the concept.

At the same time, I find it troubling that SWEEP/NRDC, Staff and RUCO have asked the Commission to order Southwest to increase its financial commitment to conservation programs, albeit with recovery of such expenditures, when the true harm to the Company will come in the form of lost revenues as a result of those programs. With steady, declining average residential usage already occurring for a variety of reasons discussed in Southwest's direct case, an additional decline due to successful energy efficiency and conservation efforts could dramatically aggravate the problem. It was this problem that the CMT (as well as other rate design changes) sought to remedy, and a Commission decision to defer commencement of the CMT for further study should certainly not be accompanied by a mandate that Southwest increase its funding for such programs.

Q. 11 You allude to other rate design proposals that could assist Southwest in improving its margin recovery and increase the likelihood that the Company can achieve its authorized ROE that were opposed by Staff and other

parties. Can you discuss those steps?

A. 11 Putting aside the CMT, Southwest looked for margin relief from a combination of two alternatives: 1) increasing pricing on the initial block of gas consumed to allow more stable recovery of fixed costs; and 2) increasing basic service charges to achieve that same objective. These alternatives would have the effect of levelizing rate recovery across peak and non-peak periods during the course of a calendar year and would minimize the customer impact of enhanced fixed cost recovery. These proposals either were opposed by the Staff or intervenors, or received support at much lower levels than as proposed by Southwest. Notwithstanding this opposition, I strongly encourage the Commission to consider the potential benefits associated with the decoupling mechanism proposed by Southwest in its direct case as well as give thought to a rate design structure that does not rely significantly on the recovery of Southwest's *fixed costs* using commodity-based rates

Q. 12 Do you believe that the interests of Southwest and its customers are aligned when it comes to designing rates in a manner that minimizes the risk of volatility for both customers and investors?

A. 12 Yes I do. All other factors remaining constant, to the extent that a rate structure designed to recover fixed costs is dependent upon factors outside the control of the Company, there is a risk of either over-recovery or

under-recovery of the revenues authorized by the Commission.

EFFECT ON SOUTHWEST'S FINANCIAL PROFILE

Q. 13 In general, what are the likely benefits that Southwest and its customers would enjoy if the Commission were to take steps to minimize revenue volatility?

A. 13 I would expect that Southwest's overall financial profile would improve, including a better balanced equity ratio and stronger credit ratings, two factors that would improve the Company's ability to access the debt and equity capital markets on a timely basis and upon reasonable terms. Such access translates into better financing terms which result in lower rates for customers.

Q. 14 Within the SWEEP/NRDC testimony, two questions were asked: 1) who should bear responsibility for weather variations and associated weather risk; and 2) who should bear the risks of variations in economic growth from forecasted levels and overall demographic and energy usage trends?

A. 14 I am a little confused by the "risk" references, but I will try to answer the questions as I understand them.

With regard to weather variations, in the absence of a weather normalization adjustment mechanism, both the Company and customers bear weather risk - depending upon how the weather plays out each year, sometimes the

Company makes out better and customers worse, and vice versa. The proposed CMT is based on weather normalized usage and, as a result, would eliminate this weather risk for both sides. By ensuring that Southwest receives the margin for each customer as measured by the Commission within this rate case, the CMT would act as a natural hedge, providing compensation to the party financially harmed by unusual weather patterns, whether it be consumers or the Company.

With regard to economic growth and usage trends, as with the time between rate cases for any utility, the Company will still make capital expenditures to address customer growth and these amounts will not be factored into rates as rate base until the next rate case. Similarly, under a CMT, the Company would receive for each of its customers the margin per customer that was calculated in the last rate case. Of course, if circumstances were to lead either of these situations to diverge far from the norm set by the Commission, consumers or the Company would be free to petition the Commission to initiate a new rate case to reset rates and terms and conditions of service.

Q. 15 In view of the Staff and intervenor opposition to fundamental rate design changes, how do you view Southwest's prospects in the absence of a CMT or significantly-modified rate design?

A. 15 I believe that with higher gas prices virtually assuring

some degree of conservation on the part of most customers, the Company will continue to face declining average residential usage and will have great difficulty in achieving its authorized return on equity for the foreseeable future. If the Commission decides that the CMT should not be adopted; that basic service charges are sufficient at current levels or with only slight enhancement; and that pricing for the initial block of customer gas consumption is appropriate at or near existing levels, I believe that Southwest's financial profile will continue to deteriorate to the detriment of both consumers and investors

Q. 16 Does this conclude your testimony?

A. 16 Yes.

Special Comment

Rebuttal Testimony
Exhibit No.___(SMF-1)
Pages 1 - 9

June 2005

New York
Edward Tan 1.212.553.1653
Mihoko Manabe
John Diaz

Impact of Conservation on Gas Margins and Financial Stability in The Gas LDC Sector

Summary Opinion

- Moody's surveyed its 34 gas LDCs (local distribution companies) as to the impact of customer conservation on their volumes of consumption and gross margins and found that 18 could quantify the loss in per customer volume consumption.
- Only four of the 18 LDCs had ratemaking mechanisms in place to recover on a regular basis the lost margins due to conservation.
- Upon closer examination of certain gas utilities, it appears that customer gas consumption patterns are more responsive to changes in gas prices (price elasticity) than to any other single factor.
- Conservation is an important part in balancing the national gas supply and demand equation but under traditional regulatory frameworks in many states, few gas utilities have the incentive to actively encourage gas conservation and promote education in gas usage efficiencies among their customers.
- With the likelihood that gas prices will remain high and volatile, conservation is expected to become a more formidable force in influencing gas consumption in the residential and commercial customer segments going forward.
- Utility commissioners in various states differ as to their approach in allowing their gas utilities to recover lost margins on account of consumption variations resulting from conservation. Those commissions with the more supportive regulatory frameworks, tend to allow mechanisms for recoveries of revenues lost to conservation and have utilities with stronger financial profiles.
- More LDCs are becoming aware of the conservation factor and the impact that this has on their customers' gas usage and the utilities' profitability, and are considering applying for the appropriate rate design changes.
- Moody's believes that having utility rate designs that compensate the gas LDCs for margin losses caused by variations in gas consumption due to conservation as with variations due to weather, would serve to stabilize the utility's credit metrics and credit ratings. Utilities having these ratemaking mechanisms also tend to carry "A" credit ratings.

Introduction

The rising impact of conservation in determining customer gas consumption levels has been more insidious than other more noticeable variables, such as those caused by weather (see Moody's October 2002 Special Comment titled *Negative Rating Trend For Local Gas Distribution Companies: Impact of Diversification And Warm Weather*). It is curious however, how some state utility commissions recognized the potential impact of customer conservation on gas utility gross margins much earlier than other states, and made special provisions in their regulatory framework to accommodate for this variable. Perhaps some states are more attuned to the benefits of environmental conservation, have better regulatory support from their utility commissions or their customers are more cognizant of the need for compensating their utilities for their fixed costs. Whatever the reasons, it is clear that in some states the factor of conservation is fully understood and accepted into the gas utility rate-setting regime while in others the educational process is slower and more difficult due to historical differences between the utility on the one hand vs. public advocates and utility commission staff on the other, often viewing each other as traditional adversaries operating in a *zero-sum* environment.

What is noteworthy, is that with the growing awareness that natural gas supplies are becoming increasingly limited and that gas prices have been increasing in price and volatility in recent years, more LDCs are searching for reference points which might serve to yield them potential solutions to their problems of variable, and oftentimes, unpredictable customer consumption. If a utility's state commission is not sympathetic to the issue, the utility could draw examples from neighboring state commissions or reach across the country to other states, where the recognition of conservation and its impact on ratemaking mechanisms could have some relevant practical experiences that might be applicable to the utility's own regulatory jurisdiction. This is what appears to be happening as more gas LDCs confront a common issue that is only now rising to the level of national awareness.

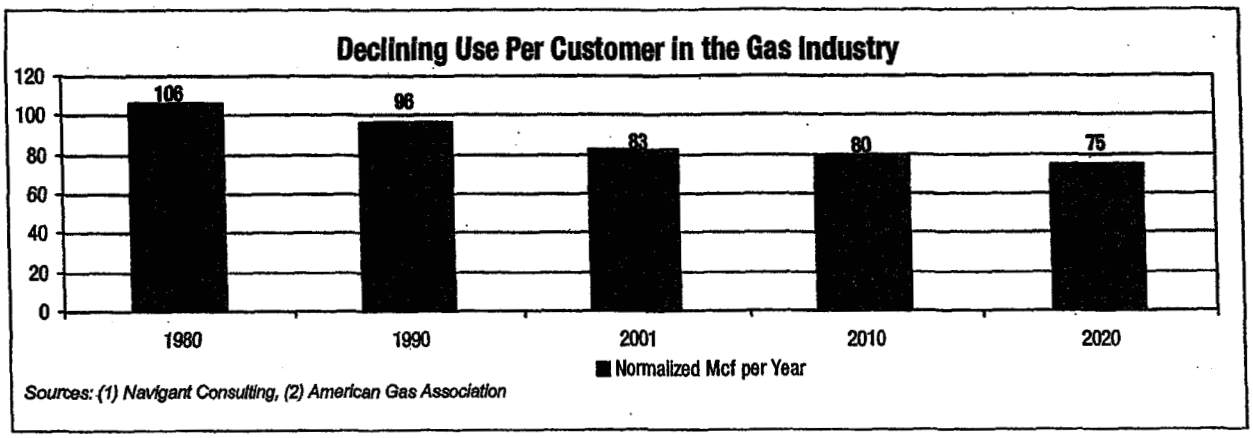
Also, as more LDCs and utility commissioners speak with one another, a greater appreciation for some of the forces affecting this segment of the energy industry develops and rate designs or the mechanisms for dealing with common issues become more accepted and might eventually become the norm. It is interesting to observe that an element of *cross-pollination* appears to be taking place where companies have become more willing to share their ideas and experiences with one another and state commissioners through the National Association of Regulatory Utility Commissioners (NARUC) are becoming more open to new approaches in dealing with their own regulatory issues in a land dominated by a *patch-work* of 50 independent state regulations. Nevertheless, the utilities that have established the appropriate ratemaking mechanisms in place first are usually the ones that fare the best in terms of financial earnings stability and credit strength, a status that appears to have been consciously achieved in cooperation with their regulators rather than being merely fortuitous or coincidental.

Conservation and Traditional Utility Rate Structures

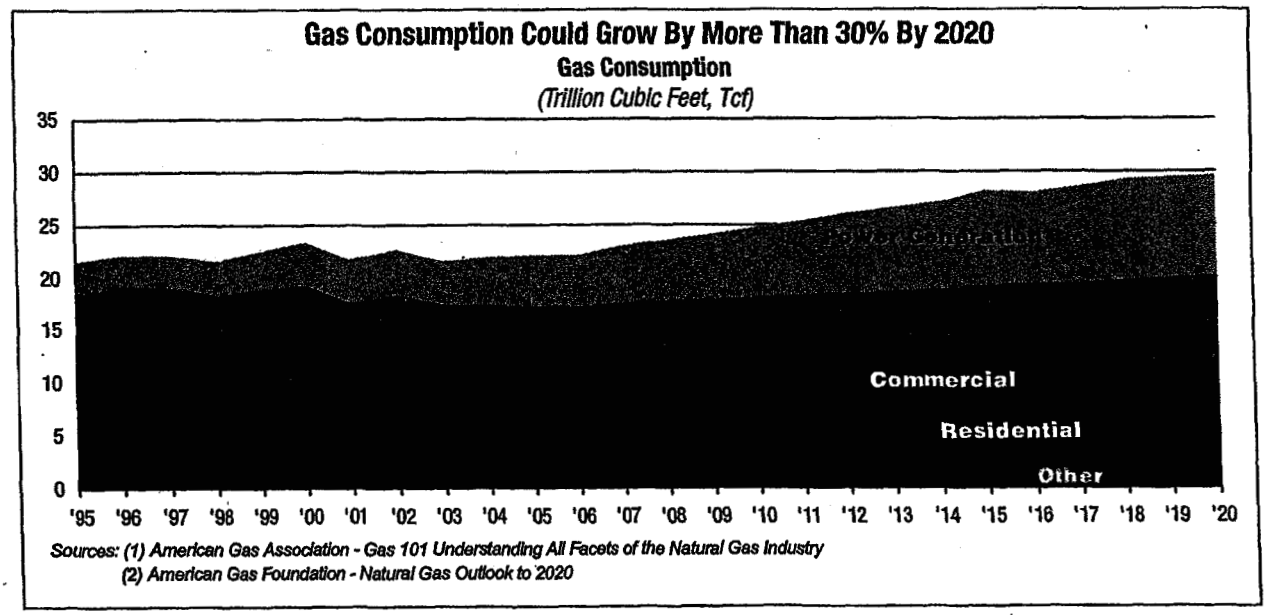
Moody's defines "conservation" as any technical advancement that improves home heating or the gas appliance efficiencies as well as the curtailment of consumption on account of high gas commodity prices. With this in mind, we surveyed our portfolio of 34 gas LDCs to inquire as to the possible impact that conservation might have on their customer gas consumption (primarily residential, as they comprise the largest class of firm customers for most LDCs compared with commercial or industrial customers, with the latter often subject to interruptible service) and the effect on their gas margins. Of the 34 LDCs, 18 were able to quantify the effect on their gas volumes and all 18 showed varying declining amounts and percentages in per customer consumption. However, only four had ratemaking mechanisms in place to recover these lost margins. The declines in per customer volumetric gas consumption ranged from 6% to 22% over a ten year period depending on the individual state. Interestingly, declines occurred whether LDCs were urban or rural[1], slow growing or rapidly growing.

The trend of declining use per customer in the gas industry also appears to be supported by a study done by the American Gas Association (AGA) released in September of 2004, as depicted in the following graph. This study suggests that the declining consumption trend is likely to continue for several more years, although our research indicates that some companies are more affected than others.

1. *Moody's defines urban as any city or town that is served by the LDC's main gas line in a contiguous flow of proximity for 100,000 or more customers. Any number less is considered rural.*



Interestingly enough, in his keynote address in January 2005, Laurence M. Downes, Chairman of the American Gas Association, stated that continued energy efficiency is an important factor in helping balance the limited accessible supply of natural gas in the United States along with the rise in gas demand on the part of electric power generators, industrial and commercial users and the need for increased housing in the country.[2]



However, in the July 2004 Joint Statement made by the AGA and the National Resources Defense Council (NRDC), a nationally recognized environmental group based in San Francisco, admission is made to a fundamental flaw in the way gas utility rates are traditionally structured in many states: namely, that the high fixed costs of operating a gas distribution system are only fully recovered when customers consume the gas volumes upon which their traditional rates are designed. If there is little or no consumption, the LDC is unable to recover its costs. Under this scenario, gas companies have no desire to encourage energy conservation or promote gas efficiency education among consumers. This conflict is stated more succinctly by Jon Stoltz, Senior Vice President of Regulatory and Gas Supply at Cascade Natural Gas Corporation in Seattle, Washington, when he said, "Our financial responsibilities and corporate citizenship responsibilities are at odds. The utility is forced to choose between conservation and profitability."[3]

One solution proposed by the Joint Statement of the AGA and the NRDC requested the National Association of Regulatory Utility Commissioners to consider and support any mechanism that uses automatic rate true-ups to ensure

2. *Investment Outlook for the Natural Gas Industry*, presented by Laurence M. Downes before the New York Society of Security Analysts, January 27, 2005, slide 7, "Continued Energy Efficiency is Important."
3. "Decoupling Through A Payment Stabilization Mechanism," White Paper by John Stoltz, April 21, 2005, p.1

that a utility's recovery of authorized fixed costs are not dependent on variations in gas sales. These ratemaking mechanisms are sometimes referred to as "decoupling," "conservation tariffs" or "conservation margin trackers."

We should note that this conservation problem is particular to the gas and not the electric power industry sector, where average kilowatt-hour of usage per customer has been generally rising over time. This may necessitate some careful explanations with regulators as they attempt to understand some of the differences between the gas and the electric power sectors.

In an attempt to better appreciate some of the decoupling mechanisms currently in use, Moody's considered three examples of how gas utilities were dealing with the impact of conservation. The first example is that of Southwest Gas Corporation (Baa2 senior unsecured, negative outlook) based in Las Vegas, Nevada; the second, Northwest Natural Gas Company (A3 senior unsecured, stable outlook) based in Portland, Oregon; the third, Southern California Gas Company (A2 senior unsecured, stable outlook) based in Los Angeles, California.

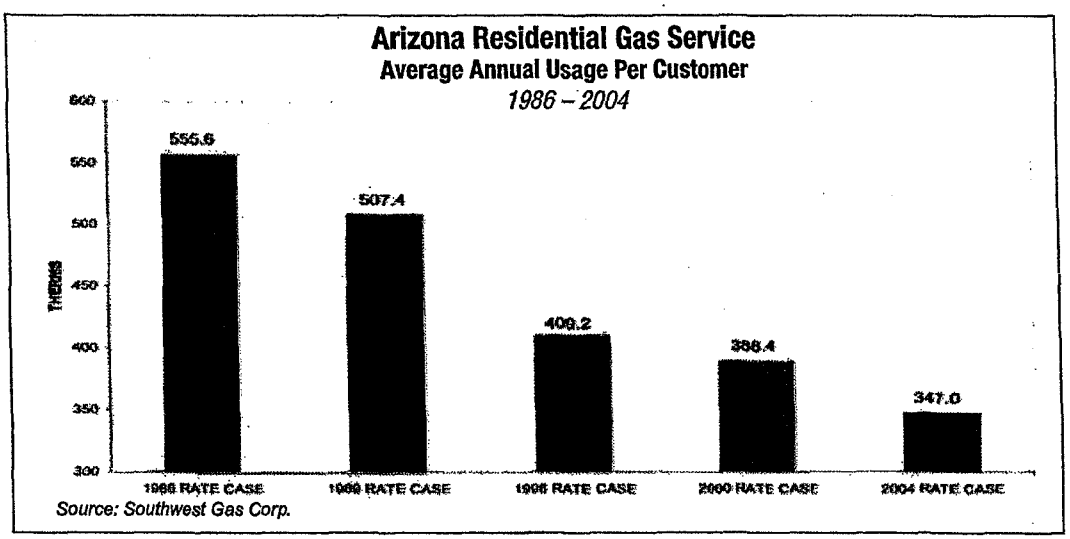
Southwest Gas Corporation

In February of 2004, Moody's changed the outlook on Southwest Gas Corporation to "negative" from "stable." The company was already one of the fastest growing LDCs in the country with a customer base expanding at the rate of 5.4%p.a. According to their CEO, Jeffrey W. Shaw, the company was growing at the equivalent rate of one gas LDC each year. This rapid growth has resulted in regulatory lag, as capital expenditure cost recoveries could not keep up with up-front growth expenditures and led to increased financial leverage.

In addition, the company had announced that 2003 earnings were lower on account of warmer than normal weather for two consecutive years with 2003 being one of the warmest in over 100 years. All these factors impacted the company at a time when it had no conservation margin trackers or weather normalization mechanisms in place. Subsequently, it was able to gain a conservation margin tracker in California, but this only covered about 10% of its service territory, leaving the remaining 90% of gas margins exposed to variable gas consumption.

In December of 2004, Southwest Gas decided to file a new rate case in Arizona which accounts for about 55% of its gas margins. In this rate case, a new rate design was introduced in Arizona for the first time in the form of a conservation margin tracker that would capture declining gas volumes on account of both conservation and weather variables when compared against a baseline consumption level.

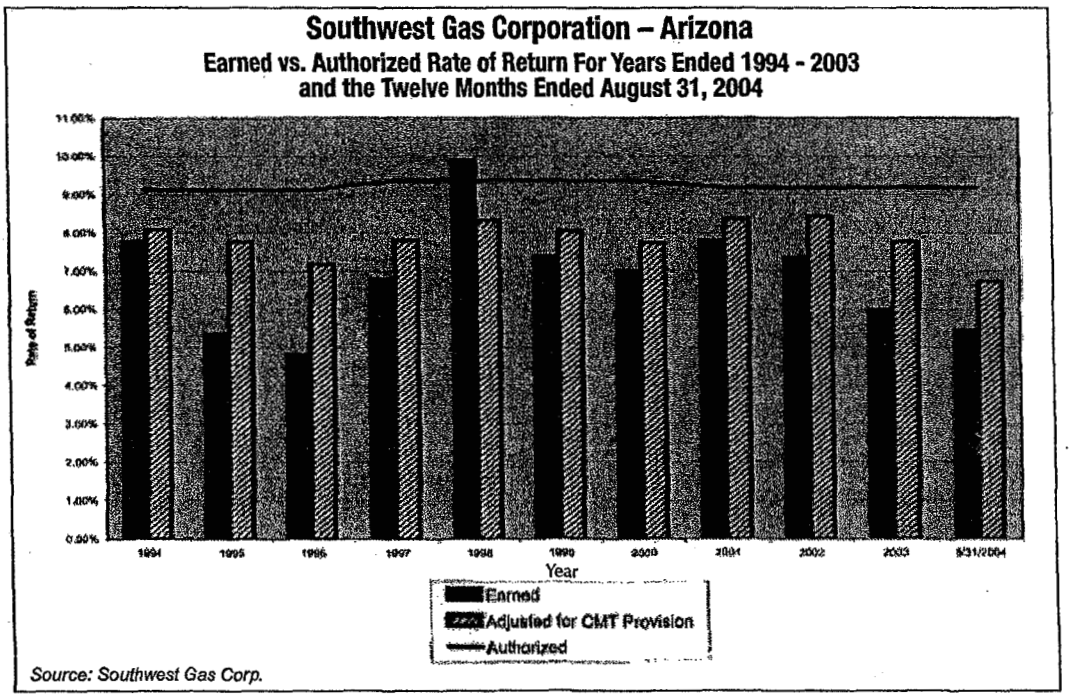
The mechanics of this rate design appear to be straightforward. The company first establishes a revenue requirement that would cover all costs of systems operation (excluding gas commodity costs), and then it apportions this number among the residential class of customers by dividing by the total volume of gas sold to each residential customer. As new customers are added onto the gas distribution system, they also help absorb the costs of operation.



Source: Southwest Gas Corp.

The first graph for Southwest Gas shows a steady 37.5% decline in annual per customer usage of gas over 18 years, or 2.1% p.a., with the consumption data weather-normalized. What is noteworthy is that despite the rapid growth in customer base in Arizona (Phoenix being one of the fastest growing cities in the country), per customer consumption is still falling.

The second graph for Southwest Gas demonstrates an inability to earn its authorized rate of return in Arizona (as depicted by the solid bars), which lie below the approximately 9%authorized overall rates of return (depicted by the horizontal line near the top), equivalent to an 11% return on equity. The gap is closed somewhat by the addition of a new conservation margin tracker (CMT) as proposed by the company in its new rate case for Arizona, but even then it falls short of earning the full authorized rate of return, a shortfall that needs to be met by other means such as exercising tighter standards when considering new expansions into more remote desert areas of the state. The spike in realized earnings in 1998 represents an unusual year when winter weather was 27% colder than normal, a windfall which the company is willing to forgo in exchange for more stable earnings over time.



Source: Southwest Gas Corp.

In its Arizona rate filing, Southwest Gas also anticipates the support of the Southwest Energy Efficiency Project (SWEEP), a regional environmental group promoting energy efficiency in the southwestern states including in Arizona. Environmental groups such as SWEEP add an independent voice in support of energy conservation and they seem to acknowledge the need for gas utilities to obtain a fair rate of return on their investments in order to accomplish their environmental objectives.

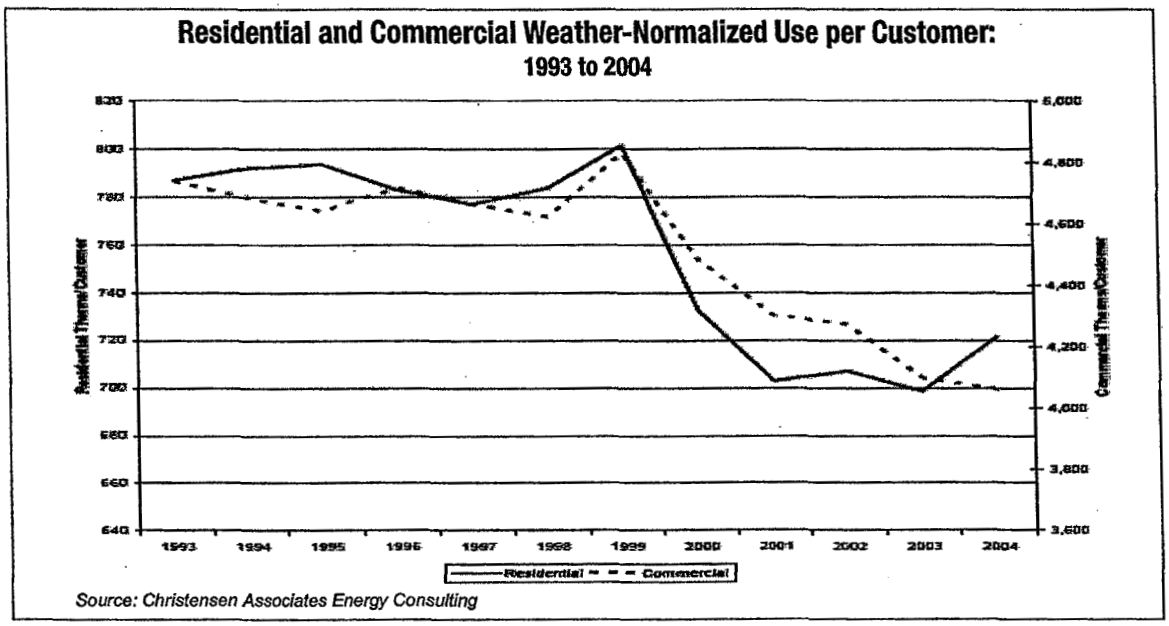
Northwest Natural Gas Company

Northwest Natural had applied for a full decoupling mechanism covering both conservation and weather factors but only obtained a conservation tariff or Distribution Margin Normalization (DMN) from the Oregon Public Utility Commission (PUC) in 2002. Its conservation tariff was granted for a limited period of three years and expires in September of 2005. In 2003, the company applied for and obtained a separate five-year weather normalization clause that operates independently of the DMN. As a condition for its DMN renewal, Northwest Natural was required to have an independent study done to determine the relative success of the rate design, and this task fell upon Christensen Associates Energy Consulting, from whom we obtained certain charts for this report.

The DMN has two essential components, 1) a price elasticity adjustment to a predetermined baseline of consumption and 2) a deferral account that captures 90% of the month-to-month deviations between actual and expected volumes. The deferred amounts are treated as adjustments to be refunded or collected in the following year.

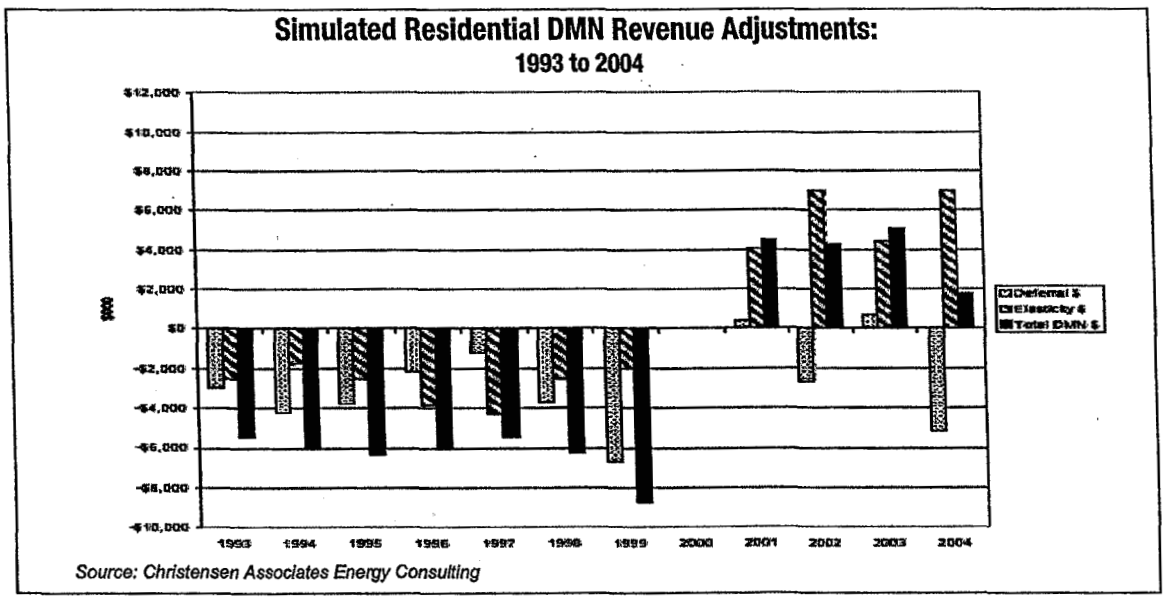
The result is that Northwest Natural's conservation tariff was able to realize an additional $3.5 million in 2003 gross margins and another $1 million in 2004 gross margins. The company also received the endorsement of the NRDC in its rate design application, which served as an independent advocate for the rate design mechanism in support for its conservation tariff application.

In the first chart for Northwest Natural, we note that both residential and commercial usage per customer were fairly constant over the 1990's when they take a sudden and sharp decline in 1999 through 2001, following a much publicized rise in natural gas prices. The slight recovery in late 2003 on the part of residential customers is due to a temporary period of declining gas prices. This chart demonstrates how in the case of Northwest Natural, customer usage is inversely correlated with changes in gas prices.



Source: Christensen Associates Energy Consulting

The second chart for Northwest Natural shows a simulated run using 2000 as a base year for the DMN, with bars above the "zero" line representing collections made by the company for conservation adjustments and bars falling below the "zero" line representing amounts to be refunded to customers. Focusing on the right side of the graph during the years when the DMN was in effect, we note that the price elasticity component represented by the cross-hatch bars are a more significant factor in the adjustment mechanism than the gray-shaded bars representing the deferral component of the DMN.



Source: Christensen Associates Energy Consulting

Southern California Gas Company

SoCal Gas is by far the largest pure gas LDC in our portfolio of 34. It also operates in a state that has one of the most progressive and supportive gas utility regulatory frameworks in the country. For example, unlike most states, California allows the use of monthly purchase gas adjustments (PGA) using short-term forecasted gas prices. When considering utility rate applications from its gas utilities, it applies a 12 month forward test period for cost recoveries, thereby helping to reduce regulatory lag. Finally, it has for many years supported the use of 100% gas balancing accounts, whereby gas LDCs are able to recover in gross margins what they lose on account of weather, conservation or other variables affecting customer use of natural gas.

In January of each year, SoCalGas sets out to recover all costs allowed by the California PUC during that year, plus any under collections or over collections of revenues from the previous year.

The total revenue requirement is divided by the forecast of sales by customer class during the year. Actual revenues are tracked against authorized revenues in balancing accounts during the year. At the end of the year, the under or over collection of revenues due to conservation, weather variation, or other conditions are then added to the subsequent year's revenue requirement to set new rates for the following year. The result is that gas sales variations do not affect net profitability of the utility.

A sample schedule of SocalGas' balancing accounts for the year 2004 appears in the table below. Note that the company finds itself with an undercollection status for 2004 of about $42 million in the lower right bottom column. This sum requires a 3% increase in system total rates for 2005.

SoCal Gas Present and Proposed Regulatory Account Balances (M$)

Account Name	4/01/04 Amortization			Proposed 01/01/05 Amortization			Proposed Change		
	Cost	Balance	Total Balance	Cost	Balance	Total Balance	Cost	Balance	Total Balance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. Affiliate Transfer Fee Memorandum Account (ATFA)	(47)	(6)	(53)	0	0	0	47	-6	39
2. Alias/Gelato Tracking Account (AGTA)	0	25	25	0	107	107	0	84	84
3. Exchange Fee Account (EFA)	0	5	5	0	131	131	0	126	126
4. Catastrophic Event Memorandum Account (Northridge)	(1)	(0)	(1)	0	0	0		0	1
5. Core Fixed Cost Account (CFCA) [2]	(38,869)	0	(38,869)	(38,869)	0	(38,869)	13,060	0	13,060
6. Economic Practicality Shortfall Memorandum Account (EPSMA)	0	(13)	(13)	0	107	107	0	199	199
7. El Paso Settlement Proceeds Memo Acct (EPSPMA)	0	0	0	(218)	0	(218)	(218)	0	(218)
8. El Paso Turned-Back Capacity Bal Acct (EPTCBA)	4,371	7,304	11,676	6,069	14,880	14,908	1,698	3,476	3,474
9. Enhanced Oil Recovery Account (EORA)	7,862	771	8,633	9,085	914	9,922	1,442	147	1,289
10. Hazardous Substance Cost-Recovery Account (HSCRA)	4,371	7,661	11,032	4,689	8,267	12,977	318	607	945
11. Interstate Transition Cost Surcharge Account (ITCSA)	0	(13,444)	(13,444)	0	18,447	18,447	0	32,392	32,392
12. Intervener Award Memorandum Account (IAMA)	88	257	345	12	21	32	(76)	(237)	(313)
13. Monthly True-Up Tracking Account (MTTA)	18,384	7,922	26,306	0	0	0	(18,384)	(7,922)	(26,306)
14. Natural Gas Vehicle Account (NGVA)	(714)	(777)	(1,491)	(2,026)	(2,776)	(4,802)	(1,312)	(1,998)	(3,309)
15. Nevares Fixed Cost Account (NFCA)	0	17,497	17,497	0	16,621	16,621	0	1,124	1,124
16. Nevares Fixed Costs Tracking Account (CCSI subaccount)	0	(7)	(7)	0	(93)	(93)	0	(86)	(86)
17. Nevares Fixed Costs Tracking Account (M&IO subaccount)	0	(1)	(1)	0	0	0	0	1	1
18. Nevares Storage Balancing Account (NSBA)	300	300	300	102	102	203	(98)	(198)	(296)
19. PITCO/PGPCO Transition Cost Account (PTTCA)	(237)	(705)	(942)	(538)	(929)	(1,447)	(301)	(242)	(543)
20. Post-Retirement Benefits Other Than Pensions (PBOPS)	(26,418)	(2,500)	(23,918)	(10)	(1)	(11)	26,408	2,384	22,954
21. Research, Development & Demonstration Expense Account (RDDEA)	(0)	(0)	(0)	0	0	0	0	0	0
22. Research Royalty Memorandum Account (RRMA)	(22)	(3)	(24)	(44)	(3)	(48)	(22)	(3)	(25)
23. Self-Generation Program Balancing Account (SGPBA)	6,687	12,328	19,015	4,375	7,847	12,222	(2,312)	(4,481)	(6,793)
24. Wheeler Ridge Firm Access Charge Memorandum Account (WRFACMA)	(3,842)	(343)	(4,185)	(889)	(107)	(996)	2,953	236	3,189
25. Balancing Account Subtotal	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Notes:

1. Balances shown include franchise fees and uncollectibles expenses.

2. Includes the Baseline Memorandum Account (BMA)

Source: Southern California Gas Company

The advantage of this procedure is that it is automatic and tends to work like "clockwork." In the absence of protest, after 40 days of presenting its annual Advising Letter of the status of its balancing accounts to the California Public Utility Commission, the adjusted rates go into effect. SoCalGas has been successfully using this methodology for margin recovery for over 20 years.

Another LDC that has a similar balancing account mechanism in place for gas system cost recovery is Alabama Gas Corporation (Alagasco, A1 senior unsecured, stable outlook). Alagasco's "rate stabilization and equalization" enables the utility to earn each year within a band of its allowed rates of return in the range of 13% return on equity. This formulaic approach that has been in place in Alabama for over 20 years is just only now being adopted in states such as South Carolina.

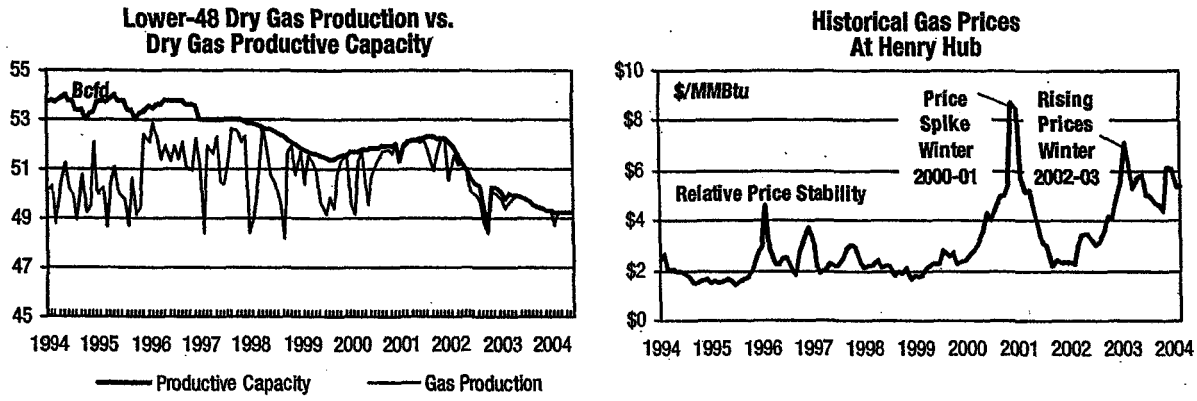
Conclusion

While declining per customer usage of gas has been occurring for many years in many parts of the country, only a handful of the 34 LDCs in our gas portfolio have ratemaking mechanisms in place to recover the utility's fixed costs on a consistent and comprehensive basis. These companies also tend to carry "A" credit ratings.

In reviewing our three examples, we observe that these mechanisms were achieved through careful coordination with interveners and with the support of environmental groups.

We expect that the decline in per customer gas usage at the residential and commercial level is a national phenomenon that is likely to persist as gas becomes more expensive and demand outstrips available supply. The charts below from the AGA and the Energy and Environmental Analysis suggests that beginning in late 1999 gas prices have become decidedly more volatile and show a generally rising trend. As noted in the case of Northwest Natural, customers are more likely to curtail their gas usage under conditions of rising gas prices.

Tightening Demand And Supply Curves = Price Volatility



Sources: (1) American Gas Association -Gas 101 Understanding All Facets of the Natural Gas Industry, (2) Energy and Environmental Analysis (EEA)

In coming months, we anticipate that more gas LDCs will be applying for these decoupling mechanisms either as stand-alone conservation tariffs as done by NWNatural or as part of an overall balancing account approach as done by SoCalGas, taking both conservation and weather factors into consideration. Companies that have announced their intention or are in the process of applying for these new ratemaking mechanisms include Cascade Natural Gas in Washington State, Piedmont Natural Gas in North Carolina and Washington Gas Light in their Maryland jurisdiction.

Finally, Moody's believes that having utility rate designs that compensate the gas LDCs for margins lost on account of variations in conservation as with variations in weather, would serve to stabilize a utility's credit metrics and credit ratings.

Special Acknowledgements

Moody's would like to extend special thanks to Southwest Gas Corporation, Northwest Natural Company, Southern California Gas Company, Alabama Gas Corporation, Cascade Natural Gas Corporation, Piedmont Natural Gas Company, Washington Gas Light Company and many other gas companies that have gone unmentioned in this study for sharing their findings, experience and materials that enabled our completion of this special comment. We would also like to thank the American Gas Association, Navigant Consulting, Christensen Associates Energy Consulting, American Gas Foundation, Energy and Environmental Analysis for allowing the use of their materials, which have been of great assistance in helping illustrate the commentary.

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Author	Associate Analysts	Production Associate
Edward Tan	Haig Tcholakian Jacquelyn Ward	Alba Ruiz

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HANLEY

BEFORE THE

ARIZONA CORPORATION COMMISSION

REBUTTAL TESTIMONY

OF

FRANK J. HANLEY, CRRA
PRESIDENT
AUS CONSULTANTS - UTILITY SERVICES

CONCERNING

COMMON EQUITY COST RATE

RE: SOUTHWEST GAS CORPORATION

DOCKET NO. G-01551A-04-0876

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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
FRANK J. HANLEY

I. PURPOSE

Q.1 Please state your name, occupation and business address.

A.1 My name is Frank J. Hanley and I am President of AUS Consultants - Utility Services. My business address is 155 Gaither Drive, P.O. Box 1050, Moorestown, New Jersey 08057.

Q.2 Are you the same Frank J. Hanley who previously submitted direct testimony in this proceeding?

A.2 Yes, I am.

Q.3 What is the purpose of this testimony?

A.3 The purpose of this testimony is to rebut certain aspects of the direct testimonies of Arizona Corporation Commission (ACC) Staff Witness Stephen G. Hill and Residential Utility Consumer Office (RUCO) Witness William A. Rigsby concerning their recommended common equity cost rates for Southwest Gas Corporation (Southwest or the Company). In addition, I respond to the critique of my direct testimony by Mr. Hill.

Q.4 Have you prepared exhibits in support of this testimony?

A.4 Yes. They have been denoted as Exhibits __ (FJH-16) through (FJH-28).

II. SUMMARY

Q.5 Please briefly summarize your rebuttal testimony.

A.5 My testimony will show that Mr. Hill's primary reliance on the Discounted Cash Flow (DCF) model, is contrary to the financial literature which supports the use of multiple cost of common equity models and results in an understatement of the cost of common equity capital. Moreover, the Efficient Market Hypothesis (EMH), upon which all of the cost of common equity models, including the DCF model, are premised, confirms that investors rely upon multiple models in formulating their required rates of return. In addition, a majority of regulatory commissions rely upon more than one method to determine common equity cost rate for ratemaking purposes. In fact, certain commissions have explicitly recognized the problems associated with the use of the DCF model and sole reliance thereon. Also, I will demonstrate why the assumption by Messrs. Hill and Rigsby of a direct relationship between market-to-book ratios and return on book common equity is unfounded and results in an understatement of the cost of common equity capital derived from his Modified Earnings-Price Ratio Analysis (MEPR) and Market-to-Book Ratio Analysis (MTB). I will also discuss the problems associated with Messrs. Hill and Rigsby's applications of the Capital Asset Pricing Model (CAPM). In addition, I explain why the common equity cost rate recommendations of both witnesses (Mr. Hill's 9.50% and Mr. Rigsby's 10.15%) are understated because, in the case of Mr. Hill, it is based predominantly upon the DCF model, and Mr. Rigsby's recommendation upon a flawed application of the CAPM. Although Mr. Rigsby's recommended common

equity cost rate is understated for the reasons discussed infra, it is much more realistic than Mr. Hill's, as is his recommended hypothetical capital structure which includes a 42% common equity ratio. I will point out that much of the information relied upon by Mr. Hill has been superseded by new information. Finally, I will respond to comments made by Mr. Hill about my direct testimony and show why they are incorrect.

III. COMMON EQUITY COST RATE

A. Mr. Hill's Sole Reliance on the DCF Model as a Primary Methodology

Q.6 Is it clear from his testimony that Mr. Hill placed primary reliance on the DCF model and that his use of other analyses was corroborative?

A.6 Yes. At page 37, line 2 through 4 of his testimony, Mr. Hill refers to his DCF result as "...my primary indication of the cost of equity capital..." and as to his MEPR, MTB and CAPM results as "corroborative analyses".

Q.7 Please summarize why you believe that either primary or exclusive reliance on the DCF model is incorrect.

A.7 The goal of a rate of return expert should be to emulate investors' actions in formulating their required rates of return rate on common equity capital. The DCF model, as are other market-based models, is predicated upon the EMH. In its generally-accepted semi-strong version, the EMH states that investors are aware of all publicly-available information and that such knowledge is embedded in the market prices they pay. The financial literature is replete with discussions of all of the cost of common equity models, e.g., the DCF model, the Risk Premium Model (RPM), CAPM, and Comparable Earnings (CEM) models. Also, many state regulatory

commissions rely upon no single method but consider a number of methods. Moreover, there is no empirical evidence of which I am aware which demonstrates that the DCF model is a superior predictor of actual earned returns experienced by investors vis-à-vis other cost of common equity models.

Q.8 Did you provide examples from the financial literature which support and encourage the use of multiple cost of common equity models in arriving at a recommendation of common equity cost rate?

A.8 Yes. I provided such examples in my direct testimony at page 22, line 13 through page 24, line 23. In their textbooks, Professors Brigham, Morin, Myers and Phillips all acknowledge the existence and encourage the use of multiple cost of common equity models. Thus it is clear that investors are aware of all the cost of common equity models and take them all into account in formulating their required rates of return consistent with the EMH.

Q.9 Can you cite some examples from regulatory decisions which recognize problems associated with undue reliance upon the DCF model?

A.9 Yes. For example, the Pennsylvania Public Utility Commission in an Opinion and Order in R-00973947 concerning United Water Pennsylvania, dated January 29, 1998 stated:

> *However, we have ... recognized that the sole use of the DCF method can result in an understatement of the common equity cost rates ...We recognize that it is within our purview to exercise our informed judgment and to consider the risks as evidenced by the Company's CAPM and RP analyses* (p. 54 of Order) (italics added for emphasis)

Also, the Iowa Utilities Board specified problems associated with reliance on the DCF model in re U.S. West Communications, Inc. in its Order dated June 17, 1994, 152 PUR 4th, p. 459 when it stated:

> While the Board has relied in the past on the DCF model, in *Iowa Electric Light and Power Company*, Docket No. RPU-89-9, "Final Decision and Order" (October 25, 1990), the Board stated: "[T]he DCF model may understate the return on equity in some circumstances. This is particularly true when the market is relatively volatile and the company in question has a market-to-book ratio in excess of one." Those conditions exist in this case and the Board will not rely on the DCF return ... The DCF approach underestimates the cost of equity needed to assure capital attraction during this time of market uncertainty and volatility. The Board will, therefore, give preference to the risk premium approach. (underlining added for emphasis)

Finally, the Regulatory Commission of Alaska (RCA) found it reasonable for investors to rely upon a variety of traditional cost of common equity models in Order Nos. 151 and 110 dated November 27, 2002 in Docket Nos. P-97-4 and P-97-7 re: Trans Alaska Pipeline System and Tesoro Alaska Petroleum Company when it stated at pages 144-145:

> We find Tesoro's expert witness to be the most credible. We base our rate of return findings primarily upon Tesoro's witnesses' recommendation. Tesoro sponsors multiple methods because it believes investors rely on the widest possible information available. [601 (footnote omitted)] We agree with Tesoro that investors are aware of all the various traditional cost of common equity models discussed in financial literature. Absent good reason for believing that investors weight the results of one method more heavily than another in their assessment of an appropriate rate of return, it is reasonable to hold that investors ascribe weight to them all. We note that the APUC has relied on a variety of methods when those methods were reliable given the specific facts at hand.[602(footnote omitted)]

Q.10 How is the semi-strong form of the EMH, which you mentioned supra, defined in the financial literature?

A.10 Brigham states:[1] "The semi-strong form of the EMH states that current market prices reflect all *publicly-available* information."

The EMH (upon which the DCF and all other market-based models are predicated) and the financial literature, along with common sense, confirm that investors rely upon all cost of equity models when establishing their required rates of return. Therefore, analysts and regulators should avoid placing exclusive or primary reliance upon a single cost of equity model.

Q.11 In addition to the reasons provided supra as to why investors consider all of the cost of equity models, is there a problem associated with the application of a common equity cost rate derived from the DCF model to the book value of common equity?

A.11 Yes. I explain the problems associated with the applicability of a market-based common equity cost rate to a book value rate base (the common equity financed portion of an original cost rate base.) in my direct testimony, page 27, line 13 through page 28, line 13.

The evidence shown in Exhibit __ (FJH-6), demonstrates the inadequacy of a DCF-derived return rate applied to book value when the market value exceeds book value. In addition, the financial literature makes it clear[2] that there is no direct relationship between market values and book values.

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1 Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition, The Dryden Press, 1989, p. 225.

2 See quotes from Phillips and Bonbright at page 26, lines 3 through 23 of Mr. Hanley's Direct Testimony.

B. Mr. Hill's Incorrect Presumption of a Direct Relationship Between Market-to-Book Ratios and Returns on Book Equity

Q.12 Mr. Hill, at page 16, line 18 of his testimony states, "...utility returns are allowed and earned on book value." And, at lines 20-21, he states: "...utility investors are aware of that fact." Mr. Hill states further, on page 17, at lines 18 through 21, that "Therefore, the market-to-book / expected return relationship that actually exists today in the market for gas utility stocks indicates that investors expect those companies will earn a return on the book value of their equity (ROE) which exceeds the cost of equity capital." Please comment.

A.12 On page 4 of his testimony in the Company's last rate case, Docket No. G-01551A-00-0309, at lines 11 through 15, Mr. Hill stated: "The Supreme Court of the United States has established ... that investors in such firms are to be given the opportunity to earn returns ... comparable to returns investors would expect *in the unregulated sector* for assuming the same degree of risk" (italics added for emphasis).

In the competitive, unregulated sector (and the natural gas industry is becoming increasingly competitive), there is no evidence of any direct relationship between market-to-book ratios and the rates of earnings on book common equity. This is clear based upon observation of the market-to-book ratios and the rates of earnings on book common equity for the S&P Industrial Index and its Global Industry Classification Standard successor, the S&P 500 Composite Index, over a long period of time. On Exhibit __ (FJH-16), I have shown the market-to-book ratios, rates of earnings on book equity (earnings/book ratios), annual inflation rates, and earnings/book ratios net of the annual rates of inflation for each year from 1947

through 2004. In only one year of the 58 years did the S&P Industrial Index have a market-to-book ratio of 1.00 and that was in 1949, when the rate of earnings on book equity was 16.3% and the real rate of earnings on book equity, adjusted for deflation, was 18.1% (16.3% + 1.8%). In contrast, in 1961 the S&P Industrial Index had a market-to-book ratio of 2.01 times while experiencing a rate of earnings on book equity of 9.8% and a real rate of earnings on book equity, adjusted for inflation, of only 9.1% (9.8% - 0.7%). In 2004, the preliminary average market-to-book ratio of the S&P 500 Composite Index was 3.05 times while the average rate of earnings on book equity was 16.1% and 12.8% (16.1% - 3.3%), net of inflation.

The information shown on Exhibit __ (FJH-16) clearly demonstrates that competitive unregulated companies' common stocks, on average, have never sold below book value during the past 58 years and have sold at their book value only once, in 1949. In all of the other 57 years, their common stocks have sold at varying premiums above their book values. These data also show that there is no relationship between ROE (either the nominal or the real earnings rate) and the market-to-book ratio. It is illogical to conclude that investors would pay 2.56 times book value to earn an ROE net of inflation of 13.8% in 1989, yet would pay 2.77 times book value to earn a rate, net of inflation , of only 7.7% in 1991. Hence, it is obvious that there exists no direct relationship between the rates of earnings on book equity (either nominal or real) and market-to-book ratios.

Because of the 58 years in the period, it cannot validly be argued that the expected trend would be different because the prices paid by investors and hence the market-to-book ratios best relate to future years. The foregoing data and all of the

data shown on Exhibit ___(FJH-16) demonstrate that there is no basis to suggest that market-to-book ratios greater than 1.0 indicate excessive returns because the competitive companies, for which regulation is a substitute, have consistently had market-to-book ratios greater than 1.0. *The data confirm that it is a distortion of reality to suggest that regulation is a substitute for the unregulated competitive sector on the one hand while on the other hand suggesting that there is a direct relationship between market-to-book ratios and the rates of earnings on book common equity when no such relationship exits.* This is especially true because, under the EMH, investors would be aware of these available data as well as the works of respected authors on utility rate regulation such as Bonbright[3] who states that market prices are beyond the control of rate regulation and Phillips[4] who notes that many believe that market-to-book ratios of utilities should be essentially equivalent with those of unregulated companies.

In view of the foregoing, Mr. Hill's presumption of a direct relationship between market-to-book ratios and rates of return on book equity is erroneous and leads to fatal conclusions of judgment.

C. Inappropriate Reliance upon Sustainable Growth in the DCF Model by Messrs. Hill and Rigsby

Q.13 At pages 30 through 34 of his testimony, supplemented by his Appendix B, Mr. Hill attempts to make the case for substantial weight to be given to long-run expected growth in the DCF model, i.e., sustainable growth reflected in the

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3 Id.
4 Id.

equation g = br + vs. In addition, Mr. Rigsby makes the exact same arguments on pages 8 through 14 of his testimony. Please comment.

A.13 Both Mr. Hill and Mr. Rigsby place undue emphasis on sustainable growth and other factors such as growth in book value per share and dividends per share.

Myron Gordon, a source cited by Mr. Hill for authority, who first introduced the DCF model adapted for utility ratemaking, came to recognize long after his book was published in 1974, that the growth component of his original "Gordon Model" had a serious limitation. In fact, Mr. Hill pays lip service to Dr. Gordon's subsequent recognition of this limitation when he states on page ii of Appendix B that "Professor Gordon's research also indicates that analysts' growth rate projections are *useful* in estimating investors' expected sustainable growth." (italics added for emphasis) However, in a presentation on March 27, 1990 (some 16 years after the publication of his 1974 book), before the Institute for Quantitative Research In Finance, Palm Beach, Florida, entitled, "The Pricing of Common Stocks", Dr. Gordon stated that analysts' growth rate projections were *more than useful,* they are, in his opinion, *superior*:

> The most serious limitation of the Gordon Model is the assumption that the dividend expectation can be represented with just two parameters, D and br … We have seen that earnings and growth estimates by security analysts were found by Malkiel and Cragg to be superior to data obtained from financial statements for the explanation of variation in price among common stocks. That is, better estimates are obtained for the coefficient of the various explanatory variables. …*estimates by security analysts available from sources such as IBES are far superior to the data available to Malkiel and Cragg. Secondly, the estimates by security analysts must be superior to the estimates derived solely from financial statements*. (italics added for emphasis)

Moreover, in view of the increasingly competitive nature of the gas distribution industry, analysts' forecasts of earnings growth today have far greater relevance to investors than even Dr. Gordon could have imagined in 1990.

Q.14 If Messrs. Hill and Rigsby had relied upon forecasted growth in earnings per share, what would their resultant DCF cost rates have been?

A.14 The average dividend yield for Mr. Hill's proxy group of eleven gas distribution companies is 4.08% as shown on Schedule 5 of Exhibit __ (SGH-1). Mr. Hill used two sources of growth, namely Value Line and First Call as shown on Schedule 4, page 2 of Exhibit __ (SGH-1). The average projected growth rates in EPS for the proxy group are 6.23% for Value Line and 4.98% for Zack's. The average growth rate of the two sources is 5.61%. Thus, a more correct indicator of a DCF common equity cost rate for Mr. Hill's proxy group of eleven LDCs is 9.69% as follows:

Average Dividend Yield	4.08%
Growth Rate	5.61
	9.69%

Keeping in mind that Mr. Hill set his range of common equity cost rate "so that the DCF result is near the middle of a reasonable range" (page 37, line 10 of Mr. Hill's testimony), a DCF cost rate of 9.69%, rounded to 9.70%, would be the midpoint of a range of common equity cost rate of approximately 9.45% - 9.95%.[5] Also keeping in mind that Mr. Hill's recommended common equity cost rate was at the upper end of

[5] The range of 9.50% to 10.00% is based upon adding / subtracting 25 basis points to the DCF result of 9.69% rounded to 9.75%. Note that Mr. Hill's range was approximately 25 basis points above / below his DCF result of 9.20%, rounded to 9.25%.

his range due to the greater financial risk of Southwest, using average projected growth rates in EPS would result in a 9.95% common equity cost rate. However, even this 9.95% DCF cost rate understates the cost rate to Southwest because it is derived from larger and less risky LDCs as measured by bond ratings and Standard & Poor's (S&P) business profiles shown on Exhibit___(FJH-11), Sheet 2 of 9.

Likewise, the average dividend yield for Mr. Rigsby's proxy group of ten gas distribution companies is 4.15% as shown on Schedule WAR-3. Mr. Rigsby also used two sources of projected EPS growth, namely Value Line and Zacks, as shown on Schedule WAR-6. The average projected growth rates in EPS are 4.80% for Value Line and 5.87% for Zacks. The average growth rate of the two sources is 5.34%. Thus, a much better indicator of a DCF common equity cost rate for Mr. Rigsby's proxy group of ten LDCs is 9.49% as follows:

Average Dividend Yield	4.15%
Growth Rate	5.34
	9.49%

Once again, even this 9.49% DCF cost rate (which is 58 basis points greater than his 8.91%) understates the cost rate to Southwest because it is derived from larger and less risky LDCs.

Q.15 Do you have any additional comments regarding the sustainable growth, i.e., BR + SV, calculations made by Messrs. Hill and Rigsby?

A.15 Yes. Both Mr. Hill and Mr. Rigsby use an average of a recent market-to-book ratio and one (1.0) in calculating the external growth portion of BR + SV growth.

Mr. Hill justifies such an average by stating on page 33 of his testimony at lines 7 through 9 that "it is reasonable to assume that the market price/book value ratio would have a tendency toward unity in order to mitigate the impact of over-earning on the projected external growth rate." And at lines 15 through 17 on page 33, "Therefore, a reasonable estimate of investors' expectations for utility price/book ratios is that it will range between current levels and 1.0. I have used the average as an estimate of investors expectations for the future." In a similar vein, Mr. Rigsby states on page 15, lines 17 through 23 that "In theory, the market price of a utility's common stock will tend to move toward book value, or a market-to-book ratios of 1.0, if regulators allow a rate of return that is equal to the cost of capital (one of the desired effects of regulation). As a result of this situation, I used [(M ÷ B) + 1] ÷ 2 as opposed to the current market-to-book ratio by itself to represent investor's [sic] expectations that, in the future, a given utility will achieve a market-to-book ratio of 1.0." Underlying these statements by Messrs. Hill and Rigsby is the presumption of a direct relationship between market-to-book ratios and returns on book common equity which, as discussed supra, is erroneous and can lead to fatal conclusions of judgment. Moreover, as noted on page 26 of my direct testimony, Charles F. , Phillips[6] states:

> Many question the assumption that market price should equal book value, believing that '*the earnings of utilities should be sufficiently high to achieve market-to-book ratios which are consistent with those prevailing for stocks of unregulated companies.*' (italics added)

[6] Charles F. Phillips, Jr., The Regulation of Public Utilities – Theory and Practice, 1993, Public Utility Reports, Inc., Arlington, VA, p. 395.

In addition, Bonbright[7] states:

> In the first place, commissions cannot forecast, except within wide limits, the effect their rate orders will have on the market prices of the stocks of the companies they regulate. In the second place, *whatever the initial market prices may be, they are sure to change not only with the changing prospects for earnings, but with the changing outlook of an inherently volatile stock market. In short, market prices are beyond the control, though not beyond the influence of rate regulation.* (italics added)

Hence, there is no valid empirically supported reason to use an average of a current market-to-book ratio and one (1.0) in the calculation of the external growth component of sustainable growth. Doing so results in the understatement of both the growth component in the DCF and the DCF cost rate itself of 0.33% for Mr. Hill and 0.42% for Mr. Rigsby as shown on Sheets1 and 2 of Exhibit___(FJH-17) and Exhibit___(FJH-18), respectively. Had Mr. Hill properly calculated sustainable growth his DCF result would have been 9.53% in contrast to his actual results of 9.20%. And, his range of DCF common equity cost rate would have been approximately 9.25% - 9.75%, instead of 9.00% - 9.50%. Likewise, had Mr. Rigsby properly calculated sustainable growth his DCF result would have been 9.33% in contrast to his actual results of 8.91%. Even these DCF cost rates, i.e., 9.53% and 9.33%, understate the cost rate to Southwest because they are derived from larger, less risky LDCs even though based upon a proxy for growth which Dr. Myron Gordon acknowledged, years after his book was published, was not equal to the *superior* proxy of analysts' forecasts.

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[7] James C. Bonbright, Albert L. Danielsen and David R. Kamerschen, Principles of Public Utility Rates, 1998, Public Utilities Reports, Inc., Arlington, VA, p. 334.

1 **D. Messrs. Hill and Rigsby's Capital Asset Pricing Analysis**

2 **Q.16 Please comment on Mr. Hill's statement regarding the CAPM at Appendix D,**
3 **page ii: "Its use in rate of return analysis to estimate multi-period return**
4 **expectations for one stock or one type of stock, rather than a diversified portfolio**
5 **of stocks, takes the model out of the context for which it was intended."**

6 A.16 As a practical matter, about 52% - 53% of the common shares of my proxy groups of
7 gas distribution companies are owned by individuals as can be determined by
8 reference to Exhibit __ (FJH-9). Because of the huge growth of investments in mutual
9 funds attributable to individual investors via Individual Retirement Accounts and
10 401(k) investments, any concern about the need to diversify investments under
11 CAPM theory is obviated. Even the smallest of individual investors, in terms of
12 dollar amount of equity investment, can easily obtain a diversified portfolio by
13 investing in many of the numerous no-load mutual funds which are available. Mr.
14 Hill's concern about the applicability of the CAPM is without merit.

15 **Q.17 At pages ii and iii of Appendix D of Mr. Hill's testimony, he expresses concern**
16 **over the validity of beta and cites an unnamed study by the Center for Research**
17 **in Security Prices at the University of Chicago Graduate School of Business.**
18 **Please comment.**

19 A.17 I can make no comment regarding an unnamed study. However, In Appendix D to
20 his testimony in the Company's last rate case, Docket No. G-01551A-00-0309, Mr.
21 Hill also expressed concern over the validity of beta and cited an article by Eugene
22 Fama and Kenneth French, "The Cross-Section of Expected Stock Returns", The
23 Journal of Finance, June 1992. This may indeed be the "unnamed study" as it was

originally a Working Paper of the Graduate School of Business at the University of Chicago and on page 53 of his testimony in this proceeding at lines 21 through 23, Mr. Hill notes that in Appendix D, "recent evidence presented by prominent economists cited as authority by Mr. Hanley (Eugene Fama), shows that over the past thirty years beta *has not been* a good indicator of relative risk." In the Journal of Portfolio Management publication, Fall 1993, Fischer Black published a response to Fama and French's findings. It was entitled, Beta and Return, "Announcements of the 'Death' of Beta Seem Premature". This article was published at pages 8 through 18 of that issue. Fischer Black is the Black of the famous Sharpe, Lintner, Black SLB Model, which Fama and French refer to often in their article. Regarding the Fama and French article, Black states,

> Fama and French claim to find evidence against this model. They say that their results 'seem to contradict' the evidence that the slope of the line relating expected return and beta is positive.
>
> This is a misstatement, in my view. Even in the period they choose to highlight, they cannot rule out the hypothesis that the slope of the line is positive. Their results for beta and average return are perfectly consistent with the SLB Model.
>
> Moreover, if the line is really flat, that implies dramatic investment opportunity for those who use beta. A person who normally holds both stocks and bond or stocks and cash can shift to a portfolio of similar total risk but higher expected return by emphasizing low-beta stocks.
>
> *Beta is a valuable investment tool if the line is as steep as the CAPM predicts. It is even more valuable if the line is flat. No matter how steep the line is, beta is alive and well.* (italics added for emphasis) (page 9)

Concluding his response to Fama and French, Black states:

> *Announcements of the Death of beta seem premature. The evidence that prompts such statements implies more uses for beta than ever. Rational investors, who can borrow freely, whether individuals or firms, should*

continue to use the CAPM and beta to value investments and to choose portfolio strategy. (italics added for emphasis) (page 17)

Q.18 Does Dr. Myron Gordon believe that beta is useful?

A.18 Yes. Dr. Gordon, cited by Mr. Hill as an authority, spoke on May 8, 1998 before the 30th Financial Forum of the Society of Utility and Regulatory Financial Analysts (SURFA) in Baltimore, Maryland, and stated:

> *Beta is a good, measurable form of risk; everybody on the street uses it more or less.* (italics added for emphasis)

Moreover, under the EMH, which neither Mr. Hill nor Mr. Rigsby has questioned in the current proceeding, investors are aware of the fact that the financial literature encourages the use of multiple cost of common equity methods. Consequently, Mr. Hill's concerns about the usefulness of the CAPM are without merit.

Q.19 Please comment on Mr. Hill's comments in Appendix D, page ii regarding the fundamental applicability of the CAPM and the veracity of beta.

A.19 I believe this statement to be no more true than with regard to the DCF model. It is simply another reason why one should not rely exclusively upon the DCF model (or any other model) as "the primary method" in arriving at a recommended common equity cost rate. The DCF model itself is subject to wide error.

In fact, a Chapter from a text previously relied upon by Mr. Hill, in Docket No. G-01151A-00-0309, Southwest's last rate case, the authors Copeland, Koller and Murrin state regarding estimating the opportunity cost of equity capital[8]:

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[8] Copeland, T., Koller, T. and Murrin, J., Valuation, Measuring and Managing the Value of Companies, 2nd Ed., Wiley & Sons, New York, 1995, 1996, p. 265.

> To estimate the opportunity cost of equity capital, we currently recommend using the capital asset pricing model (CAPM) or the arbitrage pricing model (APM). Both approaches have problems associated with their application. For example, they are subject to measurement problems. But they are theoretically correct; they are risk-adjusted and account for expected inflation. *In contrast, many other approaches to computing the cost of equity are conceptually flawed. For example, the dividend yield model, the earnings-to-price ratio model, and the dividend yield model with a growth term (sometimes called the Gordon growth model) give incorrect results.* (italics added for emphasis)

Q.20 In Appendix D to his testimony, Mr. Hill notes his use of both the arithmetic and geometric mean market risk premiums. And on page 25 of his testimony, lines 17-19, Mr. Rigsby states that he also "used both a geometric and an arithmetic mean of the historical returns . . . as the proxy for the market rate of return." Are Messrs. Hill and Rigsby correct in using the geometric mean for estimating the cost of capital?

A.20 No. Investors are constantly buying and selling stocks. Potential investors require insight into the degree of risk they will experience before they can determine whether to purchase common stock of a firm and the price they are willing to pay. Such insight is critical because the degree of the risk mandates the rate of return required in accordance with the basic financial precept of risk and return, i.e., greater risk means a greater rate of return is required and vice versa.

The financial literature is quite clear that business risk is measured by the variability of expected pretax returns, i.e., the probability distribution of returns (for example, see Eugene F. Brigham, Fundamentals of Financial Management, Fifth Edition, The Dryden Press, 1989, p. 639). Ibbotson Associates explains in detail in pages 73-81, from its Stocks, Bonds, Bills and Inflation: Valuation Edition 2005 Yearbook provided as Exhibit __ (FJH-19) which consists of ten sheets. Sheets 4

through 6 explain *why the arithmetic mean is the only correct mean to use when estimating the cost of capital.*

Weston & Brigham's[9] definition of the riskiness of an asset is standard in financial textbooks. It is:

> The riskiness of an asset is defined in terms of the *likely variability of future returns from the asset.* (italics added)

Morin[10] states:

> The geometric mean answers the question of *what constant return* an investor would have to achieve in each year to have his or her investment growth match the return achieved by the stock market. The arithmetic mean answers the question of what growth rate is the best estimate of the *future* amount of money that will be produced by continually reinvesting in the stock market. (italics added for emphasis)

Finally, Jeremy J. Siegel, cited by Mr. Hill for authority, defines risk as follows[11]:

> A common measure of risk is the *standard deviation* <u>of yearly returns</u>. (italics in original, underlining added for emphasis)

And, in a note at the bottom of Table 1-1 on page 11 of <u>Stocks for the Long-Run</u>, Siegel notes that: "Risk = standard deviation of *arithmetic returns.*" (italics added for emphasis).

Investors formulate their expectations by taking into account <u>the likely variability of expected future returns</u>. The only way investors can gain insight into relative riskiness is to analyze expected future variability. This is done by the use of

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9 J. Fred Weston and Eugene F. Brigham, <u>Essentials of Managerial Finance</u>, 3rd Edition, The Dryden Press, 1974, page 272.

10 Roger A. Morin, <u>Regulatory Finance – Utilities' Cost of Capital</u>, Public Utilities Reports, Inc., Arlington VA, 1994, p. 276.

11 Jeremy J. Siegel, <u>Stocks for the Long Run – A guide to Selecting Markets for Long-Term Growth</u>, Irwin, 1994, p. 40.

the arithmetic mean of a distribution of historical returns. Only the arithmetic mean takes into account *all* of the returns, thereby providing meaningful insight into the variance and standard deviation of those returns. In other words, only the arithmetic mean takes into account all of the returns which are part of a probability distribution of likely expected future returns. Shown graphically on Exhibit __ (FJH-20), Sheet 1, are all of the returns on large company stocks for each and every year 1926 through 2004. As can be seen, this results in a normal distribution. The mean of that probability distribution is that which takes into account the returns for *all* of the years. The use of a very long historical time period is appropriate to gain insight into a very long future period as explained by Ibbotson Associates (see Sheets 7 through 10 of Exhibit __ (FJH-19). On Sheet 2 of Exhibit___(FJH-20), I have shown the returns and how they vary by year chronologically from 1926-2004. It is easily noted that there is considerable variability. The geometric mean, or the compound return, only takes into account the first and last year (those enclosed in boxes on Sheet 1) and reduces the return to a constant. Such a constant (geometric) growth rate provides no insight <u>into the potential for future variability</u> because it ignores all of the intervening years' returns. When estimating the cost of capital, i.e., the returns expected for the future, only the arithmetic mean of <u>all</u> the historic returns (as shown on Sheets 1 and 2 of Exhibit___(FJH-20) provides insight into the potential for variability because it takes <u>all</u> of the past performance (observations) into account. Absent such insight as provided by the arithmetic mean, there can be no meaningful evaluation of the likely variability of future returns and hence business risk.

In view of the foregoing, it should be clear that Messrs. Hill's and Rigsby's use of both the arithmetic and geometric mean returns results in an "averaging down", thereby resulting in understated CAPM cost rates used by Mr. Hill to verify his understated DCF cost rate and by Mr. Rigsby to establish a range of common equity cost rate recommendation. Moreover, by failing to also utilize the ECAPM for the reasons explained in my direct testimony beginning at page 43, line 15 through page 44, line16 and as discussed infra, Messrs. Hill's and Rigsby's CAPM cost rates are even more understated.

Q.21 Both Mr. Hill and Mr. Rigsby use the yield on 3-month U.S. Treasury Bills as the risk-free rate in their CAPM analyses. Are they correct?

A.21 No. Mr. Hill relies upon information contained in the Ibbotson Associates' 2004 Yearbook for estimating his equity risk premium for use in the CAPM, while Mr. Rigsby relies upon information from the 2005 Yearbook. However, both have ignored Ibbotson Associates' recommendation that the yield on long-term Treasury Bonds is the proper risk-free rate to utilize in the CAPM. Sheet 2 of Exhibit ___(FJH-21) is a copy of page 57 of Stocks, Bonds, Bills and Inflation – Valuation Edition – 2005 Yearbook with identical language to that in the 2004 Yearbook . Note that Ibbotson Associates state:

> The horizon of the chosen Treasury security should match the horizon of whatever is being valued. *When valuing a business that is being treated as a going concern, the appropriate Treasury yield should be that of a long-term Treasury bond.* (italics added for emphasis)

The DCF model upon which Mr. Hill "primarily" relies and which Mr. Rigsby also utilizes, implicitly contains an infinite investment horizon. Southwest is

a going concern. Thus, it is clear that only the use of a long-term Treasury Bond yield is appropriate for use in the instant matter as a proxy for the risk-free rate in the application of the CAPM.

In addition, Messrs. Hill and Rigsby incorrectly used a recent average yield on 3-month U. S. Treasury Bonds. Both ratemaking and the cost of capital are prospective. Therefore, it is incumbent upon a rate of return analyst to utilize forecasted yields on long-term U.S. Treasury Bonds as the risk-free rate in a CAPM calculation.

In view of the foregoing, it is clear that the use of anything other than the yield on a long-term U.S. Treasury Bond is inappropriate for use as a proxy for the risk-free rate in the CAPM for a going concern gas distribution utility such as Southwest. Messrs. Hill and Rigsby's use of the yield on short-term 3-month U.S. Treasury Bills as the risk-free rate is inappropriate and results in a further "averaging down" of the CAPM cost rate.

Q.22 Is Mr. Hill's use of the long-term average <u>total</u> return on long-term U.S. Treasury Bonds appropriate?

A.22 No. Ibbotson Associates, upon whom Mr. Hill relies upon as authority for his basic data, clearly specifies that <u>the income return is the appropriate one to utilize</u>. This is shown on Sheets 2 and 3 of Exhibit ___(FJH-19), i.e., pages 73 and 74 of Ibbotson Associates <u>2005 Yearbook</u>. Once again, the language is identical to that in the <u>2004 Yearbook</u> upon which Mr. Hill relied. Ibbotson Associates State:

> Another point to keep in mind when calculating the equity risk premium is that the income return on the appropriate-horizon Treasury security, rather than the total return, is used in the calculation. ...[T]he income return is defined as the portion of the total return that results from a periodic cash flow

> or, in this case, the bond coupon payment. ...*[T]he income return is thus used in the estimation of the equity risk premium because it represents the truly riskless portion of the return.*[2] (footnote omitted)

In view of the foregoing, it will be shown infra that Mr. Hill's use of the total return on long-term U.S. Treasury Bonds results in an additional "averaging down" of the resultant cost rate, exacerbating an already grossly understated CAPM common equity cost rate.

Q.23 Have you recalculated Messrs. Hill's and Rigsby's CAPM results appropriately relying on forecasted yields on long-term U.S. Treasury Bonds as the risk-free rate, the income return on long-term U.S. Treasury Bonds in calculating the equity risk premium and the long-term arithmetic mean average equity risk premium?

A.23 Yes. On Exhibit ___(FJH-22), I have shown that the traditional CAPM result is 10.48% while the ECAPM result would be 10.96% for Mr. Hill and 10.77% (traditional CAPM) and 11.15% (ECAPM) for Mr. Rigsby. Messrs. Hill's and Rigsby's use of both the arithmetic and geometric means causes significant understatement of common equity cost rate because it fails to fully reflect the probability distribution of returns which indicates potential volatility and hence risk. Likewise, Mr. Hill's use of recent yields on 3-month U.S. Treasury Bills and 30-year U.S. Treasury Bonds and Mr. Rigsby's exclusive use of a recent yield on 3-month U.S. Treasury bills, rather than forecasted yields, causes additional significant understatement of common equity cost rate. The understatement of Mr. Hill's CAPM common equity cost rate is further exacerbated by his incorrect use of the total return on U.S. Treasury Bonds in calculating the long-term equity risk premium. Thus, Mr.

Hill's erroneous approach results in significant understatement of common equity cost rate, i.e., 1.68% for the traditional CAPM (10.48% - 8.80%) and 2.16% for the ECAPM (which he did not employ) (10.96% - 8.80%) while the average understatement is 1.92% ((1.68 + 2.16%)/2). Similarly, Mr. Rigsby's erroneous approach results in significant understatement of common equity cost rate, as well, i.e., 1.16% for the traditional CAPM (10.77% - 9.61%) and 1.54% for the ECAPM (11.15% - 9.61%) while the average understatement is 1.35% ((1.16% + 1.54%)/2). These corrected CAPM cost rates understate the cost rate to Southwest because they are derived from larger, less risky LDCs.

E. Mr. Hill's Modified Earnings-Price (MEPR) Analysis, Market-to-Book Ratio (MTB) Analysis and Pretax Interest Coverage

Q.24 Please comment on Mr. Hill's Modified Earnings-Price Ratio (MEPR) and market-to-book ratio (MTB) analyses discussed at pages v to ix of Appendix D to his direct testimony.

A.24 Those analyses are meaningless because they rely upon a presumed direct relationship between earnings/book ratios and market-to-book ratios. As I have discussed supra, in connection with Exhibit __ (FJH-16), empirical analysis reveals that Mr. Hill's presumption is incorrect. I know of no regulatory commission that relies on the earnings-price ratio methodology. Also, Mr. Hill's market-to-book analysis is distorted because it is based upon a presumption of relationship between earnings/book ratios (achieved rates of earnings on book common equity) and market/book ratios discussed supra.

In addition, Mr. Hill relies upon the Federal Energy Regulatory Commission's (FERC) generic rate of return, i.e., Benchmark Rate of Return Rule, hearings as

support for his MEPR analysis, citing 20-year old FERC orders from 1985 and 1986. However, Mr. Hill fails to note that FERC abolished their Benchmark Rate of Return Rule on January 2, 1992 (more than 13 years ago) with the issuance of Order No. 538 re: Docket No. RM91-17-000 stating on page 1 of Order No. 538:

> The Federal Energy Regulatory Commission is abolishing its generic benchmark determination of rate of return on common equity for public utilities and is rescinding Part 37 of its regulations, 18 CFR Part 37. While the benchmark has produced some benefits, it has not produced many of the benefits envisioned for it in 1984. The failure to achieve these other benefits leads the Commission to conclude that its continuation is not merited.

Thus, Mr. Hill's FERC support for the MEPR has been superseded with the abolishment of the Benchmark Rate of Return. Consequently, Mr. Hill's MEPR and MTB analyses should be disregarded.

Q.25 Please comment on Mr. Hill's discussion of the level of pretax interest coverage of 2.38 times implicit in his recommended overall cost of capital of 8.40% (Exhibit ___ (SGH-1), Schedule 11) at page 40 of his testimony.

A.25 Mr. Hill states on page 40 of his direct testimony at lines 14-19 that the opportunity for 2.38 times pretax interest coverage implicit in his overall rate of return recommendation of 8.40% "affords the Company the opportunity to achieve a pre-tax interest coverage of 2.38 times. That level of interest coverage, according to Standard & Poor's published benchmarks is sufficient to maintain the Company's current bond rating, and is much higher than the actual level of pre-tax interest coverage earned by the Parent company over the past three years." He further states that his recommendation "affords the company an opportunity to maintain its credit and its ability to attract capital." Such a ratio no longer has meaning because S&P revised their financial guidelines and assigned new business profile scores for utilities in June

2004. Mr. Hill is clearly aware of this fact because he cites "New Business Profile Scores Assigned for U.S. Utility and Power Companies; Financial Guidelines Revised," Standard 7 Poor's Rating Direct, June 2, 2004. Mr. Hill must therefore also be aware that in this revision, S&P eliminated pretax interest coverage as a key credit ratio and that the financial guidelines which were retained by S&P, i.e., funds from operations interest coverage, funds from operations to total debt and total debt to total capital, were "broadened so as to be more flexible. (See pages 11 and 12 of Exhibit __(FJH-2) accompanying my direct testimony). In addition, new business profile scores were assigned to U. S. Utility and Power Companies to "better reflect the relative business risk among companies in the sector." S&P further stated that "Each business profile score should be considered as the assignment of a new score; these scores do not represent improvement or deterioration in our assessment of an individual company's business risk relative to the previously assigned score." Hence, there is no relationship between the old business profiles and the financial benchmarks vis-à-vis the new business profiles and financial benchmarks which do not include pretax interest coverage. Consequently, S&P's previously published financial guidelines, including the now eliminated pretax interest coverage guideline are totally meaningless in assessing the reasonableness of a common equity cost rate recommendation. Therefore, no conclusion regarding the reasonableness of Mr. Hill's recommendation can be made by reference to the now eliminated S&P pretax interest coverage benchmarks.

F. Additional Comments on Mr. Hill's Direct Testimony

Q.26 At page 9 of his testimony, Mr. Hill suggests that recent returns on asset classes of Southwest's pension fund portfolio confirm his recommended common equity cost rate of 9.5% as reasonable. Please comment on the relevance of the use of such returns and their use in the ratemaking paradigm.

A.26 The use of such returns has no relevance to the establishment of a common equity cost rate for Southwest in this proceeding for the following reasons. Pension fund returns (either overall or by asset class) are those on a portfolio of assets which reflect the risk-reducing benefits of portfolio theory as opposed to the greater risk associated with investment in a single asset, which in this case would be Southwest's Arizona jurisdictional rate base. Pension fund investment horizons are for finite periods consistent with bond maturities in contrast to the infinite investment horizon implicit in the standard DCF model. In addition to the portfolio effect described supra, it must be kept in mind that when Southwest needs additional capital in order to provide service to its customers, it must be able to obtain that capital regardless of capital market conditions existing at the time. Such ability is especially critical for Southwest, one of the fastest growing LDCs in the U.S. Also, whatever common equity cost rate is allowed by this Commission, it will simply be an opportunity cost rate which will be impacted by attrition caused by rapidly rising investment in rate base, increasing expenses, the impact of weather and declining per customer usage especially if the requested Conservation Margin Tracker (CMT) is not approved versus the actually-earned rates of return on the pension fund portfolio of assets and its various asset classes. For the foregoing reasons, Mr. Hill's comparison to

Southwest's pension fund returns is inappropriate and does not demonstrate that his recommended common equity cost rate is reasonable.

Q.27 On pages 14-15 of his testimony, Mr. Hill suggests that the cost of common equity to utilities was reduced by 0.50% (50 basis points) in response to the reduction in 2003 of the federal income tax rate on dividends from "approximately 30% to no more than 15%". Please comment.

A.27 In accordance with the EMH investors are aware of all publicly available information. Prior to the enactment of the Tax Act, investors were aware that a reduction in the tax rate on capital gains and dividends was likely to occur. After the enactment of the Tax Act, they were aware of the effect the Act would have on their capital gains and dividend tax liabilities. Therefore, investor perceptions of the impact of the Tax Act have long been reflected in the prices investors are willing to pay for the securities they purchase and, hence, in the cost of equity. However, there are a number of reasons to believe that the effect on the common stocks of public utilities is minimal to nil for the following six reasons described by Robert G. Rosenberg[12]:

1. Many investors cannot benefit from the new dividend tax reduction. The dividend tax reduction has value to investors only if they must pay taxes on the dividends they receive. However, about half of all dividend payments go into tax-exempt to tax-deferred accounts such as charities, pensions, and IRAs.[1] This fact alone would tend to moderate or obscure investor (and company) reactions to the dividend tax reduction.

2. The dividend tax reduction has a sunset provision. Both the capital gains tax reduction to the 15 percent level and the dividend tax reduction to the 15 percent level are scheduled to expire at the end of 2008.[2] Given the uncertainty about future tax

[12] Robert G. Rosenberg, "The Dividend Bust?", Public Utilities Fortnightly, Vol. 141, No. 19, October 15, 2003, pp. 45-48.

policy regarding dividends, companies and investors might move cautiously, if at all, in response to the dividend tax reduction. This is because companies and investors base their payout policy and investment strategy, respectively, on long-term considerations. Investors would not want to switch from growth to income stocks if they thought the tax reduction for dividend-paying stocks might disappear in a few years. Similarly, companies might not want to change their long-term dividend policy to please investors if the tax considerations driving such action might be reversed within a few years.

3. The dividend tax change may cause utilities to lose their income-stock 'edge'. Utilities have often been regarded as 'income stocks' – having a relatively high level of dividends setting them apart from many other industries. With the reduction in the dividend tax rate, many non-utility companies may start paying significant dividends, thus diluting or eliminating the income-stock 'edge' utilities have over competing investments.

4. The capital gains tax rate is equal to the dividend tax rate. While much attention has been focused on the dividend tax reduction aspects of the act, the level of dividends is merely one factor among many analyzed by investors in forming their opinions as to the desirability of an investment.[4] It is important to remember that the capital gains tax rate is now equal to the dividend tax rate. Thus, at the personal tax level, there is a neutrality between dividends and capital gains. While dividends have the advantage of reflecting 'a bird in the hand', they have the disadvantage of creating a tax liability in the year they are paid. In contrast, capital gains can be deferred – gains do not have to be realized and the capital gains tax paid until a time of the investor's choosing. This ability to defer taxes can be a significant advantage for investors.

5. The cost of utility debt and preferred stock may rise. The tax cuts enacted in May 2003 are projected to widen the budget deficit.[5] This could possibly lead to higher interest rates in the future that would have two adverse effects on utilities. First, since utility common stocks are thought to be interest-rate sensitive, an increase in interest rates could lead to a decline in utility stock prices, other things being equal. Second, an increase in the general level of interest rates could raise the cost rates for new debt and preferred stock for utilities.

6. Holding utility stock in tax-deferred accounts is less attractive. The tax that investors will ultimately have to pay on withdrawals

> from a tax-deferred account is now much higher (up to 35 percent) than the taxes investors have to pay on dividends and capital gains (a maximum of 15 percent) in taxable accounts. This could make holding utility stocks less attractive in tax-deferred accounts, and it could possibly have a downward effect on utility prices. Investors likely do not, and should not, make investment decisions purely on the basis of tax law changes. This is especially true considering the sunset provision built into the act. Thus, since the act has surely made rational long-term planning for investors more difficult, it is not entirely clear what affect this particular result of the tax law change may have on utility stock prices.

(footnotes omitted)

The EMH confirms that investors' instantaneously reflect all publicly available information in the prices paid for securities. The Tax Act was passed into law in May 2003. In an article published in USA Today dated July 6, 2003 by Matt Krantz, it was noted that:

> Remember how tax law changes were going to make dividend-paying stocks the new prom queens of Wall Street? It's not happening.
>
> So far, companies rushing to increase their dividends or start paying one – and thinking they're giving investors what they want – aren't getting the applause they might have expected.
>
> During the first half [sic], as President Bush proposed and Congress ultimately cut taxes on dividends, 118 of the companies in the Standard & Poor's 500 either started paying dividends or increased them. That's a fifth more than did so the first half of 2002, S&P says.
>
> Of all companies that S&P tracks 807 increased or resumed paying dividends in the first half of 2003.
>
> But the frustrating part for companies paying the dividends and the investors going in search of yield: It's not paying off.

> The 356 S&P 500 companies that pay a dividend gained 10.2% on average in the first half, far behind the 28.7% rise of no-dividend companies.

In view of all of the foregoing, it is clear that the Tax Act has not resulted in the benefit to utilities suggested by Mr. Hill.

Q. 28 Mr. Hill, at pages 20-27 of his testimony, recommends the use of a hypothetical capital structure consisting of 55% total debt, 5% preferred securities, and 40% common equity please comment.

A.28 Mr. Hill's recommended capital structure and comparisons made to the industry and his sample group of eleven LDCs are inconsistent with the practice of this Commission which is to base the capital structure upon permanent capital, i.e., excluding short-term debt. The comparisons he makes to the LDC industry and his sample group on pages 23 and 24 of his testimony (and at Exhibit__(SGH-1), Schedule 1, page 4 of 6) are to ratios which include short-term debt and are inconsistent with the practice of this Commission. As indicated by the information shown in Rebuttal Exhibit__(TKW-2) the average common equity ratio for Mr. Hill's sample group, based upon permanent capital, averaged 51.70% in 2004 while the five-year average then ending was 50.31% (and those ratios include Southwest's actual ratios).

Even if the ratios based upon total capital are considered, the actual average for 2004 was 45.80% common equity while the average for the five-years then ending was 42.83% as shown on Mr. Wood's Rebuttal Exhibit ___(TKW-2).

Exhibit ___(FJH-23), Sheet 1 of 2, shows that the average S&P bond rating for Mr. Hill's sample group is A with a business profile of 2 (with or without the inclusion of Southwest). As can be seen on Exhibit ___(FJH-2), Sheet 14 of 15, S&P's range of required total debt for an A bond rating with a business profile of 2 is 50%-55% which implies the need for equity to be in the 45%-50% range. If Southwest is to ever become more financially healthy, i.e., a higher bond rating such as the A of Mr. Hill's sample group, it should have a reasonable opportunity to achieve its requested hypothetical 42% common equity ratio. That should mean a reasonable allowed ROE, and approval of the CMT which would enhance the likelihood of achieving the allowed ROEs and increased retained earnings.

Q. 29 At pages 24-27 of his testimony, Mr. Hill recommends that this Commission, in order to use his recommended hypothetical capital structure which includes a 40% common equity ratio, require Southwest to submit a plan to re-capitalize with at least 40% common equity and to reach that goal prior to Southwest's next rate proceeding in Arizona. Please comment.

A.29 Mr. Hill's recommendation is incredulous in view of the significant degree of new external common equity raised by Southwest in recent years as shown by Mr. Wood in his Rebuttal Exhibit __(TKW-5) and discussed in my direct testimony at page 14, lines 9-18, inclusive and as described therein. Southwest has not increased its common dividend since the Spring of 1994, or more than twelve years ago. No reasonable effort on the part of Southwest's management can obviate Southwest's horrifically low achieved ROEs of recent years versus those achieved by proxy LDCs. For example, at page 12 of my direct testimony and the data in Exhibit

___(FJH-1) Sheet 4 of 4 show that during the seven years ending 2003, the average Arizona jurisdictional achieved ROE was just 6.74% in contrast to the averages of 12.11% and 11.62% for my proxy groups of five and eleven LDCs, respectively. In 2003, the disparity was even worse, namely 4.11% for Southwest versus 11.88% and 12.86% for my proxy groups, respectively,

With a bottom of investment grade bond rating, such poor historically allowed and achieved ROEs, opposition to the requested CMT (which would help to alleviate the earnings stress and improve retained earnings and thus help improve more significantly the actual common equity ratio), and too low allowed ROEs as recommended by Staff and RUCO Witnesses Hill and Rigsby, there would be no reasonable way for Southwest to significantly improve its common equity ratio (despite a continuation of no increase in the common dividend). Consequently, given Mr. Hill's recommendation, such a requirement would, in my opinion, amount to extortion.

IV. RESPONDING TO COMMENTS ON COMPANY TESTIMONY

A. Response to Mr. Hill's Comments

Q.30 Also on page 41 of his testimony at lines 14-18, Mr. Hill states that "A central flaw in all of the analyses performed by Company witness Hanley. . . is that they all depend, in a fundamental way, on beta. The Company's Risk Premium CAPM and Comparable Earnings analyses all use beta as a measure of relative risk and return." Please comment.

A.30 First, all of the analyses performed by me do not rely upon beta. My DCF analysis does not utilize beta in any way. Regarding the other cost of common equity models

which I employ, Mr. Hill is only partially correct because much of my RP analysis does not rely upon a beta adjustment. A beta adjustment was made only to the long-term historical and forecasted market equity risk premiums as shown on Exhibit __ (FJH-11), Sheet 6. In contrast, it is shown on Exhibit __ (FJH-11), Sheet 8 that the average equity risk premium over A rated public utility bonds was derived from a study that had absolutely nothing to do with beta. As shown on Line 5 of Sheet 8, the average adjusted equity risk premiums over Baa rated and A rated public utility bonds were 3.62% and 4.14%, respectively. If I had limited my analysis to those average equity risk premia of 3.62% and 4.14% (that had nothing to do with beta), the resultant risk premium derived common equity cost rate would have been 10.70%/10.86% (7.08%/6.72% prospective Baa/A rated bond yield + 3.62%/4.14%), some 124/136 basis points greater than Mr. Hill's recommended common equity cost rate of 9.50%.

The CAPM is a beta-oriented model. Beta, however, is a principal statistic used by investors and provided by financial publications such as Value Line Investment Survey, who prominently displays beta at the top of each of its reports in the same box along with timeliness, safety, and technical rankings. As discussed supra, on average approximately 52%-53% of all common shares of the companies in my proxy groups of LDCs (and approximately 53% of the common shares of Mr. Hill's proxy group of eleven LDCs, based on data from Sheet 2 of Exhibit __ (FJH-23), are owned by individuals who would be inclined to rely upon Value Line Investment Survey because of its affordability and easy accessibility on a reference basis in most libraries. Moreover, Mr. Hill himself relies heavily upon Value Line.

In addition, Dr. Myron Gordon, cited by Mr. Hill for authority, as discussed supra, has stated that "beta is a good, measurable form of risk; everybody on the street uses it more or less."

My CEM is only *partially* dependent on beta. I find it ironic that Mr. Hill, who believes that only the DCF model accurately reflects the cost of equity because investors' knowledge and assessment of all risks are impounded in market prices, cannot accept the fact that my comparable non-price regulated domestic companies were chosen based upon statistics *derived from regression analyses of market prices paid by investors for the securities,* namely betas and residual standard deviations (standard errors of the estimate). The market prices reflect investors' assessment of all risks, both diversifiable and non-diversifiable. Thus, for the reasons described in my direct testimony, at pages 49-51, my CEM reflects all systematic (non-diversifiable) and unsystematic (diversifiable) risks. Consequently, the selected companies are comparable to Southwest and my proxy groups of LDCs.

Q.31 On page 41, lines 23-25 of his testimony, Mr. Hill states "In other words, the Company places more weight on the results of the analyses which are less reliable (i.e., beta-adjusted Risk Premium, CAPM and Comparable Earnings) than on his more reliable DCF analysis." Please comment.

A.31 Mr. Hill is incorrect. I have not weighted more heavily the results of the other models vis-à-vis the DCF model for Southwest and my proxy groups of LDCs. Shown on Exhibit __ (FJH-1), Sheet 2 are the indicated common equity cost rates before investment risk adjustment based on Southwest and each of my two proxy groups. It can be readily determined that the cost rates shown on line 5 are an average, i.e., the

result of *equal weight given to all four models*, i.e., DCF, RP, CAPM, and CEM on lines 1 through 4 for the two proxy groups of LDCs. In my direct testimony, I have shown why no model should receive sole or even primary weight; that the financial literature is in full support of the EMH which confirms that investors are fully aware of all of the models and therefore utilize all of them in formulating their required common equity cost rates.

As a matter of fact, the authors Copeland, Koller and Murrin, upon whom Mr. Hill relied for authority in Southwest's last rate case in Docket No. G-01551A-00-0309, as discussed supra, explicitly state that the DCF model is conceptually flawed and gives incorrect results. Mr. Hill's criticism is without merit.

Q.32 At pages 43 and 44 of his testimony, Mr. Hill cites fault finding comments made by Charles F. Phillips regarding the CAPM and the RPM and notes that Dr. Morin devotes five chapters to the DCF. Please comment.

A.32 The citation from Phillips shown on page 22 of my direct testimony is in reference to the DCF only because of the significant reliance placed upon the DCF by rate of return witnesses for various commissions and offices of consumer advocates as well as regulatory commissions themselves in authorizing rates of return on common equity. Nevertheless, the Phillips' citations included in Mr. Hill's testimony serve to support the use of multiple cost of common equity models in that all of these models have conceptual and application flaws in them as noted by Copeland, Koller and Murrin supra. Therefore, consistent with the EMH as also discussed supra it is imperative that multiple cost of common equity models be relied upon in arriving at a conclusion of common equity cost rate.

In fact, Dr. Morin, whom Mr. Hill cites for authority, devotes Chapter 9 of Regulatory Finance – Utilities' Cost of Capital, entitled "Reflections on Cost of Capital Methodology" to the following topics: Sole Reliance on the DCF Methodology, Reservations on DCF, Use of Multiple Methods, Financial Integrity, and DCF and Judgment and the DCF Method. Dr. Morin opens the chapter with the following:[13]

> *While the DCF model is presently fashionable in regulatory proceedings,* although not nearly as much in financial theory circles, uncritical acceptance *of the standard DCF equation vests the model with a degree of accuracy that simply is not there.* (italics added for emphasis) (p. 231)
>
> * * *
>
> Notwithstanding the fundamental thesis that several methods and/or variants of such methods should be used in measuring equity costs, the DCF methodology can be particularly fragile in a given capital market environment. *Two reservations concerning the application of the DCF method are in order. The first reservation concerns the applicability of the DCF model to utility stocks in general at this time in the current capital market environment. The second reservation concerns the estimation of the expected growth component required by the DCF model.* (italics added for emphasis) (p. 232)
>
> * * *
>
> *When measuring equity costs, which essentially deal with the measurement of investor expectations, no one single methodology provides a foolproof panacea. If the cost of equity estimation process is limited to one methodology, such as DCF, it may severely bias the results . . . All the market data and financial theory available at the time should be used in making an estimate.* (italics added for emphasis) (p. 238)
>
> * * *
>
> *It is clear from the material of the four chapters that have dealt with the DCF method that the permutations and combinations of estimates based on alternate time periods, measures, companies, models, and statistical methodology are unbounded. The only solid generalization about DCF is that the final cost of equity recommendation is a judgment based on a wide variety of data and techniques.* The important point is that judgmental estimates of

[13] Id., at p. 231.

> equity cost rest on sound factual economic logic. Plausible and defensible DCF estimates within a narrow range can be developed, provided the tools of this and previous chapters are used intelligently and objectively . . . Other cost of capital estimation techniques must be employed as an additional check on the reliability and reasonableness of the DCF estimate. These methods are the subject of subsequent chapters. (italics added for emphasis) (pp. 243-244)

It should be clear then, that notwithstanding devoting five chapters to the DCF model, Dr. Morin, cited by Mr. Hill for authority, believes that the DCF should not be relied upon exclusively when arriving at a cost rate of common equity, but rather, that consistent with the EMH, multiple methods should be employed. Moreover, it is clear that due to the vast range of judgments to analysts, the range of estimated DCF cost rates is unbounded (Morin, pp. 243-244 supra). Thus, the DCF method should not be assumed to reflect an undeserved level of precision.

Q.33 At pages 45-46 of his testimony, Mr. Hill discusses the example which you presented in Exhibit __ (FJH-6) (and discuss on pages 27-28 of your direct testimony) and suggests errors in your conclusions. Can you respond to Mr. Hill's criticism?

A.33 Yes. Mr. Hill states that my example "cannot exist in reality and is contrary to one of the most fundamental precepts in finance." Mr. Hill's premise is incorrect for two reasons.

First, investors would be aware that the regulatory commission would be allowing a 10.00% market-based rate of return (based upon the DCF methodology). Investors would also be aware that, under the rate base times rate of return paradigm, a market-based DCF cost rate would be applied to the book value of common equity. Investors also recognize that when they purchase a stock that the return that they expect is related to market value, i.e., on the price paid. *Consistent with the EMH,*

investors also know that regulators who rely solely upon a market-based DCF cost rate to establish the allowed common equity cost rate under the rate base times rate of return paradigm apply the market-based cost rate to a much lower book value (i.e., the common equity financed portion of an original cost rate base). *Consequently, when market values are well in excess of their book values, investors recognize that the utility likely will earn a lower return rate on book common equity.* Mr. Hill proves the point beginning at line 25 on page 45 and ending at line 1 on page 46, when he says: "Imagine a broker trying to sell as stock to an investor who requires a 10% return. 'I've got a stock for you that's going to pay a 10% return on a $13.33 per share book value - in other words one share will get you $1.33, but each share will cost you $24. What do you say?' No investor would knowingly pay $24 for a stock that will earn $1.33 when they require a 10% return for that type of stock." That's exactly my point. Namely, an investor who pays $24 for a stock an expects a 10% return on the price paid, i.e. $24 * 10% or $2.40 and not $1.33. A DCF market-derived cost rate of common equity capital underestimates the investors' required return when it is applied to the book value of stock which is trading at a market-to-book ratio exceeding one. (See statements from Phillips and Bonbright, supra, which confirm that regulatory actions, while they can influence market prices, do not control those prices.)

Second, Mr. Hill is also incorrect because there has never been any correlation between market-to-book ratios and the rates of earnings on book common equity of non-price regulated, competitive entities for which regulation is a substitute, as discussed supra and shown in Exhibit __ (FJH-16).

In view of the foregoing, Mr. Hill's contention is incorrect and should be disregarded.

Q.34 At page 47 of his testimony at lines 9-12, Mr. Hill notes that "The expected return on book value for gas utilities is currently 11% according to Value Line." Do you have any comment?

A.34 Yes. Presumably the 11% Value Line expected return on book value for gas utilities is for Value Line's Natural Gas (Distribution) Industry as of March 18, 2005 the date of the Value Line Ratings & Reports relied upon by Mr. Hill as noted on page 4 of Schedule 3 of Exhibit __(SGH-1). There are four problems with Mr. Hill's comparison of the 11% expected return and my recommended common equity cost rates of 11.95%/11.70%, if the CMT is not approved/approved, respectively. First, Value Line's expected return on book equity is based upon end-of-period equity, while the more appropriate expected return on book equity should be based upon average book equity, which is a higher rate of return. Second, my recommendation was derived based, in part, upon Value Line Ratings & Reports dated September 17, 2004, so there is a six-month timing mismatch in Mr. Hill's comparison. Third, Value Line's expected return of 11% cited by Mr. Hill is for the Value Line's Natural Gas (Distribution) Industry Composite which, at March 18, 2005 consisted of 18 companies, in contrast to my two proxy groups of five and eleven LDCs or his proxy group of eleven LDCs. As can be gleaned from the information shown on Sheets 3-13 of Exhibit __(FJH-10), the average expected return on book equity for my proxy group of five LDCs was 12.2% and for my proxy group of eleven Value Line LDCs was 12.1% as of September 17, 2004. Keeping in mind that these end-of-period

expected returns on book common equity underestimate the return on average book common equity, expected returns of 12.2% and 12.1% demonstrate the reasonableness of my recommended common equity cost rate of 11.95%, if the CMT is not approved or 11.70% if the CMT is approved. Fourth, it should be noted that, even if his comparison were valid, an expected return on book equity of 11.0% is closer to my recommended common equity cost rates than to Mr. Hill's recommended 9.5% common equity cost rate. Finally, it should be noted that the latest Value Line Investment Survey, June 17, 2005, *available one month before the filing date of Mr. Hill's direct testimony, shows a 12.5% expected return on book equity for the Natural Gas (Distribution) Industry.*

In addition, an expected return on book equity of 11% is consistent with *recent regulatory awards made to gas distribution companies.* As shown on Exhibit__(FJH-24) the average regulatory return on common equity awarded for all fully litigated cases for the period January 2003 through June 2005 was 10.91% relative to a 47.50% common equity ratio. The average authorized rate of return on common equity was 10.78% relative to a 47.85% for all awards including settlements/stipulations. The lowest awarded return on common equity was 9.9% based upon a settlement adopted in September 2003. Average regulatory awarded returns on common equity of 10.85% and 10.91% are, once again, closer to my recommended common equity cost rate of 11.95%/11.70% if the CMT is not/is approved, respectively, than to Mr. Hill's 9.50% recommendation. In fact, Mr. Hill's 9.50% is lower than <u>any</u> regulatory authorized return on common equity to a gas distribution utility since June 2003.

In view of all the foregoing, Value Line's expected returns on book equity for the Natural Gas (Distribution) Industry and for my proxy groups of LDCs as well as recent regulatory awarded returns on common equity confirm the reasonableness of my recommended common equity cost rates.

Q.35 At page 47 of his testimony, Mr. Hill discusses your response to Staff-SH-12-24. In an attempt to discredit your position regarding the DCF model, he suggests that you acknowledged that you "...did not state that the DCF cost rate overstated the cost of common equity..." during the early 1980's when market prices of utilities were below book value. Is his characterization of your response to Staff-SH-12-24 complete and correct?

A.35 No. Mr. Hill's partial quoting of my response to Staff-SH-12-24 is incomplete and suggests an erroneous conclusion. In order that the record may be fully accurate, I have designated my response to Staff-SH-12-24 as Exhibit __ (FJH-25). As can by seen by reference to Exhibit __ (FJH-25), I explain why I did not specifically state that the DCF cost rate overstated the cost of common equity capital, i.e., *because there was no decided trend among regulatory agencies for exclusive use of the DCF model.* I stated that I implicitly recognized the fact that the DCF model overstated the cost of common equity at that time and did so by avoiding exclusive reliance upon the DCF model. This approach is totally consistent with the approach that I use at this time whereby I rely upon a number of cost of equity models and avoid placing primary or exclusive reliance on any single cost of equity model.

Q.36 At page 48 of his testimony, lines 8-18, Mr. Hill discusses his position regarding the fallibility of the DCF. Please comment.

A.36 I commend Mr. Hill for acknowledging that there may be problems with the application of the DCF in regulatory proceedings and that he believes "it is better to rely on more information rather than less in attempting to estimate the cost of equity capital." His position is fully consistent with the literature discussed supra, which recommends the reliance upon a number of properly applied cost of common equity models, such as the RPM, CAPM and CEM, which are in widespread use rather than discredited, out of use, models such as Mr. Hill's MEPR and MTB analyses.

Q.37 At page 49 of his testimony, Mr. Hill, in criticizing your DCF growth rate analysis, states that it is "mechanistic in that it simply plugs selected projected data into a formula..." How do you respond to that criticism?

A.37 In the current economic and regulatory environment, which has surely heightened investors' perceptions of risk, my approach is hardly mechanistic. There is little value to historical growth rate data because investors recognize that the uncertain competitive environment of the future requires greater reliance upon analysts' forecasted growth rates in earnings per share. Moreover, as discussed supra, Dr. Myron Gordon, whom Mr. Hill cites for authority, has recognized that analysts' forecasted rates of growth in earnings per share are much more highly significant to investors in the pricing of common stocks. Dr. Gordon also recognized the shortcomings of his original "Gordon model" which relied upon br (retention growth). The br + sv growth formula (retention plus accretion or diminution attributable to the sales of new common stock), utilized by Mr. Hill, is simply an extension of the retention growth model which Dr. Gordon subsequently

acknowledged is a "serious limitation". In view of the foregoing, Mr. Hill's characterization of my approach to growth rate is completely without merit.

Q.38 At page 50 of his testimony, lines 8 and 9, Mr. Hill states that you "simply elected to ignore the low results and report only the high results" of your DCF analysis. Please comment.

A.38 Mr. Hill is incorrect. As discussed on page 32 of my direct testimony, I discussed the exercise of judgment based upon expected increasing interest rates, and hence capital costs, as well as comparing the individual companies' DCF results with recent regulatory awards, the lowest of which was and remains 9.9%. The only difference between my judgment in relying only upon DCF results greater than 9.9% and Mr. Hill's exercise of judgment in arriving at the individual company growth rates for his DCF analysis, is that my judgment is based upon real world observations, i.e., increasing capital costs and recently awarded returns on common equity.

Q.39 On page 50, lines 26-28 of his testimony, with regard to the RP methodology, Mr. Hill states, "The real issue with a risk premium analysis is determining the premium with any precision. *It is not a directly observable phenomenon and* must be estimated." Please comment.

A.39 Mr. Hill's comment is either wishful thinking or expresses considerable naiveté. Analysts have no choice but to observe accounting measures of growth in order to estimate growth for inclusion in the DCF model. Moreover, analysts' estimates often vary widely proving that the growth component of the DCF model is no more a directly observable phenomenon than estimating the equity risk premium for use in the risk premium model. As Morin notes supra, with regard to the DCF method:

"...the permutations and combinations of estimates. . . are unbounded." Mr. Hill's comments simply highlight the need to avoid giving primary or exclusive weight to a single model; rather all of the models should be utilized.

Q.40 At page 52, lines 5-6 of his testimony, Mr. Hill cites Jeremy Siegel, Stocks for the Long Run, 1994, Irwin, Chicago IL as supporting a "more normal risk premium between stocks and bonds ranges from 2%-3%. Please comment.

A.40 Mr. Hill's comparison is misleading, because the 2%-3% equity risk premium range cited by Siegel is a real equity risk premium range, i.e., after the exclusion of inflation. In contrast, the equity risk premiums utilized by both Mr. Hill and myself are nominal equity risk premiums, i.e., including inflation. Hence, there can be no meaningful comparison. In addition, the 2%-3% equity risk premium range cited by Siegel was calculated in a different manner than those which I utilized. Siegel's equity risk premium range is based upon historical equity risk premiums calculated as 30-year centered geometric moving averages, while the equity risk premiums I utilized are calculated as the arithmetic mean of the annual total stock returns less the arithmetic mean annual yield of corporate bonds / annual income return on U.S. Treasury Bonds from 1926-2003. Therefore, there can be no meaningful comparison between the Siegel 2%-3% equity risk premium range and the arithmetic mean equity risk premiums I utilized.

Q.41 Also, on page 52, at lines 11-14 of his testimony, Mr. Hill cites a study by Ibbotson and Chen which "indicates that the expected market risk premium . . . is 4% to 6%". Please comment.

A.41 Three points need to be made regarding this article. First, notwithstanding the conclusions cited by Mr. Hill, Ibbotson Associates in its most recent Yearbook, Stocks, Bonds, Bills and Inflation – Valuation Edition 2005 Yearbook, published two years after the Ibbotson and Chen article, recommends that the arithmetic mean equity risk premium be used for cost of capital purposes, as discussed supra, and noted on Sheets 4 through 6 of Exhibit ___(FJH-19).

Second, the arithmetic mean equity risk premium recommended by Ibbotson Associates in its 2005 Yearbook represents actual long-term results, i.e., equity risk premiums, rather than those forecasted from econometric models which can be subject to many types of errors.

Third, it should be noted that the purpose of the article was not to compare an expected equity risk premium based upon econometric models with those based upon the arithmetic mean of long-term results. Rather, Ibbotson and Chen conclude the article by stating:

> Contrary to several recent studies on the equity risk premium declaring the forward-looking premium to be close to zero or negative, *we found the long-term supply of the equity risk premium to be only slightly lower than the straight historical estimate.* (italics added for emphasis) (pp. 96-97)

Q.42 At pages 53-54 of his testimony, Mr. Hill criticizes your use of beta in the RP analysis and suggests it has no meaning. Please comment.

A.42 As discussed in my direct testimony, the bond rating process reflects all elements of diversifiable, unsystematic risk, i.e., company-specific risk. The use of beta as a means of allocating non-diversifiable systematic market risk is logical and proper. Moreover, if it is suitable to *allocate* total return on the market minus a risk-free rate

in the CAPM, it is certainly proper to use beta in the RP model as a means to *allocate* total market equity risk premium. Moreover, such a risk adjustment is discussed in the financial literature, e.g., Roger A. Morin, whom Mr. Hill cites for authority, in his book Regulatory Finance – Utilities' Cost of Capital, Public Utilities Reports, Inc., 1994, at page 283. Morin states:

> ...the beta risk measure for the subject utility or the beta of a group of equivalent risk companies can serve as an adjustment device. The market risk premium, RP_m, is multiplied by the beta of the utility, β_i, to find the utility's own Risk Premium, RP_I
>
> $$RP_i = \beta_i RP_m$$
>
> And the beta-adjusted risk premium is added to the bond yield to arrive at the utility's own cost of equity capital.

Q.43 At page 54, lines 16-23 of his testimony, Mr. Hill suggests that you take beta out of its theoretical context by using it in your risk premium analysis. Please comment.

A.43 Mr. Hill is incorrect. As discussed supra, beta is a logical means of allocating the market risk premium because of its relativity to the market as a whole and is discussed in the financial literature. The EMH suggests, therefore, that investors are aware of this. Moreover, the CAPM, while different from, is nevertheless a form of the risk premium model as discussed at page 33 of my direct testimony. Also, in my application of the risk premium model, I use the expected company/group specific bond yields which reflect all diversifiable risks via the bond rating process as discussed on pages 13-14 of my direct testimony and as revealed within Exhibit __ (FJH-2), Sheets 3 through 9.

As a result of the foregoing, Mr. Hill's contention is incorrect.

Q.44 At page 55, lines 19-20 of his testimony, Mr. Hill suggests that your ECAPM is overstated because "...the use of adjusted betas makes the same kind of adjustment as does Mr. Hanley's 'empirical' CAPM..." Is his criticism valid?

A.44 No. Mr. Hill apparently is confused about the ECAPM. Adjusted betas are used in the application of the traditional CAPM. The purpose for using adjusted betas is to account for regression analysis bias, i.e., the tendency of low beta stocks to rise toward one and of high beta stocks to decline toward one. The adjustment process to beta, which is on the x-axis (horizontal) takes care of the regression bias. The ECAPM is a return adjustment which is on the y-axis (vertical).

On this very subject, I have been in communication with Dr. Morin, whom Mr. Hill cites for authority, via e-mail. That correspondence, including Dr. Morin's response, is contained in Exhibit __ (FJH-26), which consists of four sheets. Dr. Morin's email communication is consistent with Dr. Morin's testimony before the Illinois Commerce Commission which is a matter of public record in Docket No. 01-044 re: MidAmerican Energy Company which is attached as Exhibit___(FJH-27) consisting of four sheets. The information in Exhibit___(FJH-26) and Exhibit ___(FJH-27) indicates that the ECAPM compensates for CAPM's inherent bias by ascribing a higher intercept and flatter slope to CAPM. It is not an attempt to increase beta. Dr. Morin states in both Exhibit___(FJH-26) and Exhibit___(FJH-27):

> There are two distinct separate issues involved when implementing the CAPM. First, given the validity of the standard CAPM, what is the best proxy for expected beta? Second, and more fundamentally, does the standard form of the CAPM provide the best explanation of the risk-return relationship observed on capital markets?

Regarding the standard CAPM, Dr. Morin states in Exhibit___(FJH-26):

> There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. The results of the tests support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The contradictory finding is that the risk-return tradeoff is not as steeply sloped as the predicted CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. This is one of the most well-known results in finance. A CAPM-based estimate of cost of capital underestimates the return required from low-beta securities and overstates the return from high-beta securities, based on the empirical evidence. The empirical form of the CAPM refines the standard form of the CAPM to account for this phenomenon.
>
> Thus, I do not share the view that the ECAPM is equivalent to a beta adjustment. For utility stocks with betas less than one, the CAPM understates the return. The ECAPM allows for the CAPM's inherent bias by ascribing a higher intercept and flatter slope to the CAPM. The ECAPM is a return (Y-axis, vertical axis) adjustment. It is not a beta risk (X-axis, horizontal) adjustment. <u>The ECAPM is not an attempt to increase the beta estimate, which would be a horizontal x-axis adjustment. The ECAPM is a return adjustment rather than a risk adjustment</u>. (underlining added for emphasis)

And in Exhibit___(FJH-27), regarding the standard CAPM Dr. Morin states:

> A myriad of empirical tests of the CAPM have shown that the risk-return tradeoff is not as steeply sloped as that predicted by the CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. This is one of the most widely known empirical findings of the finance literature. This literature is summarized in Chapter 13 of Dr. Morin's book [<u>Regulatory Finance</u>, Public Utilities Report [sic] Inc., Arlington, VA, 1994].

As indicated previously, Dr. Morin is a well-known finance professor and textbook author, specializing in regulatory finance. Dr. Morin also notes that regulatory support for the ECAPM can be found in the New York Public Service Commission's Generic Financing Docket, Case 91-M-0509.

Mr. Hill has confused the slope of the Security Market Line (SML) with beta. Eugene F. Brigham, finance professor emeritus and the author of many financial

textbooks, including the one used in the Certified Rate of Return Analysts program of the Society of Utility and Regulatory Financial Analysts, of which both Mr. Hill and myself are members and are Certified Rate of Return Analysts, states[14]:

> The slope of the SML reflects the degree of risk aversion in the economy – the greater the average investor's aversion to risk, then (1) the steeper is the slope of the line, (2) the greater is the risk premium for any risky asset, and (3) the higher is the required rate of return on risky assets.[12]
>
> [12]***Students sometimes confuse beta with the slope of the SML. This is a mistake.*** *As we saw earlier in connection with Figure 6-8, and as is developed further in Appendix 6A,* ***beta does represent the slope of a line but not the Security Market Line.*** This confusion arises partly because the SML equation is generally written, in this book and throughout the finance literature, as $k_i = R_F + b_i(k_M - R_F)$, and in this form b_i looks like the slope coefficient and $(k_M - R_F)$ the variable. It would perhaps be less confusing if the second term were written $(k_M - R_F)b_i$, but this is not generally done. (italics and bolding added for emphasis)

The point is that an ECAPM analysis utilizing adjusted betas is neither incorrect nor inconsistent with the financial literature.

Finally, in Order Nos. 151 and 110 dated November 27, 2002 in Docket Nos. P-97-4 and P-97-7 re: Trans Alaska Pipeline System and Tesoro Alaska Petroleum Company, also referenced supra, the RCA noted on page 146 that:

> Although we primarily rely upon Tesoro's recommendation, we are concerned, however, about Tesoro's CAPM analysis. Tesoro averaged the results it obtained from CAPM and ECAPM while at the same time providing empirical testimony [604 (footnote omitted)] that the ECAPM results are more accurate then [sic] traditional CAPM results. *The reasonable investor would be aware of these empirical results. Therefore,* ***we adjust Tesoro's recommendation to reflect only the ECAPM results.*** (italics and bolding added for emphasis)

Neither he nor the Tennessee Regulatory Authority which he cites gets it. Mr. Hill's criticism of the ECAPM is unfounded.

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[14] Eugene F. Brigham, Financial Management – Theory and Practice, 4th Ed., The Dryden Press, 1985, p. 203.

Q.45 At pages 56-58 of his testimony, Mr. Hill criticizes your comparable earnings analysis. Please address his criticisms.

A.45 My comparable earnings analysis is not beta oriented as suggested on page 58. It is based upon statistics derived from regression analyses of market prices of common stocks. The EMH confirms that the prices paid by investors reflect all relevant risks, i.e., business and financial, market (systematic) and non-market (unsystematic) risks. Thus, the use of betas (indicators of market risk) and standard errors of the regressions (indicators of all non-market risk) is entirely logical and consistent with well-founded financial precepts which are supported by the academic literature which confirms that market prices reflect all elements of risk. See especially Exhibit ___(FJH-28) which is an excerpt from Investments: Analysis and Management, Jack Clark Francis, McGraw-Hill, Inc. 1991, pp. 273-275. The betas derived therefrom reflect non-diversifiable market, or systematic, risk. The residual standard deviations (or standard errors of the regression analyses from which the betas were derived), reflect all of the remaining non-market, or company-specific risks. Thus, my selected comparable domestic non-price regulated companies are truly comparable in total risk to my proxy groups of gas distribution companies. Mr. Hill's contentions are incorrect and should be disregarded.

V. CONSERVATION MARGIN TRACKER – IMPLICATION ON THE COST OF COMMON EQUITY

Q.46 Mr. Hanley, is it your understanding that the recommendations of both Staff and RUCO are opposed to the adoption of the Company's requested CMT?

A.46 Yes, it is.

A.47 What are the implications on the cost of common equity if the Commission should disallow the Company's requested CMT?

A.47 As indicated in my direct testimony, the cost rate of common equity to Southwest is greater, or 11.95%, if the requested CMT is not allowed. For the reasons provided at pages 55-56 of my direct testimony, I believe that the allowance by the Commission of the requested CMT would reduce the cost rate by 25 basis points or 0.25%, to 11.70%.

Southwest's risks are great and even greater without the protection which would be afforded through implementation of the requested CMT. Company Witnesses Gieseking and Congdon address this issue in response to Staff and RUCO's proposed rate designs. However, in view of Staff and RUCO's rate design positions, the recommended common equity cost rates of Messrs. Hill and Rigsby are even more grossly understated.

Q.48 Please explain why.

A.48 Mr. Hill provides no specific recognition of Southwest's greater risks, which I discussed at page10, line 15 through page 13, line 2 and page 53, line 7 through page 54, line 23 of my direct testimony vis-à-vis the proxy LDCs. Moreover, Mr. Rigsby reduces his finding by 0.25% to reflect the Company's requested CMT despite the fact that the RUCO position is opposed to it. Therefore, Mr. Rigsby's recommendation is understated by 0.25% if the CMT is not approved. Of course, the recommendations of both Mr. Hill and Mr. Rigsby are also understated for all the reasons discussed supra.

Q.49 Does that conclude your rebuttal testimony?

A.49 Yes.

BEFORE THE

ARIZONA CORPORATION COMMISSION

EXHIBITS
(FJH-16) THROUGH (FJH-28)

TO ACCOMPANY THE

REBUTTAL TESTIMONY

OF

FRANK J. HANLEY, CRRA
PRESIDENT
AUS CONSULTANTS - UTILITY SERVICES

CONCERNING

COMMON EQUITY COST RATE

RE: SOUTHWEST GAS CORPORATION

DOCKET NO. G-01551A-04-0876

Southwest Gas Corporation
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of Frank J. Hanley

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Southwest Gas Corporation
Market-to-Book Ratios, Earnings / Book Ratios and Inflation for Standard & Poor's Industrial Index and the Standard & Poor's 500 Composite Index from 1947 through 2004

Year	Market-to-Book Ratio (1)		Earnings/ Book Ratio (2)				
	S&P Industrial Index (3)	S&P 500 Composite Index (3)	S&P Industrial Index (3)	S&P 500 Composite Index (3)	Inflation (4)	Earnings / Book Ratio - Net of Inflation	
1947	1.23 %	NA	13.0 %	NA	9.0 %	4.0 %	NA
1948	1.13	NA	17.3	NA	2.7	14.6	NA
1949	1.00	NA	16.3	NA	(1.8)	18.1	NA
1950	1.16	NA	18.3	NA	5.8	12.5	NA
1951	1.27	NA	14.4	NA	5.9	8.5	NA
1952	1.29	NA	12.7	NA	0.9	11.8	NA
1953	1.21	NA	12.7	NA	0.6	12.1	NA
1954	1.45	NA	13.5	NA	(0.5)	14.0	NA
1955	1.81	NA	16.0	NA	0.4	15.6	NA
1956	1.92	NA	13.7	NA	2.9	10.8	NA
1957	1.71	NA	12.5	NA	3.0	9.5	NA
1958	1.70	NA	9.8	NA	1.8	8.0	NA
1959	1.94	NA	11.2	NA	1.5	9.7	NA
1960	1.82	NA	10.3	NA	1.5	8.8	NA
1961	2.01	NA	9.8	NA	0.7	9.1	NA
1962	1.83	NA	10.9	NA	1.2	9.7	NA
1963	1.94	NA	11.4	NA	1.7	9.7	NA
1964	2.18	NA	12.3	NA	1.2	11.1	NA
1965	2.21	NA	13.2	NA	1.9	11.3	NA
1966	2.00	NA	13.2	NA	3.4	9.8	NA
1967	2.05	NA	12.1	NA	3.0	9.1	NA
1968	2.17	NA	12.6	NA	4.7	7.9	NA
1969	2.10	NA	12.1	NA	6.1	6.0	NA
1970	1.71	NA	10.4	NA	5.5	4.9	NA
1971	1.99	NA	11.2	NA	3.4	7.8	NA
1972	2.16	NA	12.0	NA	3.4	8.6	NA
1973	1.96	NA	14.6	NA	8.8	5.8	NA
1974	1.39	NA	14.8	NA	12.2	2.6	NA
1975	1.34	NA	12.3	NA	7.0	5.3	NA
1976	1.51	NA	14.5	NA	4.8	9.7	NA
1977	1.38	NA	14.6	NA	6.8	7.8	NA
1978	1.25	NA	15.3	NA	9.0	6.3	NA
1979	1.23	NA	17.2	NA	13.3	3.9	NA
1980	1.31	NA	15.6	NA	12.4	3.2	NA
1981	1.24	NA	14.9	NA	8.9	6.0	NA
1982	1.17	NA	11.3	NA	3.9	7.4	NA
1983	1.45	NA	12.2	NA	3.8	8.4	NA
1984	1.46	NA	14.6	NA	4.0	10.6	NA
1985	1.67	NA	12.2	NA	3.8	8.4	NA
1986	2.02	NA	11.5	NA	1.1	10.4	NA
1987	2.50	NA	15.7	NA	4.4	11.3	NA
1988	2.13	NA	19.0	NA	4.4	14.6	NA
1989	2.56	NA	18.5	NA	4.7	13.8	NA
1990	2.63	NA	16.3	NA	6.1	10.2	NA
1991	2.77	NA	10.8	NA	3.1	7.7	NA
1992	3.29	NA	13.0	NA	2.9	10.1	NA
1993	3.72	NA	15.7	NA	2.8	12.9	NA
1994	3.73	NA	23.0	NA	2.7	20.3	NA
1995	4.06	2.66	22.9	16.1 %	2.5	20.4	13.6 %
1996	4.79	3.02	24.8	16.9	3.3	21.5	13.6
1997	5.88	3.54	24.6	16.4	1.7	22.9	14.7
1998	7.13	4.22	21.3	14.8	1.6	19.7	13.2
1999	8.15	4.88	25.2	17.1	2.7	22.5	14.4
2000		4.61	23.9	15.6	3.4	20.5	12.2
2001	NA	3.54	NA	5.7	1.6	NA	4.1
2002	NA	2.97	NA	8.7	2.4	NA	6.3
2003	NA	2.77 P (5)	NA	14.2	1.9	NA	12.3
2004	NA	3.05 (6)	NA	16.1	3.3	NA	12.8
Average	2.24	3.52	14.9 %	14.2 %	3.9 %	10.9 %	11.7 %

P = Preliminary

Notes: (1) Market-to-Book Ratio equals average of the high and low market price for the year divided by the average book value.

(2) Earnings/Book equals earnings per share for the year divided by the average book value

(3) On January 2, 2001 Standard & Poor's released Global Industry Classification Standard (GICS) price indexes for all Standard & Poor's U.S. indexes. As a result, all S&P indexes have been calculated with a common base of 100 at a start date of December 31, 1994. Also, the GICS Industrial sector is not comparable to the former S&P Industrial Index and data for the former S&P

(4) As measured by the Consumer Price Index (CPI).

(5) *Market-to-Book Ratio for 2003 is based upon an estimated book value based the actual* average price and the estimated book value provided by Standard & Poor's in the Standard & Poor's Statistical Service, Current Statistics, June 2005., p.29.

(6) Market-to-Book Ratio for 2004 based upon an estimated book value calculated by adding the 2004 earnings per share to the 2003 book value per share and then subtracting the 2004 dividends per share (four quarter total reported for the third quarter 2004).

Source of Information: Standard & Poor's Security Price Index Record, 2000 Edition, p. 40
Standard & Poor's Statistical Service, Current Statistics, August 2001, p. 29
Standard & Poor's Statistical Service, Current Statistics, January 2001, p. 36
Standard & Poor's Current Statistics, May 2004, p. 29 & June 2005, p. 29.
Standard & Poor's Compustat Services, Inc PC Plus Research Insight Data Base

Southwest Gas Corporation
ACC Staff Witness Hill's BR + SV Growth Rates
Corrected to Reflect Recent Market-to-Book Ratios

COMPANY	br (1)	+	sv=g*(M/B/ - 1) (1)		=	g
ATG	5.25%		1.00%	(1.71 - 1)		5.96%
ATO	4.25%		5.00%	(1.31 - 1)		5.80%
CGC	4.75%		0.75%	(1.63 - 1)		5.22%
LG	4.25%		1.00%	(1.24 - 1)		4.49%
NJR	6.25%		-0.50%	(2.11 - 1)		5.70%
NWN	4.25%		1.25%	(1.60 - 1)		5.00%
PGL	4.00%		0.00%	(1.67 - 1)		4.00%
PNY	4.25%		1.50%	(1.97 - 1)		5.71%
SJI	5.25%		2.00%	(2.04 - 1)		7.33%
WGL	4.50%		0.00%	(1.71 - 1)		4.50%
SWX	5.75%		2.50%	(1.19 - 1)		6.23%
Average						5.45%
ACC Staff Witness Hill's BR + SV Growth Rate (2)						5.12%
Understatement of Mr. Hill's BR + SV Growth Rate						0.33%

Average Market-to-Book Ratio = 1.65

ATG	=	AGL Resources
ATO	=	Atmos Energy Corporation
CGC	=	Cascade Natural Gas Corporation
LG	=	Laclede Group
NJR	=	New Jersey Resources Corp.
NWN	=	Northwest Natural Gas Co.
PGL	=	Peoples Energy Corp.
PNY	=	Piedmont Natural Gas Company
SJI	=	South Jersey Industries, Inc.
WGL	=	WGL Holdings
SWX	=	Southwest Gas

g* =exprected growth in number of shares outstanding

Notes: (1) From Exhibit__(SGH-1), Schedule 4, page 1 of 2.
(2) From Exhibit__(SGH-1), Schedule 4, page 2 of 2.

Southwest Gas Corporation
ACC Staff Witness Hill's DCF Cost of Equity Capital
Corrected to Reflect Correctly Calculated BR + SV Growth Rates

	1	2	3
COMPANY	DIVIDEND YIELD (1)	GROWTH RATE (2)	DCF COST OF EQUITY CAPITAL (3)
ATG	3.60%	5.96%	9.56%
ATO	4.58%	5.80%	10.38%
CGC	5.04%	5.22%	10.26%
LG	4.90%	4.49%	9.39%
NJR	3.06%	5.70%	8.76%
NWN	3.78%	5.00%	8.78%
PGL	5.35%	4.00%	9.35%
PNY	3.92%	5.71%	9.63%
SJI	3.03%	7.33%	10.36%
WGL	4.35%	4.50%	8.85%
SWX	3.30%	6.23%	9.53%
Average			9.53%
ACC Staff Witness Hill's DCF Cost of Equity Capital (4)			9.20%
Understatement of Mr. Hill's DCF Cost of Equity Capital			0.33%

Notes:
(1) From Exhibit___(SGH-1), Schedule 5.
(2) From Sheet 1 of this Exhibit
(3) Column 1 + Column 2
(4) From Exhibit__(SGH-1), Schedule 6.

Southwest Gas Corporation
RUCO Witness Rigsby's BR + SV Growth Rates
Corrected to Reflect Recent Market-to-Book Ratios

STOCK SYMBOL	COMPANY	INTERNAL GROWTH (br) (1)	+	SHARE GROWTH (2)	MARKET-TO-BOOK - 1 (2)	=	DIVIDEND GROWTH
ATG	AGL Resources, Inc.	6.00%		0.50%	(1.89 - 1)		6.45%
CGC	Cascade Natural Gas Corporation	4.00%		1.00%	(1.59 - 1)		4.59%
KSE	Keyspan Corp.	4.00%		2.00%	(1.49 - 1)		4.98%
LG	Laclede Group, Inc.	3.00%		1.50%	(1.55 - 1)		3.83%
GAS	Nicor, Inc.	2.75%		0.25%	(2.31 - 1)		3.08%
NWN	Northwest Natural Gas Co.	5.00%		1.00%	(1.72 - 1)		5.72%
PGL	Peoples Energy Corp.	3.00%		1.75%	(1.83 - 1)		4.45%
PNY	Piedmont Natural Gas Company	4.00%		0.25%	(2.10 - 1)		4.28%
SJI	South Jersey Industries, Inc.	6.00%		2.00%	(2.21 - 1)		8.42%
WGL	WGL Holdings	5.75%		0.25%	(1.86 - 1)		5.97%
Average							5.18%
RUCO Witness Rigsby's BR + SV Growth Rate (1)							4.76%
Understatement of Mr. Rigsby's BR + SV Growth Rate							0.42%

Notes: (1) From Schedule WAR-4, page 1 of 2.
(2) From Schedule WAR-4, page 2 of 2

Southwest Gas Corporation
RUCO Witness Rigsby's DCF Cost of Equity Capital
Corrected to Reflect Correctly Calculated BR + SV Growth Rates

STOCK SYMBOL	COMPANY	1 DIVIDEND YIELD (1)	2 GROWTH RATE (2)	3 DCF COST OF EQUITY CAPITAL (3)
ATG	AGL Resources, Inc.	3.44%	6.45%	9.89%
CGC	Cascade Natural Gas Corporation	4.86%	4.59%	9.45%
KSE	Keyspan Corp.	4.58%	4.98%	9.56%
LG	Laclede Group, Inc.	4.55%	3.83%	8.38%
GAS	Nicor, Inc.	4.66%	3.08%	7.74%
NWN	Northwest Natural Gas Co.	3.53%	5.72%	9.25%
PGL	Peoples Energy Corp.	5.11%	4.45%	9.56%
PNY	Piedmont Natural Gas Company	3.83%	4.28%	8.11%
SJI	South Jersey Industries, Inc.	2.90%	8.42%	11.32%
WGL	WGL Holdings	4.07%	5.97%	10.04%
Average				9.33%
RUCO Witness Rigsby's DCF Cost of Equity Capital (1)				8.91%
Understatement of Mr. Rigsby's DCF Cost of Equity Capital				0.42%

Notes: (1) From Schedule WAR-2
(2) From Sheet 1 of this Exhibit.
(3) Column 1 + Column 2

Stocks, Bonds, Bills, and Inflation

SBBI

Valuation Edition
2005 Yearbook

Ibbotson Associates

The Market Benchmark and Firm Size

Although not restricted to include only the 500 largest companies, the S&P 500 is considered a large company index. The returns of the S&P 500 are capitalization weighted, which means that the weight of each stock in the index, for a given month, is proportionate to its market capitalization (price times number of shares outstanding) at the beginning of that month. The larger companies in the index therefore receive the majority of the weight. The use of the NYSE "Deciles 1–2" series results in an even purer large company index. Yet many valuation professionals are faced with valuing small companies, which historically have had different risk and return characteristics than large companies. If using a large stock index to calculate the equity risk premium, an adjustment is usually needed to account for the different risk and return characteristics of small stocks. This will be discussed further in Chapter 7 on the size premium.

The Risk-Free Asset

The equity risk premium can be calculated for a variety of time horizons when given the choice of risk-free asset to be used in the calculation. The *Stocks, Bonds, Bills, and Inflation Yearbook* provides equity risk premia calculations for short-, intermediate-, and long-term horizons. The short-, intermediate-, and long-horizon equity risk premia are calculated using the income return from a 30-day Treasury bill, a 5-year Treasury bond, and a 20-year-Treasury bond, respectively.

Although the equity risk premia of several horizons are available, the long-horizon equity risk premium is preferable for use in most business-valuation settings, even if an investor has a shorter time horizon. Companies are entities that generally have no defined life span; when determining a company's value, it is important to use a long-term discount rate because the life of the company is assumed to be infinite. For this reason, it is appropriate in most cases to use the long-horizon equity risk premium for business valuation.

20-Year versus 30-Year Treasuries

Our methodology for estimating the long-horizon equity risk premium makes use of the income return on a 20-year Treasury bond; however, the Treasury currently does not issue a 20-year bond. The 30-year bond that the Treasury issued until recently is theoretically more correct due to the long-term nature of business valuation, yet Ibbotson Associates instead creates a series of returns using bonds on the market with approximately 20 years to maturity. The reason for the use of a 20-year maturity bond is that 30-year Treasury securities have only been issued over the relatively recent past, starting in February of 1977, and have since been discontinued by the Treasury.

Currently, the longest term security offered by the Treasury is 10 years. The same reason exists for why Ibbotson does not use the 10-year Treasury bond; that is, a long enough history of market data is not available for 10-year bonds. Ibbotson Associates has persisted in using a 20-year bond to keep the basis of the time series consistent.

Income Return

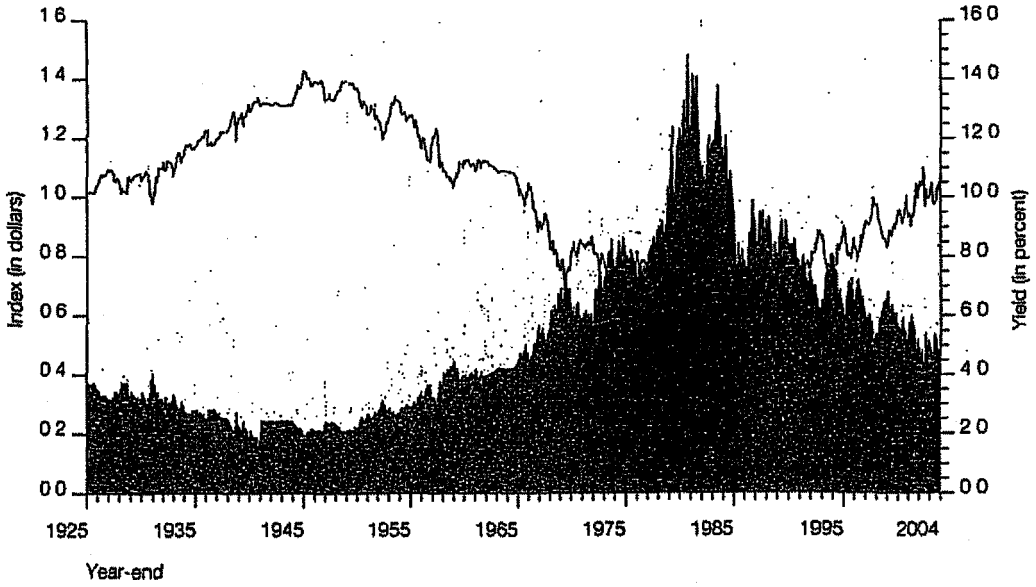
Another point to keep in mind when calculating the equity risk premium is that the income return on the appropriate-horizon Treasury security, rather than the total return, is used in the calculation. The total return is comprised of three return components: the income return, the capital appreciation

return, and the reinvestment return. The income return is defined as the portion of the total return that results from a periodic cash flow or, in this case, the bond coupon payment. The capital appreciation return results from the price change of a bond over a specific period. Bond prices generally change in reaction to unexpected fluctuations in yields. Reinvestment return is the return on a given month's investment income when reinvested into the same asset class in the subsequent months of the year. The income return is thus used in the estimation of the equity risk premium because it represents the truly riskless portion of the return.[2]

Yields have generally risen on the long-term bond over the 1926–2004 period, so it has experienced negative capital appreciation over much of this time. Graph 5-2 illustrates the yields on the long-term government bond series compared to an index of the long-term government bond capital appreciation. In general, as yields rose, the capital appreciation index fell, and vice versa. Had an investor held the long-term bond to maturity, he would have realized the yield on the bond as the total return. However, in a constant maturity portfolio, such as those used to measure bond returns in this publication, bonds are sold before maturity (at a capital loss if the market yield has risen since the time of purchase). This negative return is associated with the risk of unanticipated yield changes.

Graph 5-2

Long-term Government Bond Yields versus Capital Appreciation Index
1925–2004



2 Please note that the appropriate forward-looking measure of the riskless rate is the yield to maturity on the appropriate-horizon government bond. This differs from the riskless rate used to measure the realized equity risk premium historically. Chapter 4 includes a thorough discussion of riskless rate selection in this context

For example, if bond yields rise unexpectedly, investors can receive a higher coupon payment from a newly issued bond than from the purchase of an outstanding bond with the former lower-coupon payment. The outstanding lower-coupon bond will thus fail to attract buyers, and its price will decrease, causing its yield to increase correspondingly, as its coupon payment remains the same. The newly priced outstanding bond will subsequently attract purchasers who will benefit from the shift in price and yield; however, those investors who already held the bond will suffer a capital loss due to the fall in price.

Anticipated changes in yields are assessed by the market and figured into the price of a bond. Future changes in yields that are not anticipated will cause the price of the bond to adjust accordingly. Price changes in bonds due to unanticipated changes in yields introduce price risk into the total return. Therefore, the total return on the bond series does not represent the riskless rate of return. The income return better represents the unbiased estimate of the purely riskless rate of return, since an investor can hold a bond to maturity and be entitled to the income return with no capital loss.

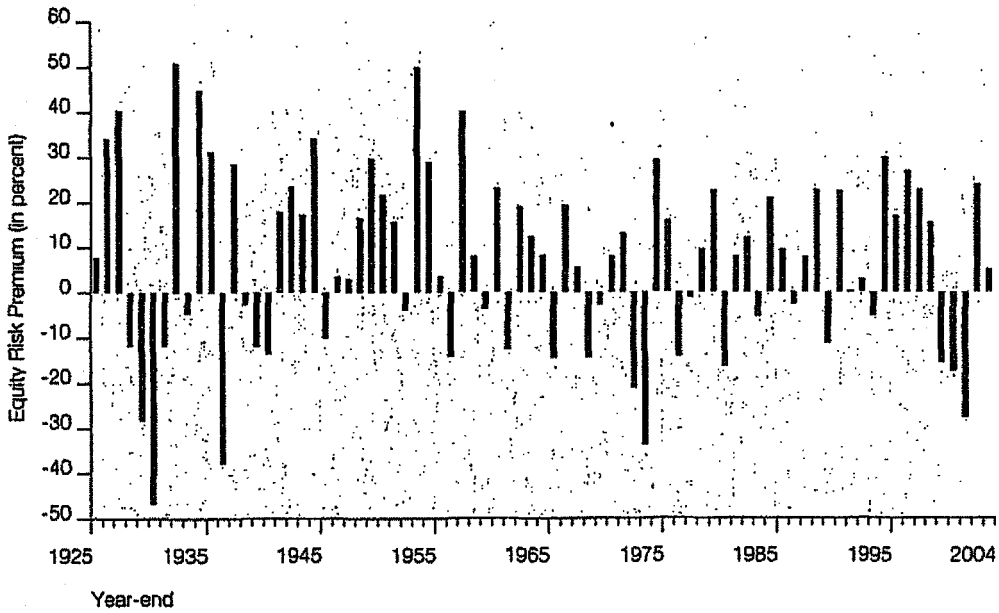
Arithmetic versus Geometric Means

The equity risk premium data presented in this book are arithmetic average risk premia as opposed to geometric average risk premia. The arithmetic average equity risk premium can be demonstrated to be most appropriate when discounting future cash flows. For use as the expected equity risk premium in either the CAPM or the building block approach, the arithmetic mean or the simple difference of the arithmetic means of stock market returns and riskless rates is the relevant number. This is because both the CAPM and the building block approach are additive models, in which the cost of capital is the sum of its parts. The geometric average is more appropriate for reporting past performance, since it represents the compound average return.

The argument for using the arithmetic average is quite straightforward. In looking at projected cash flows, the equity risk premium that should be employed is the equity risk premium that is expected to actually be incurred over the future time periods. Graph 5-3 shows the realized equity risk premium for each year based on the returns of the S&P 500 and the income return on long-term government bonds. (The actual, observed difference between the return on the stock market and the riskless rate is known as the realized equity risk premium.) There is considerable volatility in the year-by-year statistics. At times the realized equity risk premium is even negative.

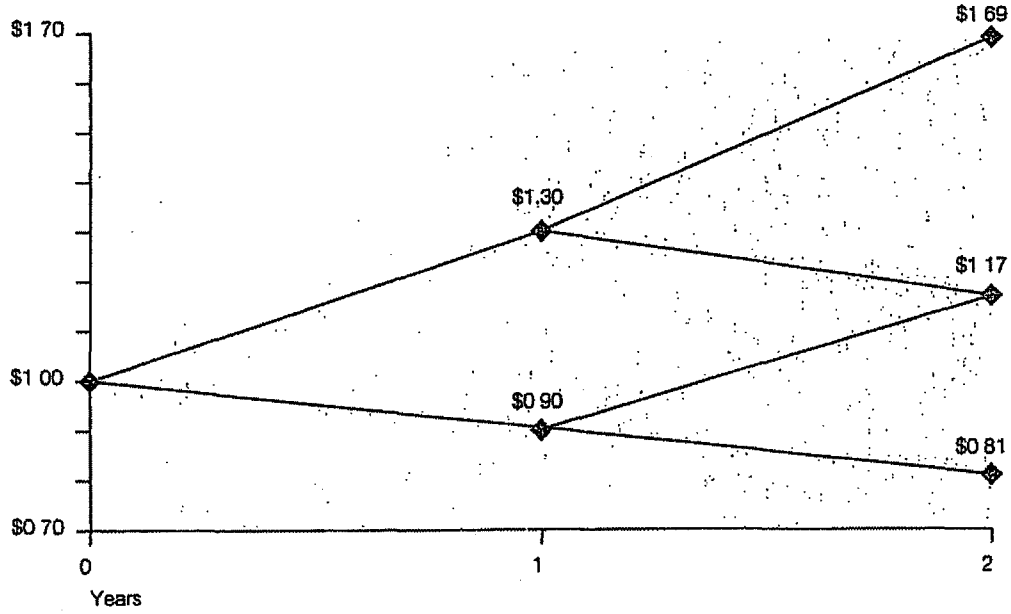
Graph 5-3

Realized Equity Risk Premium Per Year
1926–2004



To illustrate how the arithmetic mean is more appropriate than the geometric mean in discounting cash flows, suppose the expected return on a stock is 10 percent per year with a standard deviation of 20 percent. Also assume that only two outcomes are possible each year— +30 percent and –10 percent (i.e., the mean plus or minus one standard deviation). The probability of occurrence for each outcome is equal. The growth of wealth over a two-year period is illustrated in Graph 5-4.

Graph 5-4
Growth of Wealth Example



The most common outcome of $1.17 is given by the geometric mean of 8.2 percent. Compounding the possible outcomes as follows derives the geometric mean:

$$[(1+0.30)\times(1-0.10)]^{1/2}-1=0.082$$

However, the expected value is predicted by compounding the arithmetic, not the geometric, mean. To illustrate this, we need to look at the probability-weighted average of all possible outcomes:

(0.25 × $1.69)	= $0.4225
+ (0.50 × $1.17)	= $0.5850
+ (0.25 × $0.81)	= $0.2025
Total	$1.2100

Therefore, $1.21 is the probability-weighted expected value. The rate that must be compounded to achieve the terminal value of $1.21 after 2 years is 10 percent, the arithmetic mean:

$$\$1\times(1+0.10)^2=\$1.21$$

The geometric mean, when compounded, results in the median of the distribution:

$$\$1\times(1+0.082)^2=\$1.17$$

The arithmetic mean equates the expected future value with the present value; it is therefore the appropriate discount rate.

Appropriate Historical Time Period

The equity risk premium can be estimated using any historical time period For the U.S., market data exists at least as far back as the late 1800s. Therefore, it is possible to estimate the equity risk premium using data that covers roughly the past 100 years.

The Ibbotson Associates equity risk premium covers the time period from 1926 to the present. The original data source for the time series comprising the equity risk premium is the Center for Research in Security Prices. CRSP chose to begin their analysis of market returns with 1926 for two main reasons. CRSP determined that the time period around 1926 was approximately when quality financial data became available. They also made a conscious effort to include the period of extreme market volatility from the late twenties and early thirties; 1926 was chosen because it includes one full business cycle of data before the market crash of 1929. These are the most basic reasons why Ibbotson Associates' equity risk premium calculation window starts in 1926.

Implicit in using history to forecast the future is the assumption that investors' expectations for future outcomes conform to past results. This method assumes that the price of taking on risk changes only slowly, if at all, over time. This "future equals the past" assumption is most applicable to a random time-series variable. A time-series variable is random if its value in one period is independent of its value in other periods.

Does the Equity Risk Premium Revert to Its Mean over Time?

Some have argued that the estimate of the equity risk premium is upwardly biased since the stock market is currently priced high. In other words, since there have been several years with extraordinarily high market returns and realized equity risk premia, the expectation is that returns and realized equity risk premia will be lower in the future, bringing the average back to a normalized level. This argument relies on several studies that have tried to determine whether reversion to the mean exists in stock market prices and the equity risk premium.[3] Several academics contradict each other on this topic; moreover, the evidence supporting this argument is neither conclusive nor compelling enough to make such a strong assumption.

Our own empirical evidence suggests that the yearly difference between the stock market total return and the U.S. Treasury bond income return in any particular year is random. Graph 5-3, presented earlier, illustrates the randomness of the realized equity risk premium.

3 Fama, Eugene F., and Kenneth R. French. "Permanent and Temporary Components of Stock Prices," *Journal of Political Economy*, April 1988, pp 246–273. Poterba, James M., and Lawrence H. Summers. "Mean Reversion in Stock Prices," *Journal of Financial Economics*, October 1988, pp. 27–59. Lo, Andrew W., and A. Craig MacKinlay. "Stock Market Prices Do Not Follow Random Walks: Evidence from a Simple Specification Test," *The Review of Financial Studies*, Spring 1988, pp. 41–66. Finnerty, John D., and Dean Leistikow. "The Behavior of Equity and Debt Risk Premiums: Are They Mean Reverting and Downward-Trending?" *The Journal of Portfolio Management*, Summer 1993, pp 73–84. Ibbotson, Roger G., and Scott L. Lummer. "The Behavior of Equity and Debt Risk Premiums: Comment," *The Journal of Portfolio Management*, Summer 1994, pp. 98–100. Finnerty, John D., and Dean Leistikow. "The Behavior of Equity and Debt Risk Premiums: Reply to Comment," *The Journal of Portfolio Management*, Summer 1994, pp 101–102.

A statistical measure of the randomness of a return series is its serial correlation. Serial correlation (or autocorrelation) is defined as the degree to which the return of a given series is related from period to period. A serial correlation near positive one indicates that returns are predictable from one period to the next period and are positively related. That is, the returns of one period are a good predictor of the returns in the next period. Conversely, a serial correlation near negative one indicates that the returns in one period are inversely related to those of the next period. A serial correlation near zero indicates that the returns are random or unpredictable from one period to the next. Table 5-3 contains the serial correlation of the market total returns, the realized long-horizon equity risk premium, and inflation.

Table 5-3
Interpretation of Annual Serial Correlations
1926–2004

Series	Serial Correlation	Interpretation
Large Company Stock Total Returns	0 03	Random
Equity Risk Premium	0 04	Random
Inflation Rates	0 65	Trend

The significance of this evidence is that the realized equity risk premium next year will not be dependent on the realized equity risk premium from this year. That is, there is no discernable pattern in the realized equity risk premium—it is virtually impossible to forecast next year's realized risk premium based on the premium of the previous year. For example, if this year's difference between the riskless rate and the return on the stock market is higher than last year's, that does not imply that next year's will be higher than this year's. It is as likely to be higher as it is lower. The best estimate of the expected value of a variable that has behaved randomly in the past is the average (or arithmetic mean) of its past values.

Table 5-4 also indicates that the equity risk premium varies considerably by decade, from a high of 17.9 percent in the 1950s to a low of 0.3 percent in the 1970s. This look at the historical equity risk premium reveals no observable pattern.

Table 5-4
Long-Horizon Equity Risk Premium by Decade
1926–2004

1920s*	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s**	1995-2004
17 6%	2 3%	8 0%	17 9%	4 2%	0 3%	7 9%	12 1%	–6 2%	8 1%

*Based on the period 1926–1929

**Based on the period 2000–2004

Finnerty and Leistikow perform more econometrically sophisticated tests of mean reversion in the equity risk premium. Their tests demonstrate that—as we suspected from our simpler tests—the equity risk premium that was realized over 1926 to the present was almost perfectly free of mean reversion and had no statistically identifiable time trends.[4] Lo and MacKinlay conclude, "the rejection of the random walk for weekly returns does not support a mean-reverting model of asset prices."

Choosing an Appropriate Historical Period

The estimate of the equity risk premium depends on the length of the data series studied. A proper estimate of the equity risk premium requires a data series long enough to give a reliable average without being unduly influenced by very good and very poor short-term returns. When calculated using a long data series, the historical equity risk premium is relatively stable.[5] Furthermore, because an average of the realized equity risk premium is quite volatile when calculated using a short history, using a long series makes it less likely that the analyst can justify any number he or she wants. The magnitude of how shorter periods can affect the result will be explored later in this chapter.

Some analysts estimate the expected equity risk premium using a shorter, more recent time period on the basis that recent events are more likely to be repeated in the near future; furthermore, they believe that the 1920s, 1930s, and 1940s contain too many unusual events. This view is suspect because all periods contain "unusual" events. Some of the most unusual events of this century took place quite recently, including the inflation of the late 1970s and early 1980s, the October 1987 stock market crash, the collapse of the high-yield bond market, the major contraction and consolidation of the thrift industry, the collapse of the Soviet Union, and the development of the European Economic Community—all of these happened approximately in the last 30 years.

It is even difficult for economists to predict the economic environment of the future. For example, if one were analyzing the stock market in 1987 before the crash, it would be statistically improbable to predict the impending short-term volatility without considering the stock market crash and market volatility of the 1929–1931 period.

Without an appreciation of the 1920s and 1930s, no one would believe that such events could happen. The 79-year period starting with 1926 is representative of what can happen: it includes high and low returns, volatile and quiet markets, war and peace, inflation and deflation, and prosperity and depression. Restricting attention to a shorter historical period underestimates the amount of change that could occur in a long future period. Finally, because historical event-types (not specific

4 Though the study performed by Finnerty and Leistikow demonstrates that the traditional equity risk premium exhibits no mean reversion or drift, they conclude that, "the processes generating these risk premiums are generally mean-reverting." This conclusion is completely unrelated to their statistical findings and has received some criticism. In addition to examining the traditional equity risk premia, Finnerty and Leistikow include analyses on "real" risk premia as well as separate risk premia for income and capital gains. In their comments on the study, Ibbotson and Lummer show that these "real" risk premia adjust for inflation twice, "creating variables with no economic content." In addition, separating income and capital gains does not shed light on the behavior of the risk premia as a whole.

5 This assertion is further corroborated by data presented in *Global Investing: The Professional's Guide to the World of Capital Markets* (by Roger G. Ibbotson and Gary P. Brinson and published by McGraw-Hill, New York). Ibbotson and Brinson constructed a stock market total return series back to 1790. Even with some uncertainty about the accuracy of the data before the mid-nineteenth century, the results are remarkable. The real (adjusted for inflation) returns that investors received during the three 50-year periods and one 51-year period between 1790 and 1990 did not differ greatly from one another (that is, in a statistically significant amount). Nor did the real returns differ greatly from the overall 201-year average. This finding implies that because real stock-market returns have been reasonably consistent over time, investors can use these past returns as reasonable bases for forming their expectations of future returns.

events) tend to repeat themselves, long-run capital market return studies can reveal a great deal about the future. Investors probably expect "unusual" events to occur from time to time, and their return expectations reflect this.

A Look at the Historical Results

It is interesting to take a look at the realized returns and realized equity risk premium in the context of the above discussion. Table 5-5 shows the average stock market return and the average (arithmetic mean) realized long-horizon equity risk premium over various historical time periods. Similarly, Graph 5-5 shows the average (arithmetic mean) realized equity risk premium calculated through 2004 for different starting dates. The table and the graph both show that using a longer historical period provides a more stable estimate of the equity risk premium. The reason is that any unique period will not be weighted heavily in an average covering a longer historical period. It better represents the probability of these unique events occurring over a long period of time.

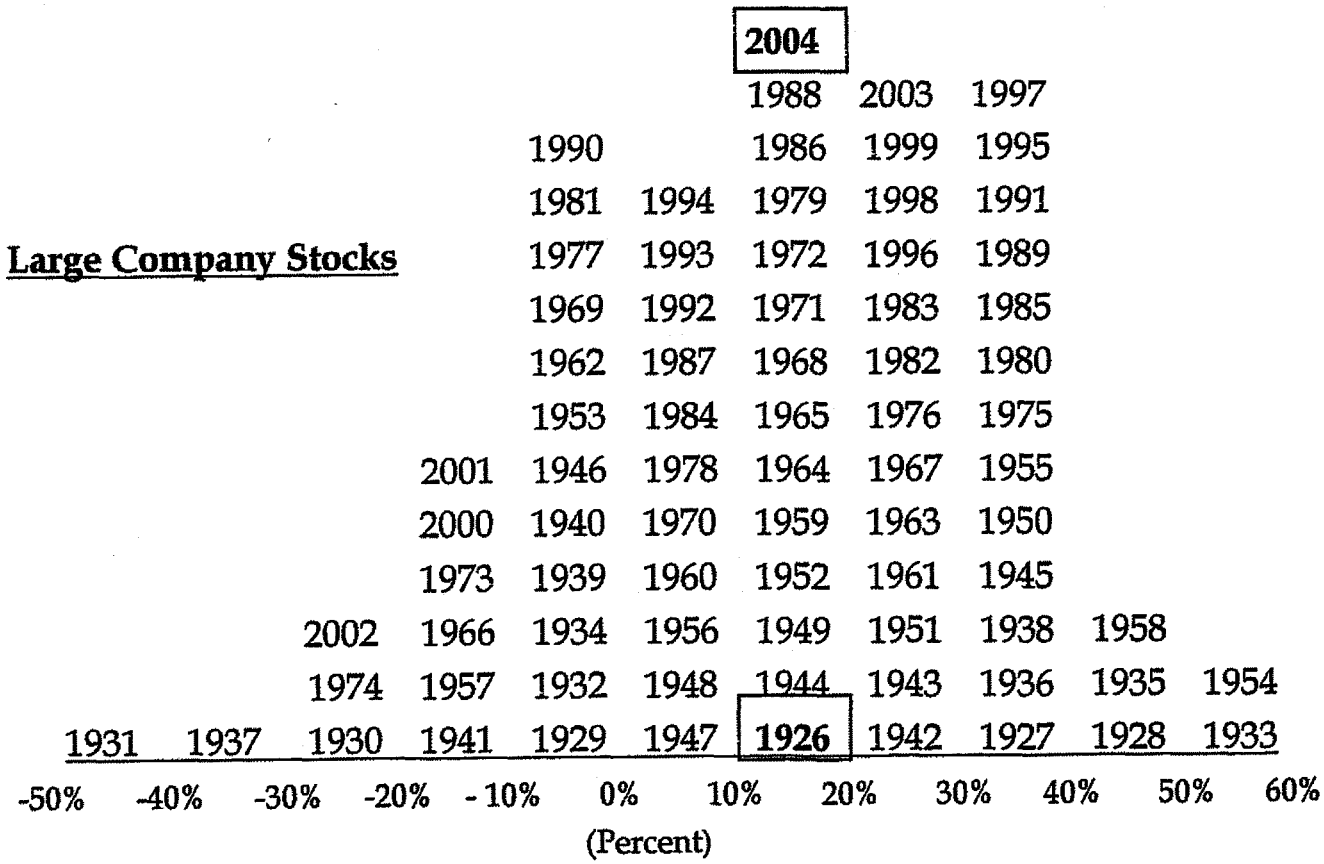
Table 5-5

Stock Market Return and Equity Risk Premium Over Time
1926–2004

Period Length	Period Dates	Large Company Stock Arithmetic Mean Total Return	Long-Horizon Equity Risk Premium
79 years	1926–2004	12 4%	7 2%
70 years	1935–2004	13 1%	7 7%
60 years	1945–2004	13 3%	7 3%
50 years	1955–2004	12 3%	5 6%
40 years	1965–2004	11 8%	4 4%
30 years	1975–2004	14 9%	6 9%
20 years	1985–2004	14 5%	7 4%
15 years	1990–2004	12 4%	6 0%
10 years	1995–2004	14 0%	8 1%
5 years	2000–2004	–0 7%	–6 2%

Looking carefully at Graph 5-5 will clarify this point. The graph shows the realized equity risk premium for a series of time periods through 2004, starting with 1926. In other words, the first value on the graph represents the average realized equity risk premium over the period 1926–2004. The next value on the graph represents the average realized equity risk premium over the period 1927–2004, and so on, with the last value representing the average over the most recent five years, 2000–2004. Concentrating on the left side of Graph 5-5, one notices that the realized equity risk premium, when measured over long periods of time, is relatively stable. In viewing the graph from left to right, moving from longer to shorter historical periods, one sees that the value of the realized equity risk premium begins to decline significantly. Why does this occur? The reason is that the severe bear market of 1973–1974 is receiving proportionately more weight in the shorter, more recent average. If you continue to follow the line to the right, however, you will also notice that when 1973 and 1974 fall out of the recent average, the realized equity risk premium jumps up by nearly 1.5 percent.

Mountaineer Gas Company
Total Returns on Large Company Stocks
1926 to 2004

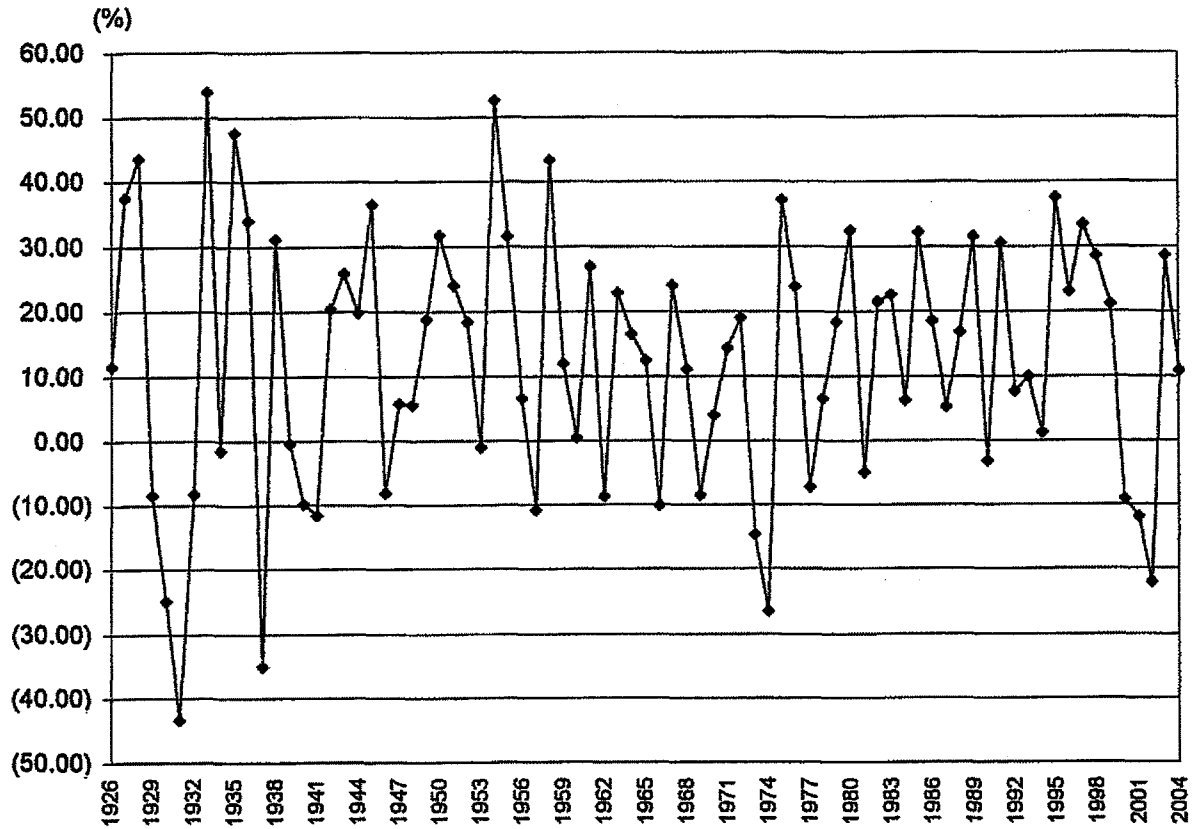


Arithmetic Mean: $r_A = \sum_{t=1}^{n} r_t \ / \ n$

Source: Stocks, Bonds, Bills, and Inflation – Valuation Edition 2005 Yearbook, pp. 30-31, Ibbotson Associates, Chicago, IL

Exhibit ___ (FJH-20)
Sheet 1 of 2

Southwest Gas Corporation
Large Company Stock Returns
From 1926 to 2004



Source of Information:
Stocks, Bonds, Bills and Inflation Valuation Edition 2005 Yearbook,
Ibbotson Associates, Chicago, Il

Exhibit ___ (FJH-20)
Sheet 2 of 2

Exhibit __ (FJH-21)
Sheet 1 of 2

Stocks, Bonds, Bills, and Inflation

SBBI

Valuation Edition
2005 Yearbook

Ibbotson Associates

However, an estimate of each of the above three variables must be formed. Like all components of the cost of capital, these variables should be measured on a forward-looking basis. Chapters 5 and 6 are devoted to estimating the equity risk premium and beta, respectively. Factors to consider in estimating the riskless rate are covered below.

Risk-Free Rate

The CAPM implicitly assumes the presence of a single riskless asset, that is, an asset perceived by all investors as having no risk. A common choice for the nominal riskless rate is the yield on a U.S. Treasury security. The ability of the U.S. government to create money to fulfill its debt obligations under virtually any scenario makes U.S. Treasury securities practically default-free. While interest rate changes cause government obligations to fluctuate in price, investors face essentially no default risk as to either coupon payment or return of principal.

The horizon of the chosen Treasury security should match the horizon of whatever is being valued. When valuing a business that is being treated as a going concern, the appropriate Treasury yield should be that of a long-term Treasury bond. Note that the horizon is a function of the investment, not the investor. If an investor plans to hold stock in a company for only five years, the yield on a five-year Treasury note would not be appropriate since the company will continue to exist beyond those five years.

In February of 1977 the Treasury began to issue 30-year Treasury securities. Prior to this date, the longest-term Treasury security was 20 years. To remain consistent with Ibbotson's historical data series, the *Stocks, Bonds, Bills, and Inflation Yearbook* continues to base the yield for its long-term government bond on one with close to 20 years to maturity. In recent years the Treasury ceased offering 30-year securities, however. As long as there are bonds being traded with at least 20 years to maturity, there will be a proxy for the yield on 20 year Treasury securities. It would not be for a number of years from now that lack of data may become an issue. Currently, the longest term security offered by the Treasury is 10 years. Differences in the yields of these long-term instruments tend to be very small. Therefore, it would be appropriate to use either maturity bond to represent a long-term riskless rate. Table 4-1 shows the current yields for several different horizons.

Table 4-1
Current Yields or Expected Riskless Rates
December 31, 2004

	Yield (Riskless Rate)*
Long-Term (20-year) U S Treasury Coupon Bond Yield	4 8%
Long-Term (10-year) U S Treasury Coupon Bond Yield	4 2%
Intermediate-Term (5-year) U S Treasury Coupon Note Yield	3 5%
Short-term (30-day) U.S Treasury Bill Yield	1 9%

*Maturities are approximate

Should the yield on a Treasury bond or a Treasury strip be used to represent the riskless rate? In most cases the yield on a Treasury coupon bond is most appropriate. If the asset being measured spins off cash periodically, the Treasury bond most closely replicates this characteristic. On the other hand, if the asset being measured provides a single payoff at the end of a specified term, the yield on a Treasury Strip would be more appropriate.

Southwest Gas Corporation
ACC Staff Witness Hill's and RUCO Witness Rigsby's CAPM Costs of Equity Capital Corrected to Properly Reflect the Arithmetic Mean Equity Risk Premium and the Appropriate Long-Term Risk Free Rate of Return (1)

Line No.		Traditional Capital Asset Pricing Model (2)	Empirical Capital Asset Pricing Model (3)	Average of Traditional and Empirical CAPM Results
	ACC Staff Witness Hill's Correct CAPM Cost of Equity Capital			
1.	Risk Free Rate (1)	5.22 %	5.22 %	
2.	Arithmetic Mean Market Equity Risk Premium (4)	7.20	7.20	
3.	Adjusted Beta	0.73 (5)	0.73 (5)	
4.	Average Company-Specific Equity Risk Premium	5.26 % (6)	5.74 % (7)	
5.	CAPM Result (8)	10.48 %	10.96 %	10.72 %
6.	Mr. Hill's CAPM Conclusion (9)	8.80 %	8.80 %	8.80 %
7.	Understatement of Mr. Hill's CAPM Conclusion (10)	1.68 %	2.16 %	1.92 %
	RUCO Witness Rigby's Correct CAPM Cost of Equity Capital			
8.	Risk Free Rate (11)	5.08 %	5.08 %	
9.	Arithmetic Mean Market Equity Risk Premium (4)	7.20	7.20	
10.	Adjusted Beta	0.79 (12)	0.79 (12)	
11.	Average Company-Specific Equity Risk Premium	5.69 % (6)	6.07 % (7)	
12.	CAPM Result (8)	10.77 %	11.15 %	10.96 %
13.	Mr. Rigsby's CAPM Conclusion (13)	9.61 %	9.61 %	9.61 %
14.	Understatement of Mr. Rigsby's CAPM Conclusion (10)	1.16 %	1.54 %	1.35 %

See Sheet 2 and 3 for notes.

Southwest Gas Corporation
ACC Staff Witness Hill's and RUCO Witness Rigsby's CAPM Costs of Equity Capital Corrected to Properly Reflect the Arithmetic Mean Equity Risk Premium and the Appropriate Long-Term Risk Free Rate of Return

Notes:

(1) Average forecast based upon six quarterly estimates of 20-year Treasury Bond yields per the consensus of nearly 50 economists reported in the Blue Chip Financial Forecasts dated June 1, 2005. The estimates are detailed below:

	20-Year Treasury Bond Yield
Second Quarter 2005	4.70%
Third Quarter 2005	5.00
Fourth Quarter 2005	5.20
First Quarter 2006	5.40
Second Quarter 2006	5.50
Third Quarter 2006	5.50
Average	5.22%

(2) The traditional Capital Asset Pricing Model (CAPM) is applied using the following formula:

$R_S = R_F + \beta (R_M - R_F)$

Where R_S = Return rate of common stock
R_F = Risk Free Rate
β = Value Line Adjusted Beta
R_M = Return on the market as a whole

(3) The empirical CAPM is applied using the following formula:

$R_S = R_F + .25 (R_M - R_F) + .75 \beta (R_M - R_F)$

Where R_S = Return rate of common stock
R_F = Risk-Free Rate
β = Value Line Adjusted Beta
R_M = Return on the market as a whole

(4) The Ibbotson Associates calculated market premium of 7.20% for the period 1926-2003 results from a total market return of 12.40% less the average income return on long-term U.S. Government Securities of 5.20% (12.40% - 5.20% = 7.20%). From Ibbotson Associates' Stocks, Bonds, Bills and Inflation – Valuation Edition – 2004 Yearbook Market Results for 1926-2003, Chicago, IL

(5) From Exhibit __(SGH-1), Schedule 7.

(6) Line No. 2 * Line No. 3 / Line No. 9 * Line No. 10.

(7) (0.25 * Line No. 2) + (0.75 * Line No. 3 * Line No. 2) / (0.25 * Line No. 9) + (0.75 * Line No. 10 * Line No. 9).

(8) Line No. 1 + Line No. 4 / Line No. 8 + Line No. 11.

(9) Mr. Hill's CAPM derived from the six week average yield 30-Years U.S. Treasury Bond for the period of April 22, 2005 - May 27, 2005, 8.22% based upon the Geometric Market Risk Premium / 9.38% based upon the Arithmetic Market Risk Premium from Exhibit_ (SGH-1), Schedule 7. (8.22%+ 9.38%)/2 = 8.80%

(10) Line No. 5 – Line No. 6 / Line No. 12 – Line No. 13.

(11) Average forecast based upon six quarterly estimates of 20-year Treasury Bond yields per the consensus of nearly 50 economists reported in the Blue Chip Financial Forecasts dated July 1, 2005. The estimates are detailed below:

Southwest Gas Corporation
ACC Staff Witness Hill's and RUCO Witness Rigsby's CAPM Costs of Equity Capital Corrected to Properly Reflect the Arithmetic Mean Equity Risk Premium and the Appropriate Long-Term Risk Free Rate of Return

	20-Year Treasury Bond Yield
Third Quarter 2005	4.70%
Fourth Quarter 2005	4.90
First Quarter 2006	5.10
Second Quarter 2006	5.20
Third Quarter 2006	5.30
Fourth Quarter 2006	5.30
Average	5.08%

(12) From Schedule WAR-7, page 1 of 2.

(13) Mr. Rigsby's average CAPM result from Schedule WAR-7, pages 1 and 2 of 2. ((8.82% +10.39%) / 2).

Southwest Gas Corporation
Comparison of Bond Ratings and Business profile for
ACC Staff Witness Hill's Group of
Eleven Gas Distribution Companies

	July 2005 Moody's Bond Rating		July 2005 Standard & Poor's Bond Rating		Standard & Poor's Business Profile (2)
	Bond Rating	Numerical Weighting (1)	Bond Rating	Numerical Weighting (1)	
Proxy Group of Eleven Value Line Gas Distribution Companies					
AGL Resources, Inc (3)	A3	7 0	A-	7 0	3 0
Atmos Energy Corporation (4)	Baa3	10 0	BBB+	8 0	2 0
Cascade Natural Gas Corp	Baa1	8 0	BBB+	8 0	2 0
Laclede Group, Inc. (5)	A3	7 0	A	6 0	3.0
New Jersey Resources Corp. (6)	Aa3	4 0	AA-	4.0	2 0
Northwest Natural Gas Co.	A2	6 0	A+	5 0	1 0
Peoples Energy Corp. (7)	Aa3	4 0	A-	7 0	2 0
Piedmont Natural Gas Co., Inc.	A3	7 0	A	6 0	2 0
South Jersey Industries, Inc. (8)	Baa1	8.0	A	6 0	2 0
WGL Holdings Inc (9)	A2	6.0	AA-	4 0	2 0
Southwest Gas Corporation	Baa2	9.0	BBB-	10.0	3.0
Average	A3	6.9	A / A-	6.5	2.2
Average - Excl. Southwest Gas Corp.	A3	6.7	A	6.1	2.1

Notes:
(1) From Sheet 3 of Exhibit___(FJH-11
(2) From Standard & Poor's U.S Utility Power Ranking List - August 10, 2005.
(3) Ratings and business profile are a composite of those of Atlanta Gas Light Company and Pivotal Utility Holdings (formerly NUI Utilities)
(4) Ratings and business profile are those of Atmos Energy Corporation
(5) Ratings and business profile are those of Laclede Gas Co.
(6) Ratings and business profile are those of New Jersey Natural Gas Co
(7) Ratings and business profile are a composite of those of North Shore Gas Company and Peoples Gas Light & Coke Company
(8) Ratings and business profile are those of South Jersey Gas Company.
(9) Ratings and business profile are those of Washington Gas Light Company

Source of Information: Moody's Investors Service
Standard & Poor's Global Utility Rating Service

Southwest Gas Corporation
Current Institutional Holdings and Individual Holdings (1) for
ACC Staff Witness Hill's Eleven Gas Distribution Companies

	1	2
	August 2005 Percentage of Institutional Holdings	August 2005 Percentage of Individual Holdings (1)
ACC Staff Witness Hill's Eleven Gas Distribution Companies		
AGL Resources, Inc.	64.8 %	35.2 %
Atmos Energy Corp.	54.5	45.5
Cascade Natural Gas Corp.	41.9	58.1
Laclede Group, Inc.	31.4	68.6
New Jersey Resources Corp.	47.9	52.1
Northwest Natural Gas Co.	47.5	52.5
Peoples Energy Corp.	52.8	47.2
Piedmont Natural Gas Co., Inc.	40.1	59.9
South Jersey Industries, Inc.	23.2	76.8
WGL Holdings Inc.	55.5	44.5
Southwest Gas Corporation	61.1	38.9
Average	47.3 %	52.7 %

(1) (1 - column 1).

Source of Information: yahoo.investor.reuters.com

Southwest Gas Corporation
Authorized Returns on Common Equity and
Common Equity Ratios for Gas Distribution Companies
for the Year 2003 through June 2005

Company	Date	Jurisdiction	Authorized Return on Common Equity	Authorized Common Equity Ratio
Peoples Gas System	01/06/03	FL	11.25 % (1)	50.92 % (2)
Madison Gas and Electric	02/28/03	WI	12 30	55.42
Rochester Gas & Electric	03/07/03	NY	9.96	41.40
Aquila Networks-MGU	03/12/04	NI	11 40	--
Wisconsin Public Service	03/20/03	WI	12.00	55.00
Wisconsin Power & Light	04/03/03	WI	12.00	51 72
SEMCO Energy Gas	05/02/03	MI	11 40 (1)	--
Interstate Power and Light	05/15/03	IA	11.05	47 84 (3)
Public Service of Colorado	06/26/03	CO	11 00 (1)	51 40
Citizens Utilities	07/01/03	AZ	11 00 (1)	--
Peoples Natural Gas	07/29/03	MN	11 71 (1)	49.99
Northwest Natural Gas	08/22/03	OR	10.20 (1)	49.50
Arkansas Western Gas	09/17/03	AR	9.90 (1)	35.20 (2)
Avista Corp.	09/25/03	OR	10.25 (1)	48.25
AmerenCILCO	10/17/03	IL	10.54	48.54
AmerenCIPS	10/22/03	IL	10.71	44 44
AmerenUE	10/22/03	IL	10.48	52 70
North Carolina Natural Gas	10/30/03	NC	11 00 (1)	51 14
Boston Gas	10/31/03	MA	10.20	50.00
Washington Gas	10/31/03	MD	10.75	51 49
Washington Gas	11/10/03	DC	10.60	50.30
Delmarva Power & Light	12/09/03	DE	10.50 (1)	45.87
Washington Gas	12/18/03	VA	10.50	50.96
Wisconsin Power & Light	12/19/03	WI	12.00	60.27
Wisconsin Public Service	12/19/03	WI	12 00	56.00
Madison Gas and Electric	1/13/2004	WI	12 00	55.91
Public Service of New Mexico	1/13/2004	NM	10.25 (1)	47 77
City Gas Co. of Florida	2/9/2004	FL	11 25	38.77 (2)
Southwest Gas	3/16/2004	CA	10.90	42.00
Interstate Power and Light	4/5/2004	MN	11 00	47 15
TXU - Gas	5/25/2004	TX	10.00	49.80
Southern Indiana Gas & Electric	6/30/2004	IN	10.50 (1)	44.00 (1)
South Jersey Gas	7/8/2004	NJ	10.00	46.00
Centerpoint Energy Arkla	7/22/2004	LA	10.25	45.80
Southwest Gas, Southern Division	8/26/2004	NV	10.50	40.00
Southern Gas, Northern Division	8/26/2004	NV	10.50	40.00
Avista Corp	9/9/2004	ID	10.40	42.59
Missouri Gas Energy	9/21/2004	MO	10.50	29.99
Consolidated Edison of New York	9/27/2004	NY	10.30 (1)	48.00
Washington Gas	9/27/2004	VA	10.50 (1)	50.96
Chattanooga Gas	10/20/2004	TN	10.20	35.50
Indiana Gas	11/30/2004	IN	10.60 (1)	50.06
San Diego Gas & Electric	12/8/2004	CA	--	--
Southern California Gas	12/8/2004	CA	--	--
Yankee Gas Service	12/8/2004	CT	9.90 (1)	47 90
Wisconsin Public Service	12/21/2004	WI	11 50	57 35
Madison Gas and Electric	12/22/2004	WI	11 50	57 64
Centerpoint Energy Arkla	12/28/2004	OK	10.25 (1)	49 86
Avista Corporation	1/6/2005	WA	-- (1)	--
Puget Sound Energy	2/18/2005	WA	10.30	43 00
SEMCO Energy Gas	3/29/2005	MI	11.00 (1)	--
National Fuel Gas Distribution	3/30/2005	PA	-- (1)	--
Vectren Energy Delivery of Ohio	4/13/2005	OH	10.60 (1)	48 10
Michigan Consolidated Gas	4/28/2005	MI	11 00	39.31
Atlanta Gas Light	4/29/2005	GA	10.90	--
Aquila Networks- KGO	5/4/2005	KS	-- (1)	--
AmerenCIPS	5/17/2005	IL	10.00 (1)	53 09
CenterPoint Energy Minnegasco	6/8/2005	MN	10.18 (1)	50.27
Entergy Gulf States	6/15/2005	LA	10.50 (1)	47 52
Average			10.78 %	47.85 %
Average of Litigated Cases			10.91 %	47.50 %

Notes: (1) Order followed stipulation or settlement by the parties. Decision particulars not necessarily precedent-setting or specifically adopted by the regulatory body.

(2) Capital structure includes cost-free items or tax credit balances at the overall rate of return.

(3) Double leveraged capital structure used

Source of Information: Major Rate Case Decisions - January - December 2003, Regulatory Research Associates, January 22, 2004
Major Rate Case Decisions - January - December 2004, Regulatory Research Associates, January 14, 2005
Major Rate Case Decisions - January - June 2005, Regulatory Research Associates, July 6, 2005

118-024

SOUTHWEST GAS CORPORATION
2004 ARIZONA GENERAL RATE CASE
* * *
ACC LEGAL DIVISION DATA REQUEST NO. 12
SWG'S DATA REQUEST NO. STAFF-SH-12
(STAFF-SH-12-1 THROUGH STAFF-SH-12-32)

DOCKET NO.: G-01551A-04-0876
COMMISSION: ARIZONA CORPORATION COMMISSION
DATE OF REQUEST: APRIL 22, 2005

Request No. STAFF-SH-12-24:

[Hanley Direct, p. 27, ll. 9-12] Please provide a complete copy of any prior testimony presented by Mr. Hanley for a utility firm whose market price was below book value and for which, he noted that the DCF result overstated the cost of equity capital.

Respondent: Treasury Services/Frank J. Hanley

Response:

Mr. Hanley has not retained any of his testimonies relating to the period of time of the late 1970s and early 1980s, when DCF cost rates were typically the highest rates of the various models for which Mr. Hanley has employed over the years and market values were often below book values. During that period, Mr. Hanley did not specifically state that the DCF cost rate overstated the cost of common equity because there was no decided trend among regulatory agencies for exclusive use of the DCF model. However, Mr. Hanley implicitly recognized that the DCF model then overstated the cost of common equity by avoiding exclusive reliance upon the DCF model. It is for this reason that Mr. Hanley advocates the use of multiple models at all times and the avoidance of exclusive use of any single model, including the DCF, consistent with the Efficient Market Hypothesis (EMH).

Frank Hanley

From: "Frank Hanley" <fhanley@ausinc.com>
To: <profmorin@msn.com>
Sent: Thursday, August 31, 2000 3:18 PM
Subject: ECAPM

Dr. Morin,

Quite some time ago I sent you e mail about the ECAPM. You replied that critics were wrong when they say that using the ECAPM with adjusted beta is a double counting. You said that you would provide me with some proof. Could you please send me something or point me to specific empirical support that use of adjusted beta in the ECAPM is not double counting ?

I know that you are a very busy man so I give you many thanks in advance for any time you take in responding to me.

Appreciatively,

Frank Hanley

Frank Hanley

From: "profmorin" <profmorin@email.msn.com>
To: <fhanley@ausinc.com>
Sent: Friday, September 01, 2000 11:51 AM
Attach: response to F.Hanley.doc
Subject: Re: ECAPM

Dear Frank:

I have attached a response to your concern. I also point out that the New York PSC has endorsed the Morin ECAPM following the massive generic cost of capital hearing of a few years ago. I have the exact cite if you need it.

---- Original Message ----
From: Frank Hanley
To: profmorin@msn.com
Sent: Thursday, August 31, 2000 4:18 PM
Subject: ECAPM

Dr. Morin,

Quite some time ago I sent you e mail about the ECAPM. You replied that critics were wrong when they say that using the ECAPM with adjusted beta is a double counting. You said that you would provide me with some proof. Could you please send me something or point me to specific empirical support that use of adjusted beta in the ECAPM is not double counting ?

I know that you are a very busy man so I give you many thanks in advance for any time you take in responding to me.

Appreciatively,

Frank Hanley

MORIN ECAPM

Some have argued that the Morin ECAPM constitutes a double beta adjustment. I do not share the view that the ECAPM is equivalent to a beta adjustment.

There are two distinct separate issues involved when implementing the CAPM. First, given the validity of the standard CAPM, what is the best proxy for expected beta? Second, and more fundamentally, does the standard form of the CAPM provide the best explanation of the risk-return relationship observed on capital markets?

i. Beta measurement

Unadjusted raw betas are inappropriate to use in a CAPM analysis. The raw unadjusted beta is not the appropriate measure of market risk to use. Current stock prices reflect expected risk, that is, expected beta, rather than historical risk or historical beta. Historical betas, whether raw or adjusted, are only surrogates for expected beta. The best of the two surrogates is adjusted beta a la Value Line, Merrill Lynch, and Bloomberg betas.

ii. Standard CAPM

There have been countless empirical tests of the CAPM to determine to what extent security returns and betas are related in the manner predicted by the CAPM. The results of the tests support the idea that beta is related to security returns, that the risk-return tradeoff is positive, and that the relationship is linear. The contradictory finding is that the risk-return tradeoff is not as steeply sloped as the predicted CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. This is one of the most well-known results in finance. A CAPM-based estimate of cost of capital underestimates the return required from low-beta securities and overstates the return from high-beta securities, based on the empirical evidence. The empirical form of the CAPM refines the standard form of the CAPM to account for this phenomenon.

Thus, I do not share the view that the ECAPM is equivalent to a beta adjustment. For utility stocks with betas less than one, the CAPM understates the return. The ECAPM allows for the CAPM's inherent bias by ascribing a higher intercept and flatter slope to the CAPM. The ECAPM is a return (Y-axis, vertical axis) adjustment. It is not a beta risk (x-axis, horizontal) adjustment. The ECAPM is not an attempt to increase the beta estimate, which would be a horizontal x-axis adjustment. The ECAPM is a return adjustment rather than a risk adjustment.

There is a huge financial literature which supports both the use of the ECAPM and the use of adjusted betas. The empirical support for adjusted betas and for the ECAPM is summarized in Chapter 13 of my book, Regulatory Finance, Public Utility Reports Inc., Arlington, Va., 1994.

With few exceptions, the empirical studies support the finding that the implied intercept term exceeds the risk-free rate and the slope term is less than predicted by the CAPM.

ILLINOIS COMMERCE COMMISSION
DATA REQUEST

REQUEST NUMBERS MGM 3.01 – MGM 3.19

Utility Company: MidAmerican Energy Company

Docket No.: 01-0444

Date of Response: August 14, 2001

MGM 3.03 On Exhibit No. 4.0, page 24, Dr. Morin states, "It is well established in the academic finance literature that the CAPM produces a downward-biased estimate of equity cost for companies with a beta of less than 1.00." Does Dr. Morin agree that this downward bias is part of the justification for using adjusted betas? If not, please explain why, in addition to an adjustment to beta, an adjustment to the CAPM formula is necessary and provide any academic finance literature to verify that position. For all such literature provided, include references to the types (e.g., raw or adjusted) of betas discussed therein.

Response:

There are two distinct separate issues involved when implementing the CAPM. First, given the validity of the standard CAPM, what is the best proxy for expected beta? Second, and more fundamentally, does the standard form of the CAPM provide the best explanation of the risk-return relationship observed on capital markets?

1. Beta measurement

Empirically, it is common knowledge that betas are estimated with measurement error. High estimated betas will tend to have positive error (overestimated) and low estimated betas will tend to have negative error (underestimated). Therefore, it is necessary to squash the estimated betas in towards 1.00. This is typically done by measuring the extent to which estimated betas tend to regress towards the mean over time. This adjustment is routinely performed by investment services such as Value Line, the most widely circulated source of investment information to investors, Merrill Lynch, and Bloomberg. In accordance with this approach and with the empirical literature which strongly supports this procedure, Dr. Morin uses the same beta adjustment procedures as the investment services by giving 2/3 weight to the measured raw beta and 1/3 weight to the prior value of 1.0 for each stock. This widely-used formula essentially pushes high betas down toward 1.0 and low betas up toward 1.0. The empirical evidence shows that the beta adjustment procedure used by investment services gives far better beta predictions than the unadjusted figures.

Unadjusted raw betas are inappropriate to use in a CAPM analysis. The raw unadjusted beta is not the appropriate measure of market risk to use. Current stock prices reflect expected risk, that is, expected beta, rather than historical risk or historical beta. Historical betas, whether raw or adjusted, are only surrogates for expected beta. The best of the two surrogates is adjusted beta.

2. Standard CAPM

A myriad of empirical tests of the CAPM have shown that the risk-return tradeoff is not as steeply sloped as that predicted by the CAPM. That is, low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. This is one of the most widely known empirical findings of the finance literature. This literature is summarized in Chapter 13 of Dr. Morin's book [Regulatory Finance, Public Utilities Report Inc., Arlington, VA, 1994].

Explanations for these results include the following:

1. The CAPM excludes other variables that are important in determining security returns.
2. The market index used in the tests excludes important classes of securities, such as bonds, mortgages, and business investment.
3. Constraints on investor borrowing exist contrary to the assumption of the CAPM.

Several finance scholars have developed refined and expanded versions of the standard CAPM. These enhanced CAPMs typically produce a risk-return relationship that is flatter than the plain vanilla CAPM prediction. This is exactly what the empirical CAPM contained in Dr. Morin's testimony accomplishes. It produces a risk-return tradeoff that is flatter than the risk-return tradeoff predicted by the standard CAPM, and better approximates the observed relationship between risk and return in capital markets.

The following empirical studies in the finance literature support the notion that the standard CAPM understates the required return for securities with betas less than unity, and overstates the return for securities with betas greater than unity. Since electric utilities have betas less than unity, the standard CAPM produces a downward-biased estimate of the cost of capital for electric utilities.

Friend, I. and Blume, M.E. "The Demand for Risky Assets." *American Economic Review*, Dec. 1975, 900-922.

Black, F., Jensen, M.C., and Scholes, M. "The Capital Asset Pricing Model: Some Empirical Tests." Reprinted in *Studies in the Theory of Capital Markets*, Edited by M.C. Jensen, 79-124. New York: Praeger, 1972

Blume, M.E. and Friend, I. "A New Look at the Capital Asset Pricing Model." *Journal of Finance*, March 1973, 19-34.

Blume, M.E. and Husic, F. "Price, Beta, and Exchange Listing." *Journal of Finance,* May 1973, 283-299.

Fama, E.F. and Macbeth, J. "Risk, Return, and Equilibrium: Empirical Tests." *Journal of Political Economy,* June 1973, 607-636.

Banz, R.W. "The Relationship Between Return and Market Value of Common Stock." *Journal of Financial Economics,* March 1981, 3-18.

Litzenberger, R. H. and Ramaswamy, K. "The Effect of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence." *Journal of Financial Economics,* June 1979, 163-196.

Litzenberger, R. H., Ramaswamy, K. and Sosin, H. (1980) "On the CAPM Approach to the Estimation of a Public Utility's Cost of Equity Capital, Journal of Finance, 35, May 1980, 369-83.

Kraus, A. and Litzenberger, R.H. (1976) "Skewness Preference and the Valuation of Risk Assets, Journal of Finance, 31, 1085-99.

Friend, I., Westerfield, R., and Granito, M. (1978) "New Evidence on the Capital Asset Pricing Model, Journal of Finance, 23, 903-916.

Morin, R.A. (1981) "Intertemporal Market-Line Theory: An Empirical Test," Financial Review, Proceedings of the Eastern Finance Association, 1981.

The empirical approximation to the CAPM that Dr Morin utilizes in his testimony is consistent with both theory and empirical evidence, and has the added advantage of computational simplicity. The traditional version of the CAPM is given by the following:

$$K = R_F + \beta(R_M - R_F)$$

As discussed above, the statistical evidence indicates that the risk-return relationship is flatter than that predicted by the CAPM. For example, over the period 1926-1984, the empirical evidence cited in Dr. Morin's book indicates that the expected return on a security is actually given by the following equation:

$$\text{RETURN} = .0829 + .0520\,\beta$$

Given that the risk-free rate over the estimation period was approximately 6%, this relationship implies that the intercept of the risk-return relationship is higher than the 6% risk-free rate, contrary to the CAPM's prediction. Given the seminal Ibbotson-Sinquefield result that the average return on an average risk stock exceeds the risk-free rate by about 8.0% in that period, that is, $(R_M - R_F) = 8\%$, the intercept of the observed relationship between return and beta exceeds the risk-free rate by about 2%, or 1/4 of 8%, and the slope of the relationship, .0520, is close to 3/4 of 8%. Therefore, the empirical evidence suggests that the expected return on a security is related to its risk by the following approximation:

$$K = R_F + x(R_M - R_F) + (1-x)\beta(R_M - R_F)$$

where x is a fraction to be determined empirically. The value of x was actually derived by systematically varying the constant "x" in that equation from 0 to 1 in steps of 0.05 and choosing that value of 'x' that minimized the mean square error between the observed relationship,

$$\text{RETURN} = .0829 + .0520\,\beta$$

and the empirical shortcut CAPM formula. The value of x that best explained the observed relationship was between 0.25 and 0.30. For reasons of conservatism, I selected the low value of x, 0.25. If x = 0.25, the equation becomes:

$$K = R_F + 0.25(R_M - R_F) + 0.75\,\beta\,(R_M - R_F)$$

To the best of Dr. Morin's knowledge, most of the aforementioned studies utilize raw betas rather than Value Line adjusted betas. The latter were not available over most of the time periods covered in these studies. Dr. Morin's own empirical investigation of the relationship between return and Value Line adjusted betas is quite consistent with the general findings of the literature cited above. The graph below shows the observed relationship between DCF returns and Value Line adjusted betas that is much flatter than that predicted by the plain vanilla CAPM.

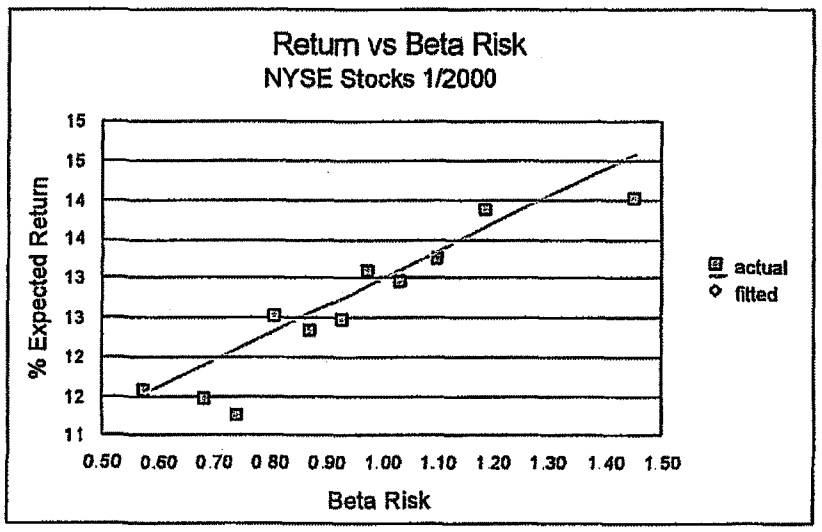


Exhibit __ (FJH-28)
Sheet 1 of 5

Investments: Analysis and Management

Fifth Edition

Jack Clark Francis

Bernard M. Baruch College
City University of New York

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Investments: Analysis and Management

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Beta Measurements The beta coefficient is an *index of systematic risk*. Beta coefficients may be used for ranking the systematic risk of different assets. If the beta is larger than 1, $b > 1.0$, then the asset is more volatile than the market and is called an aggressive asset. If the beta is less than 1, $b < 1.0$, the asset is a defensive asset; its price fluctuations are less volatile than the market's. Figure 10-1 illustrates the characteristic lines for three different assets that have low, medium, and high levels of beta (or undiversifiable risk).

Figure 10-2 shows that IBM is a stock with an average amount of systematic risk. IBM's beta of 1.02 indicates that its return tends to increase 2 percent more than the return on the market average when the market is rising. When the market falls, IBM's return tends to fall 2 percent more than the market's. The characteristic line for IBM has an above average correlation coefficient of $\rho = .7495$, indicating that the returns on this security follow its particular characteristic line slightly more closely than those of the average stock.

Partitioning Risk Total risk can be measured by the variance of returns, denoted Var(r). This measure of *total risk is partitioned into its systematic and unsystematic components in Equation (10-8)*.[7]

$$\begin{aligned}
\mathrm{Var}(r_i) &= \text{total risk of } i\text{th asset} \\
&= \mathrm{Var}(a_i + b_i r_{m,t} + e_{i,t}) \\
&\quad \text{by substituting } (a_i + b_i r_{m,t} + e_{i,t}) \text{ for } r_{i,t} \\
&= 0 + \mathrm{Var}(b_i r_{m,t}) + \mathrm{Var}(e_{i,t}) \\
&\quad \text{since } \mathrm{Var}(a_i) = 0
\end{aligned} \tag{10-8}$$

$$\begin{aligned}
\mathrm{Var}(r_i) &= b_i^2\,\mathrm{Var}(r_m) + \mathrm{Var}(e) \qquad \text{since } \mathrm{Var}(b_i r_m) = b_i^2\,\mathrm{Var}(r_m) \\
&= \text{systematic} + \text{unsystematic risk}
\end{aligned} \tag{10-8a}$$

$$.01389 = .00780 + .00609 \qquad \text{for IBM}$$

The unsystematic risk measure Var(e) is called in regression language the *residual variance* or, synonymously, the *standard error squared*.

Undiversifiable Proportion The percentage of total risk that is systematic can be measured by the coefficient of determination ρ^2 (that is, the characteristic line's squared correlation coefficient).

[7]In this context, *partition* is a technical statistical term that means to divide the total variance into *mutually exclusive* and *exhaustive* pieces. This partition is only possible if the returns from the market are statistically independent from the residual error terms that occur simultaneously, $\mathrm{Cov}(r_{m,t}, e_{i,t}) = 0$. The mathematics of regression analysis will orthogonalize the residuals and thus ensure that the needed statistical independence exists.

$$\frac{\text{Systematic risk}}{\text{Total risk}} = \frac{b_i^2 \operatorname{Var}(r_m)}{\operatorname{Var}(r_m)} = \rho^2 \tag{10-9}$$

$$\frac{.007802}{.01389} = \frac{(1.021)^2\,(.00749)}{.00749} = .5617 \times 100 = 56.17\% \qquad \text{for IBM}$$

Diversifiable Proportion The percentage of unsystematic risk equals $(1.0 - \rho^2)$.

$$\frac{\text{Unsystematic risk}}{\text{Total risk}} = \frac{\operatorname{Var}(e)}{\operatorname{Var}(r_i)} = (1.0 - \rho^2)$$

$$\frac{.00609}{.01389} = (1.0 - .5617) = .438 \times 100 \tag{10-10}$$

$$= 43.8\% \text{ unsystematic} \qquad \text{for IBM}$$

Studies of the characteristic lines of hundreds of stocks listed on the NYSE indicate that the average correlation coefficient is approximately $\rho = .5$.[8] This means that about $\rho^2 = 25$ percent of the total variability of return in most NYSE securities is explained by movements in the market.

	NYSE average	IBM
Systematic risk: ρ^2	.25	.5617
Unsystematic risk: $(1.0 - \rho^2)$	.75	.4383
Total risk: 100%	1.00	1.0000

As explained above, systematic changes are common to all stocks and are therefore undiversifiable.

A primary use of the characteristic line (or *market model*, or the *single-index model*, as it is also called) is to assess the risk characteristics of one asset.[9] The statistics in Table 10-2, for instance, indicate that IBM's common stock is slightly more risky than the average common stock in terms of total risk and

[8]The average ρ was found to be about .5, as reported in Marshall Blume, "On the Assessment of Risk," *Journal of Finance*, March 1971, p. 4. For similar estimates, see J. C. Francis, "Statistical Analysis of Risk Surrogates for NYSE Stocks," *Journal of Financial and Quantitative Analysis*, Dec. 1979.

[9]Professor Jensen reformulated the characteristic line in a risk-premium form. See M. C. Jensen, "The Performance of Mutual Funds in the Period 1945 through 1964," *Journal of Finance*, May 1968, pp. 389–416. See also M. C. Jensen, "Risk, the Pricing of Capital Assets, and the Evaluation of Investment Portfolios," *Journal of Business*, vol. XLII, 1969. Jensen interprets the alpha intercept term of the characteristic line, as he formulates it, as an investment performance measure. It has been suggested that Jensen's performance measure is biased. See Keith V. Smith and Dennis A. Tito, "Risk-Return Measures of Ex-Post Portfolio Performance," *Journal of Financial and Quantitative Analysis*, Dec. 1969, vol. IV, no. 4, p. 466.

systematic risk.[10] New risk measurements must be made periodically, however, because the risk and return of an asset may change with the passage of time.[11]

10-3 CAPITAL ASSET PRICING MODEL (CAPM)

An old axiom states "there is no such thing as a free lunch." This means that you cannot expect to get something for nothing—a rule that certainly applies to investment returns. Investors who want to earn high average rates of return must take high risks and endure the associated loss of sleep, the possibility of ulcers, and the chance of bankruptcy. The question to which we now turn is: Should investors worry about total risk, undiversifiable risk, diversifiable risk, or all three?

In Chapter 1 it was suggested that *investors should seek investments that have the maximum expected return in their risk class.* Their happiness from investing is presumed to be derived as indicated in the expected utility $E(U)$ function below.

$$E(U) = f[E(r), \sigma]$$

The investment preferences of wealth-seeking risk-averse investors represented by the function above cause them to maximize their expected utility (or, equivalently, happiness) by (1) maximizing their expected return in any given risk class, $\partial E(U)/\partial E(r) > 0$, or, conversely, (2) minimizing their total risk at any given rate of expected return, $\partial E(U)/\partial \sigma < 0$. However, in selecting individual assets, investors will not be particularly concerned with the asset's total risk σ. Figure 9-1 showed that the unsystematic portion of total risk can be easily diversified by holding a portfolio of different securities. But, systematic risk affects all stocks in the market because it is undiversifiable. Portfolio theory therefore suggests that only the undiversifiable (or systematic) risk is worth avoiding.[12]

[10]Statements about the relative degree of total risk are made in the context of a long-run horizon—that is, over at least one *complete business cycle*. Obviously, an accurate short-run forecast which says that some particular company will go bankrupt next quarter makes it more risky than IBM, although IBM may have had more historical variability of return.

[11]Empirical studies documenting the intertemporal instability of betas have been published. Marshall Blume, "Betas and Their Regression Tendencies," *Journal of Finance*, June 1975, pp. 785–795. See also J. C. Francis, "Statistical Analysis of Risk Coefficients for NYSE Stocks," *Journal of Financial and Quantitative Analysis*, Dec. 1979, vol. XIV, no. 5, pp. 981–997. An appendix at the end of this chapter reviews some evidence about shifting betas, standard deviations, and correlations.

[12]Both the systematic and unsystematic portions of total risk must be considered by undiversified investors. Entrepreneurs who have their entire net worth invested in one business, for example, can be bankrupted by a piece of bad luck that could be easily averaged away to zero in a diversified portfolio. Poorly diversified investors should not treat diversifiable risk lightly. Only well-diversified investors can afford to ignore diversifiable risk.

WOOD

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
Prepared Rebuttal Testimony
of
THEODORE K. WOOD

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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
THEODORE K. WOOD

INTRODUCTION

Q. 1 Please state your name and business address.

A. 1 My name is Theodore K. Wood. My business address is 5241 Spring Mountain Road, Las Vegas, Nevada 89150-0002.

Q. 2 By whom are you employed and in what capacity?

A. 2 I am employed by Southwest Gas Corporation (Southwest or Company) as Senior Manager in the Treasury Services Department.

Q. 3 Did you sponsor direct testimony on behalf of Southwest in this proceeding?

A. 3 Yes, I did.

Q. 4 What is the purpose of your rebuttal testimony?

A. 4 The purpose of my rebuttal testimony is to respond to specific aspects of the direct testimony presented by Stephen G. Hill, witness for the Arizona Corporation Commission Utilities Division Staff (Staff) and William A. Rigsby, witness for the Residential Utility Consumer Office (RUCO), regarding their recommendations and comments concerning capital structure and the overall allowed rate of return. Company witness Frank J. Hanley will address the allowed return on common equity

recommended by Mr. Hill and Mr. Rigsby.

Q. 5 Did you prepare any exhibits to support your rebuttal?

A. 5 Yes. I prepared the exhibits identified as Rebuttal Exhibit No.___(TKW-1) through Rebuttal Exhibit No.___ (TKW-5).

Q. 6 Please summarize your rebuttal testimony.

A. 6 My rebuttal testimony will address the following key issues:

- I will comment on both Staff's and RUCO's recommended ratemaking capital structures. The Company appreciates the fact that both Staff and RUCO recognize the need to use a hypothetical capital structure. RUCO has accepted the Company's requested hypothetical capital structure, which contains 42 percent common equity, 5 percent preferred securities and 53 percent long-term debt. Staff has proposed a hypothetical capital structure, which contains 40 percent common equity, 5 percent preferred securities and 55 percent long-term debt. Therefore, I will rebut certain aspects of the Staff's justifications for its recommended capital structure and discuss why a hypothetical capital structure with a moderately higher equity component is warranted.
- I will explain why Staff's recommendation for the Company to file a formal re-capitalization plan to achieve a 40 percent common equity ratio prior to its

next rate case is unwarranted and should be rejected. Staff, RUCO and the Company all share the common objective of Southwest improving its capital structure. What is absent from Staff's recommendation is any analysis of the Company's operating environment and any recognition of the tangible steps the Company has taken to improve its capital structure; and

- I will comment on both Staff's and RUCO's overall recommended rate of return.

RUCO'S RECOMMENDED CAPITAL STRUCTURE

Q. 7 What is RUCO's recommendation concerning the appropriate capital structure for ratemaking in this proceeding?

A. 7 RUCO's recommendation is to adopt the Company's requested hypothetical capital structure of 42 percent common equity, 5 percent preferred, and 53 percent long-term debt. RUCO witness Mr. Rigsby, on page 44 of his direct testimony, states that the Company's hypothetical capital structure is close to his proxy group's average capital structure of 51.2 percent long-term debt, 0.3 percent preferred, and 48.5 percent common equity.

STAFF'S RECOMMENDED CAPITAL STRUCTURE

Q. 8 What is Staff's recommendation concerning the appropriate capital structure for ratemaking in this proceeding?

A. 8 Mr. Hill is recommending the use of a hypothetical capital structure containing 40 percent common equity, 5 percent preferred securities and 55 percent long-term

debt. The key difference of Staff's versus the Company's and RUCO's proposed capital structures is the common equity component, with both the Company and RUCO recommending a 42 percent equity component.

Q. 9 What is Mr. Hill's justification for the use of a 40 percent equity ratio in the hypothetical capital structure?

A. 9 On page 23 of Mr. Hill's testimony, he states that a capital structure containing 40 percent common equity is similar to but slightly below the average for the gas utility industry (distribution and integrated companies), which he calculates to be 41.7 percent. Mr. Hill then states that the standard deviation of the gas industry common equity ratios is approximately 10 percent. Next, he shows that his proposed hypothetical capital structure is only 17 percent of one standard deviation unit below the average and for that reason his proposed equity ratio is reasonable.

Q. 10 Do you agree with his analysis?

A. 10 No, I do not. Mr. Hill's analysis is misleading for two reasons.

First, the gas industry common equity ratios are for 30 companies (11 natural gas distribution companies included in Mr. Hill's proxy group, plus 19 other gas industry companies), many of which are not primarily distribution companies, but are diversified companies including some that are in severe financial distress,

such as the El Paso Corporation, which had an equity ratio of only 16 percent. To determine the reasonableness of the proposed hypothetical capital structure, capital structure comparisons should be made to the proxy group of natural gas distribution companies used by Mr. Hill to estimate the cost of common equity rather than a larger sample of 30 companies, as the financial risk of the two groups is not similar.

Second, the comparison is made on equity ratios based on total capital structure, which includes short-term debt. For ratemaking purposes, the Commission's practice has been to utilize capital structures based upon permanent capital, which excludes short-term debt, as the permanent capital is the capital used to finance the long-term rate base investment of a utility. Including short-term debt in the ratemaking capital structure would underestimate the cost of financing a utility's ratebase.

Q. 11 How does the Company's requested 42 percent equity component compare to the average equity component of Mr. Hill's proxy group?

A. 11 Mr. Hill's proxy group's (11 natural gas distribution companies) permanent capital structure has an average equity ratio for 2004 of 50.21 percent. Rebuttal Exhibit No.___(TKW-2) displays the permanent capital structure of Mr. Hill's proxy group for the period 2000-2004 and the related statistics. The standard deviation of the proxy group's common equity ratios is 6.76 percent. The

Company's requested 42 percent common equity ratio is approximately 1.2 standard deviations below the proxy group average. Further, Mr. Hill's proxy group includes Southwest, which had the lowest common equity ratio. Removing the Company from the proxy group, the average proxy group equity ratio is 51.7 percent and the standard deviation is 4.85 percent. The Company's requested 42 percent common equity ratio is two standard deviations below the proxy group average. Clearly, the Company's requested 42 percent equity component is reasonable. Lowering the equity component to 40 percent would create a larger disparity between Southwest's proposed equity component and the proxy group's average equity component used by Mr. Hill to estimate the cost of common equity.

Q. 12 What other guidelines or recent regulatory precedent exists that supports the reasonableness of the Company's requested hypothetical capital structure?

A. 12 Concerning the use of a hypothetical capital structure, the National Association of Regulatory Utility Commission's (NARUC) Rate Case and Audit Manual states[1/]:

> If the utility's proportion or cost of debt is significantly different than that indicated as industry averages, the auditor may wish to consider using a hypothetical capital structure, in lieu of the actual capital structure. In doing this, <u>one would look to base the capital structure on industry averages for similarly situated utilities, in effect, using a more normal capital structure</u>

1/ Rate Case and Audit Manual, Prepared by NARUC Staff Subcommittee on Accounting and Finance, Summer 2003, page 43.

> for rates than that indicated by the actual capital structure. This is sometimes done when either the proportion of debt or proportion of equity is an unusually large portion of the capital structure. *(underlining added for emphasis)*

In addition, the Federal Energy Regulatory Commission (FERC), in natural gas pipeline proceedings, has employed hypothetical capital structures based on the average capital structure of the proxy group companies used to estimate the cost of common equity. In the recent FERC decision for High Island Offshore System, L.L.C., 110 FERC ¶ 61,043 (2005), FERC accepted the use of a hypothetical capital structure rather than employ the capital structure of the parent company, GulfTerra, whose capital structure was comprised of 63 percent debt and 37 percent common equity. FERC accepted the use of a hypothetical capital structure, which was proposed by FERC Staff, that was based on the average capital structure of the proxy group companies used in the DCF model analysis to estimate the cost of common equity. The hypothetical capital structure used was 50.8 percent debt and 49.2 percent common equity. In the decision FERC stated[2/]:

> The Commission also affirms the ALJ's decision to adopt a hypothetical capital structure based on the average equity ratio of the same proxy group Staff uses for its DCF analysis. As the ALJ found, this assures a match between the financial risk inherent in the DCF analysis used to develop the return on equity and the hypothetical capital structure.

2/ High Island Offshore System, L.L.C., 110 FERC ¶ 61,043 at P 147 (2005).

There exists support to employ the average industry capital structure of similar utilities when employing a hypothetical capital structure. In comparison, the Company's requested hypothetical capital structure contains less common equity than the average common equity ratio of the proxy groups used by any of the cost of capital witnesses in this proceeding (Southwest's, Staff's, or RUCO's).

Q. 13 What is Southwest's current capital structure and how does that compare to the test period and the Company's recommended hypothetical capital structure?

A. 13 Displayed in the table below is the Company's actual capital structure as of June 30, 2005, actual capital structure at the end of the test period (August 31, 2004), and the Company's recommended hypothetical capital structure.

	Current Jun-05	Test Period Aug-04	Recommended
Long-Term Debt	58.1%	60.8%	53.0%
Preferred Equity	4.9%	5.1%	5.0%
Common Equity	37.0%	34.1%	42.0%
Total	100.0%	100.0%	100.0%

It is important to note that at June 30, 2005, the Company had a Purchased Gas Adjustment (PGA) receivable balance of $58.2 million and no short-term debt outstanding. In addition, the Company reported that for the 24-month period ending June 30, 2005, the Company lost approximately $24 million in margin due to the combined effects of weather and conservation. Adjusting

the balance sheet for the after-tax effects of the PGA balances and lost margin, the Company's common equity component would be approximately 38.5 percent. The capital structure adjusted for both of these factors is displayed in Rebuttal Exhibit No.___(TKW-3).

This clearly shows that in the ten-month period since the end of the test period, the Company has made significant progress in improving its capital structure and even greater progress would have been made if not for the impacts of PGA balances and lost margin due to weather and conservation. At the requested 42 percent equity ratio in the capital structure, the Company is five percentage points above its June 30, 2005 actual equity component and approximately eight percentage points below Mr. Hill's proxy group of natural gas companies.

Q. 14 Do you agree with Mr. Hill's assertion that the annual rate impact of the Company's proposed hypothetical capital structure is over $8 million (page 22 of his direct testimony)?

A. 14 No. Mr. Hill's analysis contains one critically flawed assumption, which renders the end result of his analysis incorrect. To support his assertion, Mr. Hill displays his calculation in Exhibit No.___(SGH-1), Schedule 2, page 2 of 6, which compares the annual revenue requirement of using the Company's proposed hypothetical capital structure that contains 42 percent common equity versus the Company's actual capital structure with

35 percent common equity. The fatal flaw in Mr. Hill's analysis is that he does not take into account the significant differences in the capital structures, where a capital structure with lower equity and higher debt components would have additional financial risk, and therefore would require a higher return on common equity. In my direct testimony, pages 26-29, I discuss the relationship between capital structure, the cost of equity, and the overall cost of capital. A key concept of capital structure theory, which is universally accepted, is that the cost of common equity increases as the amount of financial leverage in the balance sheet increases. In Mr. Hill's analysis, he employs the Company's requested 11.95 percent return on common equity in both capital structures to compute the difference in revenue requirements. If the Company had not proposed using a hypothetical capital structure, then the requested rate of return for common equity would have been significantly higher to compensate for the additional risk reflected in the Company's actual capital structure. Company witness Frank J. Hanley points this out in his direct testimony, on page 54, lines 19-23, where he states:

> If this Commission were to adopt Southwest's actual capital structure ratios, either the average during or at the end of the August 31, 2004 test year in lieu of the proposed hypothetical ratios, my recommended common equity cost rate would be higher than 11.95% because of the added financial risk, consistent with basic financial precepts.

In addition, RUCO witness Mr. Rigsby, on page 45, lines 11-13, of his direct testimony, acknowledges the relationship between capital structure and the required return on common equity where he states:

> In the case of a publicly traded company, such as those included in my proxy group, a company with SWG's level of debt would be perceived as having a higher level of financial risk and therefore would also have a higher expected return on common equity.

Mr. Hill's assertion that the annual rate impact of the Company's proposed hypothetical capital structure is over $8 million dollars is spurious and should be disregarded.

Q. 15 Please comment on Mr. Hill's assertion that the past use of the hypothetical capital structure has resulted in ratepayers subsidizing the Company's financial strength.

A. 15 Mr. Hill points out the Company's rates in Arizona have been set using a hypothetical capital structure for some time, which he characterizes as a ratepayer subsidy. It is important to point out that the reason for imputing a hypothetical capital structure is to adjust for the substantial difference in financial risk between the capital structure of the Company and that of the average capital structure of other natural gas distribution companies. Absent the use of the hypothetical capital structure, the allowed rate of return would need to be adjusted upward to compensate for the difference in

financial risk. The hypothetical capital structure does not decrease the level of risk faced by equity holders, but indirectly increases the return to equity and, in doing so, helps maintain the Company's financial integrity and its ability to attract capital, both of which provide long-term benefits to the Company's customers. The Company appreciates the fact that the Commission has recognized the need to utilize a hypothetical capital structure for ratemaking purposes in past proceedings.

Unfortunately, the reality of the situation is that the Company's Arizona customers have had the benefit of a safe and reliable natural gas distribution system, for which the Company has not been able to realize a competitive risk-adjusted rate of return on common equity. In Company witness Robert A. Mashas's direct testimony, pages 11-14, he discusses the Company's inability to earn its authorized rate of return in Arizona, which has been impacted by factors outside the control of management, such as declining average customer usage and regulatory lag. During the period 1994-2004, the Company earned an average return on common equity of 5.04 percent in its Arizona jurisdiction, which was calculated based on the Company's actual equity component of the capital structure [see Mr. Company witness Robert A. Mashas's Exhibit No.___(RAM-1), Sheet 2 of 6]. The average authorized capital structure contained a

40 percent equity component and the average authorized rate of return was slightly above 11 percent for the same time period. Clearly, Southwest customers have not been "subsidizing" Southwest as asserted by Mr. Hill.

Q. 16 Please summarize the Company's position on why a moderately higher equity component than that of Mr. Hill's hypothetical capital structure is warranted.

A. 16 The Company believes a hypothetical capital structure with a moderately higher equity component is supported by the following factors, which were enumerated on pages 8-28 in my direct testimony:

- Southwest is a multi-jurisdictional utility company consisting of gas distribution utility operations in three states, a natural gas pipeline, and a wholly-owned construction company subsidiary;
- The hypothetical capital structure is consistent with rating agency criteria for its current "BBB" bond rating;
- The relative higher level of investment risk of Southwest as compared to the proxy groups of utility companies;
- Consideration should be given for the Company's tangible efforts to improve its capital structure and to recognize the impacts to the Company's financial condition from the high growth environment Southwest exists in, including the impact that declining average usage and several years of warmer-than-normal

heating seasons has had on the Company's financial condition;

- Regulatory precedent for the Company's use of a hypothetical capital structure for ratemaking;
- The use of a hypothetical capital structure for ratemaking is consistent with modern finance theory; and
- The use of the recommended hypothetical capital structure is fair and reasonable to both customers and investors.

In addition, in my rebuttal testimony I illustrate that the Company's requested hypothetical capital structure is reasonable in comparison to the average permanent capital structures of the proxy groups used by RUCO and Staff. In fact, RUCO supports the use of the Company's requested capital structure. Also, evidence was provided supporting the use of the proxy group average capital structure for employing a hypothetical capital structure, which further supports the reasonableness of the Company's request.

In establishing the appropriate hypothetical capital structure in this proceeding, the Commission should be cognizant of the current financial position of the Company, and examine it in the context of both the regulatory framework and the operating environment within which it exists.

Currently, Southwest is rated "BBB-" by Standard &

Poor's. This is the lowest credit rating that still affords the Company an investment grade rating. In addition, Southwest is rated "Baa2" by Moody's with a negative outlook, which means that this rating is in jeopardy of falling to the lowest investment grade credit rating. If the Company is not given a sufficient opportunity to achieve a reasonable rate of return, and its credit rating falls below investment grade, the cost of both current and new capital will increase significantly.

Southwest is among the fastest growing natural gas distribution companies in the nation. The rapid pace of customer growth in Arizona has required, and will continue to require, a significant amount of capital expenditures by the Company in order to meet its obligation to serve and maintain its level of service to its customers. The Company had to and will continue to frequently access both the debt and equity capital markets in order to fund a large portion of these capital expenditures. In order for the Company to attract additional capital at reasonable rates, and maintain its financial integrity (which benefits its customers), it must earn a rate of return which adequately compensates its investors for the degree of risk they assume.

In light of the factors mentioned above, and given the efforts Southwest has taken to improve its capital structure, which were discussed on pages 17-21 of my

direct testimony, Southwest believes the hypothetical capital structure proposed by the Company is reasonable and equitable to both shareholders and customers. Furthermore, Southwest's proposed capital structure is necessary to maintain the Company's financial integrity, and enable it to raise capital for the proper discharge of its obligations as a public service corporation. If the proposed hypothetical capital structure is not accepted, then an upward adjustment to the allowed return on common equity would be warranted in order to provide a risk adjusted return to the equity owner which is appropriate given the comparable equity returns of Southwest's peer group.

STAFF'S RECOMMENDATION TO FILE A FORMAL RE-CAPITALIZATION PLAN

Q. 17 Please comment on Staff's proposal that the Company should be required to file a formal re-capitalization plan in which the Company would be required to achieve a 40 percent equity ratio prior to the next rate proceeding in Arizona.

A. 17 Staff's proposal is unwarranted and should be rejected. Staff, RUCO and the Company all share the common objective for the Company to improve its capital structure. The Company has every incentive to improve its capital structure and the filing of a formal re-capitalization plan with the Commission will not alter that or the speed of the improvement. The ability for the Company to obtain a certain equity ratio by a certain time frame is largely

dependent on the Company's level of earnings, which are subject to numerous factors outside the control of management, such as conservation, gas prices, weather, capital market conditions, etc. In addition, the Company's capital structure is a function of the financial performance in all of the Company's regulatory jurisdictions and not just its Arizona jurisdiction. The Commission, as it has in the past, should determine the authorized capital structure for ratemaking by evaluating the circumstances of the Company and the Company's actions in managing its capital structure.

The rationale for Mr. Hill's proposal is that, in his opinion, the Company has elected to maintain a highly leveraged balance sheet. Mr. Hill's testimony is devoid of any recognition of the Company's operating environment or any acknowledgement of the tangible steps the Company has taken to improve its capital structure, which was discussed in my direct testimony on pages 17-21. In addition, as I stated in my direct testimony, on pages 11-12, the long-term goal of the Company is to achieve a target bond rating of an "A" credit rating and, at a minimum, to maintain an investment grade credit rating.

The real obstacle for Southwest to achieve its target utility bond rating and the associated capital structure is its inability to earn its authorized rate of return. The Company cannot achieve this target by simply issuing equity, as the Company needs a real opportunity

to add to its equity component through retained earnings. Given that the Company has experienced a prolonged time period requiring significant levels of customer growth-related capital expenditures, combined with woefully sub-standard achieved returns, and the fact that the Company has maintained its investment grade credit rating and has been able to make moderate progress in improving its capital structure, is a testament to the fact that the Company has been prudent in managing its capital structure.

Q 18 Please explain the impact on the Company's capital structure due to the Company's inability to earn an industry average rate of return.

A 18 In order to understand the cumulative capital structure impact due to the Company's chronic under-earning requires an examination of the Company's past financial performance over a long-period of time. Rebuttal Exhibit No.___(TKW-4), Sheet 1 of 3, displays some of the Company's key financial statistics for the time period 1994-2004. During this time period, the Company realized an average return on common equity for its gas segment of 6.0 percent. In comparison, the average common equity rates of return realized by the Value Line Investment Survey Natural Gas Distribution companies was 11.1 percent with a standard deviation of 2.7 percent. The Company's average return of 6 percent is almost 2 standard deviations away from the industry average

return. In addition, the average yield on "Baa" utility bonds during the 1994-2004 time periods was 7.8 percent, which is 180 basis points higher than the Company's average realized return on common equity.

Based on the Company's gas segment realized return on common equity over the 1994-2004 timeframe, the annual earnings gap was calculated by multiplying the average common equity balance by the difference in the Value Line industry average return on equity and the Company's gas segment return on equity. The cumulative annual gap in the realized earnings for Southwest compared to the average returns generated by the Value Line natural gas companies is $239 million.[3/] Adjusting the Company's December 31, 2004 capital structure for the $239 million earnings gap would result in a capital structure that has approximately a 47 percent common equity ratio. Rebuttal Exhibit No.___(TKW-4) Sheet 3 of 3, displays the adjusted capital structure. This demonstrates that if the Company had earned a natural gas distribution industry average return on equity over the time period 1994-2004, then its actual capital structure at December 31, 2004 would be approximately that of the natural gas distribution industry. The key problem for the Company to improve its capital structure has been its inability to earn its authorized rate of return.

3/ This is a conservative measure, as the annual earnings gap was not added back to the Company's retained earnings, therefore it does not take into account the additional earnings on equity (retained earnings) lost due to the prior periods.

Q. 19 What evidence supports the Company's position about its commitment to improve its capital structure?

A. 19 As discussed in my direct testimony, pages 19-20, the Company has made tangible efforts to improve its capital structure from 1994 through August 31, 2004, as the Company has increased its outstanding shares of common stock by approximately 69 percent[4/] and has not raised the common stock dividend per share since May 1994. During the time period 1994-2004, the Company issued approximately 15.8 million shares of common stock, which netted the Company approximately $313.7 million in proceeds. In addition, the Company has issued trust originated preferred securities to help bolster its capital structure, for which the Company receives an "equity credit" from rating agencies.

Also in my direct testimony, I discussed that in May 2004, the Company established a three-year, $60 million Common Equity Shelf Program (ESP). The Company began issuing shares via the ESP in June 2004. As of June 30, 2005, the Company has issued 2.1 million shares ($52.2 million) of common stock via the ESP. The benefits of the ESP have been demonstrated by the Company's improved common equity ratio of 37 percent as of June 30, 2005. This program is augmenting the average $15 to $25 million of common stock issued annually under the

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4/ See Rebuttal Exhibit No.___(TKW-4), which displays Southwest's common stock issuances for the period 1994 through August 31, 2004.

Company's existing Dividend Reinvestment Plan, Customer Stock Purchase Plan, and Employee Investment Plan. Rebuttal Exhibit No.___(TKW-5) displays the Company's common stock issuances for the time period 1994 through June 30, 2005. The Company has clearly demonstrated its willingness to issue common stock to improve its common equity within the capital structure. However, there is a limit to how much common stock the Company can prudently issue. Again, the key to improving the common equity within the capital structure given the Company's common stock issuances is for the Company to add equity through retained earnings. To recap the Company's efforts and the impact of under-earning, shown below is both the amount of common stock issuances and the gap in earnings for the 1994-2004 time period:

Common Stock Issuances	$313.7 million
Earnings Gap	($239.0) million

Q. 20 Have there been any factors which the Company has had to consider in its attempts to add more common equity to its capital structure?

A. 20 Yes. The Company must be prudent in determining the frequency of common stock offerings and the number of shares to be offered. It must strive to preserve the integrity of existing capital and maximize proceeds from new offerings. Therefore, the Company's stock price for new stock offerings, and the dilutive effects of such offerings, are important considerations. If too many

THE OVERALL RATE OF RETURN RECOMMENDATIONS OF STAFF, RUCO, AND SOUTHWEST

Q. 21 Please summarize the cost of capital recommendations of Staff, RUCO, and Southwest.

A. 21 A summary of the recommended overall rates of returns (ROR), returns on common equity (ROE), and capital structures, are displayed in the following table:

			Ratemaking Capital Structure		
Witness	ROR	ROE	Common Equity	Preferred Equity	Total Debt
Hill(Staff)	8.40%	9.50%	40.00%	5.00%	55.00%
Rigsby(RUCO)	8.64%	10.15%	42.00%	5.00%	53.00%
Hanley/Wood(SWG)	9.40%	11.95%	42.00%	5.00%	53.00%

Q. 22 Please explain the criteria used to evaluate the overall reasonableness of the recommended return on common equity and the resulting overall rate of return.

A. 22 The key issues of concern about the recommendations by Staff and RUCO are how the recommended return on equity and the resulting overall rates of return will impact the Company's ability to maintain its existing credit ratings and to continue to attract capital on a reasonable basis. The credit rating impact is an important consideration since the Company's current bond ratings are "BBB-" by S&P, "Baa2" by Moody's, and "BBB" by Fitch. The added importance is due to Moody's credit rating outlook for the Company being revised from stable to negative in February 2004.

A key factor used by credit rating agencies in

evaluating the creditworthiness of a utility is the impact of utility ratemaking. This issue was addressed in a recent article by S&P and was attached to my direct testimony as Exhibit No.___(TKW-3). I have restated a portion of the S&P article from page 15 of my direct testimony, that explains what key ratemaking issues S&P analyzes and it states[5/]:

> The analysis of the rate case fundamentally explores a two-fold question: are the new rates based on a rate of return consistent with the company's rating, and is the utility being afforded a legitimate opportunity to actually earn that rate of return?
>
> On the former question, the analyst looks to equity returns being authorized for other utilities of the same credit quality, as well as the capital structure employed to arrive at the overall rate of return being used to set rates.

The S&P criteria used to evaluate the authorized rate of return are a comparison to equity returns being authorized for other utilities and the capital structure utilized to set rates.

The other key issue is if the utility is being afforded a reasonable opportunity to earn its authorized rate of return. This issue addresses rate design, which is a crucial issue in this proceeding. The Company has provided testimony and rate design proposals (please see the testimony of Company witnesses Mr. Gieseking and

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5/ Todd A. Shipman, "Energy Risk - Fresh Look at US Utility Regulation", PowerMarkers.com, February 2, 2004.

Mr. Congdon) to deal with the challenges of declining average customer usage and the sensitivity to weather, both of which have impeded the Company's opportunity to earn its authorized rate of return in the past and the Company's ability to improve its capital structure. The importance of rate design is also receiving more attention by investment analysts. In the Value Line Investment Survey, dated June 17, 2005, the analysis for Southwest Gas stated:

> The company is awaiting a rate-case decision in Arizona, which would mitigate the impact of weather on earnings and allow the company to recover its higher costs-all of which should benefit earnings going forward. Importantly, without the change in rate design, we think that Southwest's return on equity will continue to lag that of its peers.
> *(underlining added for emphasis)*

Q. 23 Please comment on the reasonableness of the rates of returns recommended by Staff and RUCO.

A. 23 Company witness, Frank J. Hanley, has provided a schedule, Rebuttal Exhibit No.___(FJH-24) that reveals during the time period January 1, 2003 to June 30, 2005, the average authorized return on equity was 10.91 percent based on an average authorized common equity ratio of 47.5 percent for natural gas distribution companies. The following table comparatively displays the recommended returns on equity and equity component of the capital structure for all of the cost of capital witnesses to the average authorized:

Description	ROE	Equity Ratio
Average Authorized 2003 - June 2005[1]	10.91%	47.5%
Hill(Staff)	9.50%	40.00%
Rigsby(RUCO)	10.15%	42.00%
Hanley/Wood(Southwest)	11.95%	42.00%

[1] See F. Hanley Exhibit No.___(FJH-24)

Mr. Rigsby's recommendation of a return on equity of 10.15 percent is 76 basis points less than the average authorized rate of return on equity of 10.91 percent, and his recommended equity ratio of 42.00 percent is 5.5 percentage points less than the average equity ratio of 47.5 percent. Based on this comparison, it is clearly evident his recommendation is below the authorized returns being granted to other gas distribution companies. Company witness Mr. Hanley, in his rebuttal testimony, addresses the specific deficiencies in Mr. Rigsby's cost of capital methodologies that result in his less than adequate recommended rate of return on common equity.

Mr. Hill's recommendation of a return on equity of 9.5 percent is 141 basis points less than the average authorized rate of return on equity of 10.91 percent, and his recommended equity ratio of 40.00 percent is 7.5 percentage points less than the average equity ratio of 47.5 percent. Based on a comparison to the average authorized and the Company's recommendation, Mr. Hill's recommended return is woefully inadequate. In addition,

Staff on June 24, 2005, filed testimony in Docket No. E-01933A-04-0408, which is a rate review for Tucson Electric Power (TEP) to determine if TEP has been over-earning.[6/] In that proceeding, Staff estimated a required return on common equity for TEP of 10.5 percent versus TEP's estimated 11.5 percent. Staff's recommendation in this case is 100 basis points lower (9.5%-10.5% = -1.00%) than Staff's recommendation in the ongoing TEP proceeding. Company witness Mr. Hanley extensively rebuts Mr. Hill's cost of equity recommendation.

Q. 24 Does this conclude your prepared rebuttal testimony?

A. 24 Yes, it does.

6/ Direct Testimony of James J. Dorf, Docket No. E-0933A-04-0408, pages 13-14.

SOUTHWEST GAS CORPORATION
RUCO WITNESS MR. WILLIAM A. RIGSBY'S
PROXY GROUP OF 10 NATURAL GAS DISTRIBUTION COMPANIES

COMMON EQUITY RATIOS BASED ON PERMANENT CAPITAL STRUCTURE

Company	2004	2003	2002	2001	2000	5-Year Average
AGL Resources Inc.	45.50%	47.78%	40.94%	37.69%	47.57%	43.90%
Cascade Natural Gas Corp.	45.34%	40.56%	40.91%	49.32%	48.79%	44.98%
KeySpan Corp.	46.57%	37.11%	34.66%	36.75%	38.54%	38.73%
Laclede Group, Inc.	46.68%	49.44%	50.00%	50.18%	54.51%	50.16%
Nicor Inc.	60.11%	60.30%	59.27%	60.88%	59.67%	60.05%
Northwest Natural Gas Co.	53.25%	50.30%	50.47%	50.86%	49.82%	50.94%
Peoples Energy Corp.	49.23%	53.26%	55.60%	51.98%	64.93%	55.00%
Piedmont Natural Gas Co.	56.43%	57.70%	53.67%	52.30%	52.20%	54.46%
South Jersey Industries Inc.	50.61%	48.55%	45.45%	41.88%	44.30%	46.16%
WGL Holdings Inc.	55.69%	54.72%	50.93%	54.40%	54.69%	54.09%
Average	50.94%	49.97%	48.19%	48.62%	51.50%	49.85%
Standard Deviation	5.20%	7.16%	7.60%	7.62%	7.54%	6.39%
Company 's Hypothetical	42.00%	42.00%	42.00%	42.00%	42.00%	42.00%
Difference from Average	8.94%	7.97%	6.19%	6.62%	9.50%	7.85%
Difference in Standard Deviations	1.72	1.11	0.81	0.87	1.26	1.23

COMMON EQUITY RATIOS BASED ON TOTAL CAPITAL STRUCTURE

Company	2004	2003	2002	2001	2000	5-Year Average
AGL Resources Inc.	41.00%	41.37%	33.45%	32.21%	42.93%	38.19%
Cascade Natural Gas Corp.	40.19%	40.02%	40.91%	42.44%	48.49%	42.41%
KeySpan Corp.	41.99%	35.38%	31.29%	32.43%	32.72%	34.76%
Laclede Group, Inc.	42.68%	36.33%	38.97%	41.68%	43.80%	40.69%
Nicor Inc.	43.15%	41.31%	47.18%	49.11%	43.47%	44.84%
Northwest Natural Gas Co.	48.59%	46.37%	47.04%	45.50%	46.92%	46.88%
Peoples Energy Corp.	47.73%	47.10%	46.39%	39.15%	44.03%	44.88%
Piedmont Natural Gas Co.	52.63%	38.25%	51.49%	50.79%	47.52%	48.14%
South Jersey Industries Inc.	44.56%	41.01%	34.48%	32.48%	34.99%	37.50%
WGL Holdings Inc.	52.42%	49.23%	48.03%	49.79%	48.65%	49.62%
Average	45.49%	41.64%	41.92%	41.56%	43.35%	42.79%
Standard Deviation	4.57%	4.62%	7.09%	7.34%	5.46%	4.93%
Company 's Hypothetical	42.00%	42.00%	42.00%	42.00%	42.00%	42.00%
Difference from Average	3.49%	-0.36%	-0.08%	-0.44%	1.35%	0.79%
Difference in Standard Deviations	0.76	(0.08)	(0.01)	(0.06)	0.25	0.16

SOUTHWEST GAS CORPORATION
RUCO WITNESS MR. WILLIAM A. RIGSBY'S
PROXY GROUP OF 10 NATURAL GAS DISTRIBUTION COMPANIES
PERMANENT CAPITAL STRUCTURE

Company	2004	2003	2002	2001	2000	5-Year Average
AGL RESOURCES INC						
Long-Term Debt	53.32 %	52.22 %	59.06 %	62.31 %	52.43 %	55.87 %
Preferred Stock	1.18	0.00	0.00	0.00	0.00	0.24
Common Equity	45.50	47.78	40.94	37.69	47.57	43.90
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
CASCADE NATURAL GAS CORP						
Long-Term Debt	54.66 %	59.44 %	59.09 %	50.68 %	51.18 %	55.01 %
Preferred Stock	0.00	0.00	0.00	0.00	0.03	0.01
Common Equity	45.34	40.56	40.91	49.32	48.79	44.98
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
KEYSPAN CORP						
Long-Term Debt	53.03 %	56.88 %	61.64 %	59.74 %	58.59 %	57.98 %
Preferred Stock	0.40	6.01	3.70	3.51	2.87	3.30
Common Equity	46.57	37.11	34.66	36.75	38.54	38.73
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
LACLEDE GROUP INC						
Long-Term Debt	53.18 %	50.35 %	49.78 %	49.54 %	45.15 %	49.60 %
Preferred Stock	0.14	0.21	0.22	0.28	0.34	0.24
Common Equity	46.68	49.44	50.00	50.18	54.51	50.16
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
NICOR INC						
Long-Term Debt	39.89 %	39.70 %	40.38 %	38.59 %	39.80 %	39.67 %
Preferred Stock	0.00	0.00	0.35	0.53	0.53	0.28
Common Equity	60.11	60.30	59.27	60.88	59.67	60.05
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
NORTHWEST NATURAL GAS CO						
Long-Term Debt	46.74 %	49.70 %	48.67 %	45.45 %	46.35 %	47.38 %
Preferred Stock	0.00	0.00	0.86	3.69	3.83	1.68
Common Equity	53.26	50.30	50.47	50.86	49.82	50.94
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
PEOPLES ENERGY CORP						
Long-Term Debt	50.77 %	46.74 %	44.40 %	48.02 %	35.07 %	45.00 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	49.23	53.26	55.60	51.98	64.93	55.00
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
PIEDMONT NATURAL GAS CO						
Long-Term Debt	43.57 %	42.30 %	46.33 %	47.70 %	47.80 %	45.54 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	56.43	57.70	53.67	52.30	52.20	54.46
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
SOUTH JERSEY INDUSTRIES INC						
Long-Term Debt	49.11 %	51.17 %	54.23 %	57.80 %	55.30 %	53.52 %
Preferred Stock	0.28	0.28	0.32	0.32	0.40	0.32
Common Equity	50.61	48.55	45.45	41.88	44.30	46.16
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
WGL HOLDINGS INC						
Long-Term Debt	42.47 %	43.40 %	47.20 %	43.66 %	43.14 %	43.97 %
Preferred Stock	1.84	1.88	1.87	1.94	2.17	1.94
Common Equity	55.69	54.72	50.93	54.40	54.69	54.09
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Proxy Group of Rigsby's Ten Companies						
Long-Term Debt	48.68 %	49.19 %	51.08 %	50.35 %	47.48 %	49.36 %
Preferred Stock	0.38	0.84	0.73	1.03	1.02	0.80
Common Equity	50.94	49.97	48.19	48.62	51.50	49.84
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Data Base

SOUTHWEST GAS CORPORATION
RUCO WITNESS MR. WILLIAM A. RIGSBY'S
PROXY GROUP OF 10 NATURAL GAS DISTRIBUTION COMPANIES
TOTAL CAPITAL STRUCTURE

Company	2004	2003	2002	2001	2000	5-Year Average
AGL RESOURCES INC						
Long-Term Debt	48.05 %	45.22 %	48.24 %	53.24 %	47.31 %	48.41 %
Short-Term Debt	9.88	13.41	18.31	14.55	9.76	13.18
Preferred Stock	1.07	0.00	0.00	0.00	0.00	0.21
Common Equity	41.00	41.37	33.45	32.21	42.93	38.19
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
CASCADE NATURAL GAS CORP						
Long-Term Debt	48.46 %	58.63 %	59.09 %	43.61 %	50.87 %	52.13 %
Short-Term Debt	11.35	1.35	0.00	13.95	0.61	5.45
Preferred Stock	0.00	0.00	0.00	0.00	0.03	0.01
Common Equity	40.19	40.02	40.91	42.44	48.49	42.41
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
KEYSPAN CORP						
Long-Term Debt	47.81 %	54.23 %	55.64 %	52.71 %	49.74 %	52.03 %
Short-Term Debt	9.84	4.66	9.73	11.76	15.11	10.22
Preferred Stock	0.36	5.73	3.34	3.10	2.43	2.99
Common Equity	41.99	35.38	31.29	32.43	32.72	34.76
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
LACLEDE GROUP INC						
Long-Term Debt	48.63 %	37.01 %	38.81 %	41.15 %	36.28 %	40.38 %
Short-Term Debt	8.56	26.51	22.05	16.94	19.65	18.74
Preferred Stock	0.13	0.15	0.17	0.23	0.27	0.19
Common Equity	42.68	36.33	38.97	41.68	43.80	40.69
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
NICOR INC						
Long-Term Debt	28.63 %	27.21 %	32.14 %	31.14 %	28.99 %	29.62 %
Short-Term Debt	28.22	31.48	20.40	19.32	27.15	25.31
Preferred Stock	0.00	0.00	0.28	0.43	0.39	0.22
Common Equity	43.15	41.31	47.18	49.11	43.47	44.84
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
NORTHWEST NATURAL GAS CO						
Long-Term Debt	42.65 %	45.83 %	45.36 %	40.66 %	43.64 %	43.63 %
Short-Term Debt	8.76	7.80	6.80	10.53	5.84	7.95
Preferred Stock	0.00	0.00	0.80	3.31	3.60	1.54
Common Equity	48.59	46.37	47.04	45.50	46.92	46.88
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
PEOPLES ENERGY CORP						
Long-Term Debt	49.22 %	41.35 %	37.05 %	36.18 %	23.78 %	37.52 %
Short-Term Debt	3.05	11.55	16.56	24.67	32.19	17.60
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	47.73	47.10	46.39	39.15	44.03	44.88
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
PIEDMONT NATURAL GAS CO						
Long-Term Debt	40.63 %	28.05 %	44.45 %	46.31 %	43.52 %	40.59 %
Short-Term Debt	6.74	33.70	4.06	2.90	8.96	11.27
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	52.63	38.25	51.49	50.79	47.52	48.14
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
SOUTH JERSEY INDUSTRIES INC						
Long-Term Debt	43.25 %	43.23 %	41.14 %	44.81 %	43.68 %	43.22 %
Short-Term Debt	11.94	15.53	24.14	22.46	21.02	19.02
Preferred Stock	0.25	0.23	0.24	0.25	0.31	0.26
Common Equity	44.56	41.01	34.48	32.48	34.99	37.50
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
WGL HOLDINGS INC						
Long-Term Debt	39.98 %	39.04 %	44.51 %	39.96 %	38.38 %	40.37 %
Short-Term Debt	5.87	10.03	5.69	8.47	11.04	8.22
Preferred Stock	1.73	1.70	1.77	1.78	1.93	1.78
Common Equity	52.42	49.23	48.03	49.79	48.65	49.62
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Proxy Group of Rigsby's Ten Companies						
Long-Term Debt	43.73 %	41.98 %	44.65 %	42.98 %	40.62 %	42.79 %
Short-Term Debt	10.42	15.60	12.77	14.55	15.13	13.69
Preferred Stock	0.35	0.78	0.66	0.91	0.90	0.72
Common Equity	45.50	41.64	41.92	41.56	43.35	42.79
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Data Base

SOUTHWEST GAS CORPORATION
RUCO WITNESS MR. WILLIAM A. RIGSBY'S
PROXY GROUP OF 10 NATURAL GAS DISTRIBUTION COMPANIES
TOTAL CAPITAL STRUCTURE
(Dollars in millions)

Company	2004	2003	2002	2001	2000
AGL RESOURCES INC					
Long-Term Debt	$1,623.00	$1,033.10	$1,024.20	$1,109.90	$684.30
Short-Term Debt	334.00	306.40	388.60	303.40	141.20
Preferred Stock	36.00	0.00	0.00	0.00	0.00
Common Equity	1,385.00	945.30	710.10	671.40	620.90
Total Capital	$3,378.00	$2,284.80	$2,122.90	$2,084.70	$1,446.40
CASCADE NATURAL GAS CORP					
Long-Term Debt	$142.90	$164.93	$164.93	$125.00	$125.00
Short-Term Debt	33.50	3.80	0.00	40.00	1.50
Preferred Stock	0.00	0.00	0.00	0.00	0.06
Common Equity	118.51	112.56	114.18	121.63	119.16
Total Capital	$294.91	$281.29	$279.11	$286.63	$245.72
KEYSPAN CORP					
Long-Term Debt	$4,434.83	$5,612.90	$5,235.49	$4,698.64	$4,280.42
Short-Term Debt	912.25	481.90	915.70	1,048.45	1,300.24
Preferred Stock	33.33	593.12	314.27	276.46	209.40
Common Equity	3,894.71	3,661.95	2,944.59	2,890.60	2,815.82
Total Capital	$9,275.12	$10,349.87	$9,410.05	$8,914.15	$8,605.87
LACLEDE GROUP INC					
Long-Term Debt	$405.48	$304.63	$284.55	$284.46	$234.41
Short-Term Debt	71.38	218.20	161.67	117.05	127.00
Preferred Stock	1.11	1.26	1.27	1.59	1.76
Common Equity	355.92	299.07	285.77	288.09	282.99
Total Capital	$833.88	$823.16	$733.25	$691.18	$646.16
NICOR INC					
Long-Term Debt	$497.10	$496.90	$496.20	$446.40	$472.10
Short-Term Debt	490.00	575.00	315.00	277.00	442.00
Preferred Stock	0.00	0.00	4.30	6.10	6.30
Common Equity	749.10	754.60	728.40	704.20	707.80
Total Capital	$1,736.20	$1,826.50	$1,543.90	$1,433.70	$1,628.20
NORTHWEST NATURAL GAS CO					
Long-Term Debt	$499.03	$500.32	$465.95	$418.38	$420.79
Short-Term Debt	102.50	85.20	69.80	108.29	56.26
Preferred Stock	0.00	0.00	8.25	34.00	34.75
Common Equity	568.52	506.32	483.10	468.16	452.31
Total Capital	$1,170.04	$1,091.84	$1,027.10	$1,028.83	$964.11
PEOPLES ENERGY CORP					
Long-Term Debt	$897.38	$744.35	$644.01	$744.31	$419.66
Short-Term Debt	55.63	207.95	287.87	507.45	568.22
Preferred Stock	0.00	0.00	0.00	0.00	0.00
Common Equity	870.08	848.00	806.32	805.52	777.08
Total Capital	$1,823.09	$1,800.29	$1,738.21	$2,057.28	$1,764.96
PIEDMONT NATURAL GAS CO					
Long-Term Debt	$660.00	$462.00	$509.00	$511.00	$483.00
Short-Term Debt	109.50	555.06	46.50	32.00	99.50
Preferred Stock	0.00	0.00	0.00	0.00	0.00
Common Equity	854.90	630.20	589.60	560.38	527.37
Total Capital	$1,624.40	$1,647.25	$1,145.10	$1,103.38	$1,109.87
SOUTH JERSEY INDUSTRIES INC					
Long-Term Debt	$334.26	$314.05	$283.71	$303.98	$251.86
Short-Term Debt	92.30	112.80	166.50	152.36	121.20
Preferred Stock	1.92	1.69	1.69	1.69	1.80
Common Equity	344.41	297.96	237.79	220.29	201.74
Total Capital	$772.89	$726.51	$689.69	$678.32	$576.60
WGL HOLDINGS INC					
Long-Term Debt	$650.80	$648.83	$710.35	$632.55	$561.24
Short-Term Debt	95.63	166.66	90.87	134.05	161.42
Preferred Stock	28.17	28.17	28.17	28.17	28.17
Common Equity	853.42	818.22	766.40	788.25	711.50
Total Capital	$1,628.03	$1,661.88	$1,595.79	$1,583.03	$1,462.34

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Data Base

SOUTHWEST GAS CORPORATION
ACC STAFF WITNESS MR. STEPHEN G. HILL'S
PROXY GROUP OF 11 NATURAL GAS DISTRIBUTION COMPANIES

COMMON EQUITY RATIOS BASED ON PERMANENT CAPITAL STRUCTURE

Company	2004	2003	2002	2001	2000	5-Year Average
AGL Resources Inc.	45.50%	47.78%	40.94%	37.69%	47.57%	43.90%
Atmos Energy Corp	56.65%	49.55%	45.29%	45.02%	50.76%	49.45%
Cascade Natural Gas Corp.	45.34%	40.56%	40.91%	49.32%	48.79%	44.98%
Laclede Group, Inc.	46.68%	49.44%	50.00%	50.18%	54.51%	50.16%
New Jersey Resources Corp.	57.66%	61.67%	47.60%	49.82%	52.88%	53.93%
Northwest Natural Gas Co.	53.25%	50.30%	50.47%	50.86%	49.82%	50.94%
Peoples Energy Corp.	49.23%	53.26%	55.60%	51.98%	64.93%	55.00%
Piedmont Natural Gas Co.	56.43%	57.70%	53.67%	52.30%	52.20%	54.46%
South Jersey Industries Inc.	50.61%	48.55%	45.45%	41.88%	44.30%	46.16%
Southwest Gas Corporation	35.31%	33.93%	33.93%	32.53%	35.61%	34.26%
WGL Holdings Inc.	55.69%	54.72%	50.93%	54.40%	54.69%	54.09%
Average	50.21%	49.77%	46.80%	46.91%	50.55%	48.85%
Standard Deviation	6.76%	7.63%	6.36%	6.87%	7.23%	6.23%
Company 's Hypothetical	42.00%	42.00%	42.00%	42.00%	42.00%	42.00%
Difference from Average	8.21%	7.77%	4.80%	4.91%	8.55%	6.85%
Difference in Standard Deviations	1.22	1.02	0.75	0.71	1.18	1.10

COMMON EQUITY RATIOS BASED ON TOTAL CAPITAL STRUCTURE

Company	2004	2003	2002	2001	2000	5-Year Average
AGL Resources Inc.	41.00%	41.37%	33.45%	32.21%	42.93%	38.19%
Atmos Energy Corp	56.65%	46.37%	40.61%	38.97%	38.35%	44.19%
Cascade Natural Gas Corp.	40.19%	40.02%	40.91%	42.44%	48.49%	42.41%
Laclede Group, Inc.	42.68%	36.33%	38.97%	41.68%	43.80%	40.69%
New Jersey Resources Corp.	43.68%	48.43%	44.12%	44.42%	49.43%	46.02%
Northwest Natural Gas Co.	48.59%	46.37%	47.04%	45.50%	46.92%	46.88%
Peoples Energy Corp.	47.73%	47.10%	46.39%	39.15%	44.03%	44.88%
Piedmont Natural Gas Co.	52.63%	38.25%	51.49%	50.79%	47.52%	48.14%
South Jersey Industries Inc.	44.56%	41.01%	34.48%	32.48%	34.99%	37.50%
Southwest Gas Corporation	33.63%	33.01%	32.94%	30.87%	32.75%	32.64%
WGL Holdings Inc.	52.42%	49.23%	48.03%	49.79%	48.65%	49.62%
Average	45.80%	42.50%	41.68%	40.75%	43.44%	42.83%
Standard Deviation	6.62%	5.36%	6.31%	6.83%	5.74%	5.15%
Company 's Hypothetical	42.00%	42.00%	42.00%	42.00%	42.00%	42.00%
Difference from Average	3.80%	0.50%	-0.32%	-1.25%	1.44%	0.83%
Difference in Standard Deviations	0.57	0.09	(0.05)	(0.18)	0.25	0.16

SOUTHWEST GAS CORPORATION
ACC STAFF WITNESS MR. STEPHEN G. HILL'S
PROXY GROUP OF 11 NATURAL GAS DISTRIBUTION COMPANIES
PERMANENT CAPITAL STRUCTURE

Company	2004	2003	2002	2001	2000	5-Year Average
AGL RESOURCES INC						
Long-Term Debt	53.32 %	52.22 %	59.06 %	62.31 %	52.43 %	55.87 %
Preferred Stock	1.18	0.00	0.00	0.00	0.00	0.24
Common Equity	45.50	47.78	40.94	37.69	47.57	43.90
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
ATMOS ENERGY CORP						
Long-Term Debt	43.35 %	50.45 %	54.71 %	54.98 %	49.24 %	50.55 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	56.65	49.55	45.29	45.02	50.76	49.45
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
CASCADE NATURAL GAS CORP						
Long-Term Debt	54.66 %	59.44 %	59.09 %	50.68 %	51.18 %	55.01 %
Preferred Stock	0.00	0.00	0.00	0.00	0.03	0.01
Common Equity	45.34	40.56	40.91	49.32	48.79	44.98
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
LACLEDE GROUP INC						
Long-Term Debt	53.18 %	50.35 %	49.78 %	49.54 %	45.15 %	49.60 %
Preferred Stock	0.14	0.21	0.22	0.28	0.34	0.24
Common Equity	46.68	49.44	50.00	50.18	54.51	50.16
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
NEW JERSEY RESOURCES CORP						
Long-Term Debt	42.34 %	38.33 %	52.36 %	50.14 %	47.06 %	46.05 %
Preferred Stock	0.00	0.00	0.04	0.04	0.06	0.03
Common Equity	57.66	61.67	47.60	49.82	52.88	53.93
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
NORTHWEST NATURAL GAS CO						
Long-Term Debt	46.75 %	49.70 %	48.67 %	45.45 %	46.35 %	47.38 %
Preferred Stock	0.00	0.00	0.86	3.69	3.83	1.68
Common Equity	53.25	50.30	50.47	50.86	49.82	50.94
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
PEOPLES ENERGY CORP						
Long-Term Debt	50.77 %	46.74 %	44.40 %	48.02 %	35.07 %	45.00 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	49.23	53.26	55.60	51.98	64.93	55.00
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
PIEDMONT NATURAL GAS CO						
Long-Term Debt	43.57 %	42.30 %	46.33 %	47.70 %	47.80 %	45.54 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	56.43	57.70	53.67	52.30	52.20	54.46
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
SOUTH JERSEY INDUSTRIES INC						
Long-Term Debt	49.11 %	51.17 %	54.23 %	57.80 %	55.30 %	53.52 %
Preferred Stock	0.28	0.28	0.32	0.32	0.40	0.32
Common Equity	50.61	48.55	45.45	41.88	44.30	46.16
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
WGL HOLDINGS INC						
Long-Term Debt	42.47 %	43.40 %	47.20 %	43.66 %	43.14 %	43.97 %
Preferred Stock	1.84	1.88	1.87	1.94	2.17	1.94
Common Equity	55.69	54.72	50.93	54.40	54.69	54.09
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
SOUTHWEST GAS CORP						
Long-Term Debt	64.69 %	66.07 %	66.07 %	67.47 %	64.39 %	65.74 %
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	35.31	33.93	33.93	32.53	35.61	34.26
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Proxy Group of ACC Staff Witness Hill's Eleven Gas Distribution Companies						
Long-Term Debt	49.48 %	50.02 %	52.90 %	52.52 %	48.83 %	50.75 %
Preferred Stock	0.31	0.22	0.30	0.57	0.62	0.40
Common Equity	50.21	49.77	46.80	46.91	50.55	48.85
Total Capital	100.00 %	100.01 %	100.00 %	100.00 %	100.00 %	100.00 %

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Data Base

SOUTHWEST GAS CORPORATION
ACC STAFF WITNESS MR. STEPHEN G. HILL'S
PROXY GROUP OF 11 NATURAL GAS DISTRIBUTION COMPANIES
TOTAL CAPITAL STRUCTURE

Company	2004	2003	2002	2001	2000	5-Year Average
AGL RESOURCES INC						
Long-Term Debt	48.05 %	45.22 %	48.24 %	53.24 %	47.31 %	48.41 %
Short-Term Debt	9.88	13.41	18.31	14.55	9.76	13.18
Preferred Stock	1.07	0.00	0.00	0.00	0.00	0.21
Common Equity	41.00	41.37	33.45	32.21	42.93	38.19
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
ATMOS ENERGY CORP						
Long-Term Debt	43.35 %	47.22 %	49.06 %	47.60 %	37.21 %	44.89 %
Short-Term Debt	0.00	6.41	10.33	13.43	24.44	10.92
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	56.65	46.37	40.61	38.97	38.35	44.19
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
CASCADE NATURAL GAS CORP						
Long-Term Debt	48.45 %	58.63 %	59.09 %	43.61 %	50.87 %	52.13 %
Short-Term Debt	11.36	1.35	0.00	13.95	0.61	5.45
Preferred Stock	0.00	0.00	0.00	0.00	0.03	0.01
Common Equity	40.19	40.02	40.91	42.44	48.49	42.41
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
LACLEDE GROUP INC						
Long-Term Debt	48.63 %	37.01 %	38.81 %	41.15 %	36.28 %	40.38 %
Short-Term Debt	8.56	26.51	22.05	16.94	19.65	18.74
Preferred Stock	0.13	0.15	0.17	0.23	0.27	0.19
Common Equity	42.68	36.33	38.97	41.68	43.80	40.69
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
NEW JERSEY RESOURCES CORP						
Long-Term Debt	32.08 %	30.10 %	48.53 %	44.71 %	43.99 %	39.88 %
Short-Term Debt	24.24	21.48	7.31	10.83	6.52	14.08
Preferred Stock	0.00	0.00	0.04	0.04	0.06	0.03
Common Equity	43.68	48.43	44.12	44.42	49.43	46.02
Total Capital	100.00 %	100.01 %	100.00 %	100.00 %	100.00 %	100.00 %
NORTHWEST NATURAL GAS CO						
Long-Term Debt	42.65 %	45.83 %	45.36 %	40.66 %	43.64 %	43.63 %
Short-Term Debt	8.76	7.80	6.80	10.53	5.84	7.95
Preferred Stock	0.00	0.00	0.80	3.31	3.60	1.54
Common Equity	48.59	46.37	47.04	45.50	46.92	46.88
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
PEOPLES ENERGY CORP						
Long-Term Debt	49.22 %	41.35 %	37.05 %	36.18 %	23.78 %	37.52 %
Short-Term Debt	3.05	11.55	16.56	24.67	32.19	17.60
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	47.73	47.10	46.39	39.15	44.03	44.88
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
PIEDMONT NATURAL GAS CO						
Long-Term Debt	40.63 %	28.05 %	44.45 %	46.31 %	43.52 %	40.59 %
Short-Term Debt	6.74	33.70	4.06	2.90	8.96	11.27
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	52.63	38.25	51.49	50.79	47.52	48.14
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
SOUTH JERSEY INDUSTRIES INC						
Long-Term Debt	43.25 %	43.23 %	41.14 %	44.81 %	43.68 %	43.22 %
Short-Term Debt	11.94	15.53	24.14	22.46	21.02	19.02
Preferred Stock	0.25	0.23	0.24	0.25	0.31	0.26
Common Equity	44.56	41.01	34.48	32.48	34.99	37.50
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
WGL HOLDINGS INC						
Long-Term Debt	39.98 %	39.04 %	44.51 %	39.96 %	38.38 %	40.37 %
Short-Term Debt	5.87	10.03	5.69	8.47	11.04	8.22
Preferred Stock	1.73	1.70	1.77	1.78	1.93	1.78
Common Equity	52.42	49.23	48.03	49.79	48.65	49.62
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
SOUTHWEST GAS CORP						
Long-Term Debt	61.61 %	64.27 %	64.13 %	64.02 %	59.21 %	62.65 %
Short-Term Debt	4.76	2.72	2.93	5.11	8.04	4.71
Preferred Stock	0.00	0.00	0.00	0.00	0.00	0.00
Common Equity	33.63	33.01	32.94	30.87	32.75	32.64
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %
Proxy Group of ACC Staff Witness Hill's Eleven Gas Distribution Companies						
Long-Term Debt	45.26 %	43.63 %	47.31 %	45.66 %	42.54 %	44.88 %
Short-Term Debt	8.65	13.68	10.74	13.08	13.46	11.92
Preferred Stock	0.29	0.19	0.28	0.51	0.56	0.37
Common Equity	45.80	42.50	41.67	40.75	43.44	42.83
Total Capital	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %	100.00 %

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Data Base

SOUTHWEST GAS CORPORATION
ACC STAFF WITNESS MR. STEPHEN G. HILL'S
PROXY GROUP OF 11 NATURAL GAS DISTRIBUTION COMPANIES
TOTAL CAPITAL STRUCTURE
(Dollars in millions)

Company	2004	2003	2002	2001	2000
AGL RESOURCES INC					
Long-Term Debt	$1,623.00	$1,033.10	$1,024.20	$1,109.90	$684.30
Short-Term Debt	334.00	306.40	388.60	303.40	141.20
Preferred Stock	36.00	0.00	0.00	0.00	0.00
Common Equity	1,385.00	945.30	710.10	671.40	620.90
Total Capital	$3,378.00	$2,284.80	$2,122.90	$2,084.70	$1,446.40
ATMOS ENERGY CORP					
Long-Term Debt	$867.22	$873.26	$692.44	$713.09	$380.76
Short-Term Debt	0.00	118.60	145.79	201.25	250.05
Preferred Stock	0.00	0.00	0.00	0.00	0.00
Common Equity	1,133.46	857.52	573.24	583.86	392.47
Total Capital	$2,000.68	$1,849.38	$1,411.47	$1,498.21	$1,023.28
CASCADE NATURAL GAS CORP					
Long-Term Debt	$142.90	$164.93	$164.93	$125.00	$125.00
Short-Term Debt	33.50	3.80	0.00	40.00	1.50
Preferred Stock	0.00	0.00	0.00	0.00	0.06
Common Equity	118.51	112.56	114.18	121.63	119.16
Total Capital	$294.91	$281.29	$279.11	$286.63	$245.72
LACLEDE GROUP INC					
Long-Term Debt	$405.48	$304.63	$284.55	$284.46	$234.41
Short-Term Debt	71.38	218.20	161.67	117.05	127.00
Preferred Stock	1.11	1.26	1.27	1.59	1.76
Common Equity	355.92	299.07	285.77	288.09	282.99
Total Capital	$833.88	$823.16	$733.25	$691.18	$646.16
NEW JERSEY RESOURCES CORP					
Long-Term Debt	$343.62	$260.35	$397.57	$354.33	$292.02
Short-Term Debt	259.70	185.80	59.90	85.80	43.30
Preferred Stock	0.00	0.00	0.30	0.30	0.40
Common Equity	467.92	418.94	361.45	352.07	328.13
Total Capital	$1,071.24	$865.09	$819.22	$792.50	$663.85
NORTHWEST NATURAL GAS CO					
Long-Term Debt	$499.03	$500.32	$465.95	$418.38	$420.79
Short-Term Debt	102.50	85.20	69.80	108.29	56.26
Preferred Stock	0.00	0.00	8.25	34.00	34.75
Common Equity	568.52	506.32	483.10	468.16	452.31
Total Capital	$1,170.04	$1,091.84	$1,027.10	$1,028.83	$964.11
PEOPLES ENERGY CORP					
Long-Term Debt	$897.38	$744.35	$644.01	$744.31	$419.66
Short-Term Debt	55.63	207.95	287.87	507.45	568.22
Preferred Stock	0.00	0.00	0.00	0.00	0.00
Common Equity	870.08	848.00	806.32	805.52	777.08
Total Capital	$1,823.09	$1,800.29	$1,738.21	$2,057.28	$1,764.96
PIEDMONT NATURAL GAS CO					
Long-Term Debt	$660.00	$462.00	$509.00	$511.00	$483.00
Short-Term Debt	109.50	555.06	46.50	32.00	99.50
Preferred Stock	0.00	0.00	0.00	0.00	0.00
Common Equity	854.90	630.20	589.60	560.38	527.37
Total Capital	$1,624.40	$1,647.25	$1,145.10	$1,103.38	$1,109.87
SOUTH JERSEY INDUSTRIES INC					
Long-Term Debt	$334.26	$314.05	$283.71	$303.98	$251.86
Short-Term Debt	92.30	112.80	166.50	152.36	121.20
Preferred Stock	1.92	1.69	1.69	1.69	1.80
Common Equity	344.41	297.96	237.79	220.29	201.74
Total Capital	$772.89	$726.51	$689.69	$678.32	$576.60
WGL HOLDINGS INC					
Long-Term Debt	$650.80	$648.83	$710.35	$632.55	$561.24
Short-Term Debt	95.63	166.66	90.87	134.05	161.42
Preferred Stock	28.17	28.17	28.17	28.17	28.17
Common Equity	853.42	818.22	766.40	788.25	711.50
Total Capital	$1,628.03	$1,661.88	$1,595.79	$1,583.03	$1,462.34
SOUTHWEST GAS CORP					
Long-Term Debt	$1,292.76	$1,227.60	$1,160.85	$1,163.99	$964.56
Short-Term Debt	100.00	52.00	53.00	93.00	131.00
Preferred Stock	0.00	0.00	0.00	0.00	0.00
Common Equity	705.68	630.47	596.17	561.20	533.47
Total Capital	$2,098.43	$1,910.07	$1,810.02	$1,818.19	$1,629.02

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus / Research Insight Data Base

SOUTHWEST GAS CORPORATION
CAPITAL STRUCTURE
AS OF JUNE 30, 2005
(Thousands of Dollars)

Southwest Gas Corporation & Subsidiaries - Consolidated

	Actual 6/30/2005		PGA	Margin	PGA/Margin Adjusted 6/30/2005	
	Dollars	Percent	Adjustment	Adjustment	Dollars	Percent
Long-Term Debt	$ 1,204,440	58.5%	(36,082)	(14,880)	$ 1,153,478	57.0%
Preferred Securities	100,000	4.9%			100,000	4.9%
Common Equity	755,617	36.7%		14,880	770,497	38.1%
Total	$ 2,060,057	100.0%			$ 2,023,975	100.0%

Southwest Gas - Equity Method

	Actual 6/30/2005		PGA	Margin	PGA/Margin Adjusted 6/30/2005	
	Dollars	Percent	Adjustment	Adjustment	Dollars	Percent
Long-Term Debt	$ 1,184,134	58.1%	(36,082)	(14,880)	$ 1,133,173	56.6%
Preferred Securities	100,000	4.9%			100,000	5.0%
Common Equity	755,617	37.0%		14,880	770,497	38.5%
Total	$ 2,039,751	100.0%			$ 2,003,670	100.0%

	Pretax	After-Tax
PGA Balance	$ 58,196	$ 36,082
Margin Loss due to Weather/Conservation - 24 months	24,000	14,880
Income Tax Rate @ 38%		

Rebuttal Testimony
Exhibit No.___(TKW-3)

SOUTHWEST GAS CORPORATION
HISTORICAL FINANCIAL STATISTICS 1994 - 2004
(Dollars in Thousands)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Total
Utility Capital Expenditures												
Gross Construction Expenditures	$ 141,326	$ 166,056	$ 210,276	$ 163,868	$ 179,313	$ 207,773	$ 205,161	$ 248,352	$ 263,576	$ 228,288	$ 274,748	$ 2,288,737
Depreciation & Amortization	(57,284)	(62,492)	(67,443)	(74,528)	(80,231)	(88,254)	(94,689)	(104,498)	(115,175)	(120,791)	(130,515)	(995,900)
Net Capital Expenditures	$ 84,042	$ 103,564	$ 142,833	$ 89,340	$ 99,082	$ 119,519	$ 110,472	$ 143,854	$ 148,401	$ 107,497	$ 144,233	$ 1,292,837
Customers												
Beginning	931,917	979,715	1,028,728	1,092,489	1,150,860	1,208,746	1,274,478	1,337,161	1,397,291	1,454,984	1,530,586	
Ending	979,715	1,028,728	1,092,489	1,150,860	1,208,746	1,274,478	1,337,161	1,397,291	1,454,984	1,530,586	1,612,656	
Customers Added	47,798	49,013	63,761	58,371	57,886	65,732	62,683	60,130	57,693	75,602	82,070	680,739
Common Equity[1]												
Average Common Equity	301,590	331,750	326,583	351,667	415,093	472,973	491,420	526,226	552,507	579,847	636,237	
Return on Common Equity	7.8%	0.8%	1.2%	4.5%	10.8%	7.5%	6.9%	6.2%	7.1%	5.9%	7.6%	6.0%
Proxy Groups[2]												
Value Line LDC Group	10.3%	10.3%	11.7%	11.7%	10.6%	10.8%	11.6%	11.9%	11.6%	10.7%	10.8%	11.1%
ACC Staff Proxy Group	10.4%	10.1%	11.3%	11.8%	11.1%	10.5%	11.3%	11.5%	10.6%	11.3%	10.6%	11.0%
RUCO Proxy Group	11.1%	11.1%	12.2%	12.6%	10.8%	11.0%	12.4%	12.3%	11.5%	11.7%	11.5%	11.7%
Gap in Earnings[3]												
Value Line LDC Group	$ (7,483)	$ (31,475)	$ (34,434)	$ (25,430)	$ 969	$ (15,372)	$ (22,943)	$ (29,890)	$ (24,690)	$ (27,978)	$ (20,280)	$ (239,006)
ACC Staff Proxy Group	(7,732)	(30,732)	(32,836)	(25,672)	(1,208)	(14,318)	(21,712)	(28,129)	(19,589)	(31,101)	(19,376)	(232,405)
RUCO Proxy Group	(9,952)	(34,004)	(35,924)	(28,380)	(46)	(16,649)	(26,881)	(31,995)	(24,476)	(33,399)	(24,559)	(266,265)

[1] Gas Segment Only - Source: Southwest Gas Corporation 2004 Statistical Report & Southwest Gas Corporation 2001 Statistical Report
[2] Source: Theodore K. Wood, Rebuttal Exhibit No.___(TKW-4), Sheet 2 of 3.
[3] Gap in Earnings = Average Common Equity x (Southwest Gas Segment Return Common Equity - Proxy Group Return on Common Equity)

Rebuttal Testimony
Exhibit No.___(TKW-4)
Sheet 1 of 3

VALUE LINE INVESTMENT SURVEY
NATURAL GAS DISTRIBUTION COMPANIES
RETURN ON COMMON EQUITY 1994-2004[1]

Company	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	Average
AGL Resources, Inc.	11.3%	12.5%	12.1%	11.3%	12.3%	7.9%	11.5%	12.3%	14.5%	14.0%	11.0%	11.9%
Atmos Energy Corp.	9.8%	11.9%	13.9%	12.0%	14.9%	6.6%	8.2%	9.6%	10.4%	9.3%	7.6%	10.4%
Cascade Natural Gas	5.9%	8.1%	3.5%	9.1%	8.3%	12.0%	12.9%	13.3%	10.9%	8.6%	11.2%	9.4%
KeySpan Corp.	11.2%	11.1%	10.7%	10.9%	NMF	8.2%	10.0%	8.2%	13.3%	11.4%	15.6%	11.1%
Laclede Group, Inc.	11.3%	9.2%	13.6%	12.9%	10.8%	9.5%	9.1%	10.5%	7.8%	11.6%	10.1%	10.6%
New Jersey Resources	12.9%	13.1%	13.5%	14.3%	14.4%	14.8%	14.6%	14.9%	15.7%	15.6%	15.3%	14.5%
Nicor, Inc.	15.9%	14.4%	16.6%	16.7%	14.6%	15.4%	19.2%	18.7%	17.5%	12.3%	13.1%	15.9%
Northwest Natural Gas	11.8%	10.9%	12.7%	11.0%	6.0%	9.9%	10.0%	10.2%	8.5%	9.0%	8.9%	9.9%
Peoples Energy Corp.	11.6%	9.7%	15.2%	13.7%	10.7%	11.0%	12.4%	13.9%	12.3%	12.3%	9.4%	12.0%
Piedmont Natural Gas	11.8%	11.4%	12.6%	13.1%	13.2%	11.8%	12.1%	11.7%	10.6%	11.8%	11.1%	11.9%
SEMCO Energy	10.5%	10.4%	13.3%	10.3%	6.6%	11.9%	12.3%	NMF	8.1%	1.7%	2.5%	8.8%
South Jersey Industries, Inc.	8.0%	11.2%	10.6%	13.3%	10.3%	14.6%	14.8%	12.8%	12.5%	11.6%	12.5%	12.0%
Southern Union Co.	4.0%	12.8%	14.3%	7.1%	4.1%	3.5%	1.5%	1.8%	5.3%	4.7%	10.2%	6.3%
Southwest Gas Corporation	7.4%	0.7%	1.7%	5.4%	10.0%	7.8%	7.2%	6.6%	6.5%	6.1%	8.3%	6.2%
UGI Corp.	8.9%	5.2%	9.2%	12.9%	11.0%	17.2%	17.6%	22.5%	23.8%	17.6%	14.1%	14.5%
WGL Holdings, Inc.	12.2%	12.0%	14.4%	13.7%	11.1%	9.9%	11.7%	11.2%	7.2%	14.0%	11.7%	11.7%
Average	10.3%	10.3%	11.7%	11.7%	10.6%	10.8%	11.6%	11.9%	11.6%	10.7%	10.8%	11.1%
Standard Deviation	2.9%	3.4%	4.0%	2.8%	3.2%	3.6%	4.2%	4.8%	4.7%	4.1%	3.2%	2.7%
ACC Staff Proxy Group	10.4%	10.1%	11.3%	11.8%	11.1%	10.5%	11.3%	11.5%	10.6%	11.3%	10.6%	11.0%
RUCO Proxy Group	11.1%	11.1%	12.2%	12.6%	10.8%	11.0%	12.4%	12.3%	11.5%	11.7%	11.5%	11.6%
Southwest Gas[2]	7.8%	0.8%	1.2%	4.5%	10.8%	7.5%	6.9%	6.2%	7.1%	5.9%	7.6%	6.0%
Moody's Baa Utility Debt[3]	8.6%	8.3%	8.2%	8.0%	7.3%	7.9%	8.4%	8.0%	8.0%	6.8%	6.4%	7.8%

[1] Source: Value Line Investment Survey, June 17, 2005 for the period 1995-2004, December 17, 2004 for 1994.
[2] Gas Segment Only - Source: Southwest Gas Corporation 2004 Statistical Report & Southwest Gas Corporation 2001 Statistical Report
[3] Source: Bloomberg

SOUTHWEST GAS CORPORATION
ACTUAL CAPITAL STRUCTURE ADJUSTED FOR NORMALIZED
1994-2004 NATURAL GAS LDC INDUSTRY AVERAGE EARNINGS
(Dollars in thousands)

Capital Component	Actual 12/31/2004	Capital Ratio	Normalized Earnings[1]	Adjusted	Capital Ratio
Long-Term Debt	$ 1,192,757	59.69%	$ (239,006)	$ 953,751	47.73%
Preferred Equity	100,000	5.00%		100,000	5.00%
Common Equity	705,676	35.31%	239,006	944,682	47.27%
Total Permanent Capital	$ 1,998,433	100.00%		$ 1,998,433	100.00%

[1] Source: Theodore K. Wood, Rebuttal Exhibit No.___(TKW-4), Sheet 1 of 3.

SOUTHWEST GAS CORPORATION
COMMON STOCK ISSUANCES 1994-2005
(Dollars and Shares in Thousands)

Line No.	Year	Shares Outstanding	Shares Issued	Proceeds ($000's)	Line No.
	(a)	(b)	(c)	(d)	
1	1993	20,997			1
2	1994	21,282	285	$ 4,773	2
3	1995	24,467	3,185	44,985	3
4	1996	26,733	2,266	38,767	4
5	1997	27,387	654	12,205	5
6	1998	30,410	3,023	67,180	6
7	1999	30,985	575	14,997	7
8	2000	31,710	725	15,595	8
9	2001	32,493	783	17,061	9
10	2002	33,289	796	18,174	10
11	2003	34,232	943	21,290	11
12	2004	36,794	2,562	58,679	12
13	Total		15,797	$ 313,706	13
14	2005[1]	38,264	1,470	$ 35,560	14
15	Grand Total		17,267	$ 349,266	15

[1] As of June 30, 2005.

MOSES

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
Prepared Rebuttal Testimony
of
LISA E. MOSES

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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
LISA E. MOSES

INTRODUCTION

Q. 1 Please state your name and business address.

A. 1 My name is Lisa E. Moses, and my business address is 5241 Spring Mountain Road, Las Vegas, Nevada 89150-0002.

Q. 2 By whom and in what capacity are you employed?

A. 2 I am employed by Southwest Gas Corporation (Southwest or Company) as Director/Tax.

Q. 3 Did you present direct testimony on behalf of Southwest in this proceeding?

A. 3 No, I did not.

Q. 4 Please state your educational background and business experience.

A. 4 I am a graduate of the University of California at Los Angeles having received a Bachelor of Arts degree in Economics/Business in 1987. In 1991, I earned a Masters in Business Taxation from the University of Southern California. In 1987, I joined the tax department of Deloitte and Touche LLP (formerly Deloitte, Haskins & Sells) in Los Angeles. In 1989, I transferred to the Long Beach office. In 1992, I joined the Las Vegas office, and was promoted to Manager in 1993 and to Senior Manager in

1995. In 1996, I joined Southwest as Director/Tax. I have been licensed as a Certified Public Accountant by the state of California since 1990 and have been a member of the American Institute of Certified Public Accountants since that year. In 1993, I was also licensed by the state of Nevada.

Q. 5 Please state briefly the nature of your present responsibilities and duties with Southwest.

A. 5 As Director/Tax, I am responsible for all phases of Southwest's taxes, including preparing federal, state and local tax returns and tax provisions, researching tax matters, and preparing tax-related testimony and exhibits for various proceedings, including rate cases.

Q. 6 Have you previously testified before any regulatory commissions?

A. 6 Yes, I have previously testified before the Public Utilities Commission of Nevada, the California Public Utilities Commission, and the Federal Energy Regulatory Commission.

Q. 7 What is the purpose of your prepared rebuttal testimony in this proceeding?

A. 7 The purpose of my prepared rebuttal testimony is to respond to specific aspects of the direct testimony of Dennis R. Rogers, witness for Arizona Corporation Commission Utilities Division Staff (Staff), and Marylee Diaz Cortez and Rodney L. Moore, witnesses for the Residential Utility Consumer Office (RUCO), regarding their recommendations and comments concerning income tax

lag, and post-test period legislative changes.

Q. 8 Did you prepare exhibits to support your rebuttal?

A. 8 Yes. I prepared an exhibit identified as Rebuttal Exhibit No.___(LEM-1).

Q. 9 Please summarize your rebuttal testimony.

A. 9 My rebuttal testimony will address the following issues:

- RUCO's proposed increase to the Company's income tax lag days.
- RUCO's and Staff's utilization of legislation enacted and effective after the test period to adjust the Company's property tax expense.
- Southwest's proposed change to rate base as the result of legislation enacted in 2005.

RUCO'S RECOMMENDED TAX LAG DAYS

Q. 10 What was Ms. Diaz Cortez's recommendation concerning the appropriate income tax lag days?

A. 10 Initially, Ms. Diaz Cortez recommended an increase in Southwest's proposed income tax lag days from 37 to 59.55 days. Ms. Diaz Cortez acknowledged an inadvertent error in her calculation and subsequently reduced the number of tax lag days to 37.5 in response to Southwest's Second Set of Data Requests No. 5. Based upon RUCO's response to Southwest's data request and Southwest's understanding that Ms. Diaz Cortez is going to revise her testimony to reflect this change in the number of income tax lag days, Southwest does not dispute RUCO's revised proposed calculation of 37.5 days.

STAFF'S AND RUCO'S PROPERTY TAX ADJUSTMENTS

Q. 11 Did Staff and RUCO propose a reduction to property tax expense as a result of legislation enacted after the end of the test period?

A. 11 Yes, both Staff and RUCO made two adjustments to the property tax expense amount requested by the Company.

Q. 12 What is the nature of the two proposed adjustments?

A. 12 The first adjustment taken by both Staff and RUCO is to eliminate the recovery of property tax expense on Contributions in Aid of Construction (CIAC). The second is to reduce the applicable assessment ratio.

Q. 13 With respect to the property taxes on CIAC, was Southwest paying and accruing property taxes on CIAC at the time that it filed its application for new rates in Arizona?

A. 13 Yes. During the test period and at the time that Southwest filed its application for new rates, Southwest was required to accrue and remit property taxes on CIAC.

Q. 14 Was legislation enacted subsequent to the test period that changed the property tax treatment for CIAC for periods beyond the test period?

A. 14 Yes. Arizona House Bill 2056 (signed into law in 2005) clarified that CIAC would not be subject to property tax expense for periods beginning in 2005.

Q. 15 With respect to the Arizona property tax assessment ratio, was Southwest paying and accruing property taxes at the legally required 25 percent assessment ratio at the time of filing its application to adjust general rates in Arizona?

A. 15 Yes. As required by law, Southwest was accruing and remitting property taxes to Arizona based upon the enacted 25 percent assessment ratio during the test period and at the time it filed its general rate case.

Q. 16 Was legislation enacted subsequent to the test period, that changed the Arizona property tax assessment ratio for periods beyond the test period?

A. 16 Yes. Arizona House Bill 2779 (signed into law in 2005) provides for a gradual reduction in the assessment ratio for periods subsequent to the test period. The assessment ratio is scheduled to decrease one-half percent a year commencing in 2006 for 10 years, to an effective rate of 20 percent in 2015.

Q. 17 Does the Company propose updating its property tax expense annualization in light of these developments?

A. 17 Yes. Since the updated definition of plant (to exclude CIAC) is effective January 1, 2005, the effect of the change is known and measurable. The Company believes that in order to be consistent with its other proposed post-test year adjustments, such as the 2005 wage increase and within-grade adjustment, the Company should also exclude CIAC from its property tax calculation. The Company submits that there should be consistency with how post-test year adjustments (including impacts of new state or federal laws) are treated in this proceeding.

Q. 18 Does the Company recommend updating the assessment ratio used to calculate its annualized property tax expense?

A. 18 Yes. The Company accepts RUCO's recommendation to use the 24.5 percent property tax assessment ratio effective January 1, 2006, because the effective date of that assessment ratio is before rates in this proceeding are expected to go into effect. However, the Company recommends the Commission reject Staff's proposal to use the 2007 assessment rate of 24 percent. While the property tax assessment ratio is known and measurable for 2006 through 2015, the tax rate itself is not. Therefore, the Company's property tax expense for 2007 and beyond is not known and measurable with any reasonable certainty. Further, the effective date of the 2007 property tax assessment ratio is beyond the date that new rates are expected to be effective as a result of this proceeding.

Q. 19 Are you aware of other legislative changes that have occurred beyond the test period that are also effective for 2005 (or subsequent years) that would result in a change in Southwest's requested revenue requirement?

A. 19 Yes. The Internal Revenue Service issued regulations on August 3, 2005, and a revenue ruling relating to the capitalization of costs under two simplified methods contained in previously-issued regulations under Code Sec. 263A uniform capitalization (UNICAP) rules. With respect to Southwest, the regulations are effective for calendar year 2005 [Rebuttal Exhibit No.___(LEM-1)].

Q. 20 What is the effect of the recent UNICAP regulations to Southwest?

A. 20 As a result of the recently issued new UNICAP regulations, Southwest will be required to include in income in 2005 and 2006 the cumulative tax deduction taken under the old UNICAP regulations with respect to the Simplified Service Cost Method (SSCM). Please see my Rebuttal Exhibit No.___(LEM-2) for the quantification of the impact of this change. As such, if the Commission accepts the proposal to include post-test period enacted legislative changes, which also have an effective date post-test period for property tax adjustments related to CIAC (2005 effective date) and the property tax assessment ratio (2006 effective date), then it should give equal consideration to federal SSCM UNICAP legislation effective for Southwest on January 1, 2005.

Q. 21 What adjustment(s) does Southwest propose to reflect the recent changes in the federal SSCM UNICAP legislation?

A. 21 An adjustment to rate base would be necessary in order to be consistent with all applicable tax legislation enacted and effective after the test period. Accordingly, if all such adjustments are made, I am recommending a reduction in deferred income taxes and an increase in rate base of $21,120,694 because the plant-related deferred taxes as of August 31, 2004 will have been overstated by $21,120,694 if the proposed CIAC and the property tax assessment ratio adjustments are accepted by the Commission and the adjustment to rate base is not.

Q. 22 Does this conclude your prepared rebuttal testimony?

A. 22 Yes, it does.

[4830-01-p] Published August 3, 2005

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 1

TD 9217

RIN 1545-BE61

SUBJECT: Guidance Regarding the Simplified Service Cost Method and the Simplified Production Method

AGENCY: Internal Revenue Service (IRS), Treasury.

ACTION: Final and temporary regulations.

SUMMARY: This document contains final and temporary regulations relating to the capitalization of costs under the simplified service cost method and the simplified production method provided by the Income Tax Regulations. The regulations affect taxpayers that use the simplified service cost method or the simplified production method for self-constructed assets that are produced on a routine and repetitive basis in the ordinary course of their businesses. The text of the temporary regulations also serves as the text of the proposed regulations set forth in the notice of proposed rulemaking on this subject in the Proposed Rules section in this issue of the **Federal Register**. The portions of this rule that are final regulations provide necessary cross-references to the temporary regulations.

DATES: Effective Date: These regulations are effective August 2, 2005.

Applicability Date: These regulations apply to taxable years ending on or after August 2, 2005. See §§1.263A-1T(l) and 1.263A-2T(f).

FOR FURTHER INFORMATION CONTACT: Scott Rabinowitz, (202) 622-4970 (not a toll-free number).

SUPPLEMENTARY INFORMATION:

Background

Under section 263A of the Internal Revenue Code (Code), producers of real or tangible personal property and resellers of real or personal property must capitalize the direct costs and a proper share of the indirect costs of such property. Indirect costs include indirect labor costs, overhead, and service costs. Service costs are indirect costs that can be identified specifically with an administrative or support department. Service costs consist of capitalizable service costs, deductible service costs, and mixed service costs. Capitalizable service costs are service costs that directly benefit, or are incurred by reason of, a production or resale activity. Deductible service costs are service costs that do not directly benefit, or are not incurred by reason of, a production or resale activity. Mixed service costs are service costs that are partially allocable to production or resale activities and partially allocable to non-production or non-resale activities.

Although section 263A requires capitalization of indirect costs, the statute generally does not set forth methods for allocating indirect costs, including mixed service costs. Instead, in accordance with the legislative history of the section, the regulations under section 263A generally provide that indirect costs are to be allocated to property using detailed or specific (facts-and-circumstances) cost allocation methods, including a specific identification method, the standard cost method, and methods using burden rates. The regulations further provide that allocations of mixed service costs are

to be made on the basis of a factor or relationship that reasonably relates such costs with the benefit provided. To alleviate the administrative burdens of using these detailed or specific methods, the Treasury Department and the Internal Revenue Service developed simplified methods. In particular, the simplified production method provided by §1.263A-2(b) determines aggregate amounts of additional section 263A costs allocable to produced "eligible property." Additional section 263A costs are those costs, other than interest, that were not capitalized under a taxpayer's method of accounting immediately prior to the effective date of section 263A, but that are required to be capitalized under section 263A. In addition, the final regulations provide a simplified method, the simplified service cost method provided by §1.263A-1(h), for determining capitalizable mixed service costs incurred during the taxable year with respect to "eligible property."

On March 30, 1987, temporary regulations under section 263A were published in the **Federal Register** (TD 8131, 1987-1 C.B. 98, [52 FR 10052]). The temporary regulations limited the availability of the simplified production method and the simplified service cost method to two types of "eligible property": stock in trade or other property properly includible in the inventory of the taxpayer and non-inventory property held by a taxpayer primarily for sale to customers in the ordinary course of the taxpayer's trade or business. The preamble to the temporary regulations indicates that this limitation was prescribed because the simplified production method is not appropriate to account for the casual or occasional production of property (*i.e.*, property that is not mass-produced on a repetitive and routine basis and that does not have a high "turnover" rate.)

Similarly, the simplified service cost method is not appropriate to account for the casual or occasional production of property.

On August 22, 1988, the IRS published Notice 88-86 (1988-2 C.B. 401). Notice 88-86 states that forthcoming regulations will expand the categories of property eligible for the simplified production method and simplified service cost method to other types of property that share characteristics that are appropriate for application of the methods. In particular, the notice indicates that the regulations will provide that the simplified production method and the simplified service cost method are available to (1) self-constructed assets substantially identical in nature to, and produced in the same manner as, inventory property or other property held primarily for sale to customers in the ordinary course of the taxpayer's trade or business, and (2) self-constructed assets produced by the taxpayer on a routine and repetitive basis in the ordinary course of the taxpayer's production activities.

On August 9, 1993, final regulations under section 263A were published in the **Federal Register** (TD 8482, 1993-2 C.B. 77, [58 FR 42198]). The final regulations follow Notice 88-86 and expand the categories of eligible property for the simplified production method and the simplified service cost method.

Notice 2003-36 (2003-1 C.B. 992), as modified by Notice 2003-59 (2003-59 C.B. 429), indicates that the Treasury Department and the IRS are aware that uncertainty exists as to what types of property constitute "eligible property" under §§1.263A-1(h)(2)(i)(D) and 1.263A-2(b)(2)(i)(D) for purposes of the simplified service cost method and the simplified production method. These sections provide that self-constructed

assets produced by a taxpayer on a routine and repetitive basis in the ordinary course of the taxpayer's trade or business are "eligible property."

To provide guidance as to what types of property constitute "eligible property" under the final regulations, Rev. Rul. 2005-53 (2005-35 I.R.B.)(dated August 29, 2005), holds that a taxpayer's production of property will be considered "routine and repetitive" for purposes of §§1.263A-1(h)(2)(i)(D) and 1.263A-2(b)(2)(i)(D) only if the property is mass-produced (*i.e.*, numerous identical goods are manufactured using standardized designs and assembly line techniques) <u>or</u> the produced property has a high degree of turnover (*i.e.*, the costs of production are recovered over a relatively short amount of time).

Explanation of Provisions

Upon further consideration of the simplified service cost method and the simplified production method under §§1.263A-1(h)(2)(i)(D) and 1.263A-2(b)(2)(i)(D), the Treasury Department and the IRS believe that, to minimize the distortion of income that may arise from the use of those methods, a taxpayer's production of property is considered "routine and repetitive" for purposes of those sections only if the property is mass-produced and has a high degree of turnover. Accordingly, the temporary regulations provide that self-constructed property is considered produced on a routine and repetitive basis for purposes of the simplified service cost method and the simplified production method only if numerous substantially identical units of tangible personal property are produced within a taxable year using standardized designs and assembly line techniques <u>and</u> the applicable recovery period of the assets under §168(c) is not longer than 3 years.

A change in a taxpayer's treatment of mixed service costs or additional section 263A costs to comply with these temporary regulations is a change in method of accounting to which the provisions of sections 446 and 481 and the regulations thereunder apply. For the taxpayer's first taxable year ending on or after August 2, 2005, the taxpayer is granted the consent of the Commissioner to change its method of accounting to comply with these temporary regulations, provided the taxpayer follows the applicable administrative procedures for obtaining the Commissioner's automatic consent to a change in accounting method (for further guidance, for example, see Rev. Proc. 2002-9 (2002-1 C.B. 327), as modified and clarified by Announcement 2002-17 (2002-1 C.B. 561), modified and amplified by Rev. Proc. 2002-19 (2002-1 C.B. 696), and amplified, clarified, and modified by Rev. Proc. 2002-54 (2002-2 C.B. 432)). For purposes of Form 3115, "Application for Change in Accounting Method", the designated number for the automatic accounting method change authorized by this regulation is "95." If Form 3115 is revised or renumbered, any reference in this section to that form is treated as a reference to the revised or renumbered form. For the taxpayer's second and subsequent taxable years ending on or after August 2, 2005, requests to secure the consent of the Commissioner must be made under the administrative procedures for obtaining the Commissioner's advance consent to a change in accounting method (for further guidance, for example, see Rev. Proc. 97-27 (1997-1 C.B. 680), as modified and amplified by Rev. Proc. 2002-19 (2002-1 C.B. 696), as amplified and clarified by Rev. Proc. 2002-54 (2002-2 C.B. 432)). However, notwithstanding section 5.04(1) of Rev. Proc. 2002-9 and section 5.02(3)(a) of Rev. Proc. 97-27, the section 481(a) adjustment

period is two taxable years for a net positive adjustment for an accounting method change that is made to conform to these temporary regulations.

Special Analyses

It has been determined that this Treasury decision is not a significant regulatory action as defined in Executive Order 12866. Therefore, a regulatory assessment is not required. It also has been determined that section 553(b) of the Administrative Procedure Act (5 U.S.C. chapter 5) does not apply to these regulations. Please refer to the cross-reference notice of proposed rulemaking published elsewhere in this issue of the **Federal Register** for applicability of the Regulatory Flexibility Act (5 U.S.C. chapter 6). Pursuant to section 7805(f) of the Code, these temporary regulations will be submitted to the Chief Counsel for Advocacy of the Small Business Administration for comment on their impact on small business.

Drafting Information

The principal author of these regulations is Scott Rabinowitz of the Office of Associate Chief Counsel (Income Tax and Accounting). However, other personnel from the IRS and the Treasury Department participated in their development.

List of Subjects in 26 CFR Part 1

Income taxes, Reporting and recordkeeping requirements.

Amendments to the Regulations

Accordingly, 26 CFR part 1 is amended as follows:

PART 1--INCOME TAXES

Paragraph 1. The authority citation for part 1 continues to read, in part, as follows:

Authority: 26 U.S.C. 7805 * * *

Par. 2. Section 1.263A-1 is amended by revising paragraph (h)(2)(i)(D) and adding paragraphs (k) and (l) to read as follows:

§1.263A-1 Uniform capitalization of costs.

* * * * *

(h) * * *

(2) * * *

(i) * * *

(D) [Reserved]. For further guidance, see §1.263A-1T(h)(2)(i)(D).

* * * * *

(k) and (l) [Reserved]. For further guidance, see §1.263A-1T(k) and (l).

Par 3. Section 1.263A-1T is added to read as follows:

§1.263A-1T Uniform capitalization of costs (temporary).

(a) through (h)(2)(i)(C) [Reserved]. For further guidance, see §1.263A-1(a) through (h)(2)(i)(C).

(D) Self-constructed tangible personal property produced on a routine and repetitive basis--(1) In general. Self-constructed tangible personal property produced by the taxpayer on a routine and repetitive basis in the ordinary course of the taxpayer's trade or business. Self-constructed tangible personal property is produced by the taxpayer on a routine and repetitive basis in the ordinary course of the taxpayer's trade or business when units of tangible personal property (as defined in §1.263A-10(c)) are mass-produced, *i.e.*, numerous substantially identical assets are manufactured within a taxable year using standardized designs and assembly line techniques, and the applicable recovery period of the property determined under section 168(c) is not longer

than 3 years. For purposes of this paragraph, the applicable recovery period of the assets will be determined at the end of the taxable year in which the assets are placed in service for purposes of §1.46-3(d). Subsequent changes to the applicable recovery period after the assets are placed in service will not affect the determination of whether the assets are produced on a routine and repetitive basis for purposes of this paragraph.

(2) Examples. The following examples illustrate this paragraph (h)(2)(i)(D):

Example 1. Y is a manufacturer of automobiles. During the taxable year Y produces numerous substantially identical dies and molds using standardized designs and assembly line techniques. The dies and molds have a 3-year applicable recovery period for purposes of section 168(c). Y uses the dies and molds to produce or process particular automobile components and does not hold them for sale. The dies and molds are produced on a routine and repetitive basis in the ordinary course of Y's business for purposes of this paragraph because the dies and molds are both mass-produced and have a recovery period of not longer than 3 years.

Example 2. Z is an electric utility that regularly manufactures and installs identical poles that are used in transmitting and distributing electricity. The poles have a 20-year applicable recovery period for purposes of section 168(c). The poles are not produced on a routine and repetitive basis in the ordinary course of Z's business for purposes of this paragraph because the poles have an applicable recovery period that is longer than 3 years.

(h)(2)(ii) through (j) [Reserved]. For further guidance, see §1.263A-1(h)(2)(ii) through (j).

(k) Change in method of accounting--(1) In general. A change in a taxpayer's treatment of mixed service costs to comply with these temporary regulations is a change in method of accounting to which the provisions of sections 446 and 481 and the regulations thereunder apply. See §1.263A-7. For a taxpayer's first taxable year ending on or after August 2, 2005, the taxpayer is granted the consent of the Commissioner to change its method of accounting to comply with these temporary

regulations, provided the taxpayer follows the administrative procedures, as modified by paragraphs (k)(2) through (4) of this section, issued under §1.446-1(e)(3)(ii) for obtaining the Commissioner's automatic consent to a change in accounting method (for further guidance, for example, see Rev. Proc. 2002-9 (2002-1 C.B. 327), as modified and clarified by Announcement 2002-17 (2002-1 C.B. 561), modified and amplified by Rev. Proc. 2002-19 (2002-1 C.B. 696), and amplified, clarified, and modified by Rev. Proc. 2002- 54 (2002-2 C.B. 432), and §601.601(d)(2)(ii)(b) of this chapter). For purposes of Form 3115, "Application for Change in Accounting Method," the designated number for the automatic accounting method change authorized by this paragraph (k) is "95." If Form 3115 is revised or renumbered, any reference in this section to that form is treated as a reference to the revised or renumbered form. For the taxpayer's second and subsequent taxable years ending on or after August 2, 2005, requests to secure the consent of the Commissioner must be made under the administrative procedures, as modified by paragraphs (k)(2) through (4) of this section, for obtaining the Commissioner's advance consent to a change in accounting method (for further guidance, for example, see Rev. Proc. 97-27 (1997-1 C.B. 680), as modified and amplified by Rev. Proc. 2002-19 (2002-1 C.B. 696), as amplified and clarified by Rev. Proc. 2002-54 (2002-2 C.B. 432), and §601.601(d)(2)(ii)(b) of this chapter).

(2) Scope limitations. Any limitations on obtaining the automatic consent of the Commissioner do not apply to a taxpayer seeking to change its method of accounting to comply with this section for its first taxable year ending on or after August 2, 2005.

(3) Audit protection. A taxpayer that changes its method of accounting in accordance with this paragraph (k) to comply with these temporary regulations does not receive

audit protection if its method of accounting for mixed service costs is an issue under consideration at the time the application is filed with the national office.

(4) Section 481(a) adjustment. A change in method of accounting to conform to these temporary regulations requires a section 481(a) adjustment. The section 481(a) adjustment period is two taxable years for a net positive adjustment for an accounting method change that is made to conform to these temporary regulations.

(l) Effective date. This section applies for taxable years ending on or after August 2, 2005.

Par. 4. Section 1.263A-2 is amended by revising paragraph (b)(2)(i)(D) and adding paragraphs (e) and (f) to read as follows:

§1.263A-2 Rules relating to property produced by the taxpayer.

* * * * *

(b) * * *

(2) * * *

(i) * * *

(D) [Reserved]. For further guidance, see §1.263A-2T(b)(2)(i)(D).

* * * * *

(e) and (f) [Reserved]. For further guidance, see §1.263A-2T(e) and (f).

Par. 5. Section 1.263A-2T is added to read as follows:

§263A-2T Rules relating to property produced by the taxpayer (temporary).

(a) through (b)(2)(i)(C) [Reserved]. For further guidance, see §1.263A-2(a) through (b)(2)(i)(C).

(D) Self-constructed tangible personal property produced on a routine and repetitive basis–(1) In general. Self-constructed tangible personal property produced by the taxpayer on a routine and repetitive basis in the ordinary course of the taxpayer's trade or business. Self-constructed tangible personal property is produced by the taxpayer on a routine and repetitive basis in the ordinary course of the taxpayer's trade or business when units of tangible personal property (as defined in §1.263A-10(c)) are mass-produced, *i.e.*, numerous substantially identical assets are manufactured within a taxable year using standardized designs and assembly line techniques, and the applicable recovery period of the property determined under section 168(c) is not longer than 3 years. For purposes of this paragraph, the applicable recovery period of the assets will be determined at the end of the taxable year in which the assets are placed in service for purposes of §1.46-3(d). Subsequent changes to the applicable recovery period after the assets are placed in service will not affect the determination of whether the assets are produced on a routine and repetitive basis for purposes of this paragraph.

(2) Examples. The following examples illustrate this paragraph (D):

Example 1. Y is a manufacturer of automobiles. During the taxable year Y produces numerous substantially identical dies and molds using standardized designs and assembly line techniques. The dies and molds have a 3-year applicable recovery period for purposes of section 168(c). Y uses the dies and molds to produce or process particular automobile components and does not hold them for sale. The dies and molds are produced on a routine and repetitive basis in the ordinary course of Y's business for purposes of this paragraph because the dies and molds are both mass-produced and have an applicable recovery period of not longer than 3 years.

Example 2. Z is an electric utility that regularly manufactures and installs identical poles that are used in transmitting and distributing electricity. The poles have a 20-year applicable recovery period for purposes of section 168(a). The poles are not produced on a routine and repetitive basis in the ordinary course of Z's business for purposes of

this paragraph because the poles have an applicable recovery period that is longer than 3 years.

(b)(2)(ii) through (d) [Reserved]. For further guidance, see §1.263A-2(b)(2)(ii) though (d).

(e) Change in method of accounting- -(1) In general. A change in a taxpayer's treatment of additional section 263A costs to comply with these temporary regulations is a change in method of accounting to which the provisions of sections 446 and 481 and the regulations thereunder apply. See §1.263A-7. For a taxpayer's first taxable year ending on or after August 2, 2005, the taxpayer is granted the consent of the Commissioner to change its method of accounting to comply with these temporary regulations, provided the taxpayer follows the administrative procedures, as modified by paragraphs (e)(2) through (4) of this section, issued under §1.446-1(e)(3)(ii) for obtaining the Commissioner's automatic consent to a change in accounting method (for further guidance, for example, see Rev. Proc. 2002-9 (2002-1 C.B. 327), as modified and clarified by Announcement 2002-17 (2002-1 C.B. 561), modified and amplified by Rev. Proc. 2002-19 (2002-1 C.B. 696), and amplified, clarified, and modified by Rev. Proc. 2002- 54 (2002-2 C.B. 432), and §601.601(d)(2)(ii)(b) of this chapter). For purposes of Form 3115, "Application for Change in Accounting Method," the designated number for the automatic accounting method change authorized by this paragraph (e) is "95." If Form 3115 is revised or renumbered, any reference in this section to that form is treated as a reference to the revised or renumbered form. For the taxpayer's second and subsequent taxable years ending on or after August 2, 2005, requests to secure the consent of the Commissioner must be made under the administrative procedures, as modified by paragraphs (e)(2) through (4) of this section, for obtaining the

Commissioner's advance consent to a change in accounting method (for further guidance, for example, see Rev. Proc. 97-27 (1997-1 C.B. 680), as modified and amplified by Rev. Proc. 2002-19 (2002-1 C.B. 696), as amplified and clarified by Rev. Proc. 2002-54 (2002-2 C.B. 432), and §601.601(d)92)(ii)(b) of this chapter).

(2) Scope limitations. Any limitations on obtaining the automatic consent of the Commissioner do not apply to a taxpayer seeking to change its method of accounting to comply with this section for its first taxable year ending on or after August 2, 2005.

(3) Audit protection. A taxpayer that changes its method of accounting in accordance with this paragraph (e) to comply with these temporary regulations does not receive audit protection if its method of accounting for additional section 263A costs is an issue under consideration at the time the application is filed with the national office.

(4) Section 481(a) adjustment. A change in method of accounting to conform to these temporary regulations requires a section 481(a) adjustment. The section 481(a) adjustment period is two taxable years for a net positive adjustment for an accounting method change that is made to conform to these temporary regulations.

(f) Effective date. This section applies for taxable years ending on or after August 2, 2005.

Deputy Commissioner for Services and Enforcement.

Approved: July 14, 2005

Acting Deputy Assistant Secretary of the Treasury.

[4830-01-p] Published August 3, 2005

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 1

REG-121584-05

RIN 1545-BE57

SUBJECT: Guidance Regarding the Simplified Service Cost Method and the Simplified Production Method

AGENCY: Internal Revenue Service (IRS), Treasury.

ACTION: Notice of proposed rulemaking by cross-reference to temporary regulations.

SUMMARY: In the Rules and Regulations section of this issue of the **Federal Register**, the IRS is issuing temporary regulations relating to the capitalization of costs under the simplified service cost method and the simplified production method provided by the Income Tax Regulations. The regulations affect taxpayers that use the simplified service cost method or the simplified production method for self-constructed assets that are constructed on a routine and repetitive basis in the ordinary course of their businesses. The text of those regulations also serves as the text of these proposed regulations.

DATES: Written or electronic comments must be received by November 1, 2005.

ADDRESSES: Send submissions to: CC:PA:LPD:PR (REG-121584-05), room 5203, Internal Revenue Service, POB 7604, Ben Franklin Station, Washington, DC 20044. Submissions may be hand delivered Monday through Friday between the hours of 8 a.m. and 4 p.m. to CC:PA:LPD:PR (REG-121584-05), Courier's Desk, Internal Revenue Service, 1111 Constitution Avenue NW., Washington, DC, or sent electronically via the

IRS Internet site at www.irs.gov/regs or the Federal eRulemaking Portal at http://www.regulations.gov (IRS and REG-121584-05 or RIN-1545-BE57).

FOR FURTHER INFORMATION CONTACT: Concerning the proposed regulations, Scott Rabinowitz, (202) 622-4970; concerning submission of comments and/or requests for a public hearing, LaNita VanDyke, (202) 622-7180 (not toll-free numbers).

SUPPLEMENTARY INFORMATION:

Background and Explanation of Provisions

Temporary regulations in the Rules and Regulations section of this issue of the **Federal Register** amend the Income Tax Regulations (26 CFR part 1) relating to section 263A of the Internal Revenue Code (Code). The temporary regulations provide that self-constructed property is considered produced on a routine and repetitive basis for purposes of the simplified service cost method and the simplified production method when numerous units of tangible personal property are mass-produced, *i.e.*, substantially identical assets are manufactured within a taxable year using standardized designs and assembly line techniques, and the recovery period of the assets under section 168(c) is not longer than 3 years. The text of those regulations also serves as the text of these proposed regulations. The preamble to the temporary regulations explains the amendments.

Special Analyses

It has been determined that this notice of proposed rulemaking is not a significant regulatory action as defined in Executive Order 12866. Therefore, a regulatory assessment is not required. It also has been determined that section 553(b) of the Administrative Procedure Act (5 U.S.C. chapter 5) does not apply to these regulations,

and, because the regulations do not impose a collection of information on small entities, the Regulatory Flexibility Act (5 U.S.C. chapter 6) does not apply. Pursuant to section 7805(f) of the Code, this notice of proposed rulemaking will be submitted to the Chief Counsel for Advocacy of the Small Business Administration for comment on its impact on small business.

Comments and Requests for a Public Hearing

Before these proposed regulations are adopted as final regulations, consideration will be given to any written comments (a signed original and eight (8) copies) or electronic comments that are submitted timely to the IRS. The IRS and the Treasury Department specifically request comments on the clarity of the proposed rules and how they can be made easier to understand. All comments will be available for public inspection and copying. The IRS and the Treasury Department also request comments on whether additional simplified methods should be made available to taxpayers in certain industries. A public hearing will be scheduled if requested in writing by any person that timely submits written comments. If a public hearing is scheduled, notice of the date, time and place for the hearing will be published in the **Federal Register**.

Drafting Information

The principal author of these regulations is Scott Rabinowitz of the Office of Associate Chief Counsel (Income Tax & Accounting). However other personnel from the IRS and Treasury Department participated in their development.

List of Subjects in 26 CFR Part 1

Income taxes, Reporting and recordkeeping requirements.

Proposed Amendments to the Regulations

Accordingly, 26 CFR part 1 is proposed to be amended as follows:

PART 1--INCOME TAXES

Paragraph 1. The authority citation for part 1 continues to read, in part, as follows:

Authority: 26 USC 7805 * * *

Par 2. Section 1.263A-1 is amended by revising paragraph (h)(2)(i)(D) and adding paragraphs (k) and (l) to read as follows:

§1.263A-1 Uniform capitalization of costs.

* * * * *

(h) * * *

(2) * * *

(i) * * *

(D) [The text of this proposed paragraph (h)(2)(i)(D) is the same as the text of §1.263A-1T(h)(2)(i)(D) published elsewhere in this issue of the **Federal Register**.]

* * * * *

(k) [The text of this proposed paragraph (k) is the same as the text of §1.263A-1T(k) published elsewhere in this issue of the **Federal Register**.]

(l) [The text of this proposed paragraph (l) is the same as the text of §1.263A-1T(l) published elsewhere in this issue of the **Federal Register**.]

Par 3. Section 1.263A-2 is amended by revising paragraph (b)(2)(i)(D) and adding paragraphs (e) and (f) to read as follows:

§1.263A-2 Rules relating to property produced by the taxpayer.

* * * * *

(b) * * *

(2) * * *

(i) * * *

(D) [The text of this proposed paragraph (b)(2)(i)(D) is the same as the text of §1.263A-2T(b)(2)(i)(D) published elsewhere in this issue of the **Federal Register**.]

* * * * *

(e) The text of this proposed paragraph (e) is the same as the text of §1.263A-2T(e) published elsewhere in this issue of the **Federal Register**.]

(f) The text of this proposed paragraph (f) is the same as the text of §1.263A-2T(f) published elsewhere in this issue of the **Federal Register**.]

Deputy Commissioner for Services and Enforcement.

Part I

Section 263A.—Capitalization and Inclusion in Inventory Costs of Certain Expenses

26 CFR 1.263A-1: Uniform capitalization of costs
(Also: § 1.263A-2)

Rev. Rul. 2005-53

BACKGROUND

In Notice 2003-36, 2003-1 C.B. 992, modified by Notice 2003-59, 2003-2 C.B. 429, the Treasury Department and the Internal Revenue Service indicate that they are aware that uncertainty exists as to what types of property constitute "eligible property" under §§ 1.263A-1(h)(2)(i)(D) and 1.263A-2(b)(2)(i)(D) of the Income Tax Regulations for which qualifying taxpayers may use the simplified service cost and simplified production methods. In particular, there is uncertainty about the proper interpretation and application of the term "routine and repetitive." The notice indicates that the Treasury Department and the Service plan to publish guidance that will clarify the types of property that qualify as eligible property under those sections and address the interpretation and application of the term "routine and repetitive." This revenue ruling

clarifies the types of property that qualify as eligible property for purposes of §§ 1.263A-1(h)(2)(i)(D) and 1.263A-2(b)(2)(i)(D) and how the term "routine and repetitive" is interpreted for this purpose.

ISSUE

Under what circumstances are a taxpayer's self-constructed assets produced on a routine and repetitive basis in the ordinary course of its trade or business for purposes of the simplified service cost method and the simplified production method (the "simplified methods") under §§ 1.263A-1(h)(2)(i)(D) and 1.263A-2(b)(2)(i)(D) of the Income Tax Regulations?

FACTS

Situation 1. U, a manufacturer of office equipment, produces numerous identical copiers during the year using assembly line techniques. U leases the copiers and does not hold them for sale.

Situation 2. V, a manufacturer of automobiles, regularly produces molds that are specifically designed for the production of particular automobile parts. The molds cannot be adapted for a further or different use after changes or improvements are made to the particular part that is produced by the mold. The molds generally are used for one to three years. Accordingly, the molds have a high degree of turnover.

Situation 3. W, a telephone company, manufactures numerous identical poles using standardized designs and assembly line techniques for use in its business.

Situation 4. X, an electric utility, regularly purchases identical meters and installs them on its customers' properties. The meters measure the amount of electric current

used by X's customers. X does not manufacture meters. Meters are included in asset class 49.14 under Rev. Proc. 87-56, 1987-2 C.B. 674, as clarified and modified by Rev. Proc. 88-22, 1988-1 C.B. 785, and have a class life of 30 years.

Situation 5. Y, an electric utility, constructs from various components substations that it uses in transmitting and distributing electricity. Substations and their components are facilities built on land that house an assembly of equipment designed for switching, changing, or regulating the voltage of electricity. Each substation is intended to operate for an extended length of time, is specifically custom designed for a specific geographic site, and serves a particular function within Y's electrical grid.

Situation 6. Z, a company that owns and operates a national chain of restaurants, continually constructs new restaurants each year. Z generally uses a standardized design when constructing new restaurants. However, local zoning laws and the physical characteristics of the specific construction site require Z to modify the design for each new restaurant.

LAW AND ANALYSIS

Section 263A of the Internal Revenue Code provides that producers of real or tangible personal property must capitalize the direct costs and a proper share of the indirect costs of such property.

Section 1.263A-1(e)(3) provides that indirect costs include service costs. For this purpose, § 1.263A-1(e)(4) states that service costs are a type of indirect costs that can be identified specifically with an administrative or support department or function. Service costs include capitalizable service costs, deductible service costs, and mixed

service costs. Under § 1.263A-1(e)(4)(ii)(C), mixed service costs include service costs that are partially allocable to production activities and partially allocable to non-production activities.

Section 1.263A-1(g)(3) provides that indirect costs are generally allocated to intermediate cost objectives such as departments or activities prior to the allocation of such costs to property produced. This section further provides that taxpayers are required to allocate indirect costs using either a specific identification method, a standard cost method, a burden rate method, or any other reasonable allocation method (as defined under the principles of § 1.263A-1(f)(4)).

Section 1.263A-2(b) allows producers to use the simplified production method to determine the additional § 263A costs properly allocable to ending inventories of property produced and other "eligible" property on hand at the end of the taxable year. Section 1.263A-2(b)(3)(i)(A) generally provides that the amount of additional § 263A costs that is allocable to eligible property remaining on hand at the close of the taxable year under the simplified production method is computed by multiplying the § 471 costs on hand at the end of the year by an absorption ratio. Section 1.263A-2(b)(3)(ii)(A) provides that the absorption ratio generally is equal to the additional § 263A costs incurred during the year divided by the § 471 costs incurred during the year.

Additional § 263A costs are the costs, other than interest, that were not capitalized under the taxpayer's method of accounting immediately prior to the effective date of § 263A, but that are required to be capitalized under § 263A. See § 1.263A-1(d)(3). Section 471 costs generally are the costs, other than interest, that the taxpayer

capitalized under its method of accounting immediately prior to the effective date of § 263A. See § 1.263A-1(d)(2).

Section 1.263A-2(b)(2)(i) provides that a taxpayer electing to use the simplified production method generally must use the method for all production activities associated with the following categories of eligible property:

1. Inventory property. Stock in trade or other property properly includible in the inventory of the taxpayer. See § 1.263A-2(b)(2)(i)(A).

2. Non-inventory property held for sale. Non-inventory property held by a taxpayer primarily for sale to customers in the ordinary course of the taxpayer's trade or business. See § 1.263A-2(b)(2)(i)(B).

3. Certain self-constructed assets. Self-constructed assets substantially identical in nature to, and produced in the same manner as, inventory property produced by the taxpayer or other property produced by the taxpayer and held primarily for sale to customers in the ordinary course of the taxpayer's trade or business. See § 1.263A-2(b)(2)(i)(C).

4. Self-constructed assets produced on a repetitive basis. Self-constructed assets produced by the taxpayer on a routine and repetitive basis in the ordinary course of the taxpayer's trade or business. See § 1.263A-2(b)(2)(i)(D).

Section 1.263A-1(g)(4) generally requires taxpayers to allocate mixed service costs to property produced using reasonable factors or relationships under a direct reallocation method (as defined in § 1.263A-1(g)(4)(iii)(A)), a step-allocation method (as defined in § 1.263A-1(g)(4)(iii)(B)), or any other reasonable allocation method (as defined under the principles of § 1.263A-1(f)(4)).

Section 1.263A-1(h) permits taxpayers to use the simplified service cost method to determine the aggregate portion of mixed service costs incurred during the taxable year that are properly allocable to "eligible property." The categories of eligible property

provided by the simplified service cost method are identical to the four categories of eligible property provided by the simplified production method. Compare § 1.263A-1(h)(2)(i) with § 1.263A-2(b)(2)(i).

Section 1.263A-1(h)(3)(i) provides that under the simplified service cost method, a taxpayer computes its capitalizable mixed service costs by multiplying its total mixed service costs by an allocation ratio. The allocation ratio can be either the labor-based or production-based ratio. See §§ 1.263A-1(h)(4) and (5).

The four categories of eligible property in §§ 1.263A-1(h)(2)(i) and 1.263A-2(b)(2)(i) all share common characteristics that make application of the simplified methods appropriate. Prior to the issuance of the final § 263A regulations, the temporary § 263A regulations, issued under T.D. 8131, 1987-1 C.B. 98, and published in the Federal Register on March 30, 1987, limited the availability of the simplified methods to two categories of property: inventory and non-inventory property held by a taxpayer primarily for sale to customers in the ordinary course of the taxpayer's trade or business. The preamble to the temporary § 263A regulations indicates that this limitation was prescribed because the simplified methods are not appropriate to account for the casual or occasional production of property. Instead, the simplified methods were "designed to alleviate the administrative burdens of complying with the new capitalization rules in situations where mass production of assets occurs on a repetitive and routine basis, with a typically high 'turnover' rate for the produced assets." See T.D. 8131, 1987-1 C.B. 98, 102. The final regulations retain these two categories of

eligible property in §§ 1.263A-1(h)(2)(i)(A) and (B) and 1.263A-2(b)(2)(i)(A) and (B). See T.D. 8482, 1993-2 C.B. 77, published in the Federal Register on August 9, 1993.

Commentators to the temporary regulations suggested that the categories of property eligible for the simplified methods be expanded to other types of property that share the characteristics that are appropriate for application of the methods. In response, Notice 88-86, 1988-2 C.B. 401, published on August 5, 1988, expanded the availability of the simplified methods to:

> (1) property constructed by a taxpayer for use in its trade or business if the taxpayer is also producing, in the ordinary course of its business, inventory property (or any other property with respect to which the use of the simplified production method is permitted under the present regulations), and the property constructed by the taxpayer for use in its trade or business is substantially identical in nature to, and is produced in the same manner as, the inventory property (or such other property) produced by the taxpayer, and
>
> (2) property constructed by a taxpayer for use in its trade or business if, in the ordinary course of its production activities, the taxpayer produces such property on a routine and repetitive basis (i.e., the taxpayer produces numerous items of such property within a taxable year.)

The final regulations follow Notice 88-86 and expand the categories of produced property eligible for the simplified methods by adding §§ 1.263A-1(h)(2)(i)(C) and (D) and 1.263A-2(b)(2)(i)(C) and (D).

The simplified methods are predicated on the assumption that it is appropriate to allocate production costs on a ratable basis when assets are either mass-produced (*i.e.*, numerous identical goods are manufactured using standardized designs and assembly line techniques) or have a high degree of turnover. In contrast, it is not appropriate to

allocate production costs on a ratable basis when assets are neither mass-produced nor have a high degree of turnover.

The first three categories of eligible property provided in §§ 1.263A-1(h)(2)(i)(A)-(C) and 1.263A-2(b)(2)(i)(A)-(C) are either mass-produced and/or have a high degree of turnover or are identical to assets that are mass-produced and/or have a high degree of turnover. The fourth category of eligible property, self-constructed assets produced on a routine and repetitive basis, is similar to these first three categories. It was intended that the fourth category of eligible property provided by the simplified methods, §§ 1.263A-1(h)(2)(i)(D) and 1.263A-2(b)(2)(i)(D), possess the same characteristics shared by all of the preceding categories of eligible property. Therefore, to be eligible under the fourth category, the property also must be either mass-produced (numerous identical goods are manufactured using standardized designs and assembly line techniques) or have a high degree of turnover (in this case have a relatively short useful life). Mass production does not include all the terms provided by § 263A(g) and § 1.263A-2(a)(1) (for example, install, develop, and improve). Instead property is mass-produced only if it is *manufactured* numerous times during the year using standardized designs and assembly line techniques.

For example, the fourth category of eligible property provided by the simplified methods, §§ 1.263A-1(h)(2)(i)(D) and 1.263A-2(b)(2)(i)(D), includes property mass-produced by a vertically integrated business for use in its own business that would have been properly included in inventory of a third party if mass-produced for sale by the third party. Thus, if a telephone company mass-produces its own poles for use in its

business, the poles would be eligible property for purposes of §§ 1.263A-1(h)(2)(i)(D) and 1.263A-2(b)(2)(i)(D).

In Situation 1, U is producing copiers on a routine and repetitive basis for purposes of the simplified methods because the copiers are mass-produced.

In Situation 2, V is producing molds on a routine and repetitive basis for purposes of the simplified methods because the molds have a high degree of turnover.

In Situation 3, W is producing poles on a routine and repetitive basis for purposes of the simplified methods because the poles are mass-produced.

In Situation 4, X is not producing meters on a routine and repetitive basis for purposes of the simplified methods because the meters are neither mass-produced by X nor have a high degree of turnover. Mass production does not include installation of meters and meters do not have a short useful life.

In Situation 5, Y is not producing substations on a routine and repetitive basis for purposes of the simplified methods because the substations are neither mass-produced nor have a high degree of turnover.

In Situation 6, Z is not producing restaurants on a routine and repetitive basis for purposes of the simplified methods because the restaurants are neither mass-produced nor have a high degree of turnover.

HOLDING

For purposes of the simplified methods under §§ 1.263A-1(h)(2)(i)(D) and 1.263A-2(b)(2)(i)(D), a taxpayer's self-constructed assets are produced on a routine and repetitive basis in the ordinary course of its trade or business if the assets are either

mass-produced (numerous identical goods are manufactured using standardized designs and assembly line techniques) or have a high degree of turnover.

DRAFTING INFORMATION

The principal author of this revenue ruling is Scott H. Rabinowitz of the Office of Associate Chief Counsel (Income Tax & Accounting). For further information regarding this revenue ruling, contact Mr. Rabinowitz on (202) 622-4970 (not a toll-free call).

Southwest Gas Corporation
Calculation of Change in Plant-Related Deferred Tax Balance
As a Result of Federal Legislation Effective January 1, 2005

Line No.	Description (a)	Ref. (b)	1/02-8/04 (c)	Cumulative Through 12/01 Difference (d)	Cumulative Through 8/04 (e)	Line No.
1	Simplified Service Cost Method - Cen AZ	Company Rec.	$ 16,249,089	$ 24,867,339	$ 41,116,428	1
2	Simplified Service Cost Method - So AZ	Company Rec.	4,202,687	9,178,165	13,380,852	2
3	Without Simplified Method - Cen AZ	Company Rec.	(666,667)	0	(666,667)	3
4	Without Simplified Method - So AZ	Company Rec.	(400,000)	0	(400,000)	4
5	481 Adjustment Effective 1/1/05 - Cen AZ	Ln 1 + Ln 3	$ 15,582,422	$ 24,867,339	$ 40,449,761	5
6	481 Adjustment Effective 1/1/05 - So AZ	Ln 2 + Ln 4	$ 3,802,687	$ 9,178,165	$ 12,980,852	6
7	481 Adjustment - Total AZ	Ln 5 + Ln 6	$ 19,385,109	$ 34,045,504	$ 53,430,613	7
8	Federal Income Tax Rate				35%	8
9	Federal Deferred Income Tax Liability - Arizona	Ln 7 x Ln 8			$ 18,700,715	9
10	Federal Deferred Income Tax Liability - Common				0	10
11	State Deferred Income Tax Liability	Ln 15 col (e)			2,419,979	11
12	Total Deferred Tax Tax Liability Adjustment	Ln 9 + Ln 11			$ 21,120,694	12
13	481 Adjustment - Total AZ	Ln 7 col (e)			$ 53,430,613	13
14	Arizona Income Tax Rate net of Federal Benefit				4.53%	14
15	State Deferred Income Tax Liability	Ln 13 x Ln 14			$ 2,419,979	15

Rebuttal Testimony
Exhibit No. ___(LEM-2)

PALACIOS

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
Prepared Rebuttal Testimony
of
CHRISTINA A. PALACIOS

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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
CHRISTINA A. PALACIOS

INTRODUCTION

Q. 1 Please state your name and business address.

A. 1 My name is Christina A. Palacios. My business address is 10851 North Black Canyon Highway, Phoenix, Arizona 85072-4755.

Q. 2 Did you sponsor direct testimony on behalf of Southwest Gas Corporation (Southwest) in this proceeding?

A. 2 Yes. However, subsequent to the filing of my prepared direct testimony, I have assumed the position of Senior Vice President/Central Arizona Division.

Q. 3 What is the purpose of your prepared rebuttal testimony?

A. 3 The purpose of my prepared rebuttal testimony is to rebut the Residential Utility Consumer Office's (RUCO) witness Rodney Moore's proposal to remove the total compensation of 37 Southwest employees from the revenue requirement in this proceeding.

Q. 4 Please summarize your rebuttal testimony.

A. 4 My rebuttal testimony will address the following two issues:

- RUCO's proposed removal of reasonable and necessary utility business expenditures; and

- the responsibilities and functions of the 37 Southwest employees whose compensation is proposed to be disallowed by RUCO.

RUCO'S POSITION

Q. 5 Please describe RUCO's proposed disallowance pertaining to the compensation of 37 Southwest employees.

A. 5 RUCO proposes to disallow 100 percent of these 37 employees' compensation, including wages, incentive compensation, and labor benefits which totals approximately $2.9 million.

Q. 6 Do you agree with RUCO's proposed adjustment to eliminate the compensation of these particular Southwest employees?

A. 6 No. RUCO is proposing to disallow the total compensation of 37 Southwest employees simply because RUCO has apparently concluded that those employees' sole responsibilities are related to the functional areas of marketing and/or sales. RUCO is proposing this adjustment even though Southwest has already removed nearly $600,000 from its Arizona cost of service based on previous Commission decisions concerning promotional and marketing activities.

Q. 7 Do you know if RUCO asked any discovery regarding duties and responsibilities of the 37 employees whose compensation it is proposing to disallow for purposes of cost recovery?

A. 7 According to conversations I had with Southwest's regulatory staff, RUCO did not request any job descriptions or any other information to support its

proposed disallowance. As a result, RUCO's position on this matter appears to be unsubstantiated. Southwest witness Ms. Randi L. Aldridge, in her rebuttal testimony, provides additional information on the lack of discovery related to this matter.

RESPONSIBILITIES AND FUNCTIONS OF THE 37 SOUTHWEST EMPLOYEES

Q. 8 What are the various job titles or descriptions of the 37 employees that RUCO recommended removing from the cost of service?

A. 8 RUCO recommended that the compensation for the following positions be disallowed: (a) Account Representative; (b) Account Executive; (c) Industrial Gas Engineer; (d) Sales Supervisor; (e) Large Customer Sales Supervisor; (f) Industrial Sales Supervisor; and (g) Sales Manager.

Q. 9 Can you describe the job duties and responsibilities of these 37 Southwest employees?

A. 9 Yes. These employees are responsible for monitoring the progress and maintaining oversight of the extension of gas service from the initial contact with a customer until the service line, riser, and the meter are installed on the customer's property. In most cases, individuals and developers requiring natural gas service contact Southwest for the necessary information and requirements of obtaining gas service. This group of employees also provides customers the help and assistance necessary for them to receive gas service. These positions also coordinate the necessary responses and

tasks from multiple departments within Southwest to ensure that customers have their gas service established in a timely manner. These employees' job duties and responsibilities further include, without limitation, the following:

- Advise customers on gas products and availability
- Coordinate new business processes
- Work with customers to determine technical needs and specifications
- Investigate and settle customer complaints
- Ensure satisfactory customer service
- Participate in customer business meetings as consultant/advisor
- Establish programs to educate customers
- Interpret and apply tariffs to main/service extensions
- Ensure adequate and timely coordination of services
- Negotiate contracts/special agreements
- Prepare studies and analyses
- Make presentations to trade allies or potential customers
- Keep up-to-date on government regulations impacting company products/services
- Keep abreast of technology or other changes within the industry.

Indeed, these employees are in the best position to elicit feedback from customers and the marketplace, and are essential to Southwest's business.

Q. 10 Do several of these positions also have regulatory responsibilities?

A. 10 Yes. For example, Martha Wright and Brian O'Donnell are the Sales Manager and Large Customer Sales Supervisor of the Southern Arizona and Central Arizona Divisions, respectively. Over the last several years, they have attended and participated in several workshops, hearings, and consumer comment sessions. They have represented Southwest at meetings, workshops, and hearings related to the development of policies and rules related to the Environmental Portfolio Standards, Demand Side Management programs, interconnection and design of rates related to distributed generation in Arizona, the Arizona Public Service Company general rate case, Unisource Energy's Purchased Gas Adjustor, and several other matters, just to name a few. In addition, they attend Open Meetings to provide information to the Commissioners and to monitor Commission actions related to other energy utilities in the state. Although these are not the primary duties of these positions, they are very important to both the customers and Southwest.

Q. 11 Are these positions necessary for Southwest to extend gas service to new customers?

A. 11 These positions are essential in extending gas service to new customers. As I noted in my direct testimony, Southwest's customer base in Arizona has grown from 748,000 to 872,000 customers since the last general rate

case. These positions were responsible for ensuring these 124,000 new customers were extended gas service in an efficient and effective fashion. In fast growing service areas such as Arizona, it is essential that Southwest maintain adequate and frequent contact with customers through its marketing and sales presence. Southwest, quite simply, could not provide adequate public utility service in Arizona without these positions.

Q. 12 Did the Commission address this issue in Southwest's last Arizona general rate case?

A. 12 Yes, and Southwest rebuttal witness Randi Aldridge will further discuss this fact and will explain how the inclusion of the compensation of these 37 employees is consistent with prior Commission decisions.

CONCLUSION

Q. 13 Please summarize your response to RUCO's proposed adjustment to disallow the total compensation of 37 of Southwest's employees.

A. 13 Consistent with the last general rate case, the Commission should reject RUCO's proposed adjustment. RUCO has failed to present any evidence that the compensation of these 37 Southwest employees is unreasonable. To the contrary, Southwest has presented an abundance of evidence that these employees provide necessary service for customers and their compensation is reasonable.

Q. 14 Does this conclude your prepared rebuttal testimony?

A. 14 Yes, it does.

JOHNSON

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
Prepared Rebuttal Testimony
of
ROBERT M. JOHNSON

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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
ROBERT M. JOHNSON

INTRODUCTION

Q. 1 Please state your name and business address.

A. 1 My name is Robert M. Johnson, and my business address is 5241 Spring Mountain Road, Las Vegas, Nevada 89150-0002.

Q. 2 By whom and in what capacity are you employed?

A. 2 I am employed by Southwest Gas Corporation (Southwest or Company) as Assistant General Counsel.

Q. 3 Did you sponsor direct testimony on behalf of Southwest in this proceeding?

A. 3 No, I did not.

Q. 4 Please state your educational background and briefly describe your business experience.

A. 4 I graduated from Oregon State University in 1970 with a Bachelor of Science degree in political science. I received my Juris Doctor degree from the University of Denver in 1972. I am licensed to practice law in Arizona, Nevada and Oregon.

After graduating from the University of Denver, I worked for the Federal Power Commission, the predecessor of the Federal Energy Regulatory Commission, as a staff lawyer in the hydro-electric licensing department. After

three years in that position, I joined the Oregon Attorney General's Office, as an assistant attorney general representing the Oregon Public Utilities Commissioner. In 1979, I went to work for Northwest Natural Gas Company, as an associate, and later assistant general counsel, representing the company in regulatory proceedings in Oregon and Washington. In 1990, I joined Southwest as an associate general counsel representing the Company in regulatory proceedings in Arizona, California, and Nevada.

In addition to my legal responsibilities with Southwest, I am responsible for the Company's contract administration department and the Company's insurance program. In this latter capacity, I have been involved in the last four renewal cycles for the various insurance policies secured by the Company.

Q. 5 What is the purpose of your prepared rebuttal testimony?

A. 5 The purpose of my testimony is to clarify apparent misunderstandings in Staff's case, specifically in Mr. James J. Dorf's testimony regarding the Company's general liability insurance coverage, to address the increasing costs the Company experienced in securing liability insurance during the test year, and to provide Mr. Dorf with additional information that should be sufficient for him to reconsider his position on this issue as he suggests on page 20, lines 1-4 of his direct testimony. Southwest witness Robert A. Mashas is also

submitting rebuttal testimony on this issue.

STAFF'S PROPOSED INSURANCE DISALLOWANCE IS UNFOUNDED

Q. 6 Please clarify Staff's misunderstanding of the Company's test year general liability insurance coverage.

A. 6 Mr. Dorf inaccurately concludes that the Company is self-insured for up to $10 million for each occurrence under its general liability insurance coverage, at which point insurance would assume coverage. To the contrary, the Company secured insurance coverage with a $1 million retention per occurrence during a 12-month period, with the assumption of the first $10 million worth of exposure over the retention level (supplemental retention). The coverage the Company secured can be further explained through the following examples:

- Incident #1 results in a claim for $10 million. The Company would be responsible for the first $1 million (the retention) and the remaining $9 million of the claim (supplemental retention).
- Incident #2 results in a claim for $10 million. The Company would be responsible for the first $1 million (the retention) and the next $1 million (the remaining amount of the supplemental retention), with the remaining $8 million to be paid by the insurance company.
- Incident #3 results in a claim for $10 million. The Company would be responsible for the first $1 million (the retention), with the remaining $9 million to be paid by the insurance company.

Further, the Company secured the $1 million retention with no supplemental retention for its vehicles and its employment practices coverage under its general liability coverage.

Q. 7 Are there any other misunderstandings in Staff's case regarding the Company's general liability coverage?

A. 7 Yes. Mr. Dorf also incorrectly assumes that the Company could not obtain insurance for the first $10 million of each occurrence. To the contrary, and as outlined above, the Company did obtain such insurance with the $10 million supplemental retention. The Company also considered the following options at the time it renewed its general liability insurance during the test year. The options and the cost of each are as follows:

Coverage	Annual Cost
$1M Retention, with $5M Plus Aggregate	$7,471,740
$5M Retention	5,872,019
$1M Retention, with $10M Plus Aggregate	4,417,727

In addition, the Company also considered other insurance products to cover the additional exposure. These products included: (1) creating a captive insurance company, with the opportunity to access the reinsurance market, and (2) the use of a finite risk product that would allow the Company to fund this additional exposure over a period of time. However, uncertainties regarding accounting and tax consequences of these products led the Company to defer adoption of either option.

Q. 8 What insurance option did the Company select?

A. 8 The Company selected what it believed to be the most efficient means to manage costs and the option with the lowest premium which, when coupled with the Company's self-insurance costs, ultimately results in the lowest cost to customers. The cost of each one of the options considered by the Company are shown on Rebuttal Exhibit No.___(RMJ-1) and resulted in an annual savings to customers of approximately $460,000.

Q. 9 Based upon these misunderstandings of the Company's general liability insurance, Staff concluded that customers should not bear the cost of the Company's poor claims experience. Is Staff's conclusion correct?

A. 9 No. Mr. Dorf's statement negatively implies that the Company has an abnormal or high number of claims. To the contrary, the Company has experienced increases in the cost of its general liability insurance as a result of market conditions and the Company's actual claims experience (which is not abnormal or high). Furthermore, Mr. Dorf's conclusion regarding the Company's claims experience is also inconsistent with Staff's own testimony, specifically Mr. Dorf on page 19, lines 18-25, and Robert E. Miller regarding the Company's safety practices and is inconsistent with the steps the Company has implemented to manage risk.

Claims experience is the result of both the number of incidents and the consequences associated with each

incident. The Company asked its insurance brokers, McGriff, Siebels & Williams, Inc. (McGriff), to do a blind comparison of the Company's claims experience with comparable local distribution companies for which they provide brokerage services. Rebuttal Exhibit No.___(RMJ-2) provides a general description of McGriff and the breadth of its brokerage representation in the energy industry. The comparison McGriff prepared is presented in Rebuttal Exhibit No.___(RMJ-3) and illustrates the Company's claims history with other comparable local distribution companies over the last five- and ten-year periods. As noted in Rebuttal Exhibit No.___(RMJ-3), the number of reportable losses and losses in excess of $1 million for the Company are at the low-end of the scale. This exhibit also shows that the total amount of claims paid by the Company during these periods parallels that experienced by other local distribution companies.

A utility can positively impact the number of claims it experiences through its construction and safety practices (which Mr. Dorf and Mr. Miller acknowledge are without fault). However, the consequences of any one claim are beyond the Company's control. There are simply too many independent variables that affect the magnitude of any one claim, and this uncertainty is the basis or justification for securing insurance.

Q. 10 You have commented on Staff's adjustment associated with Mr. Dorf's perception of the Company's claims experience.

Does this account for all of the insurance cost disallowances recommended by Staff?

A. 10 No. Mr. Dorf is also recommending that the remaining liability insurance adjustments proposed by the Company be disallowed. This adjustment results in an additional $786,206 disallowance that is not in any way tied to the Company's claims experience. Approximately $460,000 of this amount is related to increases in premiums the Company experienced in its second and third layers of excess general liability insurance. The pricing for both layers reflect increases due to Southwest coming off multi-year contracts, at premium levels based on market conditions in the late 1990s, adjusted to reflect current market conditions (which includes reserve requirements, the cost of reinsurance, overheads and expected returns in the financial markets). The remaining adjustments proposed by the Company also reflect increases in premiums based solely on market conditions at the time the policies were renewed. There were no Company claims paid during this last renewal cycle with respect to any one of these policies.

Q. 11 Does Staff provide support in its case for the disallowance of the Company's self-insured retention normalization?

A. 11 No. Mr. Dorf appears to base his recommendation for disallowing this adjustment solely on his perception that the Company has "poor" claims experience. The Company's

claims experience as shown on Rebuttal Exhibit No.___(RMJ-2), is not "poor" or "abnormal." Rather, it can best be characterized as "typical" or "consistent" in relation to other local distribution companies.

As pointed out in Mr. Mashas' direct testimony at pages 15-19, this proposed adjustment is based on actual costs of claims experienced by the Company over the last 14 years. With the change in retention levels for the initial layer of the Company's general liability insurance, these costs will no longer be reflected in the insurance premiums the Company pays. Such costs reflected in the 14-year average, however, will still be incurred and will be the direct responsibility of the Company.

CONCLUSION

Q. 12 Are you recommending any changes to the insurance pro forma adjustments proposed by the Company based on Staff's case?

A. 12 No. The pro forma adjustments proposed by the Company to its liability insurance expense are reasonable and necessary, and they result in a recognition of actual expense expected to be incurred during the time the rates to be established in this proceeding are in effect.

Q. 13 Does this conclude your prepared rebuttal testimony?

A. 13 Yes, it does.

Rebuttal Testimony
Exhibit No. ___(RMJ-1)

COST ASSESSMENT
2004 AEGIS GL RENEWAL

Retention	Annual Premium	Total Claims Paid	14 year Avg Retained Losses	Total Cost
@ 5MM Each Occ.	$ 5,872,019	$ 41,105,191	$ 2,936,085	$ 8,808,104
@ 1MM w/$10MM PA	$ 4,417,727	$ 54,905,191	$ 3,921,799	$ 8,339,526
@ 1MM w/$5MM PA	$ 7,471,740	$ 41,105,191	$ 2,936,085	$ 10,407,825

McGriff, Seibels & Williams (MSW)...

MSW was founded in 1886 and is now the 6th largest brokerage firm in the country following the merger with BB&T Insurance Services (BBIS). BBIS is a subsidiary of Branch Banking & Trust (BB&T) of Raleigh, North Carolina. MSW, in turn, operates as a wholly owned subsidiary of BBIS and has over 800 employees in six major offices:

- Birmingham, Alabama
- Atlanta, Georgia
- Houston, Texas
- Dallas, Texas
- Irvine, California
- St. Louis, Missouri

MSW has:

- A reputation for technical skills & creative solutions
- A Fortune 1000 client base
- A 100+ year history of service
- A flat organizational structure that supports its client focus
- A +300% growth rate over the last 10 years, without acquisitions
- Received honors as the highest performing sales and service organization in the country
- Backing of the 10th largest financial holding company with $100 billion in assets

MSW is a full service broker featuring seven divisions based on specific industry sectors. This specific industry approach makes us qualified identifiers of risk and ultimately better business partners for risk managers. Our current corporate divisions include:

- Energy and Marine Division
- Financial Services Division
- Construction Risk Services
- Health Care Services
- Surety Risk Services
- Employee Benefit Services
- Commercial Accounts Division

BB&T Corporation (BB&T)...

With over a century of service and growth, BB&T is one of the soundest financial institutions in the nation. BB&T began its banking operations shortly after the Civil War with the establishment of Branch & Company. With early legislation regarding banking and trusts constantly evolving, the company also progressed by adapting with the times. By 1923, BB&T had already exceeded $4 million in assets and opened 4 new offices. In the catastrophic stock market crash of 1929, many banking institutions failed, yet BB&T grew from five branches to eleven and increased assets to $13.7 million.

BB&T Corporation is:

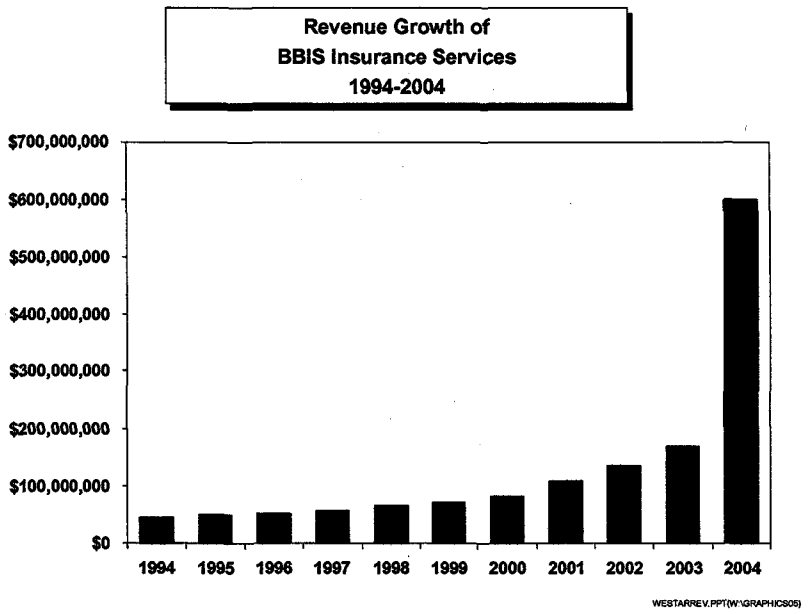
- A century old financial services company, offering:
  - Full-service banking,
  - Investments,
  - Corporate finance,
  - Leasing; and
  - Trust.
- Profitable, efficient and financially sound
- The 10th largest financial holding company, with $100 billion in assets
- One of the "Best Big Companies" from the Forbes Platinum 400
- A "Small Business Friendly" institution
- 1,400 banking offices throughout the East Coast and Southeastern United States

As it continued to grow, BB&T steadily climbed the ranks in key measures of operating performance such as profitability, efficiency and credit quality. In the 1960s, BB&T enjoyed unprecedented growth, opening new branches and acquiring others through mergers and acquisitions. Throughout the 70s and 80s the trend continued, with assets reaching $10.5 billion by 1994. With several major mergers in the 1990s and 2000s, BB&T developed into the 10th largest -- and one of the top performing -- financial holding companies in the nation. BB&T has been named to the Forbes Platinum 400 list of America's "Best Big Companies" for four years in a row, and is one of the top two "Small Business Friendly" institutions. With $100 billion in assets, BB&T serves customers from over 1,400 offices throughout the northeast and southeastern U.S., offering full-service banking, investments, corporate finance, leasing, trust and insurance.

BB&T Insurance Services, Inc. (BBIS)

BB&T entered the insurance business in Wilson, NC in 1922. Combining strong organic growth and steady acquisitions, the evolution of BB&T Insurance Services mirrored the growth of its parent company. With the acquisition of MSW in February, 2004 (which is by far the largest acquisition it has completed to-date), BBIS is now the 6th largest insurance broker in the U.S., and 7th largest worldwide. The company operates over 72 brokerage offices in 18 states, with revenues surpassing the $600 million mark in 2004.

Consistent with its culture of efficiency and profitability, BBIS's productivity has kept pace with the company's growth.



Energy/Utility Experience...

As the largest independent energy broker in the U.S., MSW has earned its reputation by operating as a "niche" player within the Energy and Marine industry.

We serve as the broker/risk consultant to a wide array of major energy companies, which currently include the following types of operations:

- Natural Gas Distribution Companies
- Combination Gas and Electrics
- Natural Gas Transmission Operations
- Energy Service Companies
- Electric Generation, Transmission and Distribution Companies
- Independent Power Producers (IPP's)
- Liquefied Petroleum Gas Distribution Companies
- Water and Waste Water Treatment Companies
- Refining and Product Terminaling Operations
- Telecommunication Companies
- Construction Contractors

In particular, we are proud to be brokers and risk consultants to our clients that represent:

- Approximately 300,000 megawatts of generating capacity providing power to over 75 Million people
- 5 of the top 10 and 11 of the top 25, electric generation companies in the U.S.
- 8 of the 13 utilities on the Dow Jones Utilities Average
- Over 50 utility clients
- The nation's first for-profit independent electric transmission company
- 40% of the natural gas pipeline transportation and storage facilities in the U.S.
- Distribution of natural gas to over 40% of the U.S. population
- 50% of the transportation and storage facilities of refined petroleum in the U.S.
- The Strategic Petroleum Reserve
- 40% of the Offshore Drilling Fleet

As is represented by the following partial client listing, and due in part to our highly specialized market focus, we manage and service one of the largest energy and marine books of business within the United States.

Birmingham/Atlanta Energy Clients – Partial Listing

Category	MSW Clients	Property	Liability	Workers' Compensation	Executive Risk*
Electric Utility/IPP	American Electric Power (AEP)	X	X	X	X
Electric Utility/IPP	Black Hills Corp.	X	X	X	X
Combination Gas & Electric	Cinergy				X
Electric Utility/IPP	Constellation Energy Group		X	X	X
Electric Utility/IPP	Dominion Resources, Inc.	X	X	X	X
Gas Utility/E&P	Energen	X	X	X	X
Combination Gas & Electric	Enron Corp.	X	X	X	X
Gas Utility	Energy South	X	X		X
Combination Gas & Electric	Entergy Corporation	X	X	X	X
Gas Utility	Equitable Resources, Inc.		X	X	
Combination Gas & Electric	Exelon		X	X	X
Electric	Florida Public Utilities	X	X		X
Gas Utility	Laclede Group	X	X	X	X
Electric Utility/IPP	Louisville Gas & Electric	X	X	X	
IPP	Mirant Corporation	X	X	X	X
Electric Utility	National Grid USA	X	X	X	X
Combination Gas & Electric	NiSource, Inc.		X	X	X
Combination Gas & Electric	Pacific Gas & Electric (PG&E)	X			
Electric Utility	Portland General Electric Company	X	X	X	X
Electric Utility	Progress Energy, Inc.		X	X	X
Electric Utility & Water Supplier	Salt River Project		X	X	X
Combination Gas & Electric	SCANA Corporation	X	X	X	X
Electric Utility	Sierra Pacific Resources	X	X	X	X
Electric Utility/IPP	Southern Company	X	X	X	X
Gas Utility and Transmission	Southern Union Company	X	X	X	X
Gas Utility	Southwest Gas	X	X	X	X
Electric Utility	TXU Energy	X			X
Gas Utility	WGL Group	X		X	X
Gas Transmission	Williams	X	X	X	X
Electric Utility/IPP	Wisconsin Energy Corporation	X			

*Includes D&O, Fiduciary, Crime and K&R.

CITIZENSGASCLIENT(W:GRAPHIC805)

Our expertise involves managing all lines of coverage for utility clients, including but not limited to:

- Property
- Excess Liability
- Primary Liabilities (Auto, Workers' Compensation, etc.)
- Directors and Officers Liability (Crime, Employment Practices Liability, etc.)
- Employee Benefits
- Alternative Risk Solutions
- Captives
- Finite Risk
- Mergers & Acquisitions Products
- Environmental Liability

Specific team member expertise (Account Managers/Account Executives) includes management of the following utilities:

- Black Hills Corporation
- Cinergy (FSD)
- Energen
- EnergySouth
- Equitable Resources, Inc.
- Florida Public Utilities
- Laclede Group
- Louisville Gas and Electric
- NiSource (FSD)
- Pacific Gas and Electric
- Southwest Gas Corporation
- WGL Group

Rebuttal Testimony
Exhibit No. ___(RMJ-3)

McGRIFF, SEIBELS & WILLIAMS, INC.

INSURANCE BROKERS

August 5, 2005

Bob Johnson
Assistant General Counsel
South West Gas Corporation
5241 Spring Mountain Road
Las Vegas, Nevada 89150-0002

Dear Bob:

Per your request, we pulled the claims history on the peer group of companies that we represent for excess liability coverage and provided a 5 and 10 year benchmark review (attached below). These companies represent those that are most like southwest Gas in operation profile and customer size. Should you have any questions, please call.

10 Year History

Company	# Losses	Total Incurred Loss	Excess $1M	# Losses	Excess $5M	# Losses
A	0	$0	$0	0	$0	0
B	27	$20,503,678	$12,067,599	6	$0	0
SWG	10	$19,116,198	$18,442,954	3	$14,500,000	1
C	23	$25,360,357	$23,249,699	3	$9,500,000	1
D	16	$29,373,391	$24,630,294	5	$16,714,817	1
E	13	$37,869,661	$35,998,523	7	$28,628,954	2

5 Year History

Company	# Losses	Total Incurred Loss	Excess $1M	# Losses	Excess $5M	# Losses
A	0	$0	$0	0	$0	0
E	3	$2,090,073	$1,152,691	1	$0	0
D	17	$8,510,161	$6,035,976	3	$0	0
B	12	$9,672,358	$5,211,690	2	$0	0
C	19	$14,696,189	$13,559,056	2	$9,500,000	1
SWG	5	$14,599,387	$14,500,000	1	$14,500,000	1

Regards,

Stuart Adam
Senior Vice President
McGriff, Seibels and Williams

2211 7th Avenue South / Birmingham, Alabama 35233
P.O. Box 10265 / Birmingham, Alabama 35202-0265
TEL—(205) 252-9871 FAX—(205) 581-9293
www.mcgriff.com

ALDRIDGE

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
Prepared Rebuttal Testimony
of
RANDI L. ALDRIDGE

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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
RANDI L. ALDRIDGE

INTRODUCTION/BACKGROUND

Q. 1 Please state your name, business address, and position.

A. 1 My name is Ms. Randi L. Aldridge. My business address is 5241 Spring Mountain Road, Las Vegas, Nevada 89150-0002. I am employed by Southwest Gas Corporation (Southwest or the Company) in the Revenue Requirements department. My title is Senior Specialist/Revenue Requirements.

Q. 2 Did you sponsor direct testimony on behalf of Southwest in this proceeding?

A. 2 Yes, I did.

Q. 3 What is the purpose of your prepared rebuttal testimony?

A. 3 The purpose of my rebuttal testimony is to respond to specific aspects of the direct testimony presented by Mr. James J. Dorf and Mr. Dennis R. Rogers, witnesses for the Arizona Corporation Commission (ACC) Utilities Division Staff (Staff), and Ms. Marylee Diaz Cortez and Mr. Rodney L. Moore, witnesses for the Residential Utility Consumer Office (RUCO), regarding their recommendations and comments concerning operating expenses and rate base. Company witness, Robert A. Mashas, will address certain operating expense and rate base items, including the Transmission

Integrity Management Program, Pipe Replacement, Management Incentive Plan, Supplemental Employee Retirement Plan, and Injuries and Damages. Company witness Lisa E. Moses will address tax issues. I will address all other operating expense and rate base issues.

Q. 4 Did you prepare exhibits to support your rebuttal testimony?

A. 4 Yes. I prepared the exhibits identified as Rebuttal Exhibit No.___(RLA-1) through Rebuttal Exhibit No.___(RLA-8).

Q. 5 Please summarize your rebuttal testimony.

A. 5 My rebuttal testimony will address pro forma adjustments related to the following issues:

- Labor Annualization: Staff and RUCO's proposed disallowance of within-grade wage movement, and RUCO's proposal to disallow the entire June 2005 wage increase.
- Elimination of the Compensation of 37 Southwest Employees from the Cost of Service: RUCO's recommendation that the total compensation of 37 Southwest employees be disallowed.
- Sarbanes-Oxley (SOX): RUCO's and Staff's adjustment to update estimated SOX costs to actual costs, and Staff's proposed disallowance.
- American Gas Association (AGA) Dues: RUCO's recommendation that additional categories of AGA dues be disallowed in this case.

- Interest on Customer Deposits: The relationship between the rate approved for interest on customer deposits and the Company's revenue requirement.
- Miscellaneous Expenses: RUCO's disallowance of items alleged to be similar to the items the Company removed in Adjustment No. 14.
- Intangible Plant Construction Work-in-Progress (CWIP): Staff's and RUCO's adjustments: to remove an intangible project from CWIP and to update the estimated costs of intangible plant projects in CWIP; and RUCO's adjustment to the accumulated provision for depreciation.
- Completed Construction Not Classified (CCNC): RUCO's conclusion that there should be an adjustment for CCNC projects not placed in service during the test period should not be allowed, and RUCO's adjustment to rate base for CCNC-related retirement work orders.

LABOR ANNUALIZATION

Q. 6 Why did the Company include a labor annualization adjustment for the June 2005 wage adjustment in this rate case?

A. 6 As it has in virtually every rate case filed over the past 20 years or more, the Company prepared a labor annualization adjustment in this rate case to more accurately reflect the true annual cost of serving customers during the time that rates set in this proceeding will be in effect, thus minimizing regulatory

lag. There is a period of approximately 18 months between the end of the test period and the date that rates from this proceeding are expected to become effective. This adjustment attempts to mitigate the impact of regulatory lag by updating the wages of only those employees on the payroll at the end of the test period (August 31, 2004) to the wage expense the Company will be incurring when rates from this proceeding go into effect. This adjustment maintains the integrity of the matching principle, matching the expenses of test year employees with test year customers because the annualization does not apply to any employees hired after August 31, 2004, to meet customer growth or other changes in work requirements. The wage increase adjustment more accurately reflects the true annual cost of serving customers during the time that rates set in this proceeding will be in effect.

Q. 7 Is the labor annualization adjustment only a partial solution to the effects of regulatory lag?

A. 7 Yes. Typically, the Company's rate case cycle is approximately three to four years. The Company expects it will announce a wage increase effective June 2006 and will continue to experience additional wage increases between rate cases due to within-grade movement of its employees. Since the Company will not recover these additional increases in labor expense until its next general rate case, the labor annualization adjustment is

only a partial solution to regulatory lag.

Q. 8 Has the Company prepared its labor annualization adjustment consistent with prior general rate cases in Arizona?

A. 8 Yes. The Company has used a consistent methodology to annualize labor in this proceeding, including a post-test year general wage increase and a post-test year within-grade movement increase. In the Company's three most recently litigated general rate cases, the ACC has accepted the Company's labor annualization methodology. Most recently, in Decision No. 64172, the Commission allowed the post-test year wage increases, because they were known and measurable and should be allowed.

Q. 9 Can you provide evidence to counter any argument that the Company's proposed post test period wage increases are not known and measurable and that the Company's estimates were reasonable?

A. 9 Yes. I prepared Rebuttal Exhibit No.___(RLA-1), Sheet 1, which shows the recorded within-grade movement from September 1, 2004 through August 7, 2005 (the most recent date available, which is just a few weeks short of the entire year of increases projected in the Company's filing), along with the actual general wage increases granted on June 27, 2005. Only those employees on the Company's payroll at the end of the test period were included in this exhibit. Line 9 of this exhibit shows that the actual percentage for post-test year wage

increases was 3.30 percent for Arizona and 3.74 percent for Corporate, compared to the percentages of 3.35 percent and 2.29 percent, respectively, projected by the Company on Line 10.

Q. 10 If the actual wage increases for the 2005 general wage increase and the within-grade movement were substituted for the percentages the Company projected in its filing, what would the impact be on the revenue requirement?

A. 10 As shown in Rebuttal Exhibit No.___(RLA-1), Sheet 2, using the actual percentages calculated in Rebuttal Exhibit No.___(RLA-1), Sheet 1, which are now known and measurable, would increase the Company's revenue requirement by $256,740.

Q. 11 Will you be addressing RUCO's proposed adjustment to remove 37 employees from the cost of service?

A. 11 Yes. I will address the bulk of this issue later in my testimony in the section "Elimination of the Compensation of 37 Southwest Employees from the Cost of Service."

Q. 12 Please comment on the impact of RUCO's proposed adjustment on the Company's overtime expense if the Commission removes these 37 employees from the cost of service.

A. 12 RUCO's assertion that the Company's calculation of its overtime percentage would result in an overstatement of overtime labor expense would only be correct if those employees were eligible to earn overtime. Since these 37

employees are exempt,[1/] RUCO's assertion is incorrect. If exempt employees were to be removed from the cost of service, as RUCO is recommending in this case, the overtime percentage would have to be recalculated in order to ensure the Company is made whole and is allowed to recover all of its overtime expense. As such, should the Commission accept RUCO's adjustment to remove 37 employees from the cost of service, it should not make any adjustment to the Company's requested overtime expense.

Q. 13 What is your recommendation to the Commission regarding Staff's and RUCO's labor annualization recommendation?

A. 13 The post-test year wage increases that have been proposed by Southwest, including the within-grade increase, are reasonable and should be allowed in rates. Staff's recommendation to deny the Company's post-test year within-grade increase and RUCO's recommendation to deny both the within-grade increase and the post-test year general wage increase are unfounded and unreasonable. Both Staff and RUCO have failed to present any sound justification for their respective disallowances and, therefore, they should be rejected.

ELIMINATION OF THE COMPENSATION OF 37 SOUTHWEST EMPLOYEES FROM THE COST OF SERVICE

Q. 14 What is RUCO proposing with respect to the elimination of

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1/ The term Exempt employee or job refers to a qualification for an exemption of overtime requirements under the Fair Labor Standards Act. As such, Exempt employees are not eligible to earn additional pay for working overtime.

the compensation of 37 Southwest employees?

A. 14 RUCO purportedly reviewed the Company's annualized payroll run and then removed any employee who received compensation under the Sales Incentive Plan (SIP).

Q. 15 Did RUCO request a description of the primary responsibilities of the 37 employees it proposes to eliminate during the discovery process?

A. 15 No. It appears RUCO relied solely on the SIP document, which was provided in response to a data request requesting information about the Company's incentive programs, to justify its adjustment.

Q. 16 Does the SIP document provide a description of the primary responsibilities of the 37 employees RUCO recommends to disallow?

A. 16 No. The SIP document merely sets forth the requirements that each eligible employee must meet in order to earn compensation from that program. The SIP represents only a part of the eligible employee's total compensation and the program document does not describe the duties and responsibilities of the various employees who are eligible to earn compensation under that program. As such, RUCO's proposed disallowance is unwarranted.

Q. 16 What are the duties and responsibilities of the 37 Southwest employees RUCO identified for removal?

A. 16 Company witness Christina A. Palacios will summarize the duties and responsibilities of the positions of the 37 employees RUCO identified for removal and explain that

the expenditures for these positions are absolutely essential in providing utility service to its customers.

Q. 17 Did the Commission address this issue in Southwest's last Arizona general rate case?

A. 17 Yes. In Southwest's last Arizona general rate case (Docket No. G-01551A-00-0309), the Commission stated:

> "While these individuals may engage in some marketing activities, they do much more than that, including coordinating the entire process of delivering gas to a specific site. Southwest argues these jobs cannot be eliminated . . . We further agree with the Company that RUCO's proposed removal of half of the costs associated with the sales and marketing staff is not warranted, as these employees are necessary for processing a request for service."

Q. 18 What is your recommendation to the Commission regarding RUCO's proposed disallowance of the compensation for these 37 employees?

A. 18 RUCO's proposed disallowance is unfounded and should be denied. RUCO has failed to present any sound justification for the removal of these 37 employees from the cost of service. To the contrary, Southwest has presented an abundance of evidence to support the inclusion of these 37 Southwest employees in the cost of service, and Southwest's inclusion of these employees is consistent with prior Commission decisions.

SARBANES-OXLEY (SOX)

Q. 19 Please summarize the Company's SOX adjustment.

A. 19 There are two parts to the Company's SOX adjustment.

1. Implementation Costs – These costs represent the initial assessment and review of the Company's internal controls. Most of these costs were either incurred or invoiced, but not paid, during the test period. The Company requested that these one-time, incremental costs be recovered over a three-year period through a regulatory amortization, and that any amounts recorded during the test period be removed from operating expenses so those expenses would not be double-counted for ratemaking purposes.

2. Audit Fees – The Company's annual outside audit fees increased substantially due to the expanded scope of the audit needed to comply with SOX. These are recurring costs starting in 2005 with the audit of 2004 information, and the Company made an adjustment to operating expenses in order to recover these recurring incremental costs.

Initially, the Company estimated the expenses related to the annual outside audit because the actual audit fees were not known until several months after the rate case was filed. The Company underestimated its increase in audit fees related to SOX and slightly overestimated its costs related to implementation.

Q. 20 Do you agree with RUCO's and Staff's proposed adjustments to update the Company's actual costs pertaining to SOX?

A. 20 Yes. However, RUCO and Staff also made other adjustments that Southwest does not agree with.

Q. 21 What RUCO adjustments does Southwest not agree with?

A. 21 RUCO incorrectly assumed the Company double-counted some of its implementation costs recorded during the test period. However, my Rebuttal Exhibit No. __ (RLA-2) shows the correct calculation of the SOX adjustment, after updating all costs to actual, and there is no double-counting of implementation costs. After updating estimated SOX costs to actual, operating expenses are increased by $458,530, and the Company's requested regulatory amortization is $14,414 per year for three years.

Q. 22 What Staff adjustments does Southwest oppose?

A. 22 Southwest opposes Staff's proposed disallowance of the Company's request to recover its SOX implementation costs through a regulatory amortization. While the Company recognizes the implementation costs are non-recurring in nature, these costs were necessary in order to comply with the onerous requirements of Section 404 of the SOX Act. The Company was able to keep its implementation costs relatively low because it used internal labor (exempt employees working uncompensated overtime on this project in addition to their normal duties) and believes it is equitable and reasonable to request that customers compensate the Company for its modest incremental external costs associated with complying with a federal mandate through a regulatory amortization.

Further, the Company opposes Staff's conclusion that

25 percent of the recurring incremental annual audit fees related to SOX are non-recurring implementation costs. Staff has simply made an unfounded assertion and has failed to present any evidence that these costs are non-recurring implementation costs. As such, to categorize any portion of the Company's annual audit fees as non-recurring implementation costs is simply incorrect and should be rejected by the Commission.

The Company also opposes Staff's proposal of a sharing concept (i.e. disallowance) with regard to its recurring annual outside audit fees related to the additional audit work required to comply with the SOX Act. These audit fees were necessary costs of doing business and complying with a federal mandate. Furthermore, the level of increases in SOX costs the Company is requesting is reasonable, as Staff itself has admitted (Dorf, Page 16, line 13). Therefore, Staff's recommendation of disallowing one-half of the recurring incremental audit fees related to SOX is unsupported and unreasonable and should be rejected by the Commission.

Q. 23 Would the Company be able to eliminate the portion of expense not allowed for recovery in rates, should any portion of this expense be disallowed?

A. 23 No. Neither the Company nor its outside auditors have the discretion to alter the scope of the SOX compliance portion of the audit. These audit fees are not discretionary; they are required in order for the Company

and its outside auditors to comply with federal regulations that apply to every publicly traded company.

AGA DUES

Q. 24 Does Southwest agree with RUCO's proposed disallowance with regard to AGA dues?

A. 24 No. In compliance with prior Commission orders, the Company has already removed the percentage of the AGA's budget reported in the marketing and lobbying categories. I have attached the documentation supporting the percentages removed as Rebuttal Exhibit No.___(RLA-3), Sheets 1 and 2.

Q. 25 Does Southwest agree with RUCO's proposed disallowances pertaining to the Communications group of the AGA?

A. 25 No, according to the AGA, the Communications group develops information materials for member companies and consumers and coordinates all media activity. Also, the Communications group is an informational function as described above, it is <u>not a marketing or promotional</u> function that is similar to costs the Commission has disallowed in the past. The portion of the AGA dues allocated to the Communications group is reasonable, and the Company should be allowed to recover them.

Q. 26 Does Southwest agree with RUCO's proposed disallowances pertaining to the Public Affairs group of the AGA?

A. 26 No. The Public Affairs group provides members with information on legislative developments, prepares testimony, comments, and filings regarding legislative

activities, and lobbies on behalf of the industry. The lobbying portion of the Public Affairs group has already been removed by the Company. Furthermore, Rebuttal Exhibit No.___(RLA-3), Sheet 3, is a page from the most recent Audit Report available to the Company, and further explains the AGA's Public Affairs activities. In 2002, its major federal, legislative, and regulatory efforts were pipeline safety legislation and regulation, federal funding for Low Income Home Energy Assistance Program (LIHEAP), federal funding for research, and national energy policy legislation. The portion of the AGA dues allocated to the Public Affairs group is reasonable, and the Company should be allowed to recover them.

INTEREST ON CUSTOMER DEPOSITS

Q. 27 Did RUCO oppose the Company's proposal regarding customer deposits?

A. 27 No.

Q. 28 Did Staff oppose the Company's proposal regarding interest on customer deposits?

A. 28 Yes. Staff witness Robert Gray recommended the Company retain its current rate for interest on customer deposits, which is six percent. Company witness A. Brooks Congdon will address the Company's position regarding the appropriate interest rate that should be allowed on customer deposits in his rebuttal testimony.

Q. 29 If the Commission accepts Staff's recommendation to have the Company retain the current rate on customer deposits

of six percent, is there a corresponding adjustment that would be necessary?

A. 29 Yes. In order for the Company to be made whole, the interest rate used to calculate interest paid on customer deposits (to be recovered in operating expenses) must match the interest rate it is authorized to charge customers on their customer deposit balances. I have prepared Rebuttal Exhibit No.___(RLA-4), which shows that Staff's recommendation increases operating expenses by $717,364. In addition, in response to Southwest's third set of data requests, Data Request No. 1, Staff acknowledged that if the Commission authorizes a customer deposit rate of anything other than three percent, an adjustment to the revenue requirement would be appropriate.

MISCELLANEOUS EXPENSES

Q. 30 Did RUCO justify which miscellaneous expenses should be removed and not subject to recovery by the Company?

A. 30 No. RUCO simply stated that these expenses "are not necessary in the provisioning of gas service." Further, RUCO's workpapers lack any detail explaining the reasoning for proposing to disallow any single expenditure.

Q. 31 What is your position regarding RUCO's adjustment?

A. 31 The Company asserts that the vast majority of these expenditures are reasonable, recurring, and necessary business expenses and should remain in the cost of

service. However, the Company, after additional review, is willing to accept a small portion of RUCO's proposed adjustment, and those amounts are identified in Rebuttal Exhibit No.___(RLA-5).

Q. 32 Please provide a summary of the transactions RUCO identified for removal, which the Company believes are reasonable and necessary business expenses.

A. 32 I have prepared an exhibit (Rebuttal Exhibit No.___ (RLA-6), which further details the transactions RUCO identified for removal that the Company believes are necessary to provide service.

The categories of expenditures RUCO identified for removal include, without limitation, the following:

- Moving expenses incurred while transferring a Company employee from Tucson to Phoenix;
- Safety awards and costs related to the Emergency Operations Center and Emergency Response Facility;
- Alcohol and Drug Testing costs;
- Continuing Professional Education expenses.

When the categories of the transactions on Sheets 1 and 2 are not self-explanatory, I have provided additional descriptions of the category and examples of the types of expenditures within those categories on Sheets 3 and 4 of this exhibit. This exhibit demonstrates that RUCO's proposed adjustment was not based on an informed knowledge of the business purpose for the specific transactions, and the portion of RUCO's

adjustment detailed in Rebuttal Exhibit No.___(RLA-6) should be rejected by the Commission and allowed to be recovered by the Company.

INTANGIBLE PLANT CONSTRUCTION WORK IN PROGRESS (CWIP)

Q. 33 Do you agree with Staff's adjustment to remove an intangible plant project that was not completed from CWIP?

A. 33 Yes.

Q. 34 Did RUCO propose a similar adjustment?

A. 34 Yes. However, RUCO proposed to take this adjustment one step further by proposing to remove the net plant from rate base related to projects with amortizations that expire before December 31, 2004.

Q. 35 Does the Company agree with RUCO's additional adjustment to intangible plant?

A. 35 The Company agrees with part of the adjustment. The Company's post-test year adjustment to remove amortizations expiring at or prior to December 31, 2004, and to add intangible projects in CWIP expected to go into service at or prior to December 31, 2004, failed to recognize the rate base impact of the expiring amortizations. However, there is one correction that needs to be made to RUCO's Schedule MDC-2. There is a typographical error on Line 19(a) and (c), the amount needs to be increased from $301,440 to $601,440, and in response to a data request, RUCO acknowledge a typographical error and the need for a correction.

Q. 36 What portion of the adjustment does the Company dispute?

A. 36 The Company noticed an additional adjustment to accumulated amortization in Schedule RLM-3, Line 3(k). In response to a data request, Ms. Marylee Diaz Cortez explained that she used a one-half year convention to reflect the accumulated amortization that would have been recorded had this adjustment been made during the test year.

Q. 37 Why does the Company dispute this portion of the adjustment?

A. 37 The Company does not use a one-half year convention to amortize intangible plant. Amortization begins the month after the asset is placed into service. Therefore, removing the net plant balance at the end of the test period is the only adjustment necessary to rate base to correctly measure the impact of removing the assets that will be fully-amortized by the end of 2004 from the cost of service; no additional adjustment is necessary.

COMPLETED CONSTRUCTION NOT CLASSIFIED (CCNC)

Q. 38 Does the Company agree with RUCO's proposed adjustment to include only those work orders with an in-service date before the end of the test period?

A. 38 No. In the CCNC adjustment, the Company is requesting recovery of those dollars spent in certain non-revenue producing work orders during the test period because those dollars represent rate base that was serving customers during the test year. Many of these work orders

represent large pipe replacement projects which may be ongoing for several months and the in-service dates referenced by RUCO indicate when the entire project was completed. Though many of these work orders closed subsequent to the end of the test period, the expenditures made during the test period should be allowed to be recovered by the Company in order to be consistent with the matching principle, matching test year customers with the plant used to serve those customers.

Q. 39 Please provide a general example of the activity of a pipe replacement CCNC work order from beginning to end.

A. 39 Certainly. A large segment of pipe is identified for replacement, and for ease of administration is placed into a single construction work order. Small segments of pipe are replaced at a time, to minimize inconvenience to customers. Each segment of new pipe is actually serving customers, in most cases, within hours of its installation. When the last foot of pipe is replaced and the last bit of road is paved over the pipe, the work order is noted as "in-service" within the Company's systems. The work order does not close until all trailing charges related to the work order have been booked, which may be one to two months after the in-service date.

Q. 40 Did Staff propose an adjustment to CCNC similar to RUCO's adjustment?

A. 40 No. Staff concluded that the tangible plant was used and

useful by the end of the test year (Rogers, Page 4, Lines 3-4).

Q. 41 Please provide additional information about the work orders in question?

A. 41 The attached Rebuttal Exhibit No.___(RLA-7) details each work order, the balance at the end of the test period, the total amount transferred to plant in service, and the in-service date. This exhibit shows that the majority of the CCNC work orders were completed and noted as in service by mid-2005 in the Company's systems.

Q. 42 Is RUCO's additional downward adjustment to rate base for the retirement costs related to the CCNC work orders correct?

A. 42 No. Attached is Rebuttal Exhibit No.___(RLA-8), which calculates what the rate base impact of retiring these assets would be. There are three amounts captured in a retirement work order: book cost, removal costs, and salvage. The book cost would result in equal reductions to gross plant and the accumulated reserve, and any removal costs (net of salvage) would actually <u>reduce</u> the accumulated reserve (which increases rate base) by $7,361. The Company maintains its position that this calculation is not necessary for its CCNC adjustment due to its negligible impact on rate base.

Q. 43 Does this conclude your prepared rebuttal testimony?

A. 43 Yes, it does.

SOUTHWEST GAS CORPORATION
ARIZONA
RECORDED WITHIN-GRADE AND GENERAL WAGE INCREASES

Line No.	Description (a)	Arizona (b)	Corporate (c)	Line No.
1	Annualized Salaries at August 31, 2004 [1]	$ 61,779,296	$ 41,807,212	1
	Actual Wage Increases: [2]			
2	Recorded Within-Grade Increases 9/1/04-8/7/05:	$ 689,510	$ 122,450	2
3	General Wage Increase Granted June 27, 2005:	1,346,139	1,440,837	3
4	Total	$ 2,035,649	$ 1,563,287	4
	Within-Grade Increases			
5	Actual Percentage Increase (Ln 2 / Ln 1)	1.12%	0.29%	5
6	Proposed Percentage Increase [3]	1.35%	0.29%	6
	General Wage Increase			
7	Actual Percentage Increase (Ln 3 / Ln 1)	2.18%	3.45%	7
8	Proposed Percentage Increase [3]	2.00%	2.00%	8
	Total			
9	Actual Percentage Increase (Ln 5 + Ln 7)	3.30%	3.74%	9
10	Proposed Percentage Increase (Ln 6 + Ln 8)	3.35%	2.29%	10

[1] WP Schedule C-2, Adj. 3, Sh 3, Ln 1
[2] Includes wage increases only for employees on the Company's payroll at August 31, 2004.
[3] WP Schedule C-2, Adj. 3, Sh 4, Note [3]

SOUTHWEST GAS CORPORATION
ARIZONA
ACTUAL JUNE 2005 GENERAL WAGE INCREASE AND WITHIN-GRADE MOVEMENT

Line No.	Description	Reference	Arizona	Corporate Direct	System Allocable	Total	Line No.
	(a)	(b)	(c)	(d)	(e)	(f) (c) + (d) + (e)	
1	Annualized Salaries at 8/31/04	WP Sch C-2, Adj. 3, Sh 3, Ln 1	$ 61,779,296	$ 41,807,212	$ 41,807,212		1
2	Historical Distribution	WP Sch C-2, Adj. 3, Sh 3, Ln 5	n/a	6.80%	87.25%		2
3	Distributed Annualized Salaries	Ln 1 * Ln 2	$ 61,779,296	$ 2,843,265	$ 36,475,304		3
4	**Actual Wage Increase Percentages**	Rebuttal Exh. No. ___(RLA-?), Ln 9	**3.30%**	**3.74%**	**3.74%**		4
5	Annualized Labor	Ln 3 * (1 + Ln 4)	$ 63,814,945	$ 2,949,583	$ 37,839,217		5
6	Overtime Percentage	WP Sch C-2, Adj. 3, Sh 4, Ln 4	8.53%	2.77%	0.43%		6
7	Annualized Labor + Overtime	Ln 5 * (1 + Ln 6)	$ 69,260,748	$ 3,031,319	$ 38,002,599		7
8	Percent Indirect Time	WP Sch C-2, Adj. 3, Sh 4, Ln 7	13.53%	12.33%	12.33%		8
9	Indirect Time	Ln 7 * Ln 8	$ 9,374,278	$ 373,708	$ 4,685,054		9
10	Annualized Labor, Less Indirect Time	Ln 7 - Ln 9	$ 59,886,470	$ 2,657,610	$ 33,317,545		10
11	O&M Percent	[1]	81.02%	100%	96.51%		11
12	Annualized Labor to O&M Accounts	Ln 10 * Ln 11	$ 48,518,347	$ 2,657,610	$ 32,154,763		12
13	Paiute and SGTC Allocation	Sch C-1, Sh 19, Ln 8(g+h)	n/a	n/a	4.29%		13
14	Annualized Labor after Paiute and SGTC Allocation	Ln 12 - (Ln 12 * Ln 13)	$ 48,518,347	$ 2,657,610	$ 30,775,324		14
15	4-Factor Allocation to Arizona	Sch C-1, Sh 18, Ln 10(b)	n/a	n/a	57.58%		15
16	Annualized Labor after Allocation to Arizona	Ln 14 * Ln 15	$ 48,518,347	$ 2,657,610	$ 17,720,431		16
17	Proposed Annualized Labor after Allocation to Arizona	[2]	$ 48,546,243	$ 2,620,441	$ 17,472,965		17
18	Impact on Requested Revenue Requirement	Ln 16 - Ln 17	$ (27,895)	$ 37,169	$ 247,466	$ **256,740**	18

The following references refer to sheet numbers in WP Sch C-2, Adj. 3:

[1] Arizona: Sh 15, Ln 11(c); Corp Dir: Sh 20, Ln 5(c); Sys Alloc: Sh 20, Ln 5(f)

[2] Arizona: Sh 15, Ln 10(c); Corp Dir: Sh 20, Ln 6(c); Sys Alloc: Sh 20, Ln 6(f) * (1-4.29%) * 57.58%.

REBUTTAL TESTIMONY
EXHIBIT NO.___(RLA-1)
SHEET 2 OF 2

SOUTHWEST GAS CORPORATION
ARIZONA
UPDATED INCREMENTAL SARBANES-OXLEY 404 (SOX 404) COMPLIANCE COSTS
ADJUSTMENT NO. 8

Line No.	Description (a)	Reference (b)	Account Number (c)	Amounts (d)	Line No.
	Test Period SOX 404 Incremental Costs				
1	Incremental Costs Recorded During Test Period [1]	WP C-2, Adj. 8	921	$ 13,765	1
2	Incremental Costs Recorded During Test Period [1]	WP C-2, Adj. 8	923	48,225	2
3	Total Incremental Costs Recorded During Test Period	Ln 1 + Ln 2		$ 61,990	3
4	Test Year Costs to Reclassify	Ln 3 * -1		(61,990)	4
5	Less: Paiute & SGTC Allocation at 4.29%	Ln 4 * 4.29% [1]		2,658	5
6	Amount to Reclassify Before 4-Factor	Ln 4 + Ln 5		$ (59,333)	6
7	Arizona 4-Factor	C-1, Sh 18		57.58%	7
8	Reclassification Allocated to Arizona	Ln 6 * Ln 7		$ (34,164)	8
	Regulatory Amortization - SOX 404				
9	Additional Incremental Costs Invoiced [2]	WP C-2, Adj. 8	923	$ 16,470	9
10	Total Implementation Costs	Ln 3 + Ln 9 + Ln 10		$ 78,461	10
11	Proposed Amortization Period			3	11
12	Total Annual Amortization Before Allocation	Ln 11 / Ln 12		26,154	12
13	Less: Paiute & SGTC Allocation at 4.29%	Ln 13 * 4.29% [1]		(1,121)	13
14	Total Annual Amortization Before 4-Factor	Ln 13 + Ln 14		$ 25,032	14
15	Arizona 4-Factor	C-1, Sh 18		57.58%	15
16	**Amortization Allocated to Arizona**	**407.3**		**$ 14,414**	16
	Estimated Incremental Annual Audit Fees				
17	for SOX 404 Opinion [3]		923	$ 894,000	17
18	Less: Paiute & SGTC Allocation at 4.29%	Ln 18 * 4.29% [1]		(38,329)	18
19	Allocation Before 4-Factor	Ln 18 + Ln 19		$ 855,671	19
20	Arizona 4-Factor	C-1, Sh 18		57.58%	20
21	Amount Allocated to Arizona	Ln 20 * Ln 21		$ 492,693	21
22	Incremental Annual Audit Fees Allocated to Arizona	Ln 21		$ 492,693	22
23	Less: TY Amount in A&G Reclassified to Regulatory Amort.	Ln 8		(34,164)	23
24	**Net Adjustment to A&G Expense**	**Ln 23 + Ln 24**		**$ 458,530**	24

[1] Rebuttal Exhibit No. ___(RLA-2), Sheet 2, Ln 6.
[2] Rebuttal Exhibit No. ___(RLA-2), Sheet 2, Ln 11.
[3] Rebuttal Exhibit No. ___(RLA-2), Sheet 2, Ln 20.

SOUTHWEST GAS CORPORATION
SYSTEM ALLOCABLE
UPDATED INCREMENTAL SARBANES-OXLEY 404 COMPLIANCE COSTS
ADJUSTMENT NO. 8

Line No.	Description (a)	Account (b)	Month Paid (c)	Amount (d)	Line No.
	SOX 404 Implementation Costs				
	Paid During Test Period				
1	Jefferson Wells [1]	921	06/04	$ 6,618	1
2	Jefferson Wells [1]	921	07/04	7,147	2
3	Ernst & Young	923	08/04	22,395	3
4	Ernst & Young	923	06/04	15,830	4
5	Ernst & Young	923	03/04	10,000	5
6	Total Test Year Amount to Reclassify to 407.3			$ 61,990	6
	Paid After Test Period				
7	Jefferson Wells	923	10/04	$ 18,718	7
8	Jefferson Wells	923	10/04	3,802	8
9	Jefferson Wells	923	10/04	(4,400)	9
10	Jefferson Wells	923	10/04	(1,650)	10
11	Implementation Costs Paid After Test Period			$ 16,470	11
12	Total Implementation Costs			$ 78,461	12
	Incremental Annual Audit Fees for SOX 404 Opinion				
	Paid During Test Period				
13	PriceWaterhouseCoopers	923	8/04	$ 21,000	13
	Paid After Test Period				
14	PriceWaterhouseCoopers	923	12/04	150,000	14
15	PriceWaterhouseCoopers	923	12/04	100,000	15
16	PriceWaterhouseCoopers	923	12/04	100,000	16
17	PriceWaterhouseCoopers	923	2/05	120,000	17
18	Paid to PriceWaterhouseCoopers to Date			$ 470,000	18
	Accrued March 2005 (invoice not yet received)				
19	PriceWaterhouseCoopers	923	3/05	$ 424,000	19
20	Subtotal: Paid/Accrued After Test Period [2]			$ 894,000	20
21	Total Incremental Annual Audit Fees for SOX 404 Opinion			$ 915,000	21

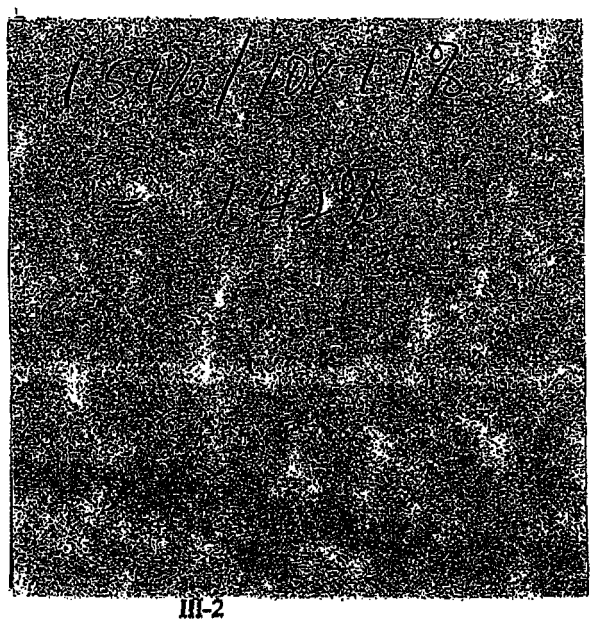
[1] Reclassified from Account 921 to 923 in 10/04 in JE 335.
[2] Amount to be added to Account 923 in Adjustment No. 8.

American Gas Association
Expenditures Funded by Member Dues
For the Year Ended December 31, 2003

REBUTTAL TESTIMONY
EXHIBIT NO.___(RLA-3)
SHEET 1 OF 3

Group Number	Group Name	Net Expense		Adjusments	G&A Allocation (3)	Adjusted Net Expense	% of Dues
03	Public Affairs	5,466,314	1, 2	(2,086,787)	594,755	3,974,282	23.35%
03	Communications	-	2	2,135,112	543,776	2,678,888	15.74%
06, 16	Corporate Affairs and International	1,588,513		-	441,818	2,030,331	11.93%
05	General Counsel & Corp. Secretary	669,281	1	(36,677)	203,916	836,520	4.91%
09	Regulatory Affairs	1,126,488	1	984,182	339,860	2,450,530	14.40%
08	Marketing Development	160,846	1	-	101,958	262,804	1.54%
14	Operating & Engineering Services	2,727,138	1	(815,865)	1,121,540	3,032,813	17.82%
07	Policy & Analysis	1,373,570	1	419,920	543,776	2,337,266	13.73%
12	Industry Finance & Admin. Programs	655,825		-	152,937	808,762	4.75%
01,10,11	General & Administrative Expense	4,044,336		-	(4,044,336)	-	0.00%
	Grand Total	17,812,311		$ 599,885	$ -	$ 18,412,196	108.17%

Adjustments as a result of AGA/NARUC Oversight Committee Staff agreement.
1 Allocation of salaries and other expenses to benefiting group.
2 Breakout of communications portion of division expenses
3 G&A allocated on basis of average equivalent full-time employees during 2003.



REBUTTAL TESTIMONY
EXHIBIT NO.___(RLA-3)
SHEET 2 OF 3

Calculation of Lobbying Expenses Pursuant to
Internal Revenue Code Section 162(e)

The American Gas Association incurred lobbying expenses, as defined under IRC Section 162, of 2.10% of total member dues during calendar year 2003.

IRC Section 162 Definition of Lobbying

(e) Denial of deduction for certain lobbying and political expenditures
- (1) In general no deduction shall be allowed under subsection (a) for any amount paid or incurred in connection with -
  - (A) influencing legislation,
  - (B) participation in, or intervention in, any political campaign on behalf of (or in opposition to) any candidate for public office,
  - (C) any attempt to influence the general public, or segments thereof, with respect to elections, legislative matters, or referendums, or
  - (D) any direct communication with a covered executive branch official in an attempt to influence the official actions or positions of such official.
- (2) Exception for local legislation - In the case of any legislation of any local council or similar governing body -
  - (A) paragraph (1)(A) shall not apply, and
  - (B) the deduction allowed by subsection (a) shall include all ordinary and necessary expenses (including, but not limited to, traveling expenses described in subsection (a)(2) and the cost of preparing testimony) paid or incurred during the taxable year in carrying on any trade or business -
    - (i) in direct connection with appearances before, submission of statements to, or sending communications to the committees, or individual members, of such council or body with respect to legislation or proposed legislation of direct interest to the taxpayer, or
    - (ii) in direct connection with communication of information between the taxpayer and an organization of which the taxpayer is a member with respect to any such legislation or proposed legislation which is of direct interest to the taxpayer and to such organization, and that portion of the dues so paid or incurred with respect to any organization of which the taxpayer is a member which is attributable to the expenses of the activities described in clauses (i) and (ii) carried on by such organization.
- (3) Application to dues of tax-exempt organizations - No deduction shall be allowed under subsection (a) for the portion of dues or other similar amounts paid by the taxpayer to an organization which is exempt from tax under this subtitle which the organization notifies the taxpayer under section 6033(e)(1)(A)(ii) is allocable to expenditures to which paragraph (1) applies.
- (4) Influencing legislation - For purposes of this subsection -
  - (A) In general The term "influencing legislation" means any attempt to influence any legislation through communication with any member or employee of a legislative body, or with any government official or employee who may participate in the formulation of legislation.
  - (B) Legislation - The term "legislation" has the meaning given such term by section 4911(e)(2).
- (5) Other special rules
  - (A) Exception for certain taxpayers - In the case of any taxpayer engaged in the trade or business of conducting activities described in paragraph (1), paragraph (1) shall not apply to expenditures of the taxpayer in conducting such activities directly on behalf of another person (but shall apply to payments by such other person to the taxpayer for conducting such activities).
  - (B) De minimis exception
    - (i) In general Paragraph (1) shall not apply to any in-house expenditures for any taxable year if such expenditures do not exceed $2,000. In determining whether a taxpayer exceeds the $2,000 limit under this clause, there shall not be taken into account overhead costs otherwise allocable to activities described in paragraphs (1)(A) and (D).
    - (ii) In-house expenditures for purposes of clause (i), the term "in-house expenditures" means expenditures described in paragraphs (1)(A) and (D) other than
      - (I) payments by the taxpayer to a person engaged in the trade or business of conducting activities described in paragraph (1) for the conduct of such activities on behalf of the taxpayer, or
      - (II) dues or other similar amounts paid or incurred by the taxpayer which are allocable to activities described in paragraph (1).
  - (C) Expenses incurred in connection with lobbying and political activities - Any amount paid or incurred for research for, or preparation, planning, or coordination of, any activity described in paragraph (1) shall be treated as paid or incurred in connection with such activity.
- (6) Covered executive branch official - For purposes of this subsection, the term "covered executive branch official" means -
  - (A) the President,
  - (B) the Vice President,
  - (C) any officer or employee of the White House Office of the Executive Office of the President, and the 2 most senior level officers of each of the other agencies in such Executive Office, and
  - (D) (i) any individual serving in a position in level I of the Executive Schedule under section 5312 of title 5, United States Code, (ii) any other individual designated by the President as having Cabinet level status, and (iii) any immediate deputy of an individual described in clause (i) or (ii).
- (7) Special rule for Indian tribal governments - For purposes of this subsection, an Indian tribal government shall be treated in the same manner as a local council or similar governing body.
- (8) Cross reference - For reporting requirements and alternative taxes related to this subsection, see section 6033(e).

Citation: IRC Sec. 6033(e)

AMERICAN GAS ASSOCIATION

Government Relations Division Expenses Including Allocation of General and Administrative Expense

For the year ended December 31, 2002

Division	Expense
Public Affairs The American Gas Association monitored and represented the activities of Congress and Federal agencies that affected issues of importance to the natural gas industry and its customers. This division also monitored state and local legislative and regulatory trends. In 2002 its major federal, legislative and regulatory efforts were pipeline safety legislation and regulation, Federal funding for Low Income Home Energy Assistance Program (LIHEAP), federal funding for research, and national energy policy legislation.	$3,994,184
Regulatory Affairs Prepares comments in regulatory proceedings before the FERC and participates in public policy discussions with NARUC. During 2002, it was active in a number of FERC proceedings involving regulations of interstate pipelines.	$2,566,965
Total Government Relations Expenses	$6,561,149

SOUTHWEST GAS CORPORATION
ARIZONA
IMPACT OF CHANGE IN INTEREST RATE ON INTEREST ON CUSTOMER DEPOSITS

Line No.	Description (a)	Amount (b)	Line No.
1	Thirteen Month Average Balance [1]	$ 23,912,141	1
2	Interest Rate increased from 3% to 6%	3.00%	2
3	Increased Interest Expense (Ln 1 * Ln 2)	$ 717,364	3

[1] Schedule C-2, Adj 19, Sheet 1, Ln 16(e)

SOUTHWEST GAS CORPORATION
ARIZONA
MISCELLANEOUS EXPENDITURES
AMOUNTS COMPANY AGREES WITH RUCO TO REMOVE

Line No.	Account	Gross Amount	Allocation to PP and SGTC	Amount Net of Allocation to PP and SGTC	Allocation to Arizona	Arizona Total	Line No.
1	870	$ 6,956	-	$ 6,956	100.00%	$ 6,956	1
2	880	31,953	-	31,953	100.00%	31,953	2
3	902	95	-	95	100.00%	95	3
4	921	13,481	4.29%	12,903	57.58%	7,429	4
5	923	27,400	4.29%	26,225	57.58%	15,100	5
6	930	1,143	4.29%	1,094	57.58%	630	6
7		$ 81,029		$ 79,227		$ 62,165	7

SOUTHWEST GAS CORPORATION
ARIZONA
MISCELLANEOUS EXPENDITURES
CATEGORIZATION OF EXPENSES NECESSARY TO PROVIDE SERVICE

Line No.	Description (a)	Account (b)	Gross Amount (c)	Allocation to PP and SGTC	Amount Net of Allocation to PP and SGTC	Allocation to Arizona	Arizona Total	Line No.
1	Alcohol/Drug Testing	921	946	4.29%	905	57.58%	521	1
2	Annual Shareholder Meeting	930	21,477	4.29%	20,556	57.58%	11,836	2
3	Coffee, Water, Tea, Sodas, etc.	870	6,252	-	6,252	100.00%	6,252	3
4	Coffee, Water, Tea, Sodas, etc.	880	35,740	-	35,740	100.00%	35,740	4
5	Coffee, Water, Tea, Sodas, etc.	921	48,634	4.29%	46,549	57.58%	26,803	5
6	Continuing Professional Education	921	4,560	4.29%	4,364	57.58%	2,513	6
7	Customer Survey Winners	921	3,762	4.29%	3,600	57.58%	2,073	7
8	Emergency Ops Ctr/Em. Resp Facility	870	18	-	18	100.00%	18	8
9	Emergency Ops Ctr/Em. Resp Facility	880	780	-	780	100.00%	780	9
10	Emergency Ops Ctr/Em. Resp Facility	921	1,493	4.29%	1,429	57.58%	823	10
11	Employee Recognition	880	5,352	-	5,352	100.00%	5,352	11
12	Employee Recognition	921	3,288	4.29%	3,147	57.58%	1,812	12
13	Employee Recruiting	870	350	-	350	100.00%	350	13
14	Employee Recruiting	880	440	-	440	100.00%	440	14
15	Employee Relocation	870	2,237	-	2,237	100.00%	2,237	15
16	Equipment, Materials and Supplies [1]	870	1,098	-	1,098	100.00%	1,098	16
17	Equipment, Materials and Supplies [1]	880	4,389	-	4,389	100.00%	4,389	17
18	Equipment, Materials and Supplies [1]	902	98	-	98	100.00%	98	18
19	Equipment, Materials and Supplies [1]	921	5,329	4.29%	5,101	57.58%	2,937	19
20	Food Service Event	921	515	4.29%	493	57.58%	284	20
21	Ice Machine Lease/Ice Purchase	870	1,586	-	1,586	100.00%	1,586	21
22	Ice Machine Lease/Ice Purchase	880	3,231	-	3,231	100.00%	3,231	22
23	Lodging	880	39	-	39	100.00%	39	23
24	Lodging	921	942	4.29%	901	57.58%	519	24
25	Lodging	923	368	4.29%	353	57.58%	203	25
26	Lodging	930	16,057	4.29%	15,368	57.58%	8,849	26
27	Low Income Program Information	880	2,525	-	2,525	100.00%	2,525	27
28	Meeting Facilities	880	5,628	-	5,628	100.00%	5,628	28
29	Meeting Facilities	921	443	4.29%	424	57.58%	244	29
30	Memberships	870	500	-	500	100.00%	500	30
31	Memberships	880	384	-	384	100.00%	384	31
32	Memberships	921	2,720	4.29%	2,603	57.58%	1,499	32

REBUTTAL TESTIMONY
EXHIBIT NO.___(RLA-6)
SHEET 1 OF 4

SOUTHWEST GAS CORPORATION
ARIZONA
MISCELLANEOUS EXPENDITURES
CATEGORIZATION OF EXPENSES NECESSARY TO PROVIDE SERVICE

Line No.	Description (a)	Account (b)	Gross Amount (c)	Allocation to PP and SGTC	Amount Net of Allocation to PP and SGTC	Allocation to Arizona	Arizona Total	Line No.
1	Meter Reading Incentive Program [2]	880	6,550	-	6,550	100.00%	6,550	1
2	Meter Reading Incentive Program [2]	902	9,835	-	9,835	100.00%	9,835	2
3	Minority Enterprise Development	880	500	-	500	100.00%	500	3
4	Miscellaneous [3]	870	130	-	130	100.00%	130	4
5	Miscellaneous [4]	880	682	-	682	100.00%	682	5
6	Miscellaneous [5]	921	254	4.29%	243	57.58%	140	6
7	Office Supplies	880	1,264	-	1,264	100.00%	1,264	7
8	Office Supplies	921	2,500	4.29%	2,393	57.58%	1,378	8
9	Other Recognition	880	703	-	703	100.00%	703	9
10	Outside Services - Building Services [6]	870	2,350	-	2,350	100.00%	2,350	10
11	Outside Services - Building Services [7]	921	35,885	4.29%	34,347	57.58%	19,777	11
12	Photography Equipment/Processing	880	6,182	-	6,182	100.00%	6,182	12
13	Photography Equipment/Processing	902	687	-	687	100.00%	687	13
14	Professional Development	870	100	-	100	100.00%	100	14
15	Professional Development	880	2,502	-	2,502	100.00%	2,502	15
16	Professional Development	921	200	4.29%	191	57.58%	110	16
17	Professional Photography	880	1,590	-	1,590	100.00%	1,590	17
18	Professional Photography	921	17,252	4.29%	16,512	57.58%	9,508	18
19	Professional Photography	930	6,886	4.29%	6,591	57.58%	3,795	19
20	Safety Awards [8]	880	15,015	-	15,015	100.00%	15,015	20
21	Shredding Service	921	4,335	4.29%	4,149	57.58%	2,389	21
22	Subscriptions	930	5,268	4.29%	5,042	57.58%	2,903	22
23	Temporary Employee	880	2,000	-	2,000	100.00%	2,000	23
24	Training	880	1,508	-	1,508	100.00%	1,508	24
25	Training	921	935	4.29%	895	57.58%	515	25
26	Transportation	921	350	4.29%	335	57.58%	193	26
27	Trip Reduction Incentive Program [9]	880	3,206	-	3,206	100.00%	3,206	27
28	Working Meals	870	3,762	-	3,762	100.00%	3,762	28
29	Working Meals	880	30,665	-	30,665	100.00%	30,665	29
30	Working Meals	921	22,769	4.29%	21,793	57.58%	12,549	30
31	Working Meals	930	6,834	4.29%	6,541	57.58%	3,766	31
32	Total Reasonable and Necessary Costs		$ 373,877		$ 364,702		$ 277,814	32

REBUTTAL TESTIMONY
EXHIBIT NO.__(RLA-6)
SHEET 2 OF 4

SOUTHWEST GAS CORPORATION
ARIZONA
MISCELLANEOUS EXPENDITURES
CATEGORIZATION OF EXPENSES NECESSARY TO PROVIDE SERVICE

[1] Equipment, Materials and Supplies

Miscellaneous purchases of tangible items of low value not included in operating inventory, including but not limited to: appliances, audio visual equipment, cellular phones, screws, hooks, fittings, flanges, tie-downs, straps, cleaning supplies, gauges, etc.

[2] Meter Reading Recognition Program

The Meter Reading Recognition Program is a Company-wide program that recognizes and rewards employees who have performed all of their Meter Reading job duties in an outstanding manner. The program has specific procedures and guidelines regarding how an award under this program may be earned (see response to Data Request No. RUCO-8.01(c)). The performance guidelines include accuracy, attendance, safety, human relations skills, etc.

[3] Miscellaneous, Account 870

A safety document was translated into Spanish.

[4] Miscellaneous, Account 880

Includes $25 arbitration fee, $100 of expenses the Company received reimbursement for, $200 in Customer Appreciation prizes, a $100 expense that was double-counted in RUCO's adjustment, $57 in meals for residents evacuated during a natural gas emergency, and $150 for trade show expenses.

[5] Miscellaneous, Account 921

Includes $128 in publications and $126 for an equipment repair.

[6] Outside Services – Building Services, Account 870

Maintenance of indoor plants.

[7] Outside Services – Building Services, Account 921

Consulting fees to firm specializing in architecture, engineering, site planning, and interiors for various remodeling projects.

[8] Safety Awards

There are two parts to the Safety Awards program. The first part applies to employees who drive a vehicle on a daily basis. Those who complete a full calendar year without a preventable accident receive a $15.00 reward, and who complete 5 years driving a vehicle without a preventable accident receive a $40.00 reward. The second part of the Safety Awards Program recognizes each employee in a department that completes a full calendar year without a lost time preventable injury with a reward of $20.00. This reward increases to $40.00 after five consecutive years without a lost time preventable injury, and the reward continues annually until the streak is broken.

[9] Trip Reduction Incentive Program

Maricopa County The Travel Reduction Program (TRP) is mandated for all employers in Maricopa County with 50 or more employees. The goal of the TRP is to implement measures which encourage employees to use an alternate mode of travel instead of driving alone. The Company agreed to be part of the Ozone Program and to receive trip reduction credit for its participation. As such, the Company was required to implement the following items: 1) Communicate high pollution advisories to all employees; 2) provide incentives throughout ozone season; 3) track employee participation; and 4) collect signed employee pledges.

The incentives provided by the Company to comply with the TRP are as follows: $10 gas coupons: Each employee who participates in the trip reduction (car-pool, van-pool, bike, ride the bus or walk to work) eight times in any month will get a coupon following the month that they qualify; $100 gift certificate: A drawing is held at the end of every month for all employees that participate at least eight times; 4-$25 gift certificates. The drawing for the grand prize of $100 has four consolation prizes each month; Van-pool subsidy: the company has three van-pools (24 employees) that it subsidizes each employee that rides at $30 per month; $50 Gift Certificate for High Pollution Advisory (HPA) drawings: any time that the county announces a HPA day, every employee that participates by using an alternate form of travel (van-pool, car-pool, bus, bike or walk) is entered into a drawing at the end of that month. The Company holds one drawing for the entire month, and each HPA day gives participating employees additional chances to win.

Tucson The Travel Reduction Program (TRP) is administered through the City of Tucson. There is a city ordinance that requires pro-active travel reduction programs and city businesses are expected to participate. The TRP requires the Company to provide its survey to Company employees. Southwest Gas shows support of the city ordinance and program by providing additional incentives for employees to participate. For its Tucson employees, the Company awards three $100, three $50 and three $25 gift certificates in a random drawing as an incentive to those who complete an annual TRAVEL REDUCTION SURVEY. The survey is used as a benchmark to show trends in employee travel to/from work with the goal to reduce miles driven, encourage use of alternative fuels and modes of transportation (i.e., bus, bike, and walk) and carpooling.

SOUTHWEST GAS CORPORATION
ARIZONA
FERC ACCOUNT 376 - MAINS
COMPLETED CONSTRUCTION NOT CLASSIFIED
BALANCES AT AUGUST 31, 2004 AND JULY 31, 2005 AND AMOUNT TRANSFERRED TO PLANT

Line No.	District (a)	Work Order Number (b)	FERC Account (c)	Description (d)	Work Order Balance at 8/31/04 (e)	Work Order Balance at 7/31/05 (f)	Amount Transferred to Plant (g)	In-Service Date (h)	Line No.
1	32	C4233289	376	Replace Steel and PVC Main	$ 16,656	$ 0	$ 43,025	14-Sep-04	1
2				Total 9604	$ 16,656	$ 0	$ 43,025		2
3	32	C3662360	376	Replace 1960' of 1 1/2" Steel	$ 47,765	$ 0	$ 50,393	1-Jul-04	3
4	32	C3668519	376	Replace approx. 12' of 1 1/2"	893	935	0	open	4
5	32	C3681448	376	Replace 276' of 2" PVC	16,043	0	16,540	17-Jan-04	5
6	32	C4223980	376	Replace 610' of 3/4" Steel	2,397	0	33,462	17-Sep-04	6
7	32	C4240722	376	Replace 1355' of 2" Steel	159	167	0	open	7
8	32	C4244375	376	Replace 623' of 2" Steel	13,672	0	15,148	14-Jul-04	8
9	32	C4244378	376	Replace 175' of 2" Steel	6,242	0	26,396	27-Jun-04	9
10	32	C4253022	376	Replace 165' of 2" PVC	51	53	0	open	10
11	32	C4270703	376	Replace and Relocate 1,580	(21,774)	0	(725)	9-Sep-04	11
12				Total 9605	$ 65,447	$ 1,155	$ 141,214		12
13	32	C2536287	376	Install Rectifier/Adodebe.	$ 2,940	$ 3,072	$ 0	open	13
14				Total 9611	2,940	3,072	0		14
15				Total District 32 - Valley	$ 85,043	$ 4,227	$ 184,239		15
16	36	C3222006	376	Install 4" PE 8100 Main and	$ 14,492	$ 0	$ 115,900	15-Mar-05	16
17	36	C3222112	376	Replace 2,901 Feet of Primary Steel	1,599	0	214,027	30-Dec-04	17
18	36	C4262016	376	Replace Approximately 1800'	47,271	0	103,420	27-Aug-04	18
19	36	C4264592	376	Relocate Existing 2" and 4"	989	0	31,094	30-Dec-04	19
20				Total 9604	$ 64,350	$ 0	$ 464,441		20
21	36	C2585555	376	Replace 195 Feet of 2" Drisco	$ 5,940	$ 0	$ 5,974	1-Jul-04	21
22	36	C3629025	376	Replace 7,105 Feet of Primary Steel	114,529	0	112,232	23-Oct-04	22
23	36	C4225145	376	Replace 346' of 2" Steel	1,534	12,636	0	21-Jun-05	23
24	36	C4234544	376	Replace 11,366 Feet of Primary Steel	16,924	0	241,107	29-Dec-04	24
25	36	C4234927	376	Abandon Exposed 2" Steel Main	1,203	0	44,210	15-Mar-05	25
26	36	C4244953	376	Replace 630 Feet of 2" Steel	425	0	14,897	14-Jan-05	26
27	36	C4264224	376	Relocate Existing 4" Steel	2,612	0	2,646	6-Aug-04	27
28	36	C4269542	376	Replace 2" Drisco Main	447	0	525	22-Jul-04	28
29	36	C4274671	376	Replace 528' of 2" PE8000	695	0	(572)	20-Aug-04	29
30				Total 9605	$ 144,311	$ 12,636	$ 421,019		30
31	36	C0366671	376	Install 135' of 6" HP Steel	$ 642	$ 0	$ 0	cancelled	31
32				Total 9635	$ 642	$ 0	$ 0		32
33				Total District 36 - Tuscon	$ 209,302	$ 12,636	$ 885,460		33
34	42	C2547577	376	Install 50' of 6" PE Main	$ 36,208	$ 0	$ 49,064	1-Nov-04	34
35	42	C2568723	376	Install 729' of 10" Steel	9,905	76,077	0	open	35
36	42	C2584157	376	Work Order to Charge Poth.	81,145	10,294	0	open	36
37	42	C2589973	376	Install 44' of 4" PE Main	254	0	20,554	23-Sep-04	37
38	42	C3201085	376	Install 4365' of 6" PE Main	88,272	0	324,428	3-Sep-04	38
39	42	C3209649	376	Install 50' of 4" Steel HP	783	0	27,321	17-Sep-04	39
40	42	C3216903	376	Install 27' of 4" PE and 77' of 2" PE	3,647	0	4,239	5-Aug-04	40

Source: Company Records

SOUTHWEST GAS CORPORATION
ARIZONA
FERC ACCOUNT 376 - MAINS
COMPLETED CONSTRUCTION NOT CLASSIFIED
BALANCES AT AUGUST 31, 2004 AND JULY 31, 2005 AND AMOUNT TRANSFERRED TO PLANT

Line No.	District (a)	Work Order Number (b)	FERC Account (c)	Description (d)	Work Order Balance at 8/31/04 (e)	Work Order Balance at 7/31/05 (f)	Amount Transferred to Plant (g)	In-Service Date (h)	Line No.
1	42	C3635877	376	Install 1304 Feet of 2" PE	$ 34,271	$ 0	$ 77,499	21-Sep-04	1
2	42	C3646604	376	Install 1100' of 4" PE Main	3,843	0	64,644	4-Nov-04	2
3	42	C3660167	376	Install 138' of 4" PE Main	21,843	0	26,546	25-May-04	3
4	42	C3663930	376	Install 24' of 8"Steel HP Main	3,039	3,773	0	open	4
5	42	C3696055	376	Install 798' of New 2" Steel	4,871	0	47,307	17-Jun-05	5
6	42	C4231967	376	Install 27' of 6" Steel 175 PSIG	(4,714)	0	7,874	20-Dec-04	6
7	42	C4233234	376	Retire 187' of 1-1/4" PE Main	71	0	0	cancelled	7
8	42	C4233802	376	Install 211' 6" Steel 175 PS	(11,749)	0	10,293	5-Apr-05	8
9	42	C4249546	376	Install 939' of 2" PE Main	6,266	0	0	cancelled	9
10	42	C4251567	376	Install 576' -2" PE Main	(1,817)	0	8,126	29-Nov-04	10
11	42	C4252036	376	Install 178' of 6" Steel	9,910	0	57,157	30-Sep-04	11
12	42	C4260769	376	Install 450' of 8" Steel	1,461	0	93,682	2-Oct-04	12
13	42	C4269589	376	Install 500' of 12" Steel	35,482	0	107,728	13-Sep-04	13
14				Total 9604	$ 322,990	$ 90,144	$ 926,462		14
15	42	C1422042	376	Replace 5" HP Steel Main	$ 262,590	$ 0	$ 281,433	7-Oct-04	15
16	42	C3664082	376	Replace 1054' of 2" Steel Main	13,932	0	93,578	20-Oct-04	16
17	42	C3693590	376	Abandon 2995'	52,673	0	68,349	12-Aug-04	17
18	42	C4231870	376	Install 408' of 4" PE Main and Aba.	477	0	26,295	11-Sep-04	18
19	42	C4232460	376	Replace 1838' of 2 1/2 Steel	1,732	0	30,671	18-Jan-05	19
20	42	C4254828	376	Replace 871' of 2" Steel	1,400	0	0	cancelled	20
21				Total 9605	$ 332,804	$ 0	$ 500,326		21
22	42	C0319485	376	Install 1,214 Feet of 4" 3PE Main	$ 267	$ 0	$ 128,017	25-Sep-04	22
23	42	C3213815	376	Install 307' of 2" Steel Main	7,375	0	21,553	23-Aug-04	23
24	42	C3214516	376	Install 195' of 2" PE	252	0	26,080	12-Oct-04	24
25	42	C3214937	376	DS 26-2 Install 3923' of 4"	335	0	283,381	11-Oct-04	25
26	42	C3216934	376	SWG Install 397' of 2" Steel	1,575	4,431	0	open	26
27	42	C3638065	376	Install 2007' of 4" PE Main	4,140	0	48,505	8-Dec-04	27
28	42	C3649358	376	Install 1624' of 6" HP Steel	42,220	0	84,085	13-Sep-04	28
29	42	C4230274	376	Install 773' of 4" PE Main	293	0	109,390	4-Nov-04	29
30	42	C4231846	376	Install 225' of 2" PE Main	511	0	14,934	4-Oct-04	30
31	42	C4231882	376	Install 1319' of 4" PE Main	547	0	86,362	6-Nov-04	31
32	42	C4236882	376	Install 624' of 4" PE Main	33,581	0	49,998	26-Aug-04	32
33	42	C4239280	376	Install 844' of 2" PE Main	2,746	0	29,220	30-Aug-04	33
34	42	C4245306	376	Install 640' of 2" PE Main	656	0	11,230	13-Dec-04	34
35	42	C4246076	376	Install 169' of 2" PE Main	211	0	27,093	29-Dec-04	35
36	42	C4249537	376	Extend 241' of 2" PE	419	0	18,292	2-Sep-04	36
37				Total 9606	$ 95,128	$ 4,431	$ 938,140		37
38	42	C1400917	376	Install Deep Anode Groundb.	$ 12,458	$ 12,980	$ 0	open	38
39	42	C2584270	376	This Job Entails the Total	7,667	8,015	0	open	39
40				Total 9611	$ 20,126	$ 20,995	$ 0		40
41				Total District 42 - Phoenix	$ 771,048	$ 115,570	$ 2,364,928		41
42	44	C4231070	376	Lower 2" PE Gas Main to Cl.	$ 3,239	$ 3,394	$ 0	open	42
43				Total District 44 - Ajo/Gila Bend	$ 3,239	$ 3,394	$ 0		43
44	46	C4249338	376	Replace 1659' of 2" Steel	$ 24,383	$ 0	$ 34,298	7-Sep-04	44
45				Total District 46 - Mountain	$ 24,383	$ 0	$ 34,298		45
46	47	C3203028	376	Abandon approx. 13,363' of 2"	$ 36,757	$ 0	$ 37,148	7-Dec-04	46
47	47	C3682002	376	Rerouted Main Due to Wash.	54	55	0	open	47
48	47	C4262595	376	Abandon 174' of 1-1/4" Steel	8,160	0	75,860	29-Sep-04	48
49				Total District 47 - Southeast	$ 44,971	$ 55	$ 113,008		49
50	48	C4272528	376	Install 318' of 4" Drisco	$ 5,790	$ 0	$ 10,982	17-Sep-04	50
51	48	C4273657	376	Replace 20 Feet of 1" HP Steel	1,581	3,470	0	open	51
52				Total District 48 - Yuma	$ 7,370	$ 3,470	$ 10,982		52
53				Total Arizona	$ 1,145,356	$ 139,352	$ 3,592,915		53

Source: Company Records

SOUTHWEST GAS CORPORATION
ARIZONA
ACCOUNT 376.0 - MAINS
RETIREMENT WORK ORDERS RELATED TO CCNC WORK ORDERS

Line No.	Description	Construction WO	Retirement WO	Book Cost [1], [2]	Removal Cost & Salvage [1]	Total Closings	Line No.
	(a)	(b)	(c)	(d)	(e)	(f) (d) + (e)	
	DISTRIBUTION PLANT						
	Mains						
1	Replace 1960' of 1 1/2" Steel	C3662360	R3662360	(1,079)	(2,230)	$ (3,309)	1
2	Replace 276' of 2"PVC	C3681448	R3681448	(202)	(7)	(209)	2
3	Replace Approximately 1800'	C4262016	R4262016			-	3
4	Replace 195' of 2" Drisco	C2585555	R2585555	(1,749)	(192)	(1,941)	4
5	Relocate Exisitng 4" Steel	C4264224	R4264224	(15,771)	(598)	(16,369)	5
6	Replace 2" Drisco Main	C4269542	R4269542	(2,295)	-	(2,295)	6
7	Replace 538' of 2"PE800	C4274671	R4274671	(4,308)	(914)	(5,222)	7
8	Instal 138' of 4" PE Main	C3660167	R3660167	(1,492)	-	(1,492)	8
9	Abandon 2995'	C3693590	R3693590	(5,780)	(3,421)	(9,201)	9
10	Install 307' of 2" Steel Main	C3213815	R3213815	-	-	-	10
11	TOTAL			$ (32,677)	$ (7,361)	$ (40,038)	11
12	**IMPACT ON ACCUMULATED PROVISION FOR DEPRECIATION**				**$ (7,361)**		

[1] Source: Response to Data Request No. RUCO-13.01
[2] Book cost has an equal impact on gross plant and accumulated provision for depreciation.

MASHAS

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
Prepared Rebuttal Testimony
of
ROBERT A. MASHAS

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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
ROBERT A. MASHAS

INTRODUCTION/BACKGROUND

Q. 1 Please state your name, business address and occupation.

A. 1 My name is Mr. Robert A. Mashas. My business address is 5241 Spring Mountain Road, Las Vegas, Nevada 89150-0002. I am employed by Southwest Gas Corporation (Southwest or the Company) in the Revenue Requirements department as Director/Revenue Requirements.

Q. 2 Are you the same Robert A. Mashas who sponsored direct testimony on behalf of Southwest in this proceeding?

A. 2 Yes, I am.

Q. 3 What is the purpose of your prepared rebuttal testimony?

A. 3 The purpose of my rebuttal testimony is to respond to specific aspects of the direct testimony presented by Mr. James J. Dorf, witness for the Arizona Corporation Commission (Commission) Utilities Division Staff (Staff) and Ms. Marylee Diaz Cortez and Mr. Rodney L. Moore, witnesses for the Residential Utility Consumer Office (RUCO), regarding their respective recommendations concerning certain operating expenses and rate base.

Q. 4 Did you prepare exhibits to support your rebuttal testimony?

A. 4 Yes. I prepared exhibits identified as Rebuttal Exhibit No.___(RAM-1) through Rebuttal Exhibit No.___(RAM-5).

Q. 5 Please summarize your rebuttal testimony.

A. 5 My rebuttal testimony will address the following issues:

- Supplemental Executive Retirement Program (SERP): RUCO's proposed disallowance of SERP.
- Management Incentive Program (MIP): RUCO's recommendation that 66 percent of MIP be disallowed and Staff's recommendation that 50 percent of MIP be disallowed.
- Transmission Integrity Program (TRIMP): the Company's approval of RUCO's proposed TRIMP adjustment and Staff's proposal to have a "DOT Pipeline Safety Surcharge" as a mechanism to recover TRIMP-related expenses.
- Pipe Replacement Program: RUCO's proposed application of Southwest's proposed write-off percentages.
- Injuries and Damages: RUCO's proposed reduction to the Company's self-insured retention (SIR) normalization and Staff's proposal to disallow the Company's proposed insurance annualization and SIR normalization.

SUPPLEMENTAL EXECUTIVE RETIREMENT PROGRAM (SERP)

Q. 6 Does RUCO propose to exclude SERP-related costs from operating expenses?

A. 6 Yes. RUCO proposes an adjustment to operating expenses to remove the cost of SERP.

Q. 7 Did RUCO propose a similar adjustment to SERP expense in the Company's last general rate case?

A. 7 Yes. RUCO sponsored similar testimony and proposed a similar adjustment in the Company's last general rate case, and the Company rebutted RUCO's proposed adjustment by submitting testimony pertaining to how the SERP plan works and the reason why such a plan is reasonable.

Q. 8 How did the Commission rule on this issue?

A. 8 In Decision No. 64172, the Commission stated: "In arguing that the SERP costs should not be borne by ratepayers, RUCO did not focus on the overall compensation package to the Company's top executives. There is no evidence that Southwest's overall compensation package is excessive. We will not remove the SERP from allowed expense absent such showing."

Q. 9 Has RUCO requested any information concerning the overall reasonableness of employee or executive compensation?

A. 9 No.

Q. 10 Has RUCO presented testimony that the Company's overall compensation is excessive?

A. 10 No.

Q. 11 Why is the SERP offered to Company officers?

A. 11 The SERP is offered to Southwest's officers to ensure that the retirement and deferred compensation portions of their total compensation are on parity with all other employees of Southwest whose retirement distribution is not impacted by certain IRS regulations. There are

several reasons why the SERP is reasonable, including, without limitation, the following: (1)restrictions on the upper amount of the Basic Retirement Plan (BRP); (2)the exclusion of deferred compensation from the BRP compensation calculation; and (3) to ensure the attraction of highly qualified individuals to manage and run the Company and to ensure their retention for the benefit of customers and shareholders of Southwest.

Q. 12 Please describe Southwest's BRP?

A. 12 Each Southwest employee is provided an opportunity to receive a pension under the BRP. For each year of service, an employee adds 1.75 percent to their pension calculation up to 30 years of service, or a maximum of 52.25 percent of the highest five consecutive years over the last ten years of service.

Q. 13 Does the IRS place restrictions on the calculation of the BRP that negatively impact Southwest's officers?

A. 13 Yes. IRS regulations place limits on the level of qualified plan compensation on which a pension calculation can be computed. For the test year ending August 31, 2004, the maximum qualified plan compensation for a qualified BRP was $165,000. As such, any portion of an officer's salary that exceeds $165,000 is not included in the pension calculation.

Q. 14 Does the Company offer its employees a 401(k) plan?

A. 14 Yes. The Company's 401(k) plan provides for the deferral of between 2 percent to 60 percent of an employee's

salary. IRS regulations provide that the maximum employee deferral is $13,000 (2004) for employees under the age of 50 and $16,000 for employees over the age of 50. The Company also matches 50 percent of the first six percent deferred into the plan, but deferrals greater than six percent are not matched.

Q. 15 Does the IRS place restrictions on the Company's 401(k) plan that negatively impact Southwest's officers?

A. 15 Yes. The maximum contribution levels represent a significantly smaller percentage of an officer's salary compared to other employees. As such, the Company provides its officers a Deferred Compensation Plan (DCP). This is a non-qualified plan that provides, without limitation, for the deferral of an officer's salary.

Q. 16 Does salary deferred under the DCP impact the officer's BRP calculation?

A. 16 Yes. IRS regulations do not permit the inclusion of salary deferred under the DCP to be included in base salary when computing the officer's pension benefit. This limitation is not placed on amounts deferred through the 401(k) plan.

Q. 17 How does the SERP provide Southwest officers with a retirement plan that is on parity with other employees?

A. 17 The SERP compensates an officer for the aforementioned IRS limitations on compensation and the BRP calculation that are not applicable to other employees by providing officers with a retirement benefit equal to 50 percent of

the average of the last three years salary provided that they are at least 60 years of age and have at least 20 years of service. If the officer has 20 or more years of service, the 50 percent under the SERP is slightly less than the 52.5 percent available to other employees under the BRP. This difference is presumably addressed by the fact that the SERP is based on the 12-month average of the highest consecutive 36 months of earnings. Also, a senior officer's benefit is calculated based upon 60 percent compared to the 50 percent for non-senior officers.

Q. 18 Should RUCO's proposed adjustment to disallow costs related to SERP be accepted by the Commission?

A. 18 No. RUCO has presented no evidence to demonstrate that the Company's overall compensation package for officers is excessive, and its proposed disallowance is unfounded. To the contrary, the Company has presented sound justification supporting the reasonableness and necessity of the SERP. As such, the SERP should be included in rates.

MANAGEMENT INCENTIVE PLAN (MIP)

Q. 19 Does Staff and RUCO propose disallowances pertaining to the Company's MIP?

A. 19 Yes. Both parties propose a sharing concept with respect to a portion of the Company's MIP. RUCO proposes a 67 percent disallowance arguing that the MIP is not known or measurable because it is a bonus program and could be

as little as zero in any particular year.

Staff, while recognizing that MIP rewards improvements in operating efficiency, proposes a 50 percent disallowance because it contends that other elements reward achievement of earnings targets.

Q. 20 How does the Company calculate the compensation that is awarded under the MIP?

A. 20 The Company uses five factors that were designed to align the interest of customers and shareholders as a basis for calculating the compensation paid out pursuant to the MIP; each are equally weighted. The five factors include the following: (1) an improved customer-to-employee ratio when compared to the prior year; (2) a comparison of the Company's customer-to-employee ratio to its peer utilities; (3) the results of customer satisfaction surveys; (4) the achievement of a three-year average return on equity (ROE) target; and (5) a comparison of the Company's ROE to its peer utilities.

Q. 21 Do Staff and RUCO rely on any of the five factors as a basis for their respective disallowances?

A. 21 Staff purportedly does not rely on any of the five factors as a basis for its proposed disallowance; whereas RUCO argues, in support of its disallowance, that the performance targets of return on equity, customers per employee, and customer satisfaction primarily benefit shareholders and not customers.

Q. 22 Does Southwest agree with RUCO's conclusion that the

performance targets primarily benefit shareholders and not customers?

A. 22 No. Southwest submits that each of the five factors used by Southwest align customer and shareholder interests. First, an improved customer-to-employee ratio benefits customers by increasing productivity which reduces the average cost of serving customers. Furthermore, the customer benefits by having a portion of management's compensation based upon obtaining goals that maximize productivity and that utilize customer satisfaction surveys to insure that management's achievement of the customer-to-employee ratio goals is not at the expense of customer satisfaction.

Q. 23 How do the ROE performance targets benefit customers?

A. 23 The achievement of ROE targets and the success of the Company's management in controlling costs benefit customers by improving the Company's capital structure and lowering its cost of capital. These benefits continue between rate cases when management's focus is on improving its ROE through increasing net income. By increasing net income, the Company will improve retained earnings (a component of common equity) and, therefore, increase the percent of investment supported by shareholder funds. The Company also presents three financial witnesses, Theodore K. Wood, Frank J. Hanley, and Steven M. Fetter, who further explain the benefits of improved credit ratings on debt that result in lower debt

cost and increasing the percent of rate base supported by common equity.

Q. 24 How can management go about increasing net income?

A. 24 The components of net income are the same as the components that make up the cost of service in this rate case, such as, operating margin (revenue less gas cost), labor, benefits, materials, contractor services, rents, etc.

Q. 25 Does the customer benefit if management is successful in controlling the components that make up the cost of service or is successful in increasing net income?

A. 25 Yes. In addition to improving the Company's capital structure and lowering its cost of capital, to the extent that the Company's management is successful at increasing margin or controlling costs, the customer benefits in either longer periods between rate cases or smaller increases in rates when a rate case is filed.

Q. 26 Is RUCO's position in this proceeding consistent with the position it took in the Company's last general rate case, Docket No. G-1551A-00-0309, Commission Decision No. 64172?

A. 26 No. In that proceeding, RUCO proposed a 50 percent disallowance of all five categories of MIP, which is less onerous than the proposed 67 percent disallowance in this case. Interestingly enough, RUCO has failed to provide any support for its more aggressive position. As such, RUCO's position is unfounded and should be denied by the Commission.

Q. 27 Is Staff's position in this proceeding consistent with the position it took in the Company's last general rate case?

A. 27 No. In that proceeding, Staff proposed a disallowance of two of the five categories of MIP (or 34.7 percent), which is also less onerous than its current position of a 50 percent disallowance. Staff has also failed to provide any support for its more aggressive stance. As such, Staff's position is also unfounded and should be denied by the Commission.

Q. 28 How did the Commission rule on MIP in the Company's last general rate case, Decision No. 64172?

A. 28 The Commission adopted Staff's proposal of a 34.7 percent disallowance of MIP. As such, if the Commission were to adopt a MIP adjustment consistent with Decision No. 64172, the disallowed portion would only be 29.1 percent. My Rebuttal Testimony Exhibit No.___(RAM-1) illustrates how these disallowances were calculated in both instances.

Q. 29 Have either RUCO or Staff challenged the overall reasonableness of employee or executive compensation?

A. 29 No.

Q. 30 Have either RUCO or Staff presented testimony that the Company's overall compensation is excessive?

A. 30 No.

Q. 31 What percentage of MIP does the Company contend should be included in the cost of service in this proceeding?

A. 31 The MIP aligns management's compensation with their success in controlling costs and maintaining a high quality of service resulting in high customer satisfaction, to the benefit of the customer. As such, based upon the foregoing, the cost of MIP (similar to the cost of SERP) should be a permissible cost of service. The Company further asserts that Staff and RUCO have failed to present sound justification in support of a disallowance of any portion of MIP. MIP (similar to SERP) is a component of management's total compensation and, absent clear and convincing evidence that the overall compensation is unreasonable, 100 percent of MIP should be included in the cost of service.

TRANSMISSION INTEGRITY MANAGEMENT PROGRAM (TRIMP)

Q. 32 Please summarize RUCO's adjustment to the Company's initially requested level of TRIMP expense.

A. 32 RUCO adjusts the Company's TRIMP expense to reflect actual costs and also proposes to amortize the deferred TRIMP expense over seven years rather than the three years proposed by the Company.

Q. 33 Does the Company accept RUCO's adjustment as reasonable?

A. 33 Yes.

Q. 34 Please summarize Staff's proposed adjustment regarding TRIMP expense?

A. 34 Staff proposes to remove all TRIMP expenses from base rates and instead proposes the Company recover only 50 percent of its TRIMP expenses through a surcharge.

Q. 35 What is the latest estimate of actual and projected costs for the period 2004 through January 2009?

A. 35 The most recent estimate of actual and projected costs that were supplied by the Company in response to RUCO Data Request No. 2-4 is $3,137,492 [see Rebuttal Exhibit No.___(RAM-2)]. As such, the Company's original estimates have been superseded by the estimates provided in response to RUCO 2-4, and the updated deferred cost provided in responses to Staff Data Request No. 14-01, dated May 20, 2005.

Q. 36 Does the Company agree with Staff that the TRIMP expense is significant?

A. 36 The $12.6 million program as originally envisioned by the Company would certainly be significant. However, the cost of the program has been greatly reduced. Now that the exact number of HCA miles is known and measurable, the cost of the program has been reduced by 75 percent. The Company is not aware of the impact that this significant reduction will have on Staff's position because Staff has relied on the original estimated costs of the program.

Q. 37 Does the Company agree with Staff that because the costs are estimated, they are not appropriate for inclusion in base rates?

A. 37 No. First the Company has incurred actual costs of $862,629 through July 2005 [see Rebuttal Exhibit No.___ (RAM-3)]. Second, the exact number of HCA miles is known at this time so the associated costs are also known.

Third, the Company now has actual experience with the program, including contracts with outside venders who will carry out the program.

Q. 38 What is the impact on the average residential customer's bill of the original and updated cost estimates?

A. 38 Rebuttal Exhibit No.___(RAM-4), Sheet 1, calculates the average monthly impact amount that will appear on the customer's bill given three scenarios. The first scenario provides the amounts using Staff's 50 percent of the Company's original $12.6 million estimate. The second scenario provides the amounts using Staff's proposed 50 percent of the most recent cost estimates, and the third scenario provides the amounts using 100 percent of the most recent cost estimates. The annual average impact is $0.97, $0.24, and $0.48, respectively. As such, the monthly amounts shown on the average bill will range from one to five cents a month.

Q. 39 Should a DOT Safety Surcharge be shown as a separate line item on the customers bill?

A. 39 No. Given the limited space on a customer's bill and the very small monthly surcharge (as low as one cent), a separate line item on a customer's bill is simply not warranted.

Q. 40 Staff refers to the Nevada decision on Southwest's application to defer TRIMP expense as a basis for its proposal that the Company recover only 50 percent of TRIMP expense. Please provide a description of the Public

Utilities Commission of Nevada (PUCN) proceeding and the resulting Order.

A. 40 The Company's application for deferral of TRIMP expense was not part of Southwest's general rate case in Nevada and was instead made in a subsequent application because the program and its resulting costs were not known or measurable during its Nevada general rate case. The PUCN has authorized the Company to defer 100 percent of its TRIMP expense from the effective date of its Decision (March 14, 2005) until the effective date of the Company's next Nevada general rate case, or December 31, 2007, whichever occurs first. As such, the Nevada decision simply does not support Staff's proposal regarding TRIMP.

Q. 41 What action does the Company recommend the Commission take with regard to TRIMP?

A. 41 The Company asserts that Staff has presented no justification that the Company recover only 50 percent of a federally-mandated expense necessary to provide safe and reliable service to its customers. Accordingly, the Commission should authorize the Company to recover 100 percent of TRIMP expense in base rates and amortize the deferred costs over a seven-year period.

PIPE REPLACEMENT PROGRAM

Q. 42 Did Staff oppose the Company's proposal to change the percentages applied to writing-off certain pipe types addressed in the Settlement Agreement (Agreement)

attached to Commission Decision No. 58693?

A. 42 No.

Q. 43 Did RUCO present testimony addressing the Company's proposal to change the percentages applied to writing-off certain pipe types addressed in the Agreement?

A. 43 Yes. RUCO supports the Company's proposal with the exception of the following: (1) the write-off percentages that will be used on a go-forward basis, rather than from the time of the Company's last Arizona general rate case; and (2) the plant adjustment as applied to 1960's vintage steel, Aldyl A, and ABS pipe replacement from January 1, 2000 through August 31, 2004.

Q. 44 Does the Company agree with the RUCO pipe replacement proposal?

A. 44 Partially. The Company agrees with the portion of RUCO's testimony that supports its proposal to calculate write-off percentages based on a new 40-year standard. However, the Company and RUCO disagree on the effective date of the new write-off percentages. The Company claims the effective date should be January 1, 2000 (the day after the test year-end in the last general rate case), while RUCO proposes September 1, 2004 (the day after the test year-end in this rate case). While in disagreement, the Company is also willing to concede the portion of RUCO's pipe replacement adjustment related to Aldyl A and ABS pipe expenditures that took place from January 2000 through August 31, 2004. However, the Company does object

to the portion of RUCO's pipe replacement adjustment that pertains to 1960s steel. The Company's position is that 1960s steel pipe replacement expenditures are not eligible for write-off under the Agreement.

Q. 45 Why does the Company disagree with RUCO's proposed effective date of the new write-off percentages?

A. 45 The effective date should be January 1, 2000 (the day after test year-end in the last general rate case) because the write-off percentages derived using the 40-year standard more accurately reflect the determination of the remedial portion of eligible pipe replacement expenditures.

Q. 46 Does the Commission have the authority to apply the write-off percentages derived from the 40-year standard to eligible pipe replacement expenditures that have occurred since the end of the test-year in the Company's last general rate case (January 1, 2000)?

A. 46 Yes. The Company is not asking to restate plant write-offs previously disallowed (as would be the case if an adjustment was made to plant write-offs recorded prior to the end of the test year in the Company's last rate case). This is a new rate case and the Commission can determine the appropriateness of any capital expenditure for inclusion in rate base that has taken place since the end of the test-year in the Company's last general rate case. Conversely, the Commission can determine what portion of a capital expenditures should be excluded from

rate base.

Q. 47 Why does the Company disagree with RUCO's adjustment that pertains to 1960s steel pipe replacement?

A. 47 As I stated in my direct testimony, 1960s vintage steel was never considered a defective material and was only included as part of the Agreement due to the lack of cathodic protection (or faulty installation practices). As such, replacement expenditures related to 1960s vintage steel do not qualify for write-offs pursuant to the Agreement because the Company was required to cathodically protect all of its steel pipe by 1998, which it did. Accordingly, all subsequent steel replacement expenditures should be considered normal and are not eligible for write-off under the Agreement. Absent evidence that any post-1998 steel pipe replacement was the result of faulty installation practices, this portion of the RUCO adjustment should be rejected.

INJURIES AND DAMAGES

Q. 48 Did RUCO propose an adjustment to the two-part injuries and damages adjustment requested by the Company in this rate case proceeding?

A. 48 Yes. RUCO accepted the Company's insurance annualization portion of its injuries and damages adjustment and proposed a reduction to the self-insured normalization. However, RUCO's proposed reduction was based upon RUCO's misunderstanding that the Company's calculation included one claim for $18.8 million.

Q. 49 Please explain RUCO's misunderstanding further.

A. 49 The $18.8 million was actually the result of two claims that occurred in the same calendar year, but in different policy claim years. The first claim was for $10 million and the second was for $8.8 million.

Q. 50 Has RUCO notified the Company that its position on injuries and damages will change?

A. 50 Yes. RUCO's response to Company Data Request No. 1 on this issue stated that after considering the fact the $18.8 million was, in fact, two claims, its position will change, and presumably, RUCO will withdraw its proposed injuries and damages adjustment.

Q. 51 Did Staff propose adjustments to the level of injuries and damages expense requested by the Company in this rate case proceeding?

A. 51 Yes. Staff rejected, in its entirety, the Company's insurance annualization and proposed 14-year self-insured normalization.

Q. 52 What is the result of the Staff's rejection of the Company's injuries and damages adjustment that annualizes insurance policies in effect at the end of the test year?

A. 52 By rejecting the Company's insurance annualization, Staff is proposing that the level of insurance expense included in rates be set at the recorded amounts for the period that began September 1, 2003 and ended August 31, 2004.

Q. 53 Is the level of insurance expense proposed by Staff representative of what the Company will experience during

the period of time that the rates established in this proceeding are in effect?

A. 53 No. Staff's proposed adjustment is significantly lower than what Southwest will experience during the period of time that rates from this proceeding will be in effect.

Q. 54 What is the basis for the Staff's rejection of the Company's insurance annualization?

A. 54 Staff expresses concern that the increase in the Company's insurance expense may be the consequence of a poor claims history and invites Southwest to present additional information on this issue, which may result in Staff changing its position.

Q. 55 Is the Company providing additional information in response to Staff's concerns?

A 55 Yes. Company rebuttal witness Robert M. Johnson presents testimony that explains that the increase in the Company's insurance expense is not the result of a poor claims history.

Q. 56 What is the result of the Staff's rejection of the portion of the Company's injuries and damages adjustment that normalizes self-insurance?

A. 56 By rejecting the 14-year normalization portion of the Company's injuries and damages adjustment, the Staff is incorrectly assuming that the test year net activity is representative of the net activity of self-insured expense that will be experienced during the period of time that rates resulting from this proceeding will be in

effect.

Q. 57 Please explain what you mean by the net activity of self-insured expense.

A. 57 Self-insured activity consists of two types of journal entries in the accounting system. The first type of journal entry is a debit (increase) for amounts that the Company believes it is likely to pay as a result of an incident. The upper amount of the entry is limited to the maximum amount of self-insured retention that the Company has contracted for in its insurance policies. The other side of the entry is to a balance sheet liability account. If the claim is ultimately paid, no further entry is made to expense. If the expected amount that was previously accrued for a claim is reduced due to a favorable resolution, the lowered amount or the entire amount that was previously accrued is recorded in a journal entry as a credit (decrease) to expense. The net activity recorded during any 12-month period is the net of the debits and credits.

Q. 58 Please explain Rebuttal Exhibit No.___(RAM-5).

A. 58 Rebuttal Exhibit No.___(RAM-5), Sheet 1, shows the test year direct Arizona net monthly self-insured activity by case number. During the test year, there were $2,440,000 of debits (additions) to expense and $2,029,000 credits (reductions) to expense. Depending on which month the test year ended, the net activity could differ dramatically; thus, the reason for normalizing the

self-insured activity over a multi-year period. Sheet 2 of Rebuttal Exhibit No.___(RAM-5) is the test year System Allocable net monthly self-insured activity by case number. In this instance, System Allocable refers to events that involved corporate employees or facilities.

Q. 59 Can the net 12-month activity fluctuate dramatically from one year to the next?

A. 59 Yes. In any one year there could be a large net activity debit and/or large net activity credit. A 12-month period with net credit activity can occur when the reversal of a previous year's activity exceeds the debit accrual of the current year. Each year can be significantly different than any other year.

Q. 60 How has the fluctuation of the self-insured portion of insurance expense been addressed in the Company's previous rate cases?

A. 60 In the general rate cases filed by the Company in its three-state service territory, self-insurance is typically normalized using a five-year average. As I stated in my direct testimony, the Company is proposing a change from a five-year to a 14-year average since the size of the year-to-year fluctuations in the net activity for self-insurance is likely to increase due to the change in the level of self-insurance that must be covered by the Company. Using a 14-year period levels out fluctuations over a longer period of time.

Q. 61 Is Staff's reliance on the test year net direct Arizona

self-insured activity a change from prior rate case methodologies?

A. 61 Yes. Furthermore, Staff has produced no evidence supporting the reasonableness of the test year net activity as a level of expense that is likely to be experienced during the period of time that rates from this proceeding will be in effect.

Q. 61 Are there any other ratemaking changes that the Company is proposing that impact the normalized level of self-insurance?

A. 61 Yes. In the general rate cases filed by the Company in its three-state service territory, self-insurance amounts are assigned to a rate jurisdiction directly. Given the change in the level of self-insurance, the Company proposes to allocate self-insurance expense using the same methodology used to allocate insurance expense. Insurance expense is first allocated to Paiute Pipeline Company using the FERC-approved Modified Massachusetts Formula. The net remaining amount is allocated to the Company's three-state retail rate jurisdiction using the Four Factor allocation methodology. In this proceeding, Arizona's allocation of self-insurance is less than if it was directly assigned.

Q. 62 Should Staff's adjustment be rejected?

A. 62 Yes. Staff has failed to present evidence sufficient to justify a change in methodology that has long been accepted by the Commission. To the contrary, Southwest

has presented sound justification in support of the practice of normalization as a basis for establishing a reasonable level of self-insurance expense.

Q. 63 Does this conclude your prepared rebuttal testimony?

A. 63 Yes, it does.

SOUTHWEST GAS CORPORATION
ARIZONA
CALCULATION OF MANAGEMENT INCENTIVE AWARD
FOR THE PLAN YEARS 1999, 2003 AND 2004

Description	Staff Exh. Sch. C-2, Sheet 2 Dkt. No. G-1551A-00-0309		Test Year 12 Months Ended August 31, 2004			
	1999 Weighting	Common Equity Factors	2003 Weighting	Common Equity Factors	2004 Weighting	Common Equity Factors
Measurement Factor						
3-Year Weighted ROE	22.0	22.0	16.3	16.3	16.2	16.2
Customer/Employee Ratio	28.0		28.0		28.0	
Customer Service Satisfaction	27.0		27.2		26.4	
ROE vs. Peers	22.2	22.2	14.0	14.0	18.3	18.3
Customer/Employee vs. Peers	28.0		23.5		27.0	
Total Percent of Target	127.2	44.2	109.0	30.3	115.8	34.5
Shareholder Goals Percent to Total	34.7%		27.8%		29.8%	
Sept 03 to Dec 03 (4/12)	100.0%		33.3%			
Jan 04 to Aug 04 (8/12)					66.7%	
Weighted Equity Performance	34.7%		9.3%		19.8%	29.1%
Customer/Employee + Customer Satisfaction	65.3%					70.9%
Total	100.0%					100.0%

Test Year in Docket No. G-1551A-00-0309 (12 Months Ended December 31, 1999). No weighting between years was required.

REBUTTAL TESTIMONY
EXHIBIT NO.___(RAM-1)
SHEET 1 OF 1

SOUTHWEST GAS CORPORATION
ARIZONA
ORIGINAL AND UPDATED ESTIMATE OF TRIMP COST
ACTUAL 2004 THROUGH JULY 2005
FOR THE YEARS 2004 THROUGH 2008

Line No.	Description (a)	2004 (b)	2005 (c)	2006 (d)	2007 (e)	2008 (f)	1 Month 2009 (g)	Total (h)	Line No.
	Company's Initial 2003 Estimate WP Sch. C-2, Adj. 12, Shts 1 & 2								
1	Baseline Line Assessment	$ 355,000	$ 532,500	$ 532,500	$ 532,500	$ 319,500	$ 26,625	2,298,625	1
2	Direct Assessment	1,065,000	1,597,500	1,597,500	1,597,500	958,500	79,875	6,895,875	2
3	Maintenance and Repairs	532,500	798,750	798,750	798,750	479,250	39,938	3,447,938	3
4	Total December 2004 Estimate	$ 1,952,500	$ 2,928,750	$ 2,928,750	$ 2,928,750	$ 1,757,250	$ 146,438	12,642,438	4
5	Actual Deferred 2004 and YTD July 2005	414,227	$ 448,402						5
6	Variance	$ (1,538,273)	$ (2,480,348)						6
7	Staff's 50 Percent Sharing							50.00%	7
8	Recoverable Amount							$ 6,321,219	8
9	Per Staff Testimony James J. Dorf Page 13, Line 20							6,321,219	9
10	Difference							$ (0)	10
	Company's Estimate February 2004, RUCO Data Request No. 2-04								
11	Baseline Line Assessment	$ 414,227	$ 254,405	$ 254,405	$ 254,405	$ 203,523	$ 16,960	$ 1,397,925	11
12	Direct Assessment		299,925	299,925	299,925	239,940	19,995	1,159,710	12
13	Maintenance and Repairs		149,963	149,963	149,963	119,970	9,998	579,857	13
14	Total December 2004 Estimate	$ 414,227	$ 704,293	$ 704,293	$ 704,293	$ 563,433	$ 46,953	$ 3,137,492	14
15	Actual Deferred 2004 and YTD July 2005	414,227	448,402						15
16	Variance	$ 0	$ (255,891)						16
17	Staff's 50 Percent Sharing							50.00%	17
18	Recoverable Amount							$ 1,568,746	18
19	Per Staff Testimony James J. Dorf Page 13, Line 20							6,321,219	19
20	Difference							$ (4,752,473)	20

REBUTTAL TESTIMONY
EXHIBIT NO.___(RAM-2)
SHEET 1 OF 1

SOUTHWEST GAS CORPORATION
ARIZONA
DOCKET NO. G-01551A-04-0876
MONTHLY DEFERRED TRIMP COSTS - UPDATED THROUGH JULY 2005
IN RESPONSE TO DATA REQUEST NO. JJD-14-1 UPDATE

Line No.	Description	May-04	Jun-04	Jul-04	Aug-04	Sep-04	Oct-04	Nov-04	Dec-04	2004 Total	Jan-05	Feb-05	Mar-05	Apr-05	May-05	Jun-05	Jul-05	YTD 2005	Grand Total	Line No.
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	
1	AMERICAN WATER SERVICES					$ 9,207				$ 9,207								$ -	$ 9,207	1
2	ARIZONA PIPELINE CO														26,329	1,377	7,330	35,035	35,035	2
3	B&R MATERIALS															149		149	149	3
4	BOBS MATERIALS																189	189	189	4
5	CITY OF TUCSON									-	3,268	3,268	30			300		6,866	6,866	5
6	DESERT BARRICADES LLC								258	258					339	3,998	763	5,100	5,358	6
7	EDM GROUP					12,870				12,870						30		30	12,900	7
8	FAIRFAX MANAGEMENT																	-	-	8
9	FEDEX									-	20							20	20	9
10	GRANITE CONSTRUCTION																95	95	95	10
11	MEARS CPG LLC					2,550	43,459	47,646	248,299	341,953		6,904	112,694	73,846		120,521		313,965	655,918	11
12	NEFF RENTAL									-				965	3,605	287		4,857	4,857	12
13	NORTHERN PIPELINE CONST	472	6,545	5,129	20,851	2,100			1,187	36,284				30	503	22,345	45,558	68,436	104,720	13
14	ONE CALL LOCATORS LTD				13,654					13,654								-	13,654	14
15	PATTISON EVANOFF ENGINE																105	105	105	15
16	RENTAL SERVICE CORP															2,514		2,514	2,514	16
17	SANDVICK EQUIPMENT														3,065	2,344	4,977	10,385	10,385	17
18	SIERRA MINING & CRUSH														656			656	656	18
19	Grand Total	$ 472	$6,545	$5,129	$34,505	$26,728	$43,459	$47,646	$249,744	$414,227	$3,288	$10,172	$112,724	$74,841	$ 34,497	$153,865	$ 59,016	$448,402	$ 862,629	19

REBUTTAL TESTIMONY
EXHIBIT NO. (RAM-3)
SHEET 1 OF 1

SOUTHWEST GAS CORPORATION
ARIZONA
AVERAGE MONTHLY AND ANNUAL LINE ITEM
AVERAGE RESIDENTIAL CUSTOMER BILL
STAFF'S DOT PIPELINE SAFETY SURCHARGE

Description	Residential Average Monthly Therms	Staff (50%) Based On Original SWG Estimates	Staff (50%) Based On Current SWG Estimates	Company (100%) Based on Current SWG Estimates
Total Dollars 2004 through 2008		$ 6,321,219	$ 1,568,746	$ 3,137,492
3-Year Therms (Staff Sch. JJD-12, Line 13)		2,280,572,616	2,280,572,616	2,280,572,616
Surcharge rate		$ **0.00277**	$ **0.00069**	$ **0.00138**

Months	Derived SWG WP Sch. H-2 Sheet 1	Average Line Item Amount on Residential Bill		
January	**73.0**	$ 0.20	$ 0.05	$ 0.10
February	**55.8**	0.15	0.04	0.08
March	**45.6**	0.13	0.03	0.06
April	**28.8**	0.08	0.02	0.04
May	**18.6**	0.05	0.01	0.03
June	**13.7**	0.04	0.01	0.02
July	**11.5**	0.03	0.01	0.02
August	**10.1**	0.03	0.01	0.01
September	**10.4**	0.03	0.01	0.01
October	**11.7**	0.03	0.01	0.02
November	**19.2**	0.05	0.01	0.03
December	**51.3**	0.14	0.04	0.07
Average Annual Impact	**349.7**	$ **0.97**	$ **0.24**	$ **0.48**

REBUTTAL TESTIMONY
EXHIBIT NO.___(RAM-4)
SHEET 1 OF 1

SOUTHWEST GAS CORPORATION
ARIZONA
NET SELF-INSURED RETENTION ACTIVITY
FOR THE TWELVE MONTHS ENDED AUGUST 31, 2004

Line No.	Date	Case Number	Monthly Amount	Activity By Case Reduction	Activity By Case Addition	Yearly Net Claim Activity	Claim Description	Line No.
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	
1	Jul-04	GC2001019995	$ (95,000)	$ (95,000)	$	$ (95,000)		1
2	Sep-03	GC2002021605	(39,000)	(39,000)		(39,000)	Staff-JDD-14-2	2
3	Jul-04	GC2002021768	(75,000)	(75,000)		(75,000)	Staff-JDD-14-2	3
4	Sep-03	GC2003021889	(200,000)	(200,000)				4
5	Nov-03		(75,000)	(75,000)				5
6	Dec-03		(35,000)	(35,000)		500,000	Staff-JDD-14-2	6
7	Jan-04		(75,000)	(75,000)				7
8	Feb-04		(115,000)	(115,000)				8
9	Mar-04		1,000,000		1,000,000			9
10	Nov-03	GC2003022126	(100,000)	(100,000)				10
11	Apr-04		(100,000)	(100,000)		(325,000)		11
12	Jul-04		(125,000)	(125,000)				12
13	Oct-03	GC2003022154	(50,000)	(50,000)		(50,000)		13
14	Jan-04	GC2004023200	100,000		100,000			14
15	Jul-04		(25,000)	(25,000)		75,000	Staff-JDD-14-2	15
16	Jul-04	GC2004023518	75,000		75,000	75,000		16
17	May-04	GC2004023553	300,000		300,000	300,000	Staff-JDD-14-2	17
18	Sep-03	GC973670	(70,000)	(70,000)		(70,000)		18
19	Dec-03	WC2003022997	1,000,000		1,000,000			19
20	Mar-04		(850,000)	(850,000)		115,000	Staff-JDD-14-2	20
21	Jul-04		(35,000)		(35,000)			21
22	Total		$ 411,000	$ (2,029,000)	$ 2,440,000	$ 411,000		22

Note: The credit or reduction column represents reductions to accruals recorded prior to the test year.

REBUTTAL TESTIMONY
EXHIBIT NO.___(RAM-5)
SHEET 1 OF 2

SOUTHWEST GAS CORPORATION
SYSTEM ALLOCABLE
NET SELF-INSURED RETENTION ACTIVITY
FOR THE TWELVE MONTHS ENDED AUGUST 31, 2004

Line No.	Date	Case Number	Monthly Amount	Activity By Case Reduction	Activity By Case Addition	Yearly Net Claim Activity
	(a)	(b)	(c)	(d)	(e)	(f)
1	Dec-03	GC2003022686	$ 100,000	$	100,000	
2	Mar-04		(100,000)	(100,000)		75,000
3	Jul-04		75,000		75,000	
4	Jan-04	GC950368	(300,000)			
5	Jul-04		500,000			200,000
6	Total		$ 275,000	$ (100,000)	$ 175,000	$ 275,000

REBUTTAL TESTIMONY
EXHIBIT NO.___(RAM-5)
SHEET 2 OF 2

MOODY

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
Prepared Rebuttal Testimony
of
WILLIAM M. MOODY

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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
WILLIAM M. MOODY

INTRODUCTION

Q. 1 Please state your name and business address.

A. 1 My name is William N. Moody. My business address is 5241 Spring Mountain Road, Las Vegas, Nevada 89150-0002.

Q. 2 By whom are you employed and in what capacity?

A. 2 I am employed by Southwest Gas Corporation (Southwest or Company) as the Vice President/Gas Resources.

Q. 3 Did you provide direct testimony in this proceeding on behalf of Southwest?

A. 3 No.

Q. 4 Please state your educational background and business experience.

A. 4 I received a Bachelor of Science degree in Business Administration with a major in Accounting from the University of Nevada, Reno in 1978. I have been employed at Southwest since 1979 in various positions of responsibility.

Q. 5 Have you previously testified before any regulatory commissions?

A. 5 Yes. I have testified before the Arizona Corporation Commission (Commission or ACC) and the Public Utilities

Commission of Nevada.

Q. 6 What is the purpose of your prepared rebuttal testimony?

A. 6 The purpose of my rebuttal testimony is to respond to specific aspects of the direct testimony of Staff witness William Gehlen, witness for the Arizona Corporation Commission's Utilities Division Staff (Staff), pertaining to natural gas procurement.

Q. 7 Please summarize your rebuttal testimony.

A. 7 My rebuttal testimony will address the following issues:

- Staff's recommendations that Southwest accepts and will implement as proposed;
- Staff's recommendation that the Company conduct, through an impartial third-party, a best practice review of fuel procurement and planning functions and explain the potential difficulties with the results of such a study;
- Staff's recommendation that the Company upgrade its portfolio evaluation software;
- Staff's recommendation that Company employees should be precluded from owning stock or some other financial interest in any supplier or class of supplier with whom Southwest conducts business;
- The current status of reviewing the use of financial instruments in Southwest's Arizona Gas Portfolio; and
- Staff's recommendation that an officer certify the information in the purchased gas adjustor (PGA) report.

STAFF RECOMMENDATIONS ACCEPTED BY SOUTHWEST

Q. 8 Are there recommendations that Mr. Gehlen has made that Southwest Gas can accept and implement without discussion?

A. 8 Yes. Southwest will implement the following recommendations as soon as practicable and submit written notification to Staff of these changes within 60 days of an order in this case.

- Eliminate the use of cellular phones during fuel bidding and negotiating activities.
- Record all fuel bidding and negotiating activities conducted on the telephone.
- Separate invoice approval authority from the contract award authority by designating an invoice approval authority other than the Vice President/Gas Resources.

BEST PRACTICES REVIEW OF FUEL PROCUREMENT AND PLANNING FUNCTIONS

Q. 9 Please comment on Staff's recommendation to conduct, through an impartial third party, a best practice review of fuel procurement and planning functions.

A. 9 Southwest is willing to conduct a best practices review and convey the results to Staff by June 30, 2006. However, while Southwest supports benchmarking of functions throughout the Company, which is evidenced by our participation in the American Gas Association Best Practice activities, gas procurement and planning functions are typically very specific to individual companies, their regulatory environment, and their respective policies

regarding the goal of the portfolio. Furthermore, each utility's planning and procurement function may differ and LDCs across the country have different circumstances that could affect the planning and procurement process. Some LDCs have multiple pipeline choices; others have market area storage or other gas supply services available. All of these factors will affect gas planning and purchasing practices. Consequently, Southwest's concern with conducting a best practices review is that the practices, processes and measures of success will likely vary due to the circumstances described above. As such, Southwest would also suggest that Staff and the Company work together to determine the scope of this study to ensure the study is done economically and that the study produces results that may be meaningful to this recommendation.

Q. 10 Do you have any other comments regarding Southwest's fuel procurement function mentioned in Mr. Gehlen's testimony?

A. 10 Yes. Staff mentions that Southwest needs to add additional checks and balances to its procurement and planning processes and decisions. Southwest agrees with some of the proposals to change its internal processes to strengthen the controls in place for portfolio activities, as described by Mr. Gehlen in his Questions and Answers on Pages 6 and 7 of his direct testimony. In addition, Southwest anticipates that statement preparation and validation will be reported to the Accounting Department by mid-year 2006. On the other hand, some of the

recommendations for the separation of authority and independent third-party observation already exist. For example, the Systems planning department, which reports to the Vice President of Regulatory Affairs and Systems Planning and the Gas Supply Department, which reports to me, are both present during the awarding of the Arizona Price Stability Program contracts, and the bids are received and independently verified by members of each department. Further, the procedures provide that as the Vice President awarding the contract, I am not aware of the name or affiliation of the bidders until after the contract has been awarded. This "blind award" process provides an excellent control. Southwest will implement similar changes for next month's bids, which will use accounting personnel to validate bids. As stated above, these changes will be implemented within the next 12 months.

PORTFOLIO EVALUATION SOFTWARE

Q. 11 Please comment on Staff's recommendation that the Company upgrade its portfolio evaluation software?

A. 11 Southwest will perform a review of available portfolio evaluation software. Upon completion of this review, Southwest will meet with Staff to discuss the results. The timing for this review will extend into 2006, as the portfolio evaluation software is not required until July 2006 for the 2006/2007 portfolio.

. . . . .

. . . . .

EMPLOYEE FINANCIAL INTEREST IN SUPPLIERS

Q. 12 Does Southwest share Staff's concern about the possibility of conflicts?

A. 12 Yes. This is why Southwest has a Code of Business Conduct & Ethics. Southwest's Code of Business Conduct & Ethics provides in part that no employee shall own "substantial stock or other financial interest in any competitor, supplier, contractor or vendor or other organization with which an employee is engaged in a business relationship." Southwest submits that this standard is an adequate guide for avoiding conflicts of interest. To impose restrictions that are proposed by Staff, for instance, the prohibition of stock ownership or other financial interest with any supplier with whom Southwest conducts business, would be overly broad and unduly burdensome on its employees. In addition, the portfolio design and controls that are in place for the Company further address the objective of ensuring that contracting and buying decisions cannot be manipulated.

HEDGING WITH FINANCIAL INSTRUMENTS

Q. 13 What is Southwest's position regarding hedging utilizing financial instruments?

A. 13 As a result of the recently issued FERC Order 2004-C, it is now possible for Southwest to utilize financial instruments for hedging a portion of the projected annual demand of Southwest's on-system, state-regulated, retail sales customers. The Company is currently engaged in a project to

evaluate the use of these instruments, the cost of control/tracking systems, and organizational changes necessary to implement their use. The Company will keep Staff and the Commission apprised of the status of this project.

OFFICER CERTIFICATION

Q. 14 Does Southwest oppose Staff's proposal that an officer certify that all information provided in the PGA report is true and accurate to the best of his or her information and belief?

A. 14 Yes. Southwest respectfully submits that officer certification for the PGA report is simply not necessary. Southwest's current practice is to have the person most knowledgeable regarding the PGA report, sign the report. Southwest submits that Staff has presented no evidence of a need for officer certification, let alone evidence that would justify a change in Southwest's current practice.

Q. 15 Does this conclude your prepared rebuttal testimony?

A. 15 Yes, it does.

MAREK

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
Prepared Rebuttal Testimony
of
MARTI MAREK

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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
MARTI MAREK

INTRODUCTION

Q. 1 Please state your name and business address.

A. 1 My name is Marti Marek. I work at Southwest Gas Corporation (Southwest or the Company). My business address is 5241 Spring Mountain Road, Las Vegas, Nevada 89150-0002.

Q. 2 Please state your job title and describe your responsibilities at Southwest?

A. 2 I am the Director of Engineering and Project Support Staff. My current responsibilities include the management of a number of corporate engineering support activities: electronic mapping, rights-of-way, product evaluation, material investigations, pipeline security, and transmission integrity management. I am also part of the oversight committees of a number of technical projects that cross department functional lines, including work management system, operations documents, and leak repair mapping.

Q. 3 What other activities have you been responsible for during your career at the Company?

A. 3 During my 20 years at the Company, I have at various

times had responsibility for state and federal code compliance, operations training, operations policies and procedures, emergency response policies and procedures, and personnel safety.

Q. 4 Did you file prepared direct testimony in this proceeding?

A. 4 No, I did not.

Q. 5 What is the purpose of your rebuttal testimony?

A. 5 The purpose of my rebuttal testimony is to respond to the direct testimony presented by Mr. Robert G. Gray, witness for the Arizona Corporation Commission (ACC or the Commission), Utilities Division (Staff), regarding his recommendations concerning the funding of natural gas research and, more specifically, the funding of the Gas Technology Institute (GTI).

NATURAL GAS RESEARCH AND DEVELOPMENT FUNDING

Q. 6 What is Staff's recommendation regarding the funding of natural gas research?

A. 6 Staff's recommendation is that Southwest fund research at GTI in two specific programs, the Operations Technology Development (OTD) program and the Utilization Technology Development (UTD) program, at a total anticipated annual level of $681,712 (based on test year meter data) and that the costs of this funding be recovered on a per therm basis from all of Southwest's sales customers, excluding Schedule G-30 and B-1 customers.

Q. 7 Does Southwest support the funding of natural gas research?

A. 7 Yes, the Company does support funding natural gas research and commends Staff for recognizing the need for (and gap in) industry-wide funding. As Staff has testified, since the curtailment of FERC-mandated surcharges, GTI has sought voluntary funding for its activities. Indeed, the Company has invested in GTI-sponsored research on a project-specific basis.

Q. 8 Does Southwest support the funding of GTI?

A. 8 The Company has been pleased with the projects it has participated in with GTI and believes it is a qualified research organization; however, it does not support the Staff's recommendation to direct all of its research funding solely to GTI, at the exclusion of other equally competent research organizations.

Q. 9 Can you please give some examples of other qualified organizations and their natural gas-related research projects?

A. 9 Yes. Some examples include:

1) The Pipeline Research Council International (PRCI). It is a non-profit organization that focuses on research associated with transmission-related issues such as pipeline integrity, welding procedures, and internal corrosion.

2) NYSEARCH. The non-profit research arm of the Northeast Gas Association has over 50 projects available for co-funding, including purged gas recovery devices, inspection tools for unpiggable

mains, remote gas pipeline monitors, and remote laser natural gas detection.

3) Southwest Research Institute (SWRI). A non-profit organization that has current projects which include real time monitoring of pipelines for third-party contact and sensors for detection of mechanical damage.

4) The Edison Welding Institute (EWI). A non-profit organization working on tools to inspect fusion joints in plastic pipe.

5) Battelle. A non-profit organization working on in-line inspection technologies.

6) Sandia National Laboratory. This organization is working to develop an airborne, remote-sensing device for leak detection.

Q. 10 Do these organizations "compete" with GTI?

A. 10 Yes. The organizations listed above compete for available research funding. Many have projects underway that are researching similar technologies to address common issues. While these research organizations frequently pool their resources and work together on projects (many with GTI), they also have independent projects for which they seek industry co-funding. Natural gas distribution companies, such as Southwest, should evaluate the available projects and use their available research dollars to achieve the maximum benefit on behalf of their customers and the general public.

Q. 11 Are there other opportunities for investment in natural gas research?

A. 11 Yes. In addition to private enterprises like GTI, PRCI, NYSEARCH, etc., the Department of Transportation, the Department of Energy, the Environmental Protection Agency, and other federal agencies have funding for natural gas-related research and development for which they seek co-funding from the natural gas industry. Also, there are specific manufacturers that seek co-funding for developing improved technologies for underground line location, natural gas detection and other safety-related equipment.

Q. 12 Do you agree with Staff's recommendation that Arizona customers fund natural gas research activities? If so, why?

A. 12 Yes. As Staff has stated, there are a wide variety of research efforts in progress that address important areas where improved technology, methods and processes can help provide for safer and more efficient production, distribution, and consumption of natural gas. Staff also recognizes that many states are currently allowing their local gas distribution companies to fund such research. By setting aside funds in Arizona, it allows those dollars to be directed specifically to research projects that directly affect Arizona customers. Some examples of Arizona-specific issues might include:

1) <u>Third-party damage</u>. Arizona's rapid growth and

active construction industry create many more opportunities for third-party damage to pipelines than in most other states.

2) Plastic pipe. Many other states may want to focus on research that deals with cast iron pipe. However, very little cast iron pipe is installed in Arizona, and Southwest has none.

3) Pipeline integrity. As Staff points out, Arizona may be more concerned about the reliability of transmission/supply lines than other states since there is a dearth of commercially available in-state supplies of natural gas.

CONCLUSION

Q. 13 What are Southwest's recommendations regarding the funding of natural gas research?

A. 13 The Company recommends following the model that many states have established by dedicating such funds generically to natural gas-related research, without designating a specific research organization with which to invest the funds. This will allow the Company, with Commission oversight, to determine which research organization or project provides the greatest benefits for its customers on a case-by-case basis. The GTI programs noted by Staff may well be the best investment in research at this time; however, by designating these funds as generically natural gas-related, it does not lock Southwest's customers into a single provider of research.

Q. 14 Do you have any further recommendations regarding the funding of natural gas-related research?

A. 14 Yes. Southwest concurs with Staff's recommended level of funding for natural gas research and proposal to recover costs on a per therm basis from all of Southwest's sales customers, excluding G-30 and B-1 customers. Furthermore, Southwest agrees that it is appropriate for Southwest to annually submit, with Docket Control, a short description of each program Southwest intends to fund in order to give the Commission an opportunity to provide input on the choice of programs. However, in contrast to Staff, Southwest proposes that the funded programs may be operated by organizations other than GTI. Southwest's recommendations regarding the rate mechanism for funding research will be covered in more detail in Mr. A. Brooks Congdon's rebuttal testimony.

Q. 15 Do you have any other comments concerning natural gas-related research?

Q. 15 Yes. I would like to reiterate that Southwest has had a long and successful relationship with GTI, as well as its predecessor, the FERC surcharge-funded Gas Research Institute (GRI). I served on the GRI Distribution Pipeline Advisory Group for a number of years, helping to determine which research projects the FERC funds should support. Many of the experienced GRI research staff are still in place at GTI, and as noted previously, Southwest has been pleased with the projects the Company has

participated in. Indeed, the GTI laboratory is on the list that Southwest provided to the Commission Pipeline Safety Staff as recommended for use when third-party materials testing is required. Southwest's recommendations for how natural gas-related research funds should be designated should not be construed to imply that the Company has any concerns about the research capabilities of GTI or the viability of the OTD and UTD programs.

Q. 17 Does this conclude your prepared rebuttal testimony?

A. 17 Yes, it does.

SCOTT

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
Prepared Rebuttal Testimony
of
VIVIAN E. SCOTT

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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
VIVIAN E. SCOTT

INTRODUCTION

Q. 1 Please state your name and business address.

A. 1 My name is Vivian E. Scott. My business address is 5241 Spring Mountain Road, Las Vegas, Nevada 89150-0002.

Q. 2 By whom are you employed and in what capacity?

A. 2 I am employed by Southwest Gas Corporation (Southwest or the Company) as manager in the Research/Conservation and Demand Side Management (DSM) Department.

Q. 3 Did you sponsor direct testimony on behalf of Southwest in this proceeding?

A. 3 Yes. In my direct testimony I described Southwest's current DSM programs and provided an overview of new conservation and energy efficiency programs that Southwest is proposing be approved in this proceeding. For purposes of my rebuttal testimony, I will refer to these programs collectively as "energy efficiency" programs.

Q. 4 What is the purpose of your prepared rebuttal testimony?

A. 4 The purpose of my rebuttal testimony is to respond to specific aspects of the direct testimony presented by Mr. Steve P. Irvine, witness for the Arizona Corporation Commission Utilities Division Staff (Staff), Ms. Marylee

Diaz Cortez, witness for the Residential Utility Consumer Office (RUCO), and Mr. Jeff Schlegel, witness for the Southwest Energy Efficiency Project and Natural Resources Defense Council (SWEEP/NRDC), regarding their respective recommendations and comments concerning the energy efficiency programs that Southwest has proposed in this proceeding.

Q. 5 Please summarize your rebuttal testimony.

A. 5 My rebuttal testimony will address the following issues:

- Progress reports and filing practices
- Bill assistance component of Low-Income Energy Conservation (LIEC)
- Program approval, funding, and the collaborative process
- Proposal by SWEEP/NRDC to include a performance incentive
- Decoupling mechanisms and their relationship to energy efficiency programs

PROGRESS REPORTS AND FILING PRACTICES

Q. 6 What is Staff's recommendation regarding the progress reports and filing practices?

A. 6 Staff recommends that, in the future, semi-annual progress reports be certified by an officer of the Company and that existing filing practices continue.

Q. 7 Does Southwest agree with Staff's recommendation?

A. 7 Southwest agrees that the existing filing practices should continue into the future. With respect to progress

report certification, Southwest respectfully submits that officer certification for these reports is not necessary. Southwest's current practice is that the person who signs the report is the person who is generally the most knowledgeable about the information contained in the report. Staff has not presented any rationale to support the need for officer certification or evidence to suggest that a change in Southwest's current practice is necessary.

BILL ASSISTANCE COMPONENT OF LOW-INCOME ENERGY CONSERVATION (LIEC)

Q. 8 What is Staff's recommendation regarding the bill assistance component of the LIEC program?

A. 8 Staff's recommendation is to eliminate the bill assistance portion of the LIEC program, which would reduce the annual program funding by $50,000.

Q. 9 Does Southwest agree with Staff's recommendation to eliminate bill assistance from the LIEC program?

A. 9 No. The bill assistance component of the LIEC program should be retained. This special assistance funding is intended for emergency situations that may be encountered by low-income households. The proposed bill assistance funding level is relatively low, representing only ten percent of the total LIEC program funding. The bulk of the program funding is targeted at weatherization, which provides long-term energy savings, improved occupant health and safety, and lower customer bills.

Q. 10 Are you aware of any other Arizona utilities that include

a bill assistance component in their low-income weatherization programs?

A. 10 Yes. Arizona Public Service Company (APS) includes a bill assistance component for electric customers in its proposed Energy Wise Low-Income Weatherization Program (Energy Wise Program), as filed in Docket No. E-01345A-05-0414. APS has proposed an annual funding level of $250,000 for bill assistance, which approximates 23 percent of its total annual program funding.

Q. 11 How is Southwest planning to administer the bill assistance portion of the LIEC program?

A. 11 Although Southwest has not yet established bill assistance guidelines for its LIEC program, Southwest anticipates administering the bill assistance component of the LIEC program in a similar manner as APS administers its Energy Wise Program, including using the funds to pay for bills for customers in the following crisis situations: 1) customers who are at risk of endangering their health by not utilizing necessary appliances; 2) customers who experience a sudden loss of income; or 3) customers who incur an unexpected expense, such as a medical expense that results in their inability to pay their utility bill.

PROGRAM APPROVAL, FUNDING, AND THE COLLABORATIVE PROCESS

Q. 12 What is Southwest's response to Staff's, RUCO's, and SWEEP/NRDC's recommendations related to program approval, funding, and the collaborative process?

A. 12 Generally, Southwest supports the recommendations of Staff, RUCO, and SWEEP/NRDC regarding the proposed programs and their funding. Southwest also agrees that a 120-day time frame for formal program submittal is reasonable, given the complexity of program implementation, administration, and cost-effectiveness evaluation. With the exception of the bill assistance component of the LIEC program, none of the parties has opposed any of the energy efficiency programs or the funding levels proposed by Southwest. As such, Southwest respectfully requests that the Commission approve, in this proceeding, all of the energy efficiency programs proposed by Southwest. In addition, Southwest requests that the Commission approve the two modifications proposed by SWEEP/NRDC (Energy Star® Home Certification program and performance incentive), and the funding levels that have been proposed for each program. Southwest recognizes, notwithstanding these requests, that the individual programs will be brought forward for final Commission review and approval, prior to implementation, within the 120-day time frame mentioned above.

The Company also supports the collaborative process, with the exception of RUCO's and SWEEP/NRDC's proposals that any member of the working group be permitted to submit a program plan to the Commission for approval. As such, within the 120-day time frame for formal program

submittal, Southwest will work in a collaborative process with the stakeholders identified by RUCO and SWEEP/NRDC to solicit input and advice regarding how these programs should be implemented, administered, and reviewed for program performance.

PROPOSAL BY SWEEP/NRDC TO INCLUDE A PERFORMANCE INCENTIVE

Q. 13 What is SWEEP/NRDC's proposal with regard to a performance incentive?

A. 13 SWEEP/NRDC recognizes the inherent disincentive associated with a volumetric rate design and the effective decline in customer usage resulting from energy efficiency programs. As such, SWEEP/NRDC propose a performance incentive that Southwest could earn for effective program performance. SWEEP/NRDC suggests that the total incentive level be capped at ten percent of the total program funding. SWEEP/NRDC further explains that the mechanism should include a threshold for minimum performance; if actual performance is less than that threshold, then no incentive would be earned.

Q. 14 Does Southwest agree with the proposed performance incentive?

A. 14 Yes. Southwest agrees with the performance incentive proposed by SWEEP/NRDC. However, it should be noted that the performance incentive proposed by SWEEP/NRDC does not remove the financial disincentive that exists for Southwest to implement energy efficiency programs, as the Conservation Margin Tracker (CMT) proposed by Southwest

would do. Southwest witness, Mr. Edward B. Gieseking, in his rebuttal testimony, addresses this issue in more detail. The Company does agree, however, that a positive performance incentive is appropriate, in exchange for effective energy efficiency program performance.

Q. 15 Has the Commission approved similar performance incentives?

A. 15 Yes. The Commission approved a similar performance incentive for APS, in its 2005 rate case (Decision No. 67744).

DECOUPLING MECHANISMS AND THEIR RELATIONSHIP TO ENERGY EFFICIENCY PROGRAMS

Q. 16 Has Staff, RUCO, or SWEEP/NRDC recommended that the Commission approve any type of mechanism that would remove the financial disincentive for Southwest to aggressively encourage its customers to conserve natural gas?

A. 16 No. In fact, they have all opposed approval of Southwest's proposed CMT in this proceeding and none has proposed other mechanisms to alleviate this problem.

Q. 17 Should the Commission approve the new energy efficiency programs without adequately addressing the financial disincentive issue that these programs create?

A. 17 No. Southwest proposed these new energy efficiency programs together with the CMT so that there would not be a financial disincentive for Southwest to aggressively encourage customers to conserve natural gas. Southwest

would encourage the Commission to follow the guidance provided by the National Association of Regulatory Utility Commissioners in its resolution approving the Joint Statement of the American Gas Association and NRDC when it reaches its decision in this proceeding.

Q. 18 Does this conclude your prepared rebuttal testimony?

A. 18 Yes, it does.

CONGDON

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
A. BROOKS CONGDON

INTRODUCTION

Q. 1 Please state your name and business address.

A. 1 My name is A. Brooks Congdon. My business address is 5241 Spring Mountain Road, Las Vegas, Nevada 89150-0002.

Q. 2 Did you submit prepared direct testimony in this Docket on behalf of Southwest Gas Corporation (Southwest or Company)?

A. 2 Yes.

Q. 3 What is the purpose of your rebuttal testimony?

A. 3 The purpose of my rebuttal testimony is to respond to the direct testimony presented by the following witnesses: Ms. Marylee Diaz Cortez and Mr. Rodney L. Moore, witnesses for the Residential Utility Consumer Office (RUCO); Messrs. Robert G. Gray and William H. Musgrove, witnesses for the Arizona Corporation Commission Utilities Division Staff (Staff); Mr. Jeff Schlegel, witness for the Southwest Energy Efficiency Project and Natural Resources Defense Council (SWEEP/NRDC); and Mr. Jeffery L. Hoffman, witness for Yuma Cogeneration Associates (YCA), regarding their respective recommendations and comments concerning Southwest's

proposed rate design, revenue allocation to customer classes, tariff revisions, and customer bill format.

Q. 4 Did you prepare exhibits to support your rebuttal?

A. 4 Yes. I prepared the exhibits identified as Rebuttal Exhibit No.___(ABC-1) through Rebuttal Exhibit No.___ (ABC-XX).

Q. 5 Please summarize your rebuttal testimony.

A. 5 My rebuttal testimony will address the following key issues:

1. Southwest's proposed residential rate design.
2. Need for a shift in rate design policy.
3. Gas and electric utilities and their rate designs.
4. Cost of service rate design and the use of declining block rates.
5. Impact of Southwest's, Staff's, and RUCO's rate design proposals on Southwest's customers.
6. Southwest's rate design promotes energy efficiency.
7. Southwest's proposed margin allocation.
8. Southwest's adjusted test period bills and volumes.
9. Southwest's proposed multi-family rate schedule.
10. Southwest's proposed year-round low-income discount.
11. Rate Schedule G-15 - Special Residential Service for Gas Air Conditioning.
12. Rate Schedule G-25 - General Gas Service.
13. Rate Schedule G-35 - Gas Service to Armed Forces and Rate Schedule G-75 - Small Essential Agricultural User Gas Service.

14. Rate Schedule G-60 - Cogeneration Gas Service.
15. Rate Schedule G-80 - Natural Gas Engine Gas Service.
16. Southwest's Energy Share program.
17. Interest rate on customer deposits.
18. Cost of subsequent meter tests for large volume customers.
19. Purchased Gas Adjustment (PGA) bank balance trigger.
20. Southwest's title assignment service.

SOUTHWEST'S PROPOSED RESIDENTIAL RATE DESIGN

A. Need for Shift In Rate Design Policy

Q. 6 Is there a need for shift in rate design policy with respect to Arizona gas utilities?

A. 6 Yes. Arizona's marketplace for natural gas and electric service has changed dramatically, and these changes call for the careful consideration of the potential negative consequences of not changing Southwest's rate design to adapt to the changing marketplace. Accordingly, in order to achieve the most efficient long-term rate design solution to the challenges presented by today's marketplace, Southwest's marginal commodity price signal to customers should be set as close as possible to the incremental marginal cost of delivering gas to its customers.

Q. 7 Why is it critical at this time to fully consider the marginal cost of service in the development of rates?

A. 7 Economists agree that prices reflecting the marginal costs of production provide the most accurate price

signal and will lead to an economically efficient use of energy resources. In a competitive market, the forces of competition will ultimately drive prices toward the marginal cost of production. In a regulated environment, where regulation is a substitute for the competitive marketplace, rates that best promote conservation and energy efficiency would reflect the marginal cost of service. Southwest's marginal cost of service provides the most accurate price signal to its customers and encourages an economic level of gas consumption and energy efficiency.

B. Gas and Electric Utilities and Their Rate Designs

Q. 8 Please explain some of the changes in the electric and gas utility industries that make changes in Southwest's rate design necessary?

A. 8 Due to increases in the cost of incremental generation and transmission capacity, the electric utility industry changed from a declining average unit cost industry in the late 1960s to an increasing average unit cost industry today.

In addition, during this same time period, there have been important changes in the natural gas distribution business, including the following: (1) the development of a robust competitive marketplace for natural gas supply subsequent to the deregulation of well-head gas prices; (2) capacity constraints and sustained high gas prices related to growth in gas-fired

electric generation; (3) and the erosion of revenue resulting from a chronic reduction in residential customers' average annual use per customer.

Q. 9 Since natural gas and electricity are both public utility services, shouldn't the Commission's regulation of the two products be similar as far as the pricing of service to residential customers?

A. 9 No. Because of certain changes in the electric and gas utility industry it is not appropriate to structure the rate designs in the same way.

Q. 10 Why are inverted rates (used by some electric utilities) not appropriate for a gas utility?

A. 10 In an increasing unit cost industry (like the electric utilities) inverted rates may be appropriate because they reflect the long-term cost of providing service. Conversely, in a declining average unit cost industry (like gas utilities), inverted or even flat rates do not reflect long-term costs. Thus, for many electric companies inverted rates are, in fact, cost-based and send the correct price signal to electric customers that increased demand will result in increased costs.

As such, the residential rate design philosophy applied to Arizona's electric utilities is not proper for Southwest for many reasons including: (1) the differences in the consumption trends of natural gas and electric residential customers; (2) the fact that gas service, at least as far as residential customer use is concerned, is

a discretionary service; and (3) the differences in utility cost-structure. Accordingly, these factors require a new approach to the development of Southwest's residential rate design.

Q. 11 Please discuss the differences in the consumption trends of gas and electric customers, and why natural gas is a discretionary energy source.

A. 11 Unlike electricity, which is the only energy choice for many residential applications such as: lighting, refrigeration, home computers, television sets, microwaves, and ceiling fans, natural gas is a discretionary fuel and has basically one residential purpose which is to provide heat for items such as space heat, water heat, clothes drying, and cooking. Although consumers are demanding increasing amounts of electricity for new residential appliances, there is minimal potential for increased gas use. In fact, customers have the option to choose electricity to displace gas at their discretion. Therefore, as weather becomes warmer and as new homes and gas appliances become more efficient, Southwest's average use per customer has decreased and can only be expected to decrease further in the future. Consequently, to limit the further erosion of Southwest's cost recovery and earnings, it is necessary to address the declining average use phenomenon through proper cost of service rate design.

Q. 12 Why do cost-structure differences between gas and

electric systems require differences in gas and electric rate designs?

A. 12 Southwest's cost structure is fundamentally different from that of an electric utility because the cost of incremental capacity on Southwest's distribution system is very small relative to the electric industry. The incremental cost of delivering additional volumes of natural gas is far less than the incremental cost to deliver additional quantities of electricity because gas distribution is subject to economies of scale. In contrast, incremental increases in electric capacity require capital intensive investment in new generation and, depending on the location of the generation facility, transmission facilities. This results in an increasing average unit cost in the electric industry.

Q. 13 Please explain how changes in residential customers' demand for natural gas impacts Southwest's cost structure.

A. 13 The cost to Southwest of providing service to residential customers consists entirely of fixed customer-related and demand-related costs of providing customers access to the system, with the exception of *de minimus* commodity-related costs. Southwest incurs these costs regardless of how much gas customers actually use. Therefore, excluding the cost of gas, there are few, if any, savings Southwest can achieve on its gas distribution system as a result of customers reducing their use of gas. Consequently, a

residential rate design (in an environment of declining average usage) where Southwest's fixed cost of service is recovered through a volumetric rate design places Southwest at risk for the non-recovery of its fixed cost of service because there are no savings for Southwest associated with decreased residential customer usage. A volumetric rate design also increases customers' exposure to high winter bills during colder-than-normal weather.

C. Cost of Service Rate Design and the Use of Declining Block Rates

Q. 14 Did Southwest consider recovering its fixed costs through a full cost of service-based rate design?

A. 14 Yes. Schedule H-6, Sheet 6 reflects the full cost of service-based charges that would be applicable to Southwest's single-family and multi-family rate schedules (as well as Southwest's other rate schedules) under a full cost of service-based rate design. However, due to the need to balance rate designs with the principle of gradualism, Southwest proposed basic service charges [with and without the Conservation Margin Tracker (CMT)] that are well below the full cost of service amounts for single-family and multi-family residential gas service of $26.25 and $20.65, respectively. Also, Southwest's proposed second block margin rates (with and without the CMT) are well above the full commodity-related costs of service rate reflected on line 7 of Schedule H-6, Sheet 6.

Q. 15 Does any party to this proceeding dispute your

calculations presented in Schedule H-6, Sheet 6?

A. 15 No.

Q. 16 Please respond to Staff's contention that Southwest's inclusion of customer-related costs in the second block of the rate design is not consistent with traditional rate design.

A. 16 Traditional utility rate design has always included a portion of customer-related costs not captured in the basic service charge in commodity margin rates. In addition, Staff acknowledges that the commodity margin rates must also recover fixed demand-related distribution costs. However, it was not possible to recover 100 percent of the balance of customer-related costs (the portion not captured in the basic service charge) in the first block of the rate design without creating unacceptably large impacts on low-use customers. As a result, it was necessary for Southwest to recover a portion of customer-related costs in the second block of the proposed residential rate structures. Accordingly, Southwest's proposed rate design is traditional in that it balances the strict cost of service-based ratemaking principles with the competing goal of gradualism.

Q. 17 Do you agree with Staff's assertion that none of the other Arizona local distribution companies have a declining block rate structure for their residential customers?

A. 17 No. Although not regulated by the Commission, the City of

Mesa Gas has a seasonal declining block rate design, Schedule No. G1.1 Residential Gas Service. In fact, during the summer season, there is a $.35 per therm reduction from the first to the second block of the rate schedule, and the second block margin rate is less than $.17 per therm.

Q. 18 Why is it significant to note the City of Mesa's Schedule No. G1.1 Residential Gas Service rate design?

A. 18 It is noteworthy that another Arizona gas distribution company does have declining block residential rates, contrary to Staff's assertion.

Q. 19 Do you agree with Staff's claim that a declining block rate structure is more complicated than a flat rate structure, and that a flat rate structure would be easier for customers to understand and for Southwest to administer?

A. 19 Although on its face a declining block rate structure may appear more complicated, utilities in Arizona have had declining or inverted rates for many years. Southwest has had a declining block rate design for residential gas service in Arizona since September of 1997, and, to Southwest's knowledge, the declining rate design has not been a problem or caused confusion with Southwest's customers. Two of Arizona's largest electric utilities also have blocked residential rate designs. One has a three tier inverted block summer rate structure, and the other has a declining block winter rate structure. If a

flat rate design is imposed on Southwest, the basic service charge necessary to give Southwest a reasonable opportunity to recover its authorized margin may be too high to meet any gradualism test.

Q. 20 Do RUCO and Staff recognize the principle of cost of service-based rate design in their proposals?

A. 20 No. RUCO and Staff effectively ignored cost of service principles in their residential rate designs. Neither Staff's nor RUCO's proposed residential rate designs improve Southwest's marginal price signal. In fact, both proposals amplify the distortion in Southwest's marginal price signal by increasing the marginal commodity prices customers will pay. Departing from marginal cost pricing increases the likelihood that customers will make poor energy decisions which will negatively impact Arizona's energy marketplace (which I discuss later in my testimony).

D. Impact of Southwest's, Staff's, and RUCO's Rate Design Proposals on Southwest's Customers

Q. 21 How has Staff characterized the impact Southwest's residential rate design proposal will have on its customers?

A. 21 Staff asserts that Southwest's changes are front-loaded and will impact low usage residential customers particularly hard, while high usage customers will experience relatively small increases.

Q. 22 Has Staff provided a quantitative analysis that

thoroughly evaluates the impact of Southwest's proposed rate design on residential customers and has Staff determined whether the impact of Southwest's proposal is equitable for all customers?

A. 22 No. Purportedly, Staff has been unable to quantify the difference in customer impact between its and Southwest's proposed rate designs.

Q. 23 What should the Commission consider in evaluating the effects of Southwest's, and the other parties' residential rate design proposals?

A. 23 The Commission should not conclude from Staff's unfounded assertions that Southwest's proposed residential rate design impacts low-usage residential customers more than high-usage customers. Rather, the Commission should evaluate how the total dollar increase and the resulting residential margin is distributed among all customers.

Q. 24 What would be an appropriate method to show the Commission the total dollar increase among all customers?

A. 24 An appropriate method would be to select usage above and below the mode to allow the Commission to see how each rate design proposal affects the upper and lower five percent of customers. In fact, I used the mode usage in my Rebuttal Exhibit No.___(ABC-1), instead of the average usage, because the mode value is where the greatest number of bills actually fall, and, therefore, reflects the usage most customers experience. I also selected the midpoint usage between the upper and lower usage levels

and the mode for each month of the test period, and calculated monthly bills for each of the rate designs.

Q. 25 Have you prepared an exhibit that illustrates how residential margin is distributed among all customers?

A. 25 Yes. In my Rebuttal Exhibit No.___(ABC-1), lines 1-5, the Commission can see the shift in margin recovery between small and large residential customers under Southwest's, Staff's, and RUCO's rate design proposals. Further, lines 11-15 reflect the differences in the average margin per customer as compared to Southwest's proposed average margin per customer. This comparison demonstrates that the high-use residential customers contribute significantly more on a margin per customer basis under Southwest's proposed rate design.

Q. 26 When reviewing a proposed rate design and its impact on customer bills, is it appropriate to focus only on the percentage change of the bill?

A. 26 No. When reviewing Southwest's proposed rate design, focusing on the dollar difference is more important because percentage changes can be misleading. For example, a four dollar increase in Southwest's basic service charge equates to a 50 percent increase if there is zero consumption (in August of the test period, 31,237 of Southwest's residential customers had zero consumption). As such, in this example, the real impact on a customer's bill is four dollars. For instance, in my Rebuttal Exhibit No.___(ABC-1), lines 6-10, the

Commission can see that the monthly dollar shift in margin recovery between small and large residential customers under Southwest's, Staff's, and RUCO's rate design proposals is not that significant.

Q. 27 Why is it also important to know the annual dollar effect when analyzing the impact of Southwest's proposal?

A. 27 Knowledge of the annual dollar effect is also important because Southwest's proposal shifts margin recovery from the winter to the summer season. As such, for many customers, increases in summer bills will be offset by decreases in their winter bills.

Q. 28 Why is it important to know the number of customers within each consumption group that are affected by the proposed rate designs?

A. 28 Knowledge of the number of customers affected within each consumption group is critical because when rate design changes are made, the results vary amongst the consumption groups. In some cases we might see a result that affects some consumption groups more than others. However, if we know that only a small fraction of total customers are affected, we are in a better position to make a decision based on how a particular proposal affects the majority of customers.

Q. 29 Please summarize the results of your Rebuttal Exhibit No.___(ABC-2).

A. 29 Rebuttal Exhibit No.___(ABC-2) illustrates the impact of Southwest's, Staff's, and RUCO's rate design proposals on

Southwest's single-family low-income customers.

In evaluating the information presented in Rebuttal Exhibit No.___(ABC-2), it is important to bear in mind that many of Southwest's low-income customers consume relatively high volumes of gas during the winter. Rebuttal Exhibit No.___(ABC-2) shows that approximately 50 percent of low-income customers' annual bills would be less under Southwest's proposed rate design than Staff's or RUCO's proposed rate designs.

Q. 30 Do you have any additional comments with respect to your Rebuttal Exhibit Nos.___(ABC-1) and ____(ABC-2)?

A. 30 Yes. During the last several years, purchased gas costs have increased markedly due to changes in the national market for gas that are beyond Southwest's control, but nevertheless have a major impact on customers' bills. The increases in gas cost have already had a much larger impact on Southwest's high-use residential customers (not to mention Southwest's much higher-use commercial and industrial customers) than on low-use residential customers. Consideration should be given to the impact of today's high gas prices when reviewing the bill impacts presented in these exhibits.

Q. 31 What has Southwest done to moderate the impact on small residential customers?

A. 31 Southwest moderated the impact on small residential customers by proposing a new rate schedule applicable to residential customers residing in multi-family

structures. In addition to differences in the cost of providing service, Southwest's multi-family customers on average use almost 100 therms, or 28 percent, less gas annually than single-family residential customers. As such, the multi-family rate schedule allowed Southwest to moderate the effect of changes in rate design on multi-family customers by proposing a lower basic service charge and lower first block consumption levels through Southwest's proposed single-family rate design.

In addition, Southwest's proposed changes to its residential basic service charges and second block commodity margin rates are much less than would be required if rates were to reflect full cost of service.

Q. 32 Does shifting rates toward Southwest's cost of service result in greater stability in customers' bills and in the Company's revenue stream?

A. 32 Yes. I have quantified the impact to customer bills and to Southwest's revenue that would result from variations in customer usage (through conservation or weather) under Southwest's, Staff's, and RUCO's proposed rate designs. I calculated the average dollar increase in customers' winter bills if sales were to increase in response to weather being colder than normal. I have also calculated the decrease in Southwest's margin revenue, if residential sales were to decrease by ten therms per customer (as was experienced in 2003). The results of these calculations are summarized in the following tables.

Colder Than Normal Weather (1998 HDDs)

Rate Design	Average Winter Bill Increase
Southwest (no CMT)	$ 7.82
Southwest (CMT)	13.03
RUCO	28.63
Staff	30.59

Ten Therm Decrease in Residential Use per Customer

Rate Design	SWG Margin Decrease
Southwest (current)	$3,513,043
Southwest (no CMT)	$2,311,340
Southwest (CMT)	-0-
RUCO	4,547,838
Staff	4,952,410

The above information demonstrates the greater degree of stability that Southwest's proposed rate designs provide customers and shareholders as compared to Staff's and RUCO's proposals.

E. Southwest's Rate Design Promotes Energy Efficiency

Q. 33 Please explain why using natural gas as a domestic fuel is critical to conserving our natural gas resources.

A. 33 In today's energy marketplace, the most critical aspect of accomplishing the objective of preserving our supplies of natural gas is retaining gas as the fuel of choice for domestic space heating, water heating, clothes drying, and cooking requirements. These four major domestic uses of energy are not discretionary uses. Residential

customers require these services and will utilize electric appliances if natural gas is either unavailable or inappropriately priced. In today's energy market, because incremental electric generation capacity is mainly natural gas fired, increases in the demand for electricity correspondingly increase the demand for natural gas. Therefore, using natural gas to generate electricity and using electric appliances to provide the four domestic services mentioned above requires almost twice as much natural gas providing these services with natural gas appliances.

Moreover, the emergence of gas fired generation as the marginal energy source for incremental electric demand has drastically altered electric and gas industry dynamics. The relative inefficiency of burning natural gas in the generation process and today's sustained high natural gas prices impact the traditional view of conservation as it relates to residential customers.

Q. 34 Please explain how utilizing natural gas appliances for the four major domestic applications you mention can reduce the consumption of natural gas by almost 50 percent as compared to electric appliances.

A. 34 The efficiency gain is not necessarily in the appliances themselves, but rather in the large percentage of energy that is lost in electric generation and transmission of electricity, particularly over long distances. For example, a state-of-the-art gas turbine generator is only

about 42 percent efficient. That is, for every 100 therms of energy burned, only 42 therms of useful electric energy is actually produced. Depending upon the distance, transmission losses can also be significant. There are huge energy efficiency losses in the generation and transmission of electricity as compared to energy efficiency losses of approximately five percent in the transmission of natural gas from the wellhead to the end-use customer. Consequently, in terms of the total volume of natural gas transported and consumed, utilizing natural gas as an end-use domestic energy source where possible is the most efficient energy choice.

Q. 35 Please explain how the residential rate design proposed by Southwest has an energy efficiency and conservation effect on the consumption of natural gas.

A. 35 As I have just described, the total demand for natural gas can actually be reduced if gas is available to meet residential customers' space heating, water heating, clothes drying, and cooking requirements (four-use). In today's market, the best way to ensure that natural gas continues to be desirable from the customers' perspective, is to equitably distribute the recovery of Southwest's fixed customer-related and demand-related costs of providing service across the residential customer class. The Commission's approval of Southwest's proposed rate design will accomplish this objective by shifting margin recovery away from the volumetric-

sensitive commodity component of residential rates into the monthly basic service charge and non-volumetric-sensitive rate components. For Arizona, the long-term result will be reduced overall demand for natural gas and lower average electric and gas prices for the following reasons:

1. The likelihood of gas customers switching to electric service in response to artificially inflated marginal commodity charges in Southwest's residential rate design is reduced.
2. Retaining four-use homes as gas customers reduces the incremental demand for electric generation, thereby reducing the overall demand for natural gas.
3. Reducing the demand for electricity delays the need for expensive new generation and transmission resources, thereby putting downward pressure on electric rates.
4. Retaining four-use gas customers reduces Southwest's average cost of providing distribution service.

Q. 36 Please explain why Southwest's proposed residential rate design more accurately reflects marginal cost than the rate designs proposed by Staff and RUCO.

A. 36 Southwest's cost of service is generally fixed, that is, once customers have been connected to the system, Southwest's cost of providing service does not vary with the amount of gas actually used (other than the cost of the commodity itself). Putting this into perspective, it

costs the same amount for Southwest to read meters, render and process bills, and pay its employees in August when average residential customer usage is 10 therms as it does in December when average usage is 51 therms.

Accordingly, Southwest's proposed residential rate design focuses on Southwest's cost structure, including the following: 1) the adjustments to the length of the summer and winter rate blocks; 2) the changes to the length of the summer and winter seasons; and 3) the changes to the block rate differential.

Southwest's, Staff's, and RUCO's residential rate design proposals are reflected in the table below.

Description	SWG CMT	SWG No CMT	Staff	RUCO
Bills Stopping in 2nd Block	62%	62%	40%	n/a
Marginal Price	$.250	$.150	$.490	$.487
Residential Margin (millions)	$266	$266	$242	$241

As shown above, Southwest's proposed changes to lengths of the summer and winter rate blocks and to the summer and winter seasons result in 62 percent of the residential customers' consumption stopping in the second block of the rate design (where pricing is closer to marginal cost). Southwest's proposed second block margin rates of $0.25 per therm, if the Commission grants the CMT, and $0.15 per therm, if the CMT is denied, are much

closer to the marginal cost of service than the rate designs proposed by Staff and RUCO. As such, Southwest's rates will better promote the efficient use of gas.

SOUTHWEST'S PROPOSED MARGIN ALLOCATION

Q. 37 Please briefly discuss how Southwest's method of allocating the total system margin revenue requirement among customer classes differs from allocation methodologies set forth by Staff and RUCO in their direct testimony.

A. 37 Southwest's allocation methodology is based firmly on the results of its Class Cost of Service Study (CCOSS). RUCO's proposed allocation maintains the relationship of residential and non-residential margin as a percent of total margin as it exists today at Southwest's currently effective rates. Staff provides no explanation in its direct testimony in support of how it determined proposed customer class margin requirements. Thus, the essential differences in the various allocation methodologies is that Southwest's allocation is well founded upon the CCOSS (which Staff has recommended the Commission approve) and Southwest's allocation methodology gradually moves each classes' rate of return closer to the cost of service. As previously discussed, in the long-term setting prices that reflect cost of service sends proper price signals to customers and maximizes overall efficiency.

Q. 38 How are Staff's and RUCO's allocation of total proposed

class margin requirements different from Southwest's proposal?

A. 38 Staff's allocation results in an approximately $9 million shift in margin from residential customers to general service customers. RUCO's allocation results in an approximately $10 million shift of margin from residential to general service customers.

Q. 39 Have you quantified the effect of Southwest's, Staff's and RUCO's proposals on the rate of return (ROR) for the residential and general service classes of customers?

A. 39 Yes. Southwest's proposal results in a ROR for the residential classes of 7.09 percent and 17.77 percent for the general service classes (Schedule No. G-26b, Sheet 2). Staff's and RUCO's margin allocation increases the average ROR for general service customer classes to approximately 20 percent, which is more than twice Southwest's requested system average ROR of 9.4 percent. In addition, Staff's and RUCO's residential margin allocation depresses Southwest's average ROR on residential customer classes to approximately 6.4 percent.

Q. 40 Are there any adverse consequences if the Commission were to adopt Staff's and RUCO's proposed allocation?

A. 40 Yes. There are definitely long-term negative implications associated with setting rates that do not reflect cost of service. The residential customer classes are Southwest's fastest growing market segment and drive the vast majority of Southwest's costs. If changes are made to

further depress the authorized ROR in a customer class whose ROR is already lower than the ROR required to maintain the system, then the likelihood that Southwest's revenues will be deficient overall is increased, which sends the wrong signal to the financial community. Company witnesses Steven M. Fetter, Theodore K. Wood, and Frank J. Hanley discuss this topic further.

Q. 41 What is your conclusion regarding the allocation of Southwest's total authorized margin revenue to customer classes?

A. 41 For each of the foregoing reasons, the Commission should accept Southwest's proposed allocation of margin to customer classes.

SOUTHWEST'S ADJUSTED TEST PERIOD BILLS AND VOLUMES

Q. 42 Please explain how RUCO calculated its proposed bills and volumes for each rate schedule?

A. 42 Southwest requested support for RUCO's adjustments in Southwest Data Request No. RUCO 1-1. Essentially, RUCO attempted to utilize Southwest's recorded bills and volumes to recalculate the recorded revenues for each rate schedule. To the extent the recalculated annual revenue didn't match Southwest's recorded test year revenue, RUCO adjusted Southwest's recorded bills and volumes to reconcile the difference.

Q. 43 Has Southwest provided RUCO a reconciliation of its recorded bills and volumes, and its recorded revenues?

A. 43 Yes. In its response to RUCO Data Request No. 9.01,

Southwest provided residential bill frequency analyses (BFAs) for each month of the test year. BFAs are necessary to correctly price the first and second block volumes of Southwest's existing residential rates. To further assist RUCO, Southwest also multiplied the recorded bills and volumes for each month of the test year by the effective margin and gas cost rates, and compared the results to the recorded test year revenue. Southwest's recalculation of residential revenue was accurate to 0.03 percent of the recorded revenue reported for the test year. This comparison is reflected on Sheet No. 3, line 1 of Rebuttal Exhibit No.___(ABC-4).

Q. 44 What is the problem with RUCO's calculated increases to Southwest's residential bills and volumes?

A. 44 First, RUCO did not properly utilize data reflected in the BFAs. Specifically, the monthly volumes RUCO put into the first block of the residential rates were understated by approximately 88 million therms, which resulted in the same 88 million therms being priced at the lower second block rate. This mistake alone resulted in RUCO understating residential revenues by approximately $7.4 million. As a consequence, RUCO increased residential bills and volumes to capture these dollars.

Second, RUCO improperly uses ratios to distribute Southwest's total proposed adjustments to bills and volumes reflected on Line 24, Columns (d) and (g) of Schedule H-2, Sheet 13. RUCO's use of these ratios does

not properly distribute Southwest's adjustments to bills and volumes among rate schedules.

Southwest has notified RUCO of these two errors and presumably RUCO will be revising its calculations accordingly.

Q. 45 Does Staff accept Southwest's adjusted test period bills and volumes for each rate schedule?

A. 45 Yes. However, Staff does not accept all of Southwest's proposed reclassifications of customers to new rate schedules.

Q. 46 Which set of bills and volumes should be utilized in calculating rates that reflect the Commission's authorized level of margin?

A. 46. The Commission should utilize Southwest's adjusted bills and volumes if the Commission accepts the new rate schedules and customer reclassifications proposed by Southwest. Alternatively, if Southwest's new rate schedules and customer reclassifications are not approved, Staff's bills and volumes would be appropriate.

SOUTHWEST'S PROPOSED MULTI-FAMILY RATE SCHEDULE

Q. 47 Please summarize Staff's and RUCO's position regarding Southwest's proposal to implement a new rate schedule for service to residential customers residing in multi-family structures.

A. 47 RUCO supports Southwest's proposal to implement a distinct multi-family residential rate schedule while Staff does not support the proposal. Staff contends that

there is no compelling reason to split the existing residential customer class into subclasses.

Q. 48 What is the benefit of Southwest's proposed multi-family rate schedule?

A. 48 Multi-family customers use significantly less gas annually on average than Southwest's single-family residential customers. Creating a distinct rate schedule for service to multi-family customers allows the Commission to moderate the affect on Southwest's smallest residential customers as it moves residential service rates gradually towards the cost of service.

Implementation of the multi-family rate schedule facilitates the development of a monthly basic service charge and seasonal commodity rate blocks that are reflective of the cost of service and usage characteristics that are unique to this particular customer class. To the extent Southwest's multi-family customers' cost of service and average use are both less than comparable amounts for single-family customers, these differences can be addressed in rate design. As such, Southwest's multi-family rate schedule better reflects the cost of service through rates for both multi-family and single-family customers.

SOUTHWEST'S PROPOSED YEAR-ROUND LOW-INCOME RATE DISCOUNT

Q. 49 Please summarize Staff's and RUCO's position regarding Southwest's proposal on low-income service.

A. 49 RUCO does not oppose Southwest's proposal. However, Staff

contests extending the discount for low-income service on a year-round basis and instead prefers to retain Southwest's currently effective 20 percent discount on the first 150 therms of winter use.

Q. 50 Please explain the rationale behind Southwest's proposed year-round low-income discount.

A. 50 Southwest's residential rate design proposal shifts a portion of margin recovery from the winter season into the summer season. Thus, there is less of a need to shield low-income customers from the affect of high winter bills. As a result, this justifies the reduction in the discount percentage that will be applied to all volumes throughout the calendar year.

Q. 51 Has Southwest discussed its low-income rate proposals with local community action groups or community agencies?

A. 51 Yes. Southwest met with representatives from the Phoenix and Tucson Urban Leagues, Pima County Community Action Agency, Salvation Army, Green Valley Assistance Services, and the Western Arizona Council of Governments to discuss Southwest's proposed changes to its residential and low-income residential rate schedules.

Q. 52 Did you receive any specific feedback regarding the structure of the low-income rate discount?

A. 52 No.

Q. 53 Have any of the groups included in Southwest's outreach effort filed testimony in this case?

A. 53 Yes. However, none of them have taken issue with the

changes to the low-income discount.

Q. 54 If the Commission does not accept Southwest's proposed rate design that moves a portion of margin from winter months to summer months, should the current low-income discount of 20 percent be modified?

A. 54 No.

RATE SCHEDULE G-15 - SPECIAL RESIDENTIAL SERVICE FOR GAS AIR CONDITIONING

Q. 55 Do Staff and RUCO oppose Southwest's proposal to eliminate Rate Schedule G-15 - Special Residential Service for Gas Air Conditioning?

A. 55 While RUCO does not oppose Southwest's proposal, Staff does oppose the elimination of the G-15 rate schedule.

Q. 56 Please respond to Staff's proposal for Rate Schedule G-15?

A. 56 The differential between the currently effective G-15 air conditioning rate and the proposed second block margin rates is very small. As such, Southwest proposed to eliminate Rate Schedule G-15 and to reclassify customers served on that schedule to Rate Schedule G-5. However, if the Commission rejects Southwest's proposed residential rate design and adopts either of the rate designs proposed by Staff or RUCO, Southwest recommends that Rate Schedule G-15 be retained and the summer air conditioning margin rate be set at $.25 per therm.

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SOUTHWEST'S RATE SCHEDULE G-25 - GENERAL GAS SERVICE

Q. 57 Please summarize the differences between Southwest's proposed rate designs and the rate designs proposed by Staff and RUCO with respect to Rate Schedule G-25.

A. 57 There are differences regarding the appropriate level of monthly basic service charges, and with regard to Staff's opposition to Southwest's method for calculating the billing demand units for its largest general service customers and Staff's opposition to Southwest proposal to create a new small general service rate class.

Q. 58 Why should the Commission approve Southwest's proposed rate designs for general service rate schedules?

A. 58 The Commission should approve Southwest's general service rate design proposal, including the proposed Small General Service rate schedule, because: 1) Southwest's proposed basic service charges move rates closer to cost of service than Staff's proposal; 2) Southwest's basic service charge proposals reflect more gradual changes in rates than RUCO and do not result in excessive customer impacts; and 3) Southwest's proposed billing demand calculation stabilizes revenues and more fairly reflects the value to customers of Southwest's service on an annual basis.

A. General Gas Service Basic Service Charges.

Q. 59 Please briefly summarize the basic service charge proposals of each party.

A. 59 Southwest's and RUCO's proposals both include the new

Small General Gas Service rate schedule whereas Staff's proposal does not include this schedule. This complicates the comparison of Staff's proposal to Southwest's and RUCO's respective proposals. Southwest's, Staff's, and RUCO's proposed basic service charges for the general service rate schedules are contrasted in the table below.

Proposed Schedule	Current Charge	Staff	SWG	RUCO
Small GS	$20.00	$24.00	$25.00	$34.57
Medium GS	20.00	24.00	35.00	48.39
Large GS	90.00	105.00	150.00	207.40
Transport Eligible	500.00	540.00	750.00	1,037.41

*** Please note that Staff's proposed small general service basic service charge is reflected in both the Small GS and Medium GS proposed schedules. While the Large GS and Transport Eligible schedules reflect the proposed basic service charges for Staff's medium and large general service schedules.

As noted in the table, by failing to move toward a cost of service rate design, Staff's charges are inadequately low. Whereas, RUCO's basic service charges reflect unacceptably large increases.

Q. 60 Can you illustrate the effect of Staff's basic service charge proposal?

A. 60 Yes, Staff's proposal results in customers on each general service rate schedule paying basic service charges that are much less than Southwest's fixed customer-related costs. To illustrate this point, I have summarized the fixed monthly customer-related charges reflected in Schedule H-6, Sheet 6 that would apply to

each of Southwest's proposed general service rate schedules.

Proposed Schedule	Charge
Small GS	$74.86
Medium GS	79.02
Large GS	145.81
Transport Eligible	754.99

Staff's proposed Small General Gas Service rates include a monthly basic charge of $24.00 per month and a commodity margin rate of $.44700 per therm (See Schedule RGG3-17). As such, Staff's proposal results in customers whose average monthly usage is less than 123 therms not even paying their full share of Southwest's customer-related costs ($79.02 minus $24.00 divided by $.44700 per therm).

Consequently, Staff's proposed rate design results in approximately 70 percent (280,000 out of 393,517) of the total bills on Staff's proposed Small General Gas Service rate schedule paying less than Southwest's fixed customer-related cost of service.

Q. 61 Does Southwest's proposed general service rate design completely cure the problem you have illustrated above?

A. 61 No, the need for gradualism in rate changes prevents the movement from "where we are today" to cost-based rates in one step. However, Southwest's proposal does go considerably further than Staff's in moving toward cost-based rates.

Q. 62 Have you analyzed the affect of Staff's proposed general gas service rates at the crossover volumes between general service rate schedules?

A. 62 Yes. The dollar differences under both Staff's and Southwest's proposed rate designs for customers switching between the smaller volume general service rate schedules are not significant. However, with respect to customers switching between the Medium General Gas Service and the Large General Gas Service rate schedules, Staff's rate design results in approximately $21,000 change in annual costs. Whereas, there is only a $9,000 change in annual costs under Southwest's proposal.

B. Billing Demand Volumes for Southwest's Largest General Service Customers.

Q. 63 Please respond to Staff's proposal to retain the current method for determining billing demand volumes for general service customers using more than 180,000 therms on an annual basis.

A. 63 Southwest's disagrees with Staff's proposal because its current billing demand volume calculations place Southwest at somewhat greater risk for recovery of its authorized margin. Southwest's proposal to utilize customers' non-coincident peak month to establish their billing demand volume takes some of the risk of revenue recovery out of rates while, at the same time, reflecting the value to customers of Southwest's service on an annual basis.

C. Southwest's Proposed Small General Gas Service Rate Schedule

Q. 64 Please summarize Staff's and RUCO's position regarding Southwest's proposal to implement a new rate schedule for service to general service customers using less than 600 therms annually.

A. 64 RUCO does not oppose Southwest's proposal. However, Staff does not support Southwest's proposal because it claims this new smaller commercial class would experience a larger rate increase than if they remained part of the current small commercial class.

Q. 65 Is Staff's assertion correct that implementing a new rate schedule for Southwest's smallest general service class causes these customers to experience a larger rate increase?

A. 65 No. Implementing a distinct rate schedule for Southwest's smallest general service class actually allows the Commission to moderate the affect on the small general service class (0 - 600 therms annually) if necessary, while at the same time permitting rates for Southwest's proposed medium general service class (601 - 7,200 therms annually) to be adjusted further toward cost of service than would otherwise be possible.

Q. 66 If the Commission determines that further moderation of the increase to the smallest general service class is necessary, how could this be accomplished?

A. 66 Additional moderation can easily be accomplished by simply further reducing the class margin increase.

RATE SCHEDULES G-35 - GAS SERVICE TO ARMED FORCES AND G-75 - SMALL ESSENTIAL AGRICULTURAL USER GAS SERVICE

Q. 67 Please respond to Staff's suggestion that customers served under rate Schedule Nos. G-35 and/or G-75 should be allowed to switch to general service rate schedules between rate cases if they desire.

A. 67 Staff's proposal to allow customers to switch rate schedules if their annual cost of service is reduced, but to not reflect such customer movement in rate design is tantamount to designing an under-recovery of margin into rates. Rather than allowing Southwest to reclassify customers to less costly rate schedules and design rates accordingly, Staff suggests designing rates first and then waiting to see if any customers switch schedules. Staff's proposal results in increased risk to Southwest, while providing no greater benefit to customers than they would receive under Southwest's proposal. Therefore, the Commission should accept Southwest's proposal.

RATE SCHEDULE G-60 - COGENERATION GAS SERVICE

Q. 68 Please respond to Staff's recommendation regarding Rate Schedule G-60.

A. 68 Staff mischaracterizes Southwest's proposal as banning customers above 5 MW from taking service under the G-60 schedule. Southwest's proposal does not ban any customer from taking service under Rate Schedule G-60. Southwest's proposal simply requires that customers whose facilities exceed the 5 MW threshold take transportation service at

the Schedule G-60 rates, thus eliminating the risk to Southwest's sales customers associated with the procurement of the upstream gas supply and interstate pipeline requirements for these large customers. Similarly, the portion of Southwest's proposal requiring customers greater than 5 MW who desire to have Southwest procure their gas supply to enter into special procurement agreement (SPA) service was simply intended to provide Southwest with greater ability to manage upstream supply costs and risks. However, Southwest is willing to include the SPA language from its Rate Schedule G-30 as a special condition in Rate Schedule G-60 in response to Staff's recommendation that Southwest include provisions in the G-60 schedule to protect core sales customers.

RATE SCHEDULE G-80 - NATURAL GAS ENGINE GAS SERVICE

Q. 69 Please briefly describe the customers comprising Rate Schedule G-80.

A. 69 Rate Schedule G-80 is comprised of customers who use natural gas to pump water for irrigation. This is a very price-sensitive market as many customers have electricity as a competitive energy source. As such, the impact of rate increases is significant to this particular customer because from season to season they may, or may not, decide to irrigate and produce crops based upon the cost to operate their irrigation equipment and their opportunity to be profitable.

Q. 70 Has Southwest seen any losses in market share to date as a result of increases in gas prices?

A. 70 Not to my knowledge, but the current cost of gas has not yet been reflected in the G-80 rates. As explained by Staff witness Robert G. Gray, gas prices for Rate Schedule G-80 are reset twice a year on April 1st and October 1st.

Q. 71 Does Southwest know what the October 1st rates for this schedule will be?

A. 71 Yes. The gas cost portion of rates will increase by almost 20 cents per therm, resulting in a 27 percent increase in the commodity rate for G-80 customers.

Q. 72 What is the most appropriate level of margin the Commission should assign to this rate class?

A. 72 Southwest assigned no increase in margin to this class of customers because it is concerned that it may lose some of its G-80 market simply due to increases in gas costs. In other words, Southwest does not want to compound the revenue affect of losing a portion of this market by assigning additional increases in margin to this schedule. Staff has proposed that Rate Schedule G-80 margin be increased by approximately $354,500 and RUCO has proposed a decrease in rate schedule margin of approximately $81,000. On that basis, RUCO's proposal to reduce G-80 margin provides the strongest price signal to retain G-80 load and thus the most protection to Southwest. Conversely Staff's proposal to increase G-80

margin rates provides the strongest price signal to G-80 customers to switch to electricity or even stop farming due to increased costs.

Therefore, if the Commission does not accept the reduction in G-80 margin proposed by RUCO, it should accept Southwest's proposal to retain the present level of margin for this rate schedule.

SOUTHWEST'S ENERGY SHARE PROGRAM

Q. 73 Please respond to Staff's proposal that Southwest change its bill format to include a box that customers can check if they wish to participate in the Energy Share Program.

A. 73 Southwest strongly supports retention of its current method of notifying customers of the energy share program and their opportunity to contribute via a bill insert, unless Staff presents clear and convincing evidence that a change in the program notification process would result in a greater benefit than its cost.

INTEREST RATE ON CUSTOMER DEPOSITS

Q. 74 What are Staff's recommendations related to interest rates applicable to customer deposits and balancing accounts?

A. 74 Staff opposes the Company's proposal to reduce the interest rate applicable to customer deposits from six percent to three percent. Staff, on the other hand, is proposing in this proceeding that the interest rate applicable to Southwest's Purchased Gas Cost Adjustment (PGA), Low-Income Rate Assistance (LIRA) and Demand Side

Management (DSM) bank balancing accounts be the monthly one-year nominal Treasury constant maturity rate, which has been slightly above three percent in recent months.

Q. 75 Does Southwest agree with Staff's recommendations?

A. 75 No. The interest rate applicable to customer deposits and bank balancing accounts should be the same, or at least approximately the same. Southwest disagrees with Staff's recommendations only to the extent that Staff's recommendations result in vastly different interest rates for customer deposits and bank balancing accounts.

COST OF SUBSEQUENT METER TESTS FOR LARGE VOLUME CUSTOMERS

Q. 76 Please respond to Staff's opposition to Southwest's proposal to charge customers whose annual volume exceeds 180,000 therms the actual cost of "subsequent" customer requested meter tests.

A. 76 The charge for the first customer requested meter test is fixed at $25.00. It is reasonable to expect that the cost of testing larger more complex meters could exceed $25.00 dollars by a wide margin. Accordingly, permitting Southwest to charge larger customers the actual cost of any subsequent meter tests will reduce an existing inter-customer subsidy where smaller customers are essentially subsidizing the cost of meter tests for larger customers.

PGA BANK BALANCE TRIGGER

Q. 77 Is Southwest opposed to Staff's recommendation to increase Southwest's PGA bank balance trigger?

A. 77 No. However, it potentially increases the amount of money carried in the balancing account, and the financial community may view this proposal as yet another example of increased risk of doing business with Southwest (this view was provided by Mr. Dimitri Nikas in his presentation at the Law Seminars International conference held in Las Vegas, Nevada on February 17 and 18 of 2004).

Q. 78 What is your recommendation regarding Staff's proposal to increase Southwest's PGA bank balance trigger?

A. 78 If the Commission chooses to increase the PGA bank balance trigger as proposed by Staff, a balanced and equitable approach includes a corresponding three-cent per therm increase to the cap on changes in Southwest's monthly gas cost adjustment. An increase to the cap will save Arizona customers in the long-run by minimizing under-collections, and reduce the carrying costs on the PGA balance.

SOUTHWEST'S TITLE ASSIGNMENT SERVICE

Q. 79 Does Southwest agree with Yuma Cogeneration Associates' (YCA) allegations pertaining to Southwest's proposal regarding the elimination of Title Assignment provision in its Special Supplementary Tariff.

A. 79 No. Southwest proposed that the Title Assignment (TA) provision in its currently effective Special Supplementary Tariff Interstate Pipeline Capacity Services Provision be cancelled, primarily because no customer has taken service under the TA since March of

1998. Furthermore, Southwest disagrees with YCA's characterization of the Master Service Agreement, the TA, and the party's conversations regarding those agreements. Nonetheless, in light of YCA's concerns, Southwest would be willing to withdraw its request to cancel the TA.

Q. 80 Does this conclude your prepared rebuttal testimony?

A. 80 Yes, it does.

SOUTHWEST GAS CORPORATION
ARIZONA DIVISION
DIFFERENCE IN ANNUAL MARGIN PER BILL
SINGLE-FAMILY RESIDENTIAL GAS SERVICE

Line No.	Description (a)	Southwest (b)	RUCO (c)	Staff (d)	Percentage of Bills in Interval (e)	Line No.
	Average Annual Margin at Proposed Rate Design [1]					
1	First 5 Percent of Total Bills	$ 185	$ 161	$ 145	5.2%	1
2	Mid-Point First Percent and Mode	266	217	207	14.1%	2
3	Mode Use (Greatest Number of Bills)	315	273	270	22.1%	3
4	Mid-Point Mode and 95 Percent	382	417	425	42.5%	4
5	95 Percent of Total Bills	447	560	579	11.1%	5
	Dollar Difference Per Month Between Southwest and RUCO and Staff Rate Designs					
6	First 5 Percent of Total Bills		$ 2.00	$ 3.40		6
7	Mid-Point First Percent and Mode		4.13	4.90		7
8	Mode Use (Greatest Number of Bills)		3.44	3.74		8
9	Mid-Point Mode and 95 Percent		(2.95)	(3.61)		9
10	95 Percent of Total Bills		(9.43)	(11.03)		10
	Plus/Minus Average Margin per Customer [2]					
11	First 5 Percent of Total Bills	$ (143)	$ (167)	$ (183)		11
12	Mid-Point First Percent and Mode	(62)	(111)	(121)		12
13	Mode Use (Greatest Number of Bills)	(13)	(55)	(58)		13
14	Mid-Point Mode and 95 Percent	54	89	97		14
15	95 Percent of Total Bills	119	232	251		15

[1] RUCO and Staff rate designs calculated at Southwest's proposed residential margin revenue.
[2] Average annual Single-Family residential margin at Southwest proposed rates of $328.

Rebuttal Testimony
Exhibit No. __(ABC-1)

SOUTHWEST GAS CORPORATION
ARIZONA DIVISION
DIFFERENCE IN ANNUAL MARGIN PER BILL
LOW INCOME SINGLE-FAMILY RESIDENTIAL GAS SERVICE

Line No.	Description (a)	Southwest (b)	RUCO (c)	Staff (d)	Percentage of Bills in Interval (e)	Line No.
	Average Annual Margin					
1	First 5 Percent of Total Bills	$ 130	$ 114	$ 118	4.90%	1
2	Mid-Point First Percent and Mode	209	199	218	16.61%	2
3	Mode Use (Greatest Number of Bills)	224	202	217	23.13%	3
4	Mid-Point Mode and 95 Percent	279	309	334	39.15%	4
5	95 Percent of Total Bills	335	432	469	10.95%	5

Rebuttal Testimony
Exhibit No. __(ABC-2)

SOUTHWEST GAS CORPORATION
ARIZONA DIVISION
PERCENTAGE OF TOTAL MARGIN BY USAGE INTERVAL
SINGLE-FAMILY RESIDENTIAL GAS SERVICE

Line No.	Description (a)	Southwest (b)	RUCO (c)	Staff (d)	Percent of Customers in Interval (e)	Line No.
1	First 5 Percent of Total Bills	2.6%	2.3%	2.1%	5.2%	1
2	Mid-Point First Percent and Mode	10.3%	8.6%	8.1%	14.1%	2
3	Mode Use (Greatest Number of Bills)	20.5%	17.3%	17.0%	22.1%	3
4	Mid-Point Mode and 95 Percent	43.4%	42.2%	42.4%	42.5%	4
5	95 Percent of Total Bills	14.4%	16.9%	17.3%	11.1%	5
6	95 to 100 Percent of Bills	8.7%	12.7%	13.1%	5.0%	6
7	Total	100.0%	100.0%	100.0%	100.0%	7

Rebuttal Testimony
Exhibit No. __(ABC-3)

SOUTHWEST GAS CORPORATION
2004 ARIZONA GENERAL RATE CASE
*** * ***
RESIDENTIAL UTILITY CONSUMER OFFICE
DATA REQUEST NO. RUCO-9
(RUCO-9-1)

DOCKET NO.: G-01551A-04-0876
COMMISSION: ARIZONA CORPORATION COMMISSION
DATE OF REQUEST: APRIL 21, 2005

Request No. RUCO-9-1:

Bill Counts - With reference to the Company's Schedule H-2, Sheet 16 of 16, please provide a breakdown of the calculation of each revenue total in column (e). An adequate breakdown would be a bill frequency analysis for each rate schedule for each month of the test year; similar to Workpapers, Schedule H-5, Sheets 1 through 27, except as being representative of recorded values not "test year as adjusted" and repeated for all rate schedules.

Respondent: Gas Resources Planning/Pricing & Tariffs

Response:

Please see the attached response reflecting Southwest's calculation of each customers class' recorded revenue total in Schedule H-2, Sheet 16, Column (e). Included in the attachment are residential bill frequency analyses (BFAs) and monthly bills and volumes for former Black Mountain Gas customers for the recorded period.

In preparing this response, Southwest discovered that Schedule H-2, Sheet 16 of 16, inadvertently included $520,661 in recorded revenues for rate Schedule G-45 - Street Lighting Gas Service, that should have been included in Rate Schedule G-35 - Armed Forces Gas Service. The correction is reflected in the attached response.

Sheet 2

(Revised Page)

G-01551A-04-0876
Attachment to RUCO 9-1
84 Pages

SOUTHWEST GAS CORPORATION
ARIZONA DIVISION
SALES AND REVENUE BY RATE SCHEDULE AS RECORDED
FOR THE TWELVE MONTHS ENDED AUGUST 31, 2004

Line No.	Description	Schedule No.	Recorded Test Year Data: Number Of Bills [1]	Sales (Therms) [1]	Revenues	Line No.
	(a)	(b)	(c)	(d)	(e)	
1	Residential Gas Service	G-5	9,253,061	267,837,474	$ 330,193,899	1
2	Low Income Residential Gas Service	G-10	371,675	10,695,648	11,186,780	2
3	Special Residential Gas Service for A/C	G-15	1,883	228,821	201,618	3
4	Special Residential Gas Service for Electric Generation	G-16	0	0	0	4
5	Master Metered Mobile Home Park Gas Service	G-20	2,293	2,519,499	2,126,052	5
	General Gas Service	G-25				
6	Small		391,164	47,557,432	49,120,076	6
7	Medium		81,423	136,866,745	110,818,391	7
8	Large		1,254	44,280,034	29,805,775	8
9	Optional Gas Service	G-30	395	103,995,837	64,228,107	9
10	Gas Service to Armed Forces	G-35	99	3,308,091	2,258,902	10
11	Air Conditioning Gas Service	G-40	465	1,067,788	628,151	11
12	Street Lighting Gas Service	G-45	338	100,215	80,302	12
	Gas Service for Compression on Customer's Premises	G-55				
13	Small		309	196,184	139,636	13
14	Large		323	1,873,025	1,208,203	14
15	Residential		1,348	80,334	60,298	15
16	Cogeneration Gas Service	G-60	269	14,998,373	8,293,990	16
17	Small Essential Agriculture User Gas Service	G-75	1,169	7,932,305	5,507,594	17
18	Natural Gas Engine Gas Service	G-80	7,372	20,198,094	12,442,282	18
19	Resale Gas Service	G-95	3	(14,502)	(7,296)	19
20	Total Gas Sales		10,114,843	663,721,397	$ 628,292,760	20
21	Transportation Service Including Special Contract	T-1/B-1	2,770	65,680,156	9,099,186	21
22	Other Operating Revenue				9,885,120	22
23	Total Arizona		10,117,613	729,401,553	$ 647,277,066	23

[1] See Workpapers H-2, Sheets 41 - 43.

SOUTHWEST GAS CORPORATION
ARIZONA DIVISION
SALES AND REVENUE BY RATE SCHEDULE (RECORDED AND CALCULATED)
FOR THE TWELVE MONTHS ENDED AUGUST 31, 2004

Line No.	Description	Schedule No.	Recorded Test Year Data: Number Of Bills [1]	Recorded Test Year Data: Sales (Therms) [1]	Recorded Test Year Data: Revenues	Calculated Revenues from Bills and Therms: Number Of Bills	Calculated Revenues from Bills and Therms: Sales (Therms)	Calculated Revenues from Bills and Therms: Revenues	Difference	Percent of Filed	Line No.
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	
1	Residential Gas Service [2], [3]	G-5	9,253,061	267,837,474	$ 330,193,899	$ 9,253,061	267,837,474	$ 330,082,778	(111,121)	-0.03%	1
2	Low Income Residential Gas Service [2], [4]	G-10	371,675	10,695,648	11,186,780	371,675	10,695,648	11,158,125	(28,656)	-0.26%	2
3	Special Residential Gas Service for A/C	G-15	1,883	228,821	201,618	1,883	228,821	201,752	135	0.07%	3
4	Special Residential Gas Service for Electric Generation	G-16	0	0	0	0	0	0	0	0.00%	4
5	Master Metered Mobile Home Park Gas Service	G-20	2,293	2,519,499	2,126,052	2,293	2,519,499	2,148,479	22,427	1.05%	5
	General Gas Service	G-25									
6	Small		391,164	47,557,432	49,120,076	391,164	47,557,432	49,115,667	(4,408)	-0.01%	6
7	Medium		81,423	136,866,745	110,818,391	81,423	136,866,745	110,818,764	374	0.00%	7
8	Large		1,254	44,280,034	29,805,775	1,254	44,280,034	29,829,346	23,571	0.08%	8
9	Optional Gas Service [6]	G-30	395	103,995,837	64,228,107	395	103,995,837	64,228,107	0	0.00%	9
10	Gas Service to Armed Forces [5]	G-35	99	3,308,091	2,258,902	99	3,308,091	2,250,966	(7,936)	-0.35%	10
11	Air Conditioning Gas Service [2]	G-40	465	1,067,788	628,151	465	1,067,788	626,645	(1,507)	-0.24%	11
12	Street Lighting Gas Service (Unmetered) [5]	G-45	338	100,215	80,302	338	100,215	96,317	16,016	19.94%	12
	Gas Service for Compression on Customer's Premises	G-55									
13	Small		309	196,184	139,636	309	196,184	127,391	(12,245)	-8.77%	13
14	Large		323	1,873,025	1,208,203	323	1,873,025	1,208,771	568	0.05%	14
15	Residential		1,348	80,334	60,298	1,348	80,334	60,213	(85)	-0.14%	15
16	Cogeneration Gas Service [2]	G-60	269	14,998,373	8,293,990	269	14,998,373	8,299,091	5,100	0.06%	16
17	Small Essential Agriculture User Gas Service	G-75	1,169	7,932,305	5,507,594	1,169	7,932,305	5,472,983	(34,610)	-0.63%	17
18	Natural Gas Engine Gas Service	G-80	7,372	20,198,094	12,442,282	7,372	20,198,094	12,466,637	24,355	0.20%	18
19	Resale Gas Service [6]	G-95	3	(14,502)	(7,296)	3	(14,502)	(7,296)	0	0.00%	19
20	Total Gas Sales		10,114,843	663,721,397	$ 628,292,760	10,114,843	663,721,397	628,184,738	(108,022)	-0.02%	20
21	Transportation Service Including Special Contract [6]	T-1/B-1	2,770	65,680,156	9,099,186	2,770	65,680,156	9,099,186	0	0.00%	21
22	Other Operating Revenue [6]				9,885,120			9,885,120	0	0.00%	22
23	Total Arizona		10,117,613	729,401,553	$ 647,277,066	10,117,613	729,401,553	647,169,044	(108,022)	-0.02%	23

[1] See Workpapers H-2, Sheets 41 - 43.
(2) Includes Black Mountain Gas Schedules priced under appropriate rates.
[3] Residential volumes and revenues under Schedule R-1 for July and August are calculated at at the tier 1 rates.
[4] Low Income volumes under Black Mountain R-1 are calculated at at the tier 1 rates.
[5] Armed Forces Recorded adjusted for correction in intial reporting. $520,661 reported as gas light revenue on Schedule H-2, Sheet 16 of 16.
[6] Optional Sales, Transportation Service, Resale, and Other Operating Revenue are not priced.

Sheet 3

Description	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004	August 2004	TOTAL
Residential Gas Service													
Sales	7,666,811	8,712,926	13,724,667	37,414,653	51,978,027	50,963,678	37,218,333	16,007,022	12,369,431	10,357,680	8,717,262	7,738,843	262,869,333
Customers	740,431	745,537	753,734	762,157	768,878	770,431	775,195	771,435	769,605	770,511	772,017	773,772	9,173,703
Tier 1	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	
Tier 2	0.40344	0.40344	0.40344	0.40344	0.40344	0.40344	0.40344	0.40344	0.40344	0.40344	0.40344	0.40344	
Gas Cost	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment	(0.02325)	(0.02325)	0.01194	0.01194	0.01194	0.01194	0.01194	0.01181	0.01073	0.01073	0.01073	0.01073	
Monthly Gas Cost Adjustment	0.08310	0.08567	0.09061	0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Basic Service Charge	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	
Consolidated Factor													
Tier 1	0.9094	0.8712	0.8973	0.6434	0.5190	0.5297	0.6600	0.8769	0.7847	0.8332	0.8819	0.9097	
Tier 2	0.0906	0.1288	0.1027	0.3566	0.4810	0.4703	0.3400	0.1231	0.2153	0.1668	0.1181	0.0903	
Volumes													
Tier 1	6,972,198	7,590,701	12,315,144	24,072,588	26,976,596	26,995,460	24,564,100	14,036,558	9,706,293	8,630,019	7,687,753	7,040,025	176,587,434
Tier 2	694,613	1,122,225	1,409,523	13,342,065	25,001,431	23,968,218	12,654,233	1,970,464	2,663,138	1,727,661	1,029,509	698,818	86,281,899
Total Recorded	12,901,651	13,889,030	19,093,898	41,071,778	54,294,082	54,300,688	42,112,368	22,079,057	18,611,695	16,576,651	15,043,408	14,102,900	324,077,206
Black Mountain R-1													
Sales	0	0	0	565,714	1,033,331	978,071	1,012,909	495,897	356,698	239,024	168,501	117,996	4,968,141
Customers	0	0	0	8,451	8,615	8,713	8,837	8,876	8,964	9,053	9,112	8,737	79,358
Basic Service Charge				6.00	6.00	6.00	6.00	6.00	6.00	6.00	8.00	8.00	
Margin				0.62357	0.62357	0.62357	0.62357	0.62357	0.62357	0.62357	0.48762	0.48762	
Gas Cost				0.46524	0.46715	0.48457	0.49393	0.50472	0.52668	0.52099	0.52880	0.53172	
Tariff Rate				1.08881	1.09072	1.10814	1.11750	1.12829	1.15025	1.14456	1.01642	1.01934	
Total Recorded				666,661	1,178,765	1,136,118	1,184,948	612,772	464,076	327,895	244,164	190,174	6,005,572
Low Income Residential GAS.													
Sales	327,693	357,131	589,341	1,608,259	2,135,353	2,051,205	1,502,326	624,464	469,652	383,392	333,359	310,130	10,692,305
Customers	31,432	31,441	31,430	31,288	31,473	31,299	31,357	31,002	30,701	30,192	29,571	30,409	371,595
Tier 1	0.48762	0.48762	0.29691	0.29621	0.29567	0.29218	0.29031	0.28818	0.48762	0.48762	0.48762	0.48762	
Tier 2	0.40344	0.40344	0.22956	0.22887	0.22832	0.22484	0.22297	0.22084	0.40344	0.40344	0.40344	0.40344	
Tier 3			0.40344	0.40344	0.40344	0.40344	0.40344	0.40344					
Gas Cost	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment	(0.03020)	(0.03020)	0.00499	0.00499	0.00499	0.00499	0.00499	0.00486	0.00486	0.00486	0.00486	0.00486	
Monthly Gas Cost Adjustment	0.08310	0.08567	0.09061	0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Basic Service Charge	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00	$ 7.00	
Consolidated Factor													
Tier 1	0.9317	0.9289	0.9490	0.6484	0.5310	0.5470	0.6825	0.9573	0.8569	0.9050	0.9295	0.9442	
Tier 2	0.0683	0.0711	0.0499	0.3452	0.4515	0.4398	0.3112	0.0421	0.1431	0.0950	0.0705	0.0558	
Tier 3	-		0.0011	0.0064	0.0175	0.0132	0.0063	0.0006					
Volumes													
Tier 1	305,312	331,739	559,285	1,042,795	1,133,872	1,122,009	1,025,337	597,799	402,445	346,970	309,857	292,825	7,470,245
Tier 2	22,381	25,392	29,408	555,171	964,112	902,120	467,524	26,290	67,207	36,422	23,502	17,305	3,136,835
Tier 3	0	0	648	10,293	37,369	27,076	9,465	375	0	0	0	0	85,225
Total Recorded	516,622	544,164	667,114	1,415,369	1,798,951	1,764,866	1,374,767	713,459	687,900	596,834	545,471	529,041	11,154,558

Description	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004	August 2004	TOTAL
Low Income Residential G.S. - Black Mtn Gas													
Sales				102	732	808	990	249	176	114	91	81	3,343
Customers				1	1	10	12	11	10	11	12	12	80
Margin				0.40597	0.40543	0.40194	0.40007	0.39791	0.62357	0.62357	0.48762	0.48762	
Gas Cost				0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment				-	-	-	-	-	-	-	0.00486	0.00486	
Monthly Gas Cost Adjustment				0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Total Tariff Rate				0.87121	0.87258	0.88651	0.89400	0.90263	1.15025	1.14456	1.02128	1.02420	
Basic Service Charge				6.00000	6.00000	6.00000	6.00000	6.00000	6.00000	6.00000	7.00000	7.00000	
Total Recorded				$ 94.86	$ 644.73	$ 776.30	$ 957.06	$ 290.75	$ 262.44	$ 196.48	$ 176.94	$ 166.96	3,567
Special Residential G.S. for A/C													
Sales	24,311	17,288	11,730	20,984	25,901	22,975	19,416	12,260	13,735	16,627	19,712	23,882	228,821
Customers	159	159	159	158	159	159	159	156	153	154	153	155	1,883
Tier 1	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	0.48762	
Tier 2	0.19125	0.19125	0.40344	0.40344	0.40344	0.40344	0.40344	0.40344	0.19125	0.19125	0.19125	0.19125	
Gas Cost	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment	(0.03020)	(0.03020)	0.00499	0.00499	0.00499	0.00499	0.00499	0.00486	0.00486	0.00486	0.00486	0.00486	
Monthly Gas Cost Adjustment	0.08310	0.08567	0.09061	0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Gas Cost Total	0.42324	0.42581	0.46594	0.47023	0.47214	0.48956	0.49892	0.50958	0.53154	0.52585	0.53366	0.53658	
Basic Service Charge	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	$ 8.00	
Consolidation Factor													
Tier 1	0.1025	0.1467	0.3763	0.2809	0.2356	0.2648	0.2994	0.3569	0.1860	0.1474	0.1170	0.1005	
Tier 2	0.8975	0.8533	0.6237	0.7191	0.7644	0.7352	0.7006	0.6431	0.8140	0.8526	0.8830	0.8995	
Volumes													
Tier 1	2,492	2,536	4,414	5,894	6,102	6,084	5,813	4,376	2,555	2,451	2,306	2,400	47,423
Tier 2	21,819	14,752	7,316	15,090	19,799	16,891	13,603	7,884	11,180	14,176	17,406	21,482	181,398
Total Recorded	16,949	12,691	11,841	20,093	24,464	22,301	19,282	12,810	11,909	13,882	16,197	19,333	201,752
Special Resid. G.S. for Electric Generation													
Sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Customers	0	0	0	0	0	0	0	0	0	0	0	0	0
Master Metered Mobile Home Parks													
Sales	67,966	83,393	163,492	392,403	476,707	479,771	335,611	165,200	119,770	91,047	77,891	66,248	2,519,499
Customers	194	193	192	192	191	190	192	190	190	190	190	189	2,293
Gas Cost	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment	(0.02325)	(0.02325)	0.01194	0.01194	0.01194	0.01194	0.01194	0.01181	0.01073	0.01073	0.01073	0.01073	
Monthly Gas Cost Adjustment	0.08310	0.08567	0.09061	0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Margin	0.31415	0.31415	0.31415	0.31415	0.31415	0.31415	0.31415	0.31415	0.31415	0.31415	0.31415	0.31415	
Total Tariff Rate	0.74434	0.74691	0.78704	0.79133	0.79324	0.81066	0.82002	0.83068	0.85156	0.84587	0.85368	0.85660	
Basic Service Charge	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	
Total Recorded	$ 60,289.81	$ 71,937.07	$ 138,274.74	$ 320,120.27	$ 387,693.06	$ 398,431.16	$ 284,807.73	$ 146,728.34	$ 111,491.34	$ 86,513.93	$ 75,993.99	$ 66,198.04	2,148,479

Description	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004	August 2004	TOTAL
General Gas Service - Small													
Sales	2,245,769	2,426,413	3,209,337	5,745,112	7,004,923	7,051,212	5,590,406	3,374,717	2,860,535	2,575,177	2,264,002	2,140,124	46,487,727
Customers	31,735	31,829	32,178	32,912	33,294	33,255	33,226	32,669	32,316	32,072	31,871	31,952	389,309
Gas Cost	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment	(0.03519)	(0.03519)	-	-	-	-	-	-	-	-	-	-	
Monthly Gas Cost Adjustment	0.08310	0.08567	0.09061	0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Margin	0.38024	0.38024	0.38024	0.38024	0.38024	0.38024	0.38024	0.38024	0.38024	0.38024	0.38024	0.38024	
Tariff Rate	0.79849	0.80106	0.84119	0.84548	0.84739	0.86481	0.87417	0.88496	0.90692	0.90123	0.90904	0.91196	
Basic Service Charge	$ 20.00	$ 20.00	$ 20.00	$ 20.00	$ 20.00	$ 20.00	$ 20.00	$ 20.00	$ 20.00	$ 20.00	$ 20.00	$ 20.00	
Total Recorded	$ 2,427,924.09	$ 2,580,282.40	$ 3,343,222.19	$ 5,515,617.29	$ 6,601,781.70	$ 6,763,058.65	$ 5,551,485.21	$ 3,639,869.56	$ 3,240,596.40	$ 2,962,266.77	$ 2,695,488.38	$ 2,590,747.48	47,912,340
Black Mountain C-1													
Sales				154,901	184,656	199,340	157,339	118,225	94,758	79,768	64,959	15,759	1,069,705
Customers				216	220	221	221	219	218	219	220	101	1,855
Gas Cost				0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment				-	-	-	-	-	-	-	-	-	
Monthly Gas Cost Adjustment				0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Margin				0.62357	0.62357	0.62357	0.62357	0.62357	0.62357	0.62357	0.38024	0.38024	
Tariff Rate				1.08881	1.09072	1.10814	1.11750	1.12829	1.15025	1.14456	0.90904	0.91196	
Basic Service Charge				15.00000	15.00000	15.00000	15.00000	15.00000	15.00000	15.00000	20.00000	20.00000	
Total Recorded				$ 171,897.76	$ 204,707.99	$ 224,211.63	$ 179,141.33	$ 136,677.09	$ 112,265.39	$ 94,584.26	$ 63,450.33	$ 16,391.58	1,203,327
General Gas Service - Medium													
Sales	7,124,560	7,862,162	10,615,715	16,258,771	17,699,058	17,687,142	15,242,088	11,043,616	9,619,207	8,594,491	7,792,317	7,327,618	136,866,745
Customers	6,746	6,772	6,758	6,783	6,815	6,774	6,799	6,800	6,750	6,751	6,829	6,846	81,423
Gas Cost	$ 0.37034	$ 0.37034	$ 0.37034	$ 0.37034	$ 0.37034	$ 0.37034	$ 0.37034	$ 0.37034	$ 0.37034	$ 0.37034	$ 0.37034	$ 0.37034	
Rate Adjustment	$ (0.03519)	$ (0.03519)	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	
Monthly Gas Cost Adjustment	$ 0.08310	$ 0.08567	$ 0.09061	$ 0.09490	$ 0.09681	$ 0.11423	$ 0.12359	$ 0.13438	$ 0.15634	$ 0.15065	$ 0.15846	$ 0.16138	
Margin	0.27211	0.27211	0.27211	0.27211	0.27211	0.27211	0.27211	0.27211	0.27211	0.27211	0.27211	0.27211	
Basic Service Charge	$ 90.00	$ 90.00	$ 90.00	$ 90.00	$ 90.00	$ 90.00	$ 90.00	$ 90.00	$ 90.00	$ 90.00	$ 90.00	$ 90.00	
Total Recorded	$ 5,525,651.24	$ 6,057,407.91	$ 8,390,176.04	$ 12,598,874.80	$ 13,697,555.62	$ 13,993,166.61	$ 12,287,959.09	$ 9,191,012.22	$ 8,291,226.36	$ 7,423,880.81	$ 6,855,554.61	$ 6,506,299.18	110,818,764
General Gas Service - Large													
Sales	2,949,136	3,044,152	3,608,837	4,786,985	4,726,659	4,741,749	4,130,422	3,652,953	3,155,288	3,371,637	3,143,446	2,968,770	44,280,034
Customers	105	104	104	103	104	103	102	104	102	104	108	111	1,254
Gas Cost	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment	(0.03519)	(0.03519)	-	-	-	-	-	-	-	-	-	-	
Monthly Gas Cost Adjustment	0.08310	0.08567	0.09061	0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Margin	0.08548	0.08548	0.08548	0.08548	0.08548	0.08548	0.08548	0.08548	0.08548	0.08548	0.08548	0.08548	
Basic Service Charge	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	500.00	
Monthly Demand Charge	325,371.84	325,371.84	325,371.84	325,371.84	325,371.84	325,371.84	325,371.84	325,371.84	340,089.24	340,089.24	340,089.24	340,089.24	
Total Recorded	$ 1,863,440.12	$ 1,918,626.00	$ 2,349,348.64	$ 3,013,160.22	$ 2,989,465.41	$ 3,079,905.86	$ 2,769,579.65	$ 2,533,344.70	$ 2,322,630.34	$ 2,436,885.93	$ 2,325,045.25	$ 2,227,914.08	29,829,346
Optional Gas Service													
Sales	8,838,157	8,332,887	6,810,026	5,090,187	6,319,220	6,659,114	6,720,692	4,027,450	9,334,602	12,160,736	15,845,036	13,857,730	103,995,837
Customers	56	29	29	32	37	36	36	28	29	29	28	26	395

Description	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004	August 2004	TOTAL
Gas Services to Armed Forces													
Sales	160,158	171,264	282,571	515,594	526,577	530,120	301,258	200,789	157,681	149,342	148,892	163,845	3,306,091
Customers	8	8	8	8	8	8	8	8	8	9	9	9	99
Gas Cost	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment	(0.03519)	(0.03519)	-	-	-	-	-	-	-	-	-	-	
Monthly Gas Cost Adjustment	0.08310	0.08567	0.09061	0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Margin	0.18966	0.18966	0.18966	0.18966	0.18966	0.18966	0.18966	0.18966	0.18966	0.18966	0.18966	0.18966	
Basic Service Charge	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	350.00	
Total Recorded	$ 100,161.65	$ 107,353.25	$ 186,643.52	$ 340,462.51	$ 348,661.04	$ 360,222.81	$ 208,736.96	$ 142,223.87	$ 115,753.21	$ 109,279.89	$ 110,122.95	$ 121,344.51	2,250,966
Air Conditioning Gas Service													
Small Commercial WITH A/C													
Sales	32,272	23,037	11,181	12,225	7,349	7,662	2,284	14,221	15,622	23,540	30,501	35,156	215,050
Customers	2	2	2	2	2	2	2	2	2	2	3	4	27
Small Commercial A/C ONLY													
Sales	42,705	30,367	51,541	11,706	12,131	10,953	10,819	18,652	31,665	49,563	61,484	56,504	388,090
Customers	29	29	27	32	35	34	35	34	33	32	31	28	336
Large Commercial WITH A/C													
Sales	35,318	20,395	12,419	1,998	16	209	548	4,469	2,020	0	487	41	77,920
Customers	1	1	1	1	1	1	1	1	1	1	1	1	12
Large Commercial A/C ONLY													
Sales	52,444	42,360	16,618	4,802	2,474	3,520	14,110	6,165	58,102	42,239	45,537	54,457	342,828
Customers	3	3	3	3	3	3	3	2	3	3	3	3	35
Small Essential Agriculture A/C ONLY													
Sales	3,525	3,309	3,335	3,538	4,328	3,484	4,194	4,002	3,846	3,768	3,422	3,149	43,900
Customers	1	1	1	1	1	1	1	1	1	1	1	1	12
Total Sales	166,264	119,468	95,094	33,880	25,722	25,320	31,614	47,197	110,777	118,211	140,886	149,307	1,063,740
Basic Service Charge (sm)	20	20	20	20	20	20	20	20	20	20	20	20	422
Basic Service Charge (lg)	500	500	500	500	500	500	500	500	500	500	500	500	
Basic Service Charge (Ag)	75	75	75	75	75	75	75	75	75	75	75	75	
No Basic Service Charge	0	0	0	0	0	0	0	0	0	0	0	0	
Gas Cost	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment	(0.03519)	(0.03519)	-	-	-	-	-	-	-	-	-	-	
Monthly Gas Cost Adjustment	0.08310	0.08567	0.09061	0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Margin	0.07613	0.07613	0.07613	0.07613	0.07613	0.07613	0.07613	0.07613	0.07613	0.07613	0.07613	0.07613	
Tariff Rate	0.49438	0.49695	0.53708	0.54137	0.54328	0.56070	0.57006	0.58085	0.60281	0.59712	0.60493	0.60785	
Total Recorded	84,352.60	61,524.62	53,188.09	20,556.62	16,249.25	16,451.92	20,296.88	29,169.38	69,012.48	72,801.15	87,421.17	92,891.26	623,915
Black Mountain GAC-1													
Sales	0.00	0.00	0.00	389.00	576.00	508.00	341.00	312.00	478.00	899.00	545.00	0.00	4,048
Customers	0.00	0.00	0.00	5.00	6.00	6.00	5.00	5.00	5.00	5.00	4.00	2.00	43
Gas Cost				0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment				-	-	-	-	-	-	-	-	-	
Monthly Gas Cost Adjustment				0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Margin				0.09000	0.09000	0.09000	0.09000	0.09000	0.09000	0.09000	0.07613	0.07613	
Tariff Rate				0.55524	0.55715	0.57457	0.58393	0.59472	0.61668	0.61099	0.60493	0.60785	
Basic Service Charge				6.00	6.00	6.00	6.00	6.00	6.00	6.00	20.00	20.00	
Total Recorded				246	357	328	229	216	325	579	410	40	2,729

Description	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004	August 2004	TOTAL
Street Lighting Gas Service													
Sales	8,738	8,710	7,937	8,811	8,375	8,169	8,035	8,421	8,285	8,592	8,064	8,078	100,215
	9,397	9,397	9,397	9,397	9,397	9,397	9,397	9,397	9,397	9,397	9,397	9,397	112,764
Customers	28	28	27	27	28	27	28	28	29	29	29	30	338
Gas Cost	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment	(0.03519)	(0.03519)	-	-	-	-	-	-	-	-	-	-	
Monthly Gas Cost Adjustment	0.08310	0.08567	0.09061	0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Margin	0.47648	0.47648	0.47648	0.47648	0.47648	0.47648	0.47648	0.47648	0.47648	0.47648	0.47648	0.47648	
Tariff Rate	0.89473	0.89730	0.93743	0.94172	0.94363	0.96105	0.97041	0.98120	1.00316	0.99747	1.00528	1.00820	
Total Recorded	7,818.15	7,815.48	7,440.38	8,297.49	7,902.90	7,850.82	7,797.24	8,262.69	8,311.18	8,570.26	8,106.58	8,144.24	96,317
Gas Service for Comp. On Cust. Premises													
Compressed Natural Gas - Residential													
Sales	7,678	8,043	7,165	6,823	6,159	6,179	6,678	6,757	6,638	7,057	6,058	5,099	80,334
Customers	108	114	114	114	115	113	113	112	112	112	111	110	1,348
Compressed Natural Gas - Small													
Sales	17,746	16,190	18,679	16,631	13,483	15,181	15,621	17,266	18,313	17,952	14,406	14,716	196,184
Customers	35	29	29	27	26	24	24	23	23	23	23	23	309
Compressed Natural Gas - Large													
Sales	179,443	185,344	149,473	165,414	125,234	161,973	160,862	151,616	176,416	151,733	125,298	140,219	1,873,025
Customers	26	27	26	28	27	27	27	27	27	27	27	27	323
Total Sales	204,867	209,577	175,317	188,868	144,876	183,333	183,161	175,639	201,367	176,742	145,762	160,034	2,149,543
Basic Service Charge (Res)	8	8	8	8	8	8	8	8	8	8	8	8	
Basic Service Charge (Sm)	20	20	20	20	20	20	20	20	20	20	20	20	
Basic Service Charge (Lg)	170	170	170	170	170	170	170	170	170	170	170	170	
Gas Cost	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment	(0.03519)	(0.03519)	-	-	-	-	-	-	-	-	-	-	
Monthly Gas Cost Adjustment	0.08310	0.08567	0.09061	0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Margin	0.13305	0.13305	0.13305	0.13305	0.13305	0.13305	0.13305	0.13305	0.13305	0.13305	0.13305	0.13305	
Tariff Rate	0.55130	0.55387	0.59400	0.59829	0.60020	0.61762	0.62698	0.63777	0.65973	0.65404	0.66185	0.66477	
Residential Revenue	5,097	5,367	5,168	4,994	4,617	4,720	5,091	5,205	5,275	5,512	4,897	4,270	60,213
Small Revenue	10,483	9,547	11,675	10,490	8,612	9,856	10,274	11,472	12,542	12,201	9,995	10,243	127,391
Large Revenue	103,347	107,246	93,207	103,726	79,755	104,628	105,447	101,286	120,977	103,629	87,518	97,803	1,208,771

Description	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004	August 2004	TOTAL
Cogeneration Gas Service													
Commercial - Small G.S.													
Sales	3,266	2,884	0	0	0	0	0	0	0	0	10	0	6,160
Customers	3	3	2	2	2	2	2	2	2	2	2	2	26
Commercial - Medium G.S.													
Sales	55,613	79,834	42,855	35,102	40,617	89,839	29,109	29,115	37,277	30,526	27,123	31,439	528,649
Customers	6	6	6	6	5	7	5	5	5	5	5	6	67
Commercial - Large G.S.													
Sales	187,624	212,399	264,893	272,769	179,068	161,349	234,148	212,666	182,903	251,083	260,479	253,364	2,672,745
Customers	3	3	4	3	4	4	5	5	5	5	5	5	51
Industrial - Small G.S.													
Sales	10	(51)	123	133	51	82	31	0	20	21	0	0	420
Customers	1	0	2	2	2	2	2	2	2	2	2	3	22
Industrial - Medium G.S.													
Sales	0	22,348	11,226	14,884	10,820	9,666	12,850	15,467	10,325	16,094	10,718	7,614	142,012
Customers	1	2	2	2	2	2	2	2	2	2	2	1	22
Industrial - Large G.S.													
Sales	1,011,366	934,395	1,032,073	1,067,818	865,571	859,379	912,718	1,002,660	915,253	978,798	1,051,240	969,761	11,601,032
Customers	5	4	4	4	4	4	4	4	4	4	4	4	49
Military Cogen - (GTS Billed)													
Sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Customers	0	0	0	0	0	0	0	0	0	0	0	0	0
Small Essential Agriculture G.S.													
Sales	3,649	4,182	4,271	4,404	5,106	4,356	3,102	2,883	3,044	3,583	5,004	3,771	47,355
Customers	2	2	2	2	2	2	2	2	2	2	2	2	24
Total Sales	1,261,728	1,255,991	1,355,441	1,391,919	1,102,346	1,090,291	1,180,981	1,255,555	1,137,406	1,268,464	1,344,507	1,265,949	14,910,578
													261
Basic Service Charge (Sm)	20	20	20	20	20	20	20	20	20	20	20	20	
Basic Service Charge (Med)	90	90	90	90	90	90	90	90	90	90	90	90	
Basic Service Charge (Lg)	500	500	500	500	500	500	500	500	500	500	500	500	
Basic Service Charge (Ag)	75	75	75	75	75	75	75	75	75	75	75	75	
Margin	0.08934	0.08934	0.08934	0.08934	0.08934	0.08934	0.08934	0.08934	0.08934	0.08934	0.08934	0.08934	
Gas Cost	0.33387	0.50054	0.50054	0.50054	0.50054	0.50054	0.50054	0.43742	0.43742	0.43742	0.43742	0.43742	
Tariff Rate	0.42321	0.58988	0.58988	0.58988	0.58988	0.58988	0.58988	0.52676	0.52676	0.52676	0.52676	0.52676	
Total Recorded Revenue	538,836	745,314	804,498	825,515	655,112	648,181	701,997	666,736	604,500	673,536	713,593	672,231	8,250,048
Black Mountain CGEN-1 (M)													
Sales	0	0	0	3,191	(1,113)	34,380	10,977	7,236	11,416	11,641	10,067	0	87,795
Customers	0	0	0	1	1	1	1	1	1	1	1	0	8
Gas Cost				0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.43742	0.43742	
Rate Adjustment				-	-	-	-	-	-	-	-	-	
Monthly Gas Cost Adjustment				0.09490	0.09661	0.11423	0.12359	0.13438	0.15634	0.15065	-	-	
Margin				0.06000	0.06000	0.06000	0.06000	0.06000	0.06000	0.06000	0.08934	0.08934	
Tariff Rate				0.52524	0.52715	0.54457	0.55393	0.56472	0.58668	0.58099	0.52676	0.52676	
Basic Service Charge				30.00	30.00	30.00	30.00	30.00	30.00	30.00	90.00	90.00	
Total Recorded				1,706	(557)	18,752	6,110	4,116	6,728	6,793	5,393	0	49,042

Description	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004	August 2004	TOTAL
Small Essential Ag. Gas Service													
Sales	552,012	585,221	665,600	857,139	836,269	841,204	642,069	583,350	598,327	626,618	574,998	569,498	7,932,305
Customers	86	87	96	94	123	118	116	90	90	89	89	91	1,169
Gas Cost	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	0.37034	
Rate Adjustment	(0.03519)	(0.03519)	-	-	-	-	-	-	-	-	-	-	
Monthly Gas Cost Adjustment	0.08310	0.08567	0.09061	0.09490	0.09681	0.11423	0.12359	0.13438	0.15634	0.15065	0.15846	0.16138	
Margin	0.19468	0.19468	0.19468	0.19468	0.19468	0.19468	0.19468	0.19468	0.19468	0.19468	0.19468	0.19468	
Basic Service Charge	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00	
Total Recorded	$ 344,794.72	$ 366,728.53	$ 443,587.33	$ 572,693.17	$ 562,692.91	$ 580,237.82	$ 450,835.13	$ 414,744.99	$ 438,359.16	$ 455,126.70	$ 422,674.55	$ 420,508.35	5,472,983
Natural Gas Engine Gas Service													
Sales	2,404,972	1,872,941	1,142,424	480,857	365,747	453,365	633,209	1,498,466	2,214,511	3,011,480	3,222,182	2,897,940	20,198,094
Customers	623	620	607	599	591	607	618	642	624	621	611	609	7,372
Margin	0.16189	0.16189	0.16189	0.16189	0.16189	0.16189	0.16189	0.16189	0.16189	0.16189	0.16189	0.16189	
Gas Cost	0.33387	0.50054	0.50054	0.50054	0.50054	0.50054	0.50054	0.43742	0.43742	0.43742	0.43742	0.43742	
Tariff Rate	0.49576	0.66243	0.66243	0.66243	0.66243	0.66243	0.66243	0.59931	0.59931	0.59931	0.59931	0.59931	
Basic Service Charge	80.00	0.00	0.00	0.00	0.00	0.00	0.00	80.00	80.00	80.00	80.00	80.00	
Total Recorded	1,242,128.92	1,240,692.31	756,775.93	318,534.10	242,281.79	300,322.58	419,456.64	949,405.66	1,377,098.59	1,854,490.08	1,979,965.89	1,785,484.42	12,466,637
Resale Gas Service													
Sales	(7,428)	(7,074)	0	0	0	0	0	0	0	0	0	0	(14,502)
Customers	1	1	1	0	0	0	0	0	0	0	0	0	3

SOUTHWEST G[illegible]RPORATION
TOTAL [illegible]ONA
TWELVE MONTHS ENDED AUGUST 2004
RECORDED DELIVERIES (THERMS) AND CUSTOMERS

Rate Schedule	Description	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004	August 2004	TOTAL
G-5	Residential Gas Service													
	Sales	7,666,811	8,712,926	13,724,667	37,414,653	51,978,027	50,963,678	37,218,333	16,007,022	12,369,431	10,357,680	8,717,262	7,738,843	262,869,333
	Customers	740,431	745,537	753,734	762,157	768,878	770,431	775,195	771,435	769,605	770,511	772,017	773,772	9,173,703
R-1	Residential G. S. - Black Mtn Gas													
	Sales	0	0	0	565,714	1,033,331	978,071	1,012,909	495,897	356,698	239,024	168,501	117,996	4,968,141
	Customers	0	0	0	8,451	8,615	8,713	8,837	8,876	8,964	9,053	9,112	8,737	79,358
G-10	Low Income Residential GAS.													
	Sales	327,693	357,131	589,341	1,608,259	2,135,353	2,051,205	1,502,326	624,464	469,652	383,392	333,359	310,130	10,692,305
	Customers	31,432	31,441	31,430	31,288	31,473	31,299	31,357	31,002	30,701	30,192	29,571	30,409	371,595
R-1	Low Income Residential G.S. - Black Mtn Gas													
	Sales	0	0	0	102	732	808	990	249	176	114	91	81	3,343
	Customers	0	0	0	1	1	10	12	11	10	11	12	12	80
G-15	Special Residential G.S. for A/C													
	Sales	24,311	17,288	11,730	20,984	25,901	22,975	19,416	12,260	13,735	16,627	19,712	23,882	228,821
	Customers	159	159	159	158	159	159	159	156	153	154	153	155	1,883
G-16	Special Resid. G.S. for Electric Generation													
	Sales	0	0	0	0	0	0	0	0	0	0	0	0	0
	Customers	0	0	0	0	0	0	0	0	0	0	0	0	0
G-20	Master Metered Mobile Home Parks													
	Sales	67,966	83,393	163,492	392,403	476,707	479,771	335,611	165,200	119,770	91,047	77,891	66,248	2,519,499
	Customers	194	193	192	192	191	190	192	190	190	190	190	189	2,293
G-25 (S)	General Gas Service - Small													
	Apartments													
	Sales	58,507	66,550	115,148	221,563	238,786	223,520	179,380	113,068	87,348	75,135	65,673	56,041	1,500,719
	Customers	877	871	876	883	882	873	865	865	861	862	872	871	10,458
	Small Commercial Gas Service													
	Sales	2,183,029	2,351,691	3,088,627	5,510,857	6,752,421	6,811,886	5,396,114	3,251,704	2,761,134	2,491,845	2,191,204	2,074,860	44,865,372
	Customers	30,809	30,910	31,254	31,982	32,364	32,331	32,312	31,755	31,406	31,161	30,950	31,032	378,266
	Large Commercial Gas Service													
	Sales	246	239	276	1,172	1,873	1,575	752	333	292	153	107	135	7,153
	Customers	13	12	12	12	12	12	12	12	12	12	12	12	145
	Small Industrial Gas Service													
	Sales	3,987	7,933	5,286	11,520	11,843	14,231	14,160	9,612	11,761	8,044	7,018	9,088	114,483
	Customers	36	36	36	35	36	39	37	37	37	37	37	37	440
C-1	Small Commercial Gas Service - Black Mtn Gas													
	Sales	0	0	0	154,901	184,656	199,340	157,339	118,225	94,758	79,768	64,959	15,759	1,069,705
	Customers	0	0	0	216	220	221	221	219	218	219	220	101	1,855
G-25 (M)	General Gas Service - Medium													
	Apartments													
	Sales	398,147	432,120	583,104	1,083,785	1,240,961	1,220,690	1,014,577	640,984	532,312	478,902	412,722	383,568	8,421,872
	Customers	326	329	325	327	332	336	334	335	333	336	336	336	3,985
	Small Commercial Gas Service													
	Sales	6,049,817	6,691,100	9,175,155	13,878,313	15,021,964	15,046,923	12,947,464	9,537,976	8,284,057	7,362,233	6,691,582	6,282,987	116,969,571
	Customers	6,251	6,273	6,261	6,286	6,311	6,269	6,296	6,297	6,249	6,247	6,325	6,344	75,409
	Large Commercial Gas Service													
	Sales	336,199	349,777	449,320	773,967	922,589	833,602	760,857	452,516	400,306	357,191	301,126	291,215	6,228,665
	Customers	74	75	75	74	75	73	73	72	73	73	73	74	884
	Small Industrial Gas Service													
	Sales	340,397	389,165	408,136	522,706	513,544	585,927	519,190	412,140	402,532	396,165	386,887	369,848	5,246,637
	Customers	95	95	97	96	97	96	96	96	95	95	95	92	1,145
	Large Essential Agriculture													
	Sales	0	0	0	0	0	0	0	0	0	0	0	0	0
	Customers	0	0	0	0	0	0	0	0	0	0	0	0	0

SOUTHWEST G[illegible]PORATION
TOTAL A[illegible]ONA
TWELVE MONTHS ENDED AUGUST 2004
RECORDED DELIVERIES (THERMS) AND CUSTOMERS

Rate Schedule	Description	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004	August 2004	TOTAL
G-25 (L)	General Gas Service - Large													
	Apartments													
	Sales	0	0	0	0	0	0	0	0	0	0	0	0	0
	Customers	0	0	0	0	0	0	0	0	0	0	0	0	0
	Small Commercial Gas Service													
	Sales	193,358	197,568	211,957	318,430	392,218	376,552	349,423	217,005	231,524	252,130	229,747	262,757	3,232,669
	Customers	11	11	11	10	10	10	10	11	12	13	13	15	137
	Large Commercial Gas Service													
	Sales	1,507,534	1,625,780	1,966,419	2,686,401	2,866,066	2,679,255	2,349,901	2,142,962	1,753,817	1,708,773	1,498,038	1,366,098	24,151,044
	Customers	54	54	53	55	55	55	56	56	54	54	52	53	651
G-25 (L)	General Gas Service - Large													
	Small Industrial Gas Service													
	Sales	1,113,655	1,112,832	1,262,821	1,556,356	1,277,971	1,433,991	1,264,044	1,170,143	1,041,327	1,244,991	1,121,513	1,083,816	14,683,460
	Customers	34	34	35	33	35	34	32	33	32	33	35	36	406
	Large Industrial Gas Service													
	Sales	134,589	107,972	167,640	225,798	190,404	251,951	167,054	122,843	128,620	165,743	294,148	256,099	2,212,861
	Customers	6	5	5	5	4	4	4	4	4	4	8	7	60
	Large Essential Ag. Gas Service													
	Sales	0	0	0	0	0	0	0	0	0	0	0	0	0
	Customers	0	0	0	0	0	0	0	0	0	0	0	0	0
G-30	Optional Gas Service													
	Sales	8,838,157	8,332,887	6,810,026	5,090,187	6,319,220	6,659,114	6,720,692	4,027,450	9,334,602	12,160,736	15,845,036	13,857,730	103,995,837
	Customers	56	29	29	32	37	36	36	28	29	29	28	26	395
G-35	Gas Services to Armed Forces													
	Sales	160,158	171,264	282,571	515,594	526,577	530,120	301,258	200,789	157,681	149,342	148,892	163,845	3,308,091
	Customers	8	8	8	8	8	8	8	8	8	9	9	9	99
G-40	Air Conditioning Gas Service													
	Small Commercial WITH A/C													
	Sales	32,272	23,037	11,181	12,225	7,349	7,662	2,284	14,221	15,622	23,540	30,501	35,156	215,050
	Customers	2	2	2	2	2	2	2	2	2	2	3	4	27
	Small Commercial A/C ONLY													
	Sales	42,705	30,367	51,541	11,317	11,555	10,445	10,478	18,340	31,187	48,664	60,939	56,504	384,042
	Customers	29	29	27	27	29	28	30	29	28	27	27	26	336
	Large Commercial WITH A/C													
	Sales	35,318	20,395	12,419	1,998	16	209	548	4,469	2,020	0	487	41	77,920
	Customers	1	1	1	1	1	1	1	1	1	1	1	1	12
	Large Commercial A/C ONLY													
	Sales	52,444	42,360	16,618	4,802	2,474	3,520	14,110	6,165	58,102	42,239	45,537	54,457	342,828
	Customers	3	3	3	3	3	3	3	2	3	3	3	3	35
	Small Industrial WITH A/C													
	Sales	0	0	0	0	0	0	0	0	0	0	0	0	0
	Customers	0	0	0	0	0	0	0	0	0	0	0	0	0
	Large Industrial A/C ONLY													
	Sales	0	0	0	0	0	0	0	0	0	0	0	0	0
	Customers	0	0	0	0	0	0	0	0	0	0	0	0	0
	Small Essential Agriculture WITH A/C													
	Sales	0	0	0	0	0	0	0	0	0	0	0	0	0
	Customers	0	0	0	0	0	0	0	0	0	0	0	0	0
	Small Essential Agriculture A/C ONLY													
	Sales	3,525	3,309	3,335	3,538	4,328	3,484	4,194	4,002	3,846	3,768	3,422	3,149	43,900
	Customers	1	1	1	1	1	1	1	1	1	1	1	1	12
	Military WITH A/C (GTS Billed)													
	Sales	0	0	0	0	0	0	0	0	0	0	0	0	0
	Customers	0	0	0	0	0	0	0	0	0	0	0	0	0
GAC-1	Small Commercial A/C Only -Black Mtn Gas													
	Sales	0	0	0	389	576	508	341	312	478	899	545	0	4,048
	Customers	0	0	0	5	6	6	5	5	5	5	4	2	43
G-45	Street Lighting Gas Service													
	Sales	8,738	8,710	7,937	8,811	8,375	8,169	8,035	8,421	8,285	8,592	8,064	8,078	100,215
	Customers	28	28	27	27	28	27	28	28	29	29	29	30	338

SOUTHWEST G[illegible]RPORATION
TOTAL A[illegible]ZONA
TWELVE MONTHS ENDED AUGUST 2004
RECORDED DELIVERIES (THERMS) AND CUSTOMERS

Rate Schedule	Description	September 2003	October 2003	November 2003	December 2003	January 2004	February 2004	March 2004	April 2004	May 2004	June 2004	July 2004	August 2004	TOTAL
G-55	Gas Service for Comp. On Cust. Premises													
	Compressed Natural Gas - Residential													
	Sales	7,678	8,043	7,165	6,823	6,159	6,179	6,678	6,757	6,638	7,057	6,058	5,099	80,334
	Customers	108	114	114	114	115	113	113	112	112	112	111	110	1,348
	Compressed Natural Gas - Small													
	Sales	17,746	16,190	18,679	16,631	13,483	15,181	15,621	17,266	18,313	17,952	14,406	14,716	196,184
	Customers	35	29	29	27	26	24	24	23	23	23	23	23	309
	Compressed Natural Gas - Large													
	Sales	179,443	185,344	149,473	165,414	125,234	161,973	160,862	151,616	176,416	151,733	125,298	140,219	1,873,025
	Customers	26	27	26	28	27	27	27	27	27	27	27	27	323
CNG-1	Compressed Natural Gas - Black Mtn Gas													
	Sales													0
	Customers													0
G-60	Cogeneration Gas Service													
	Commercial - Small G.S.													
	Sales	3,266	2,884	0	0	0	0	0	0	0	0	10	0	6,160
	Customers	3	3	2	2	2	2	2	2	2	2	2	2	26
	Commercial - Medium G.S.													
	Sales	55,813	79,834	42,855	31,911	41,730	55,459	18,132	21,879	25,861	18,885	17,056	31,439	440,854
	Customers	6	6	6	6	5	7	5	5	5	5	5	6	67
	Commercial - Large G.S.													
	Sales	187,624	212,399	264,893	272,769	179,068	161,349	234,148	212,666	182,903	251,083	260,479	253,364	2,672,745
	Customers	3	3	4	3	4	4	5	5	5	5	5	5	51
	Industrial - Small G.S.													
	Sales	10	(51)	123	133	51	82	31	0	20	21	0	0	420
	Customers	1	0	2	2	2	2	2	2	2	2	2	3	22
	Industrial - Medium G.S.													
	Sales	0	22,348	11,226	14,884	10,820	9,666	12,850	15,467	10,325	16,094	10,718	7,614	142,012
	Customers	1	2	2	2	2	2	2	2	2	2	2	1	22
	Industrial - Large G.S.													
	Sales	1,011,366	934,395	1,032,073	1,067,818	865,571	859,379	912,718	1,002,660	915,253	978,798	1,051,240	969,761	11,601,032
	Customers	5	4	4	4	4	4	4	4	4	4	4	4	49
	Military Cogen - (GTS Billed)													
	Sales	0	0	0	0	0	0	0	0	0	0	0	0	0
	Customers	0	0	0	0	0	0	0	0	0	0	0	0	0
	Small Essential Agriculture G.S.													
	Sales	3,649	4,182	4,271	4,404	5,106	4,356	3,102	2,883	3,044	3,583	5,004	3,771	47,355
	Customers	2	2	2	2	2	2	2	2	2	2	2	2	24
CGEN-1	Commercial - Cogen (M) - Black Mtn Gas													
	Sales	0	0	0	3,191	(1,113)	34,380	10,977	7,236	11,416	11,641	10,067	0	87,795
	Customers	0	0	0	1	1	1	1	1	1	1	1	0	8
G-75	Small Essential Ag. Gas Service													
	Sales	552,012	585,221	665,600	857,139	836,269	841,204	642,069	583,350	598,327	626,618	574,998	569,498	7,932,305
	Customers	86	87	96	94	123	118	116	90	90	89	89	91	1,169
G-80	Natural Gas Engine Gas Service													
	Sales	2,404,972	1,872,941	1,142,424	480,857	365,747	453,365	633,209	1,498,466	2,214,511	3,011,480	3,222,182	2,897,940	20,198,094
	Customers	623	620	607	599	591	607	618	642	624	621	611	609	7,372
G-95	Resale Gas Service													
	Sales	(7,428)	(7,074)	0	0	0	0	0	0	0	0	0	0	(14,502)
	Customers	1	1	1	0	0	0	0	0	0	0	0	0	3
	Total Sales Service													
	Sales	33,995,714	35,052,450	42,457,529	75,518,719	94,593,942	94,001,755	74,922,177	43,299,018	42,834,100	43,241,682	44,022,479	39,781,832	663,721,397
	Customers	811,830	817,034	825,548	843,251	850,769	852,180	857,135	852,483	850,014	850,258	851,072	853,269	10,114,843
	Transportation													
	Deliveries	4,677,995	5,206,582	5,704,320	6,183,241	6,094,946	6,400,934	6,073,914	5,600,719	5,323,873	4,901,590	4,861,384	4,650,658	65,680,156
	Customers	232	231	226	231	231	240	227	232	231	231	231	227	2,770
	District Total													
	Deliveries	**38,673,709**	**40,259,032**	**48,161,849**	**81,701,960**	**100,688,888**	**100,402,689**	**80,996,091**	**48,899,737**	**48,157,973**	**48,143,272**	**48,883,863**	**44,432,490**	729,401,553
	Customers	**812,062**	**817,265**	**825,774**	**843,482**	**851,000**	**852,420**	**857,362**	**852,715**	**850,245**	**850,489**	**851,303**	**853,496**	10,117,613

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = SEPTEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-4,599	-4,599	29,015	29,015	-0.06	3.91	712,466	0	-4,599	-0.06
1	11,096	6,497	11,096	40,111	0.09	5.41	701,370	701,370	707,867	9.29
2	36,388	42,885	18,194	58,305	0.56	7.86	683,176	1,366,352	1,409,237	18.50
3	142,794	185,679	47,598	105,903	2.44	14.28	635,578	1,906,734	2,092,413	27.46
4	202,460	388,139	50,615	156,518	5.09	21.11	584,963	2,339,852	2,727,991	35.81
5	259,335	647,474	51,867	208,385	8.50	28.10	533,096	2,665,480	3,312,954	43.48
6	337,770	985,244	56,295	264,680	12.93	35.70	476,801	2,860,806	3,846,050	50.48
7	388,283	1,373,527	55,469	320,149	18.03	43.18	421,332	2,949,324	4,322,851	56.74
8	449,184	1,822,711	56,148	376,297	23.92	50.75	365,184	2,921,472	4,744,183	62.27
9	420,804	2,243,515	46,756	423,053	29.45	57.06	318,428	2,865,852	5,109,367	67.06
10	485,950	2,729,465	48,595	471,648	35.83	63.61	269,833	2,698,330	5,427,795	71.24
11	415,536	3,145,001	37,776	509,424	41.28	68.70	232,057	2,552,627	5,697,628	74.78
12	391,956	3,536,957	32,663	542,087	46.42	73.11	199,394	2,392,728	5,929,685	77.83
13	363,376	3,900,333	27,952	570,039	51.19	76.88	171,442	2,228,746	6,129,079	80.45
14	334,390	4,234,723	23,885	593,924	55.58	80.10	147,557	2,065,798	6,300,521	82.70
15	310,065	4,544,788	20,671	614,595	59.65	82.89	126,886	1,903,290	6,448,078	84.63
16	286,832	4,831,620	17,927	632,522	63.42	85.31	108,959	1,743,344	6,574,964	86.30
17	255,765	5,087,385	15,045	647,567	66.77	87.33	93,914	1,596,538	6,683,923	87.73
18	228,312	5,315,697	12,684	660,251	69.77	89.04	81,230	1,462,140	6,777,837	88.96
19	217,778	5,533,475	11,462	671,713	72.63	90.59	69,768	1,325,592	6,859,067	90.03
20	191,460	5,724,935	9,573	681,286	75.14	91.88	60,195	1,203,900	6,928,835	90.94
25	654,418	6,379,353	28,845	710,131	83.73	95.77	31,350	783,750	7,163,103	94.02
30	362,031	6,741,384	13,064	723,195	88.48	97.53	18,286	548,580	7,289,964	95.68
35	212,023	6,953,407	6,490	729,685	91.27	98.41	11,796	412,860	7,366,267	96.69
40	137,731	7,091,138	3,642	733,327	93.08	98.90	8,154	326,160	7,417,298	97.36
45	93,561	7,184,699	2,189	735,516	94.30	99.20	5,965	268,425	7,453,124	97.83
50	67,298	7,251,997	1,407	736,923	95.19	99.39	4,558	227,900	7,479,897	98.18
55	54,995	7,306,992	1,041	737,964	95.91	99.53	3,517	193,435	7,500,427	98.45
60	40,462	7,347,454	699	738,663	96.44	99.62	2,818	169,080	7,516,534	98.66
65	31,652	7,379,106	503	739,166	96.86	99.69	2,315	150,475	7,529,581	98.83
70	27,748	7,406,854	409	739,575	97.22	99.74	1,906	133,420	7,540,274	98.97
75	23,830	7,430,684	327	739,902	97.53	99.79	1,579	118,425	7,549,109	99.09
80	18,940	7,449,624	243	740,145	97.78	99.82	1,336	106,880	7,556,504	99.18
85	16,592	7,466,216	200	740,345	98.00	99.85	1,136	96,560	7,562,776	99.27
90	15,565	7,481,781	177	740,522	98.20	99.87	959	86,310	7,568,091	99.34
95	10,292	7,492,073	111	740,633	98.34	99.89	848	80,560	7,572,633	99.40
100	10,676	7,502,749	109	740,742	98.48	99.90	739	73,900	7,576,649	99.45
105	7,626	7,510,375	74	740,816	98.58	99.91	665	69,825	7,580,200	99.49
110	9,612	7,519,987	89	740,905	98.70	99.92	576	63,360	7,583,347	99.54
115	8,926	7,528,913	79	740,984	98.82	99.93	497	57,155	7,586,068	99.57
120	5,791	7,534,704	49	741,033	98.90	99.94	448	53,760	7,588,464	99.60
125	6,773	7,541,477	55	741,088	98.99	99.95	393	49,125	7,590,602	99.63
130	4,087	7,545,564	32	741,120	99.04	99.95	361	46,930	7,592,494	99.66
135	4,255	7,549,819	32	741,152	99.10	99.96	329	44,415	7,594,234	99.68
140	3,848	7,553,667	28	741,180	99.15	99.96	301	42,140	7,595,807	99.70

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = SEPTEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	2,999	7,556,666	21	741,201	99.19	99.96	280	40,600	7,597,266	99.72
150	3,985	7,560,651	27	741,228	99.24	99.97	253	37,950	7,598,601	99.74
155	2,137	7,562,788	14	741,242	99.27	99.97	239	37,045	7,599,833	99.75
160	4,580	7,567,368	29	741,271	99.33	99.97	210	33,600	7,600,968	99.77
165	2,122	7,569,490	13	741,284	99.35	99.97	197	32,505	7,601,995	99.78
170	3,533	7,573,023	21	741,305	99.40	99.98	176	29,920	7,602,943	99.79
175	2,599	7,575,622	15	741,320	99.43	99.98	161	28,175	7,603,797	99.80
180	3,558	7,579,180	20	741,340	99.48	99.98	141	25,380	7,604,560	99.81
185	1,645	7,580,825	9	741,349	99.50	99.98	132	24,420	7,605,245	99.82
190	1,133	7,581,958	6	741,355	99.52	99.98	126	23,940	7,605,898	99.83
195	1,923	7,583,881	10	741,365	99.54	99.98	116	22,620	7,606,501	99.84
200	1,384	7,585,265	7	741,372	99.56	99.99	109	21,800	7,607,065	99.85
999,999	33,447	7,618,712	109	741,481	100.00	100.00	0	0	7,618,712	100.00
TOTAL	7,618,712		741,481							
AVG. USE	10.3									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = OCTOBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-3,551	-3,551	25,526	25,526	-0.04	3.41	723,570	0	-3,551	-0.04
1	10,000	6,449	10,000	35,526	0.07	4.74	713,570	713,570	720,019	8.25
2	30,468	36,917	15,234	50,760	0.42	6.78	698,336	1,396,672	1,433,589	16.43
3	106,263	143,180	35,421	86,181	1.64	11.50	662,915	1,988,745	2,131,925	24.43
4	158,708	301,888	39,677	125,858	3.46	16.80	623,238	2,492,952	2,794,840	32.02
5	226,410	528,298	45,282	171,140	6.05	22.85	577,956	2,889,780	3,418,078	39.16
6	311,676	839,974	51,946	223,086	9.62	29.78	526,010	3,156,060	3,996,034	45.79
7	369,313	1,209,287	52,759	275,845	13.86	36.82	473,251	3,312,757	4,522,044	51.81
8	456,168	1,665,455	57,021	332,866	19.08	44.44	416,230	3,329,840	4,995,295	57.23
9	433,251	2,098,706	48,139	381,005	24.05	50.86	368,091	3,312,819	5,411,525	62.00
10	532,700	2,631,406	53,270	434,275	30.15	57.97	314,821	3,148,210	5,779,616	66.22
11	434,929	3,066,335	39,539	473,814	35.13	63.25	275,282	3,028,102	6,094,437	69.83
12	429,468	3,495,803	35,789	509,603	40.05	68.03	239,493	2,873,916	6,369,719	72.98
13	408,070	3,903,873	31,390	540,993	44.73	72.22	208,103	2,705,339	6,609,212	75.73
14	381,528	4,285,401	27,252	568,245	49.10	75.86	180,851	2,531,914	6,817,315	78.11
15	358,290	4,643,691	23,886	592,131	53.21	79.05	156,965	2,354,475	6,998,166	80.18
16	329,648	4,973,339	20,603	612,734	56.98	81.80	136,362	2,181,792	7,155,131	81.98
17	300,611	5,273,950	17,683	630,417	60.43	84.16	118,679	2,017,543	7,291,493	83.54
18	273,582	5,547,532	15,199	645,616	63.56	86.19	103,480	1,862,640	7,410,172	84.90
19	254,733	5,802,265	13,407	659,023	66.48	87.98	90,073	1,711,387	7,513,652	86.09
20	232,140	6,034,405	11,607	670,630	69.14	89.53	78,466	1,569,320	7,603,725	87.12
25	818,422	6,852,827	36,023	706,653	78.52	94.33	42,443	1,061,075	7,913,902	90.68
30	457,979	7,310,806	16,525	723,178	83.77	96.54	25,918	777,540	8,088,346	92.67
35	281,678	7,592,484	8,622	731,800	86.99	97.69	17,296	605,360	8,197,844	93.93
40	185,179	7,777,663	4,891	736,691	89.11	98.34	12,405	496,200	8,273,863	94.80
45	120,734	7,898,397	2,821	739,512	90.50	98.72	9,584	431,280	8,329,677	95.44
50	92,564	7,990,961	1,935	741,447	91.56	98.98	7,649	382,450	8,373,411	95.94
55	71,178	8,062,139	1,345	742,792	92.37	99.16	6,304	346,720	8,408,859	96.35
60	60,647	8,122,786	1,048	743,840	93.07	99.30	5,256	315,360	8,438,146	96.68
65	49,128	8,171,914	782	744,622	93.63	99.40	4,474	290,810	8,462,724	96.96
70	41,886	8,213,800	618	745,240	94.11	99.49	3,856	269,920	8,483,720	97.20
75	33,914	8,247,714	466	745,706	94.50	99.55	3,390	254,250	8,501,964	97.41
80	29,890	8,277,604	383	746,089	94.84	99.60	3,007	240,560	8,518,164	97.60
85	27,847	8,305,451	336	746,425	95.16	99.64	2,671	227,035	8,532,486	97.76
90	25,692	8,331,143	292	746,717	95.46	99.68	2,379	214,110	8,545,253	97.91
95	19,456	8,350,599	209	746,926	95.68	99.71	2,170	206,150	8,556,749	98.04
100	17,177	8,367,776	175	747,101	95.88	99.73	1,995	199,500	8,567,276	98.16
105	19,081	8,386,857	185	747,286	96.09	99.76	1,810	190,050	8,576,907	98.27
110	14,167	8,401,024	131	747,417	96.26	99.78	1,679	184,690	8,585,714	98.37
115	13,466	8,414,490	119	747,536	96.41	99.79	1,560	179,400	8,593,890	98.47
120	16,395	8,430,885	139	747,675	96.60	99.81	1,421	170,520	8,601,405	98.55
125	10,823	8,441,708	88	747,763	96.72	99.82	1,333	166,625	8,608,333	98.63
130	12,421	8,454,129	97	747,860	96.87	99.84	1,236	160,680	8,614,809	98.71
135	14,232	8,468,361	107	747,967	97.03	99.85	1,129	152,415	8,620,776	98.77
140	9,093	8,477,454	66	748,033	97.13	99.86	1,063	148,820	8,626,274	98.84

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = OCTOBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	10,862	8,488,316	76	748,109	97.26	99.87	987	143,115	8,631,431	98.90
150	8,303	8,496,619	56	748,165	97.35	99.88	931	139,650	8,636,269	98.95
155	9,018	8,505,637	59	748,224	97.46	99.88	872	135,160	8,640,797	99.00
160	8,047	8,513,684	51	748,275	97.55	99.89	821	131,360	8,645,044	99.05
165	9,115	8,522,799	56	748,331	97.65	99.90	765	126,225	8,649,024	99.10
170	9,078	8,531,877	54	748,385	97.76	99.91	711	120,870	8,652,747	99.14
175	6,756	8,538,633	39	748,424	97.83	99.91	672	117,600	8,656,233	99.18
180	7,475	8,546,108	42	748,466	97.92	99.92	630	113,400	8,659,508	99.22
185	6,036	8,552,144	33	748,499	97.99	99.92	597	110,445	8,662,589	99.25
190	6,771	8,558,915	36	748,535	98.07	99.93	561	106,590	8,665,505	99.29
195	8,106	8,567,021	42	748,577	98.16	99.93	519	101,205	8,668,226	99.32
200	5,936	8,572,957	30	748,607	98.23	99.93	489	97,800	8,670,757	99.35
999,999	154,755	8,727,712	489	749,096	100.00	100.00	0	0	8,727,712	100.00
TOTAL	8,727,712		749,096							
AVG. USE	11.7									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = NOVEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-6,715	-6,715	15,734	15,734	-0.05	2.08	740,086	0	-6,715	-0.05
1	6,138	-577	6,138	21,872	-0.00	2.89	733,948	733,948	733,371	5.36
2	16,986	16,409	8,493	30,365	0.12	4.02	725,455	1,450,910	1,467,319	10.73
3	48,504	64,913	16,168	46,533	0.47	6.16	709,287	2,127,861	2,192,774	16.04
4	73,672	138,585	18,418	64,951	1.01	8.59	690,869	2,763,476	2,902,061	21.23
5	109,635	248,220	21,927	86,878	1.82	11.49	668,942	3,344,710	3,592,930	26.28
6	163,812	412,032	27,302	114,180	3.01	15.11	641,640	3,849,840	4,261,872	31.17
7	217,882	629,914	31,126	145,306	4.61	19.22	610,514	4,273,598	4,903,512	35.87
8	301,992	931,906	37,749	183,055	6.82	24.22	572,765	4,582,120	5,514,026	40.33
9	323,847	1,255,753	35,983	219,038	9.19	28.98	536,782	4,831,038	6,086,791	44.52
10	410,360	1,666,113	41,036	260,074	12.19	34.41	495,746	4,957,460	6,623,573	48.45
11	421,036	2,087,149	38,276	298,350	15.27	39.47	457,470	5,032,170	7,119,319	52.07
12	431,424	2,518,573	35,952	334,302	18.42	44.23	421,518	5,058,216	7,576,789	55.42
13	429,208	2,947,781	33,016	367,318	21.56	48.60	388,502	5,050,526	7,998,307	58.50
14	439,236	3,387,017	31,374	398,692	24.77	52.75	357,128	4,999,792	8,386,809	61.34
15	441,705	3,828,722	29,447	428,139	28.00	56.65	327,681	4,915,215	8,743,937	63.96
16	437,648	4,266,370	27,353	455,492	31.21	60.26	300,328	4,805,248	9,071,618	66.35
17	429,420	4,695,790	25,260	480,752	34.35	63.61	275,068	4,676,156	9,371,946	68.55
18	436,392	5,132,182	24,244	504,996	37.54	66.81	250,824	4,514,832	9,647,014	70.56
19	394,858	5,527,040	20,782	525,778	40.43	69.56	230,042	4,370,798	9,897,838	72.40
20	392,660	5,919,700	19,633	545,411	43.30	72.16	210,409	4,208,180	10,127,880	74.08
25	1,682,776	7,602,476	73,749	619,160	55.61	81.92	136,660	3,416,500	11,018,976	80.60
30	1,251,000	8,853,476	44,977	664,137	64.76	87.87	91,683	2,750,490	11,603,966	84.88
35	964,633	9,818,109	29,440	693,577	71.81	91.76	62,243	2,178,505	11,996,614	87.75
40	683,749	10,501,858	18,096	711,673	76.81	94.16	44,147	1,765,880	12,267,738	89.73
45	480,723	10,982,581	11,222	722,895	80.33	95.64	32,925	1,481,625	12,464,206	91.17
50	360,811	11,343,392	7,539	730,434	82.97	96.64	25,386	1,269,300	12,612,692	92.25
55	299,326	11,642,718	5,666	736,100	85.16	97.39	19,720	1,084,600	12,727,318	93.09
60	230,132	11,872,850	3,978	740,078	86.84	97.92	15,742	944,520	12,817,370	93.75
65	176,442	12,049,292	2,806	742,884	88.13	98.29	12,936	840,840	12,890,132	94.28
70	147,188	12,196,480	2,167	745,051	89.21	98.58	10,769	753,830	12,950,310	94.72
75	118,003	12,314,483	1,620	746,671	90.07	98.79	9,149	686,175	13,000,658	95.09
80	102,489	12,416,972	1,316	747,987	90.82	98.96	7,833	626,640	13,043,612	95.41
85	86,320	12,503,292	1,043	749,030	91.45	99.10	6,790	577,150	13,080,442	95.68
90	67,750	12,571,042	771	749,801	91.95	99.20	6,019	541,710	13,112,752	95.91
95	60,487	12,631,529	650	750,451	92.39	99.29	5,369	510,055	13,141,584	96.12
100	49,035	12,680,564	501	750,952	92.75	99.36	4,868	486,800	13,167,364	96.31
105	45,102	12,725,666	438	751,390	93.08	99.41	4,430	465,150	13,190,816	96.48
110	41,764	12,767,430	387	751,777	93.39	99.47	4,043	444,730	13,212,160	96.64
115	34,792	12,802,222	308	752,085	93.64	99.51	3,735	429,525	13,231,747	96.78
120	31,360	12,833,582	266	752,351	93.87	99.54	3,469	416,280	13,249,862	96.91
125	29,014	12,862,596	236	752,587	94.08	99.57	3,233	404,125	13,266,721	97.04
130	29,920	12,892,516	234	752,821	94.30	99.60	2,999	389,870	13,282,386	97.15
135	29,762	12,922,278	224	753,045	94.52	99.63	2,775	374,625	13,296,903	97.26
140	22,602	12,944,880	164	753,209	94.68	99.65	2,611	365,540	13,310,420	97.36

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = NOVEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	19,725	12,964,605	138	753,347	94.83	99.67	2,473	358,585	13,323,190	97.45
150	18,810	12,983,415	127	753,474	94.97	99.69	2,346	351,900	13,335,315	97.54
155	20,046	13,003,461	131	753,605	95.11	99.71	2,215	343,325	13,346,786	97.62
160	15,619	13,019,080	99	753,704	95.23	99.72	2,116	338,560	13,357,640	97.70
165	15,963	13,035,043	98	753,802	95.34	99.73	2,018	332,970	13,368,013	97.78
170	18,303	13,053,346	109	753,911	95.48	99.75	1,909	324,530	13,377,876	97.85
175	18,494	13,071,840	107	754,018	95.61	99.76	1,802	315,350	13,387,190	97.92
180	16,365	13,088,205	92	754,110	95.73	99.77	1,710	307,800	13,396,005	97.98
185	16,287	13,104,492	89	754,199	95.85	99.79	1,621	299,885	13,404,377	98.04
190	12,957	13,117,449	69	754,268	95.95	99.79	1,552	294,880	13,412,329	98.10
195	10,599	13,128,048	55	754,323	96.02	99.80	1,497	291,915	13,419,963	98.16
200	10,689	13,138,737	54	754,377	96.10	99.81	1,443	288,600	13,427,337	98.21
999,999	532,940	13,671,677	1,443	755,820	100.00	100.00	0	0	13,671,677	100.00
TOTAL	13,671,677		755,820							
AVG. USE	18.1									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = DECEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-6,633	-6,633	8,639	8,639	-0.02	1.13	757,971	0	-6,633	-0.02
1	2,465	-4,168	2,465	11,104	-0.01	1.45	755,506	755,506	751,338	2.01
2	5,502	1,334	2,751	13,855	0.00	1.81	752,755	1,505,510	1,506,844	4.03
3	14,721	16,055	4,907	18,762	0.04	2.45	747,848	2,243,544	2,259,599	6.05
4	18,960	35,015	4,740	23,502	0.09	3.07	743,108	2,972,432	3,007,447	8.05
5	24,545	59,560	4,909	28,411	0.16	3.71	738,199	3,690,995	3,750,555	10.04
6	31,890	91,450	5,315	33,726	0.24	4.40	732,884	4,397,304	4,488,754	12.02
7	38,955	130,405	5,565	39,291	0.35	5.13	727,319	5,091,233	5,221,638	13.98
8	50,976	181,381	6,372	45,663	0.49	5.96	720,947	5,767,576	5,948,957	15.92
9	58,050	239,431	6,450	52,113	0.64	6.80	714,497	6,430,473	6,669,904	17.85
10	80,540	319,971	8,054	60,167	0.86	7.85	706,443	7,064,430	7,384,401	19.77
11	87,021	406,992	7,911	68,078	1.09	8.88	698,532	7,683,852	8,090,844	21.66
12	101,376	508,368	8,448	76,526	1.36	9.98	690,084	8,281,008	8,789,376	23.53
13	116,207	624,575	8,939	85,465	1.67	11.15	681,145	8,854,885	9,479,460	25.37
14	130,606	755,181	9,329	94,794	2.02	12.37	671,816	9,405,424	10,160,605	27.20
15	148,470	903,651	9,898	104,692	2.42	13.66	661,918	9,928,770	10,832,421	29.00
16	162,224	1,065,875	10,139	114,831	2.85	14.98	651,779	10,428,464	11,494,339	30.77
17	176,647	1,242,522	10,391	125,222	3.33	16.33	641,388	10,903,596	12,146,118	32.51
18	195,066	1,437,588	10,837	136,059	3.85	17.75	630,551	11,349,918	12,787,506	34.23
19	205,618	1,643,206	10,822	146,881	4.40	19.16	619,729	11,774,851	13,418,057	35.92
20	221,700	1,864,906	11,085	157,966	4.99	20.61	608,644	12,172,880	14,037,786	37.58
25	1,313,964	3,178,870	57,056	215,022	8.51	28.05	551,588	13,789,700	16,968,570	45.42
30	1,592,741	4,771,611	56,888	271,910	12.77	35.47	494,700	14,841,000	19,612,611	52.50
35	1,899,306	6,670,917	57,640	329,550	17.86	42.99	437,060	15,297,100	21,968,017	58.80
40	2,133,072	8,803,989	56,243	385,793	23.57	50.32	380,817	15,232,680	24,036,669	64.34
45	2,064,717	10,868,706	48,045	433,838	29.09	56.59	332,772	14,974,740	25,843,446	69.18
50	2,108,086	12,976,792	43,958	477,796	34.74	62.33	288,814	14,440,700	27,417,492	73.39
55	2,246,166	15,222,958	42,434	520,230	40.75	67.86	246,380	13,550,900	28,773,858	77.02
60	2,059,134	17,282,092	35,527	555,757	46.26	72.50	210,853	12,651,180	29,933,272	80.13
65	1,904,021	19,186,113	30,248	586,005	51.36	76.44	180,605	11,739,325	30,925,438	82.78
70	1,834,127	21,020,240	26,997	613,002	56.27	79.96	153,608	10,752,560	31,772,800	85.05
75	1,737,235	22,757,475	23,831	636,833	60.92	83.07	129,777	9,733,275	32,490,750	86.97
80	1,517,325	24,274,800	19,471	656,304	64.98	85.61	110,306	8,824,480	33,099,280	88.60
85	1,395,498	25,670,298	16,826	673,130	68.71	87.81	93,480	7,945,800	33,616,098	89.98
90	1,275,302	26,945,600	14,500	687,630	72.13	89.70	78,980	7,108,200	34,053,800	91.16
95	1,134,880	28,080,480	12,214	699,844	75.17	91.29	66,766	6,342,770	34,423,250	92.14
100	975,286	29,055,766	9,959	709,803	77.78	92.59	56,807	5,680,700	34,736,466	92.98
105	872,521	29,928,287	8,479	718,282	80.11	93.70	48,328	5,074,440	35,002,727	93.70
110	796,669	30,724,956	7,374	725,656	82.24	94.66	40,954	4,504,940	35,229,896	94.30
115	658,290	31,383,246	5,828	731,484	84.01	95.42	35,126	4,039,490	35,422,736	94.82
120	568,305	31,951,551	4,819	736,303	85.53	96.05	30,307	3,636,840	35,588,391	95.26
125	496,388	32,447,939	4,038	740,341	86.86	96.57	26,269	3,283,625	35,731,564	95.65
130	424,366	32,872,305	3,318	743,659	87.99	97.01	22,951	2,983,630	35,855,935	95.98
135	395,393	33,267,698	2,974	746,633	89.05	97.39	19,977	2,696,895	35,964,593	96.27
140	344,199	33,611,897	2,495	749,128	89.97	97.72	17,482	2,447,480	36,059,377	96.52

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = DECEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	298,038	33,909,935	2,085	751,213	90.77	97.99	15,397	2,232,565	36,142,500	96.75
150	256,328	34,166,263	1,732	752,945	91.46	98.22	13,665	2,049,750	36,216,013	96.94
155	226,659	34,392,922	1,481	754,426	92.06	98.41	12,184	1,888,520	36,281,442	97.12
160	192,537	34,585,459	1,219	755,645	92.58	98.57	10,965	1,754,400	36,339,859	97.28
165	173,804	34,759,263	1,067	756,712	93.04	98.71	9,898	1,633,170	36,392,433	97.42
170	163,260	34,922,523	972	757,684	93.48	98.84	8,926	1,517,420	36,439,943	97.54
175	147,035	35,069,558	850	758,534	93.87	98.95	8,076	1,413,300	36,482,858	97.66
180	115,120	35,184,678	647	759,181	94.18	99.03	7,429	1,337,220	36,521,898	97.76
185	109,505	35,294,183	599	759,780	94.48	99.11	6,830	1,263,550	36,557,733	97.86
190	107,131	35,401,314	570	760,350	94.76	99.18	6,260	1,189,400	36,590,714	97.95
195	92,119	35,493,433	477	760,827	95.01	99.25	5,783	1,127,685	36,621,118	98.03
200	77,010	35,570,443	389	761,216	95.22	99.30	5,394	1,078,800	36,649,243	98.10
999,999	1,787,403	37,357,846	5,394	766,610	100.00	100.00	0	0	37,357,846	100.00
TOTAL	37,357,846		766,610							
AVG. USE	48.7									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = JANUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-5,097	-5,097	7,095	7,095	-0.01	0.92	765,200	0	-5,097	-0.01
1	2,003	-3,094	2,003	9,098	-0.01	1.18	763,197	763,197	760,103	1.46
2	4,312	1,218	2,156	11,254	0.00	1.46	761,041	1,522,082	1,523,300	2.93
3	9,999	11,217	3,333	14,587	0.02	1.89	757,708	2,273,124	2,284,341	4.40
4	12,664	23,881	3,166	17,753	0.05	2.30	754,542	3,018,168	3,042,049	5.86
5	17,175	41,056	3,435	21,188	0.08	2.74	751,107	3,755,535	3,796,591	7.31
6	21,876	62,932	3,646	24,834	0.12	3.22	747,461	4,484,766	4,547,698	8.76
7	26,929	89,861	3,847	28,681	0.17	3.71	743,614	5,205,298	5,295,159	10.20
8	33,320	123,181	4,165	32,846	0.24	4.25	739,449	5,915,592	6,038,773	11.63
9	36,675	159,856	4,075	36,921	0.31	4.78	735,374	6,618,366	6,778,222	13.05
10	43,400	203,256	4,340	41,261	0.39	5.34	731,034	7,310,340	7,513,596	14.47
11	57,332	260,588	5,212	46,473	0.50	6.02	725,822	7,984,042	8,244,630	15.88
12	57,984	318,572	4,832	51,305	0.61	6.64	720,990	8,651,880	8,970,452	17.28
13	64,636	383,208	4,972	56,277	0.74	7.29	716,018	9,308,234	9,691,442	18.67
14	71,582	454,790	5,113	61,390	0.88	7.95	710,905	9,952,670	10,407,460	20.04
15	79,755	534,545	5,317	66,707	1.03	8.64	705,588	10,583,820	11,118,365	21.41
16	86,064	620,609	5,379	72,086	1.20	9.33	700,209	11,203,344	11,823,953	22.77
17	97,002	717,611	5,706	77,792	1.38	10.07	694,503	11,806,551	12,524,162	24.12
18	104,526	822,137	5,807	83,599	1.58	10.82	688,696	12,396,528	13,218,665	25.46
19	108,053	930,190	5,687	89,286	1.79	11.56	683,009	12,977,171	13,907,361	26.79
20	115,080	1,045,270	5,754	95,040	2.01	12.31	677,255	13,545,100	14,590,370	28.10
25	681,192	1,726,462	29,571	124,611	3.33	16.14	647,684	16,192,100	17,918,562	34.51
30	868,876	2,595,338	31,005	155,616	5.00	20.15	616,679	18,500,370	21,095,708	40.63
35	1,108,102	3,703,440	33,570	189,186	7.13	24.50	583,109	20,408,815	24,112,255	46.44
40	1,470,938	5,174,378	38,779	227,965	9.97	29.52	544,330	21,773,200	26,947,578	51.90
45	1,645,028	6,819,406	38,259	266,224	13.13	34.47	506,071	22,773,195	29,592,601	57.00
50	1,893,434	8,712,840	39,428	305,652	16.78	39.58	466,643	23,332,150	32,044,990	61.72
55	2,232,192	10,945,032	42,096	347,748	21.08	45.03	424,547	23,350,085	34,295,117	66.05
60	2,391,945	13,336,977	41,256	389,004	25.69	50.37	383,291	22,997,460	36,334,437	69.98
65	2,472,176	15,809,153	39,263	428,267	30.45	55.45	344,028	22,361,820	38,170,973	73.52
70	2,550,826	18,359,979	37,518	465,785	35.36	60.31	306,510	21,455,700	39,815,679	76.69
75	2,668,291	21,028,270	36,536	502,321	40.50	65.04	269,974	20,248,050	41,276,320	79.50
80	2,522,834	23,551,104	32,359	534,680	45.36	69.23	237,615	19,009,200	42,560,304	81.97
85	2,443,387	25,994,491	29,453	564,133	50.07	73.05	208,162	17,693,770	43,688,261	84.14
90	2,419,165	28,413,656	27,491	591,624	54.72	76.61	180,671	16,260,390	44,674,046	86.04
95	2,178,606	30,592,262	23,438	615,062	58.92	79.64	157,233	14,937,135	45,529,397	87.69
100	2,082,296	32,674,558	21,272	636,334	62.93	82.40	135,961	13,596,100	46,270,658	89.12
105	1,840,970	34,515,528	17,881	654,215	66.48	84.71	118,080	12,398,400	46,913,928	90.36
110	1,842,083	36,357,611	17,051	671,266	70.03	86.92	101,029	11,113,190	47,470,801	91.43
115	1,511,395	37,869,006	13,385	684,651	72.94	88.65	87,644	10,079,060	47,948,066	92.35
120	1,413,836	39,282,842	11,988	696,639	75.66	90.20	75,656	9,078,720	48,361,562	93.14
125	1,266,167	40,549,009	10,299	706,938	78.10	91.54	65,357	8,169,625	48,718,634	93.83
130	1,047,088	41,596,097	8,185	715,123	80.11	92.60	57,172	7,432,360	49,028,457	94.43
135	977,079	42,573,176	7,351	722,474	82.00	93.55	49,821	6,725,835	49,299,011	94.95
140	896,114	43,469,290	6,495	728,969	83.72	94.39	43,326	6,065,640	49,534,930	95.40

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = JANUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	748,872	44,218,162	5,239	734,208	85.16	95.07	38,087	5,522,615	49,740,777	95.80
150	683,757	44,901,919	4,623	738,831	86.48	95.67	33,464	5,019,600	49,921,519	96.15
155	628,974	45,530,893	4,111	742,942	87.69	96.20	29,353	4,549,715	50,080,608	96.46
160	557,359	46,088,252	3,528	746,470	88.77	96.66	25,825	4,132,000	50,220,252	96.72
165	478,243	46,566,495	2,935	749,405	89.69	97.04	22,890	3,776,850	50,343,345	96.96
170	417,037	46,983,532	2,484	751,889	90.49	97.36	20,406	3,469,020	50,452,552	97.17
175	385,821	47,369,353	2,231	754,120	91.23	97.65	18,175	3,180,625	50,549,978	97.36
180	341,424	47,710,777	1,919	756,039	91.89	97.90	16,256	2,926,080	50,636,857	97.53
185	324,548	48,035,325	1,774	757,813	92.52	98.12	14,482	2,679,170	50,714,495	97.68
190	260,659	48,295,984	1,387	759,200	93.02	98.30	13,095	2,488,050	50,784,034	97.81
195	232,300	48,528,284	1,204	760,404	93.47	98.46	11,891	2,318,745	50,847,029	97.93
200	212,591	48,740,875	1,074	761,478	93.88	98.60	10,817	2,163,400	50,904,275	98.04
999,999	3,180,007	51,920,882	10,817	772,295	100.00	100.00	0	0	51,920,882	100.00
TOTAL	51,920,882		772,295							
AVG. USE	67.2									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = FEBRUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-4,002	-4,002	7,035	7,035	-0.01	0.91	769,689	0	-4,002	-0.01
1	2,186	-1,816	2,186	9,221	-0.00	1.19	767,503	767,503	765,687	1.50
2	4,560	2,744	2,280	11,501	0.01	1.48	765,223	1,530,446	1,533,190	3.01
3	9,636	12,380	3,212	14,713	0.02	1.89	762,011	2,286,033	2,298,413	4.51
4	12,088	24,468	3,022	17,735	0.05	2.28	758,989	3,035,956	3,060,424	6.00
5	17,200	41,668	3,440	21,175	0.08	2.73	755,549	3,777,745	3,819,413	7.49
6	22,236	63,904	3,706	24,881	0.13	3.20	751,843	4,511,058	4,574,962	8.97
7	26,250	90,154	3,750	28,631	0.18	3.69	748,093	5,236,651	5,326,805	10.44
8	33,184	123,338	4,148	32,779	0.24	4.22	743,945	5,951,560	6,074,898	11.91
9	38,664	162,002	4,296	37,075	0.32	4.77	739,649	6,656,841	6,818,843	13.37
10	48,550	210,552	4,855	41,930	0.41	5.40	734,794	7,347,940	7,558,492	14.82
11	57,893	268,445	5,263	47,193	0.53	6.08	729,531	8,024,841	8,293,286	16.26
12	61,968	330,413	5,164	52,357	0.65	6.74	724,367	8,692,404	9,022,817	17.69
13	69,329	399,742	5,333	57,690	0.78	7.43	719,034	9,347,442	9,747,184	19.11
14	76,034	475,776	5,431	63,121	0.93	8.13	713,603	9,990,442	10,466,218	20.52
15	83,730	559,506	5,582	68,703	1.10	8.85	708,021	10,620,315	11,179,821	21.92
16	92,944	652,450	5,809	74,512	1.28	9.59	702,212	11,235,392	11,887,842	23.31
17	98,804	751,254	5,812	80,324	1.47	10.34	696,400	11,838,800	12,590,054	24.68
18	105,624	856,878	5,868	86,192	1.68	11.10	690,532	12,429,576	13,286,454	26.05
19	117,895	974,773	6,205	92,397	1.91	11.90	684,327	13,002,213	13,976,986	27.40
20	121,520	1,096,293	6,076	98,473	2.15	12.68	678,251	13,565,020	14,661,313	28.75
25	708,211	1,804,504	30,754	129,227	3.54	16.64	647,497	16,187,425	17,991,929	35.28
30	885,595	2,690,099	31,613	160,840	5.27	20.71	615,884	18,476,520	21,166,619	41.50
35	1,123,451	3,813,550	34,050	194,890	7.48	25.09	581,834	20,364,190	24,177,740	47.40
40	1,413,615	5,227,165	37,137	232,027	10.25	29.87	544,697	21,787,880	27,015,045	52.97
45	1,675,363	6,902,528	38,949	270,976	13.53	34.89	505,748	22,758,660	29,661,188	58.16
50	2,009,930	8,912,458	41,874	312,850	17.47	40.28	463,874	23,193,700	32,106,158	62.95
55	2,254,401	11,166,859	42,520	355,370	21.89	45.75	421,354	23,174,470	34,341,329	67.33
60	2,507,953	13,674,812	43,258	398,628	26.81	51.32	378,096	22,685,760	36,360,572	71.29
65	2,547,690	16,222,502	40,458	439,086	31.81	56.53	337,638	21,946,470	38,168,972	74.84
70	2,647,016	18,869,518	38,934	478,020	37.00	61.54	298,704	20,909,280	39,778,798	77.99
75	2,737,595	21,607,113	37,502	515,522	42.36	66.37	261,202	19,590,150	41,197,263	80.77
80	2,623,440	24,230,553	33,660	549,182	47.51	70.70	227,542	18,203,360	42,433,913	83.20
85	2,463,942	26,694,495	29,698	578,880	52.34	74.53	197,844	16,816,740	43,511,235	85.31
90	2,351,365	29,045,860	26,736	605,616	56.95	77.97	171,108	15,399,720	44,445,580	87.14
95	2,199,658	31,245,518	23,670	629,286	61.26	81.02	147,438	14,006,610	45,252,128	88.72
100	2,027,841	33,273,359	20,710	649,996	65.24	83.68	126,728	12,672,800	45,946,159	90.08
105	1,802,096	35,075,455	17,505	667,501	68.77	85.94	109,223	11,468,415	46,543,870	91.26
110	1,698,961	36,774,416	15,735	683,236	72.10	87.96	93,488	10,283,680	47,058,096	92.27
115	1,472,610	38,247,026	13,037	696,273	74.99	89.64	80,451	9,251,865	47,498,891	93.13
120	1,371,436	39,618,462	11,626	707,899	77.68	91.14	68,825	8,259,000	47,877,462	93.87
125	1,166,318	40,784,780	9,488	717,387	79.97	92.36	59,337	7,417,125	48,201,905	94.51
130	1,020,719	41,805,499	7,978	725,365	81.97	93.39	51,359	6,676,670	48,482,169	95.06
135	896,221	42,701,720	6,742	732,107	83.72	94.26	44,617	6,023,295	48,725,015	95.53
140	813,827	43,515,547	5,901	738,008	85.32	95.02	38,716	5,420,240	48,935,787	95.95

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = FEBRUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	732,114	44,247,661	5,124	743,132	86.75	95.68	33,592	4,870,840	49,118,501	96.30
150	601,482	44,849,143	4,065	747,197	87.93	96.20	29,527	4,429,050	49,278,193	96.62
155	550,821	45,399,964	3,602	750,799	89.01	96.66	25,925	4,018,375	49,418,339	96.89
160	494,597	45,894,561	3,131	753,930	89.98	97.07	22,794	3,647,040	49,541,601	97.13
165	413,490	46,308,051	2,537	756,467	90.79	97.39	20,257	3,342,405	49,650,456	97.35
170	368,740	46,676,791	2,196	758,663	91.52	97.67	18,061	3,070,370	49,747,161	97.54
175	346,650	47,023,441	2,004	760,667	92.20	97.93	16,057	2,809,975	49,833,416	97.71
180	289,979	47,313,420	1,630	762,297	92.77	98.14	14,427	2,596,860	49,910,280	97.86
185	282,605	47,596,025	1,545	763,842	93.32	98.34	12,882	2,383,170	49,979,195	97.99
190	247,482	47,843,507	1,317	765,159	93.81	98.51	11,565	2,197,350	50,040,857	98.11
195	212,792	48,056,299	1,103	766,262	94.22	98.65	10,462	2,040,090	50,096,389	98.22
200	203,309	48,259,608	1,027	767,289	94.62	98.79	9,435	1,887,000	50,146,608	98.32
999,999	2,743,522	51,003,130	9,435	776,724	100.00	100.00	0	0	51,003,130	100.00
TOTAL	51,003,130		776,724							
AVG. USE	65.7									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = MARCH

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-4,561	-4,561	7,335	7,335	-0.01	0.94	773,020	0	-4,561	-0.01
1	2,706	-1,855	2,706	10,041	-0.00	1.29	770,314	770,314	768,459	2.07
2	6,044	4,189	3,022	13,063	0.01	1.67	767,292	1,534,584	1,538,773	4.15
3	12,498	16,687	4,166	17,229	0.04	2.21	763,126	2,289,378	2,306,065	6.21
4	17,536	34,223	4,384	21,613	0.09	2.77	758,742	3,034,968	3,069,191	8.27
5	23,260	57,483	4,652	26,265	0.15	3.37	754,090	3,770,450	3,827,933	10.31
6	28,758	86,241	4,793	31,058	0.23	3.98	749,297	4,495,782	4,582,023	12.34
7	37,765	124,006	5,395	36,453	0.33	4.67	743,902	5,207,314	5,331,320	14.36
8	47,176	171,182	5,897	42,350	0.46	5.43	738,005	5,904,040	6,075,222	16.37
9	55,530	226,712	6,170	48,520	0.61	6.22	731,835	6,586,515	6,813,227	18.35
10	69,580	296,292	6,958	55,478	0.80	7.11	724,877	7,248,770	7,545,062	20.33
11	92,587	388,879	8,417	63,895	1.05	8.19	716,460	7,881,060	8,269,939	22.28
12	96,648	485,527	8,054	71,949	1.31	9.22	708,406	8,500,872	8,986,399	24.21
13	110,019	595,546	8,463	80,412	1.60	10.30	699,943	9,099,259	9,694,805	26.12
14	126,616	722,162	9,044	89,456	1.95	11.46	690,899	9,672,586	10,394,748	28.00
15	142,635	864,797	9,509	98,965	2.33	12.68	681,390	10,220,850	11,085,647	29.86
16	158,176	1,022,973	9,886	108,851	2.76	13.95	671,504	10,744,064	11,767,037	31.70
17	181,033	1,204,006	10,649	119,500	3.24	15.31	660,855	11,234,535	12,438,541	33.51
18	194,724	1,398,730	10,818	130,318	3.77	16.70	650,037	11,700,666	13,099,396	35.29
19	224,466	1,623,196	11,814	142,132	4.37	18.21	638,223	12,126,237	13,749,433	37.04
20	232,600	1,855,796	11,630	153,762	5.00	19.70	626,593	12,531,860	14,387,656	38.76
25	1,440,358	3,296,154	62,511	216,273	8.88	27.71	564,082	14,102,050	17,398,204	46.87
30	1,826,914	5,123,068	65,239	281,512	13.80	36.07	498,843	14,965,290	20,088,358	54.12
35	2,144,145	7,267,213	65,064	346,576	19.58	44.41	433,779	15,182,265	22,449,478	60.48
40	2,289,279	9,556,492	60,229	406,805	25.74	52.13	373,550	14,942,000	24,498,492	66.00
45	2,308,599	11,865,091	53,792	460,597	31.96	59.02	319,758	14,389,110	26,254,201	70.73
50	2,244,551	14,109,642	46,859	507,456	38.01	65.03	272,899	13,644,950	27,754,592	74.77
55	2,126,874	16,236,516	40,162	547,618	43.74	70.18	232,737	12,800,535	29,037,051	78.22
60	2,006,894	18,243,410	34,633	582,251	49.15	74.61	198,104	11,886,240	30,129,650	81.17
65	1,805,348	20,048,758	28,689	610,940	54.01	78.29	169,415	11,011,975	31,060,733	83.67
70	1,683,613	21,732,371	24,776	635,716	58.54	81.46	144,639	10,124,730	31,857,101	85.82
75	1,606,925	23,339,296	22,017	657,733	62.87	84.29	122,622	9,196,650	32,535,946	87.65
80	1,414,336	24,753,632	18,150	675,883	66.68	86.61	104,472	8,357,760	33,111,392	89.20
85	1,271,526	26,025,158	15,333	691,216	70.11	88.58	89,139	7,576,815	33,601,973	90.52
90	1,190,807	27,215,965	13,536	704,752	73.32	90.31	75,603	6,804,270	34,020,235	91.65
95	1,044,125	28,260,090	11,238	715,990	76.13	91.75	64,365	6,114,675	34,374,765	92.60
100	939,090	29,199,180	9,590	725,580	78.66	92.98	54,775	5,477,500	34,676,680	93.41
105	812,846	30,012,026	7,895	733,475	80.85	93.99	46,880	4,922,400	34,934,426	94.11
110	723,521	30,735,547	6,705	740,180	82.80	94.85	40,175	4,419,250	35,154,797	94.70
115	617,176	31,352,723	5,463	745,643	84.46	95.55	34,712	3,991,880	35,344,603	95.21
120	562,329	31,915,052	4,768	750,411	85.97	96.16	29,944	3,593,280	35,508,332	95.65
125	479,477	32,394,529	3,901	754,312	87.27	96.66	26,043	3,255,375	35,649,904	96.04
130	415,946	32,810,475	3,252	757,564	88.39	97.08	22,791	2,962,830	35,773,305	96.37
135	376,936	33,187,411	2,835	760,399	89.40	97.44	19,956	2,694,060	35,881,471	96.66
140	359,462	33,546,873	2,607	763,006	90.37	97.78	17,349	2,428,860	35,975,733	96.91

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = MARCH

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	306,819	33,853,692	2,149	765,155	91.20	98.05	15,200	2,204,000	36,057,692	97.13
150	248,643	34,102,335	1,681	766,836	91.87	98.27	13,519	2,027,850	36,130,185	97.33
155	222,593	34,324,928	1,455	768,291	92.47	98.45	12,064	1,869,920	36,194,848	97.50
160	206,957	34,531,885	1,310	769,601	93.02	98.62	10,754	1,720,640	36,252,525	97.66
165	182,690	34,714,575	1,121	770,722	93.52	98.77	9,633	1,589,445	36,304,020	97.80
170	151,319	34,865,894	901	771,623	93.92	98.88	8,732	1,484,440	36,350,334	97.92
175	143,837	35,009,731	832	772,455	94.31	98.99	7,900	1,382,500	36,392,231	98.04
180	126,997	35,136,728	714	773,169	94.65	99.08	7,186	1,293,480	36,430,208	98.14
185	118,166	35,254,894	646	773,815	94.97	99.16	6,540	1,209,900	36,464,794	98.23
190	104,865	35,359,759	558	774,373	95.25	99.23	5,982	1,136,580	36,496,339	98.32
195	89,878	35,449,637	466	774,839	95.50	99.29	5,516	1,075,620	36,525,257	98.39
200	81,413	35,531,050	411	775,250	95.72	99.35	5,105	1,021,000	36,552,050	98.47
999,999	1,590,299	37,121,349	5,105	780,355	100.00	100.00	0	0	37,121,349	100.00
TOTAL	37,121,349		780,355							
AVG. USE	47.6									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = APRIL

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-1,811	-1,811	11,918	11,918	-0.01	1.53	768,948	0	-1,811	-0.01
1	5,790	3,979	5,790	17,708	0.02	2.27	763,158	763,158	767,137	4.79
2	13,232	17,211	6,616	24,324	0.11	3.12	756,542	1,513,084	1,530,295	9.55
3	31,821	49,032	10,607	34,931	0.31	4.47	745,935	2,237,805	2,286,837	14.27
4	47,216	96,248	11,804	46,735	0.60	5.99	734,131	2,936,524	3,032,772	18.93
5	72,215	168,463	14,443	61,178	1.05	7.83	719,688	3,598,440	3,766,903	23.51
6	108,240	276,703	18,040	79,218	1.73	10.14	701,648	4,209,888	4,486,591	28.00
7	153,174	429,877	21,882	101,100	2.68	12.95	679,766	4,758,362	5,188,239	32.38
8	226,168	656,045	28,271	129,371	4.09	16.57	651,495	5,211,960	5,868,005	36.62
9	267,156	923,201	29,684	159,055	5.76	20.37	621,811	5,596,299	6,519,500	40.68
10	328,160	1,251,361	32,816	191,871	7.81	24.57	588,995	5,889,950	7,141,311	44.56
11	430,254	1,681,615	39,114	230,985	10.49	29.58	549,881	6,048,691	7,730,306	48.24
12	431,784	2,113,399	35,982	266,967	13.19	34.19	513,899	6,166,788	8,280,187	51.67
13	461,500	2,574,899	35,500	302,467	16.07	38.73	478,399	6,219,187	8,794,086	54.88
14	481,404	3,056,303	34,386	336,853	19.07	43.14	444,013	6,216,182	9,272,485	57.86
15	500,040	3,556,343	33,336	370,189	22.19	47.41	410,677	6,160,155	9,716,498	60.64
16	523,200	4,079,543	32,700	402,889	25.46	51.60	377,977	6,047,632	10,127,175	63.20
17	524,229	4,603,772	30,837	433,726	28.73	55.54	347,140	5,901,380	10,505,152	65.56
18	513,144	5,116,916	28,508	462,234	31.93	59.20	318,632	5,735,376	10,852,292	67.72
19	539,448	5,656,364	28,392	490,626	35.30	62.83	290,240	5,514,560	11,170,924	69.71
20	504,300	6,160,664	25,215	515,841	38.45	66.06	265,025	5,300,500	11,461,164	71.52
25	2,232,311	8,392,975	97,725	613,566	52.38	78.58	167,300	4,182,500	12,575,475	78.48
30	1,650,380	10,043,355	59,332	672,898	62.67	86.17	107,968	3,239,040	13,282,395	82.89
35	1,192,358	11,235,713	36,397	709,295	70.12	90.83	71,571	2,504,985	13,740,698	85.75
40	838,939	12,074,652	22,139	731,434	75.35	93.67	49,432	1,977,280	14,051,932	87.69
45	550,619	12,625,271	12,870	744,304	78.79	95.32	36,562	1,645,290	14,270,561	89.05
50	389,375	13,014,646	8,142	752,446	81.22	96.36	28,420	1,421,000	14,435,646	90.08
55	298,319	13,312,965	5,644	758,090	83.08	97.08	22,776	1,252,680	14,565,645	90.90
60	222,399	13,535,364	3,847	761,937	84.47	97.58	18,929	1,135,740	14,671,104	91.55
65	175,717	13,711,081	2,798	764,735	85.56	97.93	16,131	1,048,515	14,759,596	92.11
70	138,848	13,849,929	2,043	766,778	86.43	98.20	14,088	986,160	14,836,089	92.58
75	118,091	13,968,020	1,619	768,397	87.17	98.40	12,469	935,175	14,903,195	93.00
80	108,717	14,076,737	1,394	769,791	87.84	98.58	11,075	886,000	14,962,737	93.37
85	88,913	14,165,650	1,072	770,863	88.40	98.72	10,003	850,255	15,015,905	93.71
90	74,837	14,240,487	852	771,715	88.87	98.83	9,151	823,590	15,064,077	94.01
95	68,407	14,308,894	736	772,451	89.29	98.92	8,415	799,425	15,108,319	94.28
100	66,250	14,375,144	676	773,127	89.71	99.01	7,739	773,900	15,149,044	94.54
105	52,696	14,427,840	512	773,639	90.04	99.07	7,227	758,835	15,186,675	94.77
110	53,221	14,481,061	493	774,132	90.37	99.14	6,734	740,740	15,221,801	94.99
115	50,282	14,531,343	445	774,577	90.68	99.19	6,289	723,235	15,254,578	95.20
120	45,748	14,577,091	388	774,965	90.97	99.24	5,901	708,120	15,285,211	95.39
125	42,439	14,619,530	345	775,310	91.23	99.29	5,556	694,500	15,314,030	95.57
130	39,642	14,659,172	310	775,620	91.48	99.33	5,246	681,980	15,341,152	95.74
135	38,281	14,697,453	288	775,908	91.72	99.37	4,958	669,330	15,366,783	95.90
140	35,576	14,733,029	258	776,166	91.94	99.40	4,700	658,000	15,391,029	96.05

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = APRIL

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	36,157	14,769,186	253	776,419	92.17	99.43	4,447	644,815	15,414,001	96.19
150	30,379	14,799,565	205	776,624	92.36	99.46	4,242	636,300	15,435,865	96.33
155	32,146	14,831,711	210	776,834	92.56	99.48	4,032	624,960	15,456,671	96.46
160	25,741	14,857,452	163	776,997	92.72	99.50	3,869	619,040	15,476,492	96.58
165	26,901	14,884,353	165	777,162	92.88	99.53	3,704	611,160	15,495,513	96.70
170	29,044	14,913,397	173	777,335	93.07	99.55	3,531	600,270	15,513,667	96.81
175	24,405	14,937,802	141	777,476	93.22	99.57	3,390	593,250	15,531,052	96.92
180	25,089	14,962,891	141	777,617	93.37	99.58	3,249	584,820	15,547,711	97.02
185	26,900	14,989,791	147	777,764	93.54	99.60	3,102	573,870	15,563,661	97.12
190	22,159	15,011,950	118	777,882	93.68	99.62	2,984	566,960	15,578,910	97.22
195	25,452	15,037,402	132	778,014	93.84	99.63	2,852	556,140	15,593,542	97.31
200	25,740	15,063,142	130	778,144	94.00	99.65	2,722	544,400	15,607,542	97.40
999,999	961,405	16,024,547	2,722	780,866	100.00	100.00	0	0	16,024,547	100.00
TOTAL	16,024,547		780,866							
AVG. USE	20.5									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = MAY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-1,693	-1,693	17,957	17,957	-0.01	2.31	759,633	0	-1,693	-0.01
1	8,030	6,337	8,030	25,987	0.05	3.34	751,603	751,603	757,940	6.12
2	19,926	26,263	9,963	35,950	0.21	4.62	741,640	1,483,280	1,509,543	12.19
3	54,015	80,278	18,005	53,955	0.65	6.94	723,635	2,170,905	2,251,183	18.17
4	85,364	165,642	21,341	75,296	1.34	9.68	702,294	2,809,176	2,974,818	24.01
5	133,840	299,482	26,768	102,064	2.42	13.13	675,526	3,377,630	3,677,112	29.68
6	200,106	499,588	33,351	135,415	4.03	17.41	642,175	3,853,050	4,352,638	35.14
7	267,687	767,275	38,241	173,656	6.19	22.33	603,934	4,227,538	4,994,813	40.32
8	361,976	1,129,251	45,247	218,903	9.12	28.15	558,687	4,469,496	5,598,747	45.20
9	391,104	1,520,355	43,456	262,359	12.27	33.74	515,231	4,637,079	6,157,434	49.71
10	474,870	1,995,225	47,487	309,846	16.11	39.85	467,744	4,677,440	6,672,665	53.86
11	499,675	2,494,900	45,425	355,271	20.14	45.69	422,319	4,645,509	7,140,409	57.64
12	486,636	2,981,536	40,553	395,824	24.07	50.90	381,766	4,581,192	7,562,728	61.05
13	490,360	3,471,896	37,720	433,544	28.03	55.75	344,046	4,472,598	7,944,494	64.13
14	487,256	3,959,152	34,804	468,348	31.96	60.23	309,242	4,329,388	8,288,540	66.91
15	484,590	4,443,742	32,306	500,654	35.87	64.39	276,936	4,154,040	8,597,782	69.40
16	463,280	4,907,022	28,955	529,609	39.61	68.11	247,981	3,967,696	8,874,718	71.64
17	433,806	5,340,828	25,518	555,127	43.11	71.39	222,463	3,781,871	9,122,699	73.64
18	423,936	5,764,764	23,552	578,679	46.54	74.42	198,911	3,580,398	9,345,162	75.44
19	417,791	6,182,555	21,989	600,668	49.91	77.25	176,922	3,361,518	9,544,073	77.04
20	382,860	6,565,415	19,143	619,811	53.00	79.71	157,779	3,155,580	9,720,995	78.47
25	1,500,506	8,065,921	65,900	685,711	65.11	88.18	91,879	2,296,975	10,362,896	83.65
30	953,717	9,019,638	34,348	720,059	72.81	92.60	57,531	1,725,930	10,745,568	86.74
35	622,175	9,641,813	19,016	739,075	77.83	95.05	38,515	1,348,025	10,989,838	88.71
40	403,469	10,045,282	10,667	749,742	81.09	96.42	27,848	1,113,920	11,159,202	90.08
45	276,149	10,321,431	6,454	756,196	83.32	97.25	21,394	962,730	11,284,161	91.09
50	196,369	10,517,800	4,107	760,303	84.90	97.78	17,287	864,350	11,382,150	91.88
55	149,638	10,667,438	2,829	763,132	86.11	98.14	14,458	795,190	11,462,628	92.53
60	125,879	10,793,317	2,177	765,309	87.13	98.42	12,281	736,860	11,530,177	93.08
65	100,840	10,894,157	1,603	766,912	87.94	98.63	10,678	694,070	11,588,227	93.54
70	83,382	10,977,539	1,228	768,140	88.61	98.78	9,450	661,500	11,639,039	93.95
75	71,012	11,048,551	974	769,114	89.19	98.91	8,476	635,700	11,684,251	94.32
80	64,093	11,112,644	823	769,937	89.71	99.02	7,653	612,240	11,724,884	94.65
85	52,882	11,165,526	638	770,575	90.13	99.10	7,015	596,275	11,761,801	94.95
90	52,758	11,218,284	599	771,174	90.56	99.17	6,416	577,440	11,795,724	95.22
95	47,063	11,265,347	506	771,680	90.94	99.24	5,910	561,450	11,826,797	95.47
100	48,028	11,313,375	491	772,171	91.33	99.30	5,419	541,900	11,855,275	95.70
105	41,938	11,355,313	407	772,578	91.66	99.36	5,012	526,260	11,881,573	95.91
110	38,520	11,393,833	357	772,935	91.98	99.40	4,655	512,050	11,905,883	96.11
115	36,395	11,430,228	322	773,257	92.27	99.44	4,333	498,295	11,928,523	96.29
120	32,677	11,462,905	277	773,534	92.53	99.48	4,056	486,720	11,949,625	96.46
125	33,471	11,496,376	272	773,806	92.80	99.51	3,784	473,000	11,969,376	96.62
130	30,307	11,526,683	237	774,043	93.05	99.54	3,547	461,110	11,987,793	96.77
135	26,971	11,553,654	203	774,246	93.27	99.57	3,344	451,440	12,005,094	96.91
140	22,202	11,575,856	161	774,407	93.44	99.59	3,183	445,620	12,021,476	97.04

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = MAY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR	
									THERMS	PERCENT
145	25,849	11,601,705	181	774,588	93.65	99.61	3,002	435,290	12,036,995	97.17
150	26,637	11,628,342	180	774,768	93.87	99.64	2,822	423,300	12,051,642	97.29
155	22,782	11,651,124	149	774,917	94.05	99.66	2,673	414,315	12,065,439	97.40
160	21,335	11,672,459	135	775,052	94.22	99.67	2,538	406,080	12,078,539	97.50
165	20,536	11,692,995	126	775,178	94.39	99.69	2,412	397,980	12,090,975	97.60
170	20,985	11,713,980	125	775,303	94.56	99.71	2,287	388,790	12,102,770	97.70
175	19,530	11,733,510	113	775,416	94.72	99.72	2,174	380,450	12,113,960	97.79
180	13,882	11,747,392	78	775,494	94.83	99.73	2,096	377,280	12,124,672	97.87
185	21,047	11,768,439	115	775,609	95.00	99.75	1,981	366,485	12,134,924	97.96
190	15,603	11,784,042	83	775,692	95.13	99.76	1,898	360,620	12,144,662	98.04
195	20,245	11,804,287	105	775,797	95.29	99.77	1,793	349,635	12,153,922	98.11
200	15,236	11,819,523	77	775,874	95.41	99.78	1,716	343,200	12,162,723	98.18
999,999	568,425	12,387,948	1,716	777,590	100.00	100.00	0	0	12,387,948	100.00
TOTAL	12,387,948		777,590							
AVG. USE	15.9									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = JUNE

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-12,502	-12,502	24,506	24,506	-0.12	3.15	753,183	0	-12,502	-0.12
1	9,343	-3,159	9,343	33,849	-0.03	4.35	743,840	743,840	740,681	7.16
2	24,710	21,551	12,355	46,204	0.21	5.94	731,485	1,462,970	1,484,521	14.35
3	83,238	104,789	27,746	73,950	1.01	9.51	703,739	2,111,217	2,216,006	21.41
4	132,896	237,685	33,224	107,174	2.30	13.78	670,515	2,682,060	2,919,745	28.22
5	189,625	427,310	37,925	145,099	4.13	18.66	632,590	3,162,950	3,590,260	34.70
6	271,260	698,570	45,210	190,309	6.75	24.47	587,380	3,524,280	4,222,850	40.81
7	343,147	1,041,717	49,021	239,330	10.07	30.77	538,359	3,768,513	4,810,230	46.48
8	426,992	1,468,709	53,374	292,704	14.19	37.64	484,985	3,879,880	5,348,589	51.69
9	438,390	1,907,099	48,710	341,414	18.43	43.90	436,275	3,926,475	5,833,574	56.37
10	460,830	2,367,929	46,083	387,497	22.88	49.83	390,192	3,901,920	6,269,849	60.59
11	550,484	2,918,413	50,044	437,541	28.20	56.26	340,148	3,741,628	6,660,041	64.36
12	468,492	3,386,905	39,041	476,582	32.73	61.28	301,107	3,613,284	7,000,189	67.65
13	451,633	3,838,538	34,741	511,323	37.09	65.75	266,366	3,462,758	7,301,296	70.56
14	436,338	4,274,876	31,167	542,490	41.31	69.76	235,199	3,292,786	7,567,662	73.13
15	416,400	4,691,276	27,760	570,250	45.34	73.33	207,439	3,111,585	7,802,861	75.40
16	392,240	5,083,516	24,515	594,765	49.13	76.48	182,924	2,926,784	8,010,300	77.41
17	379,015	5,462,531	22,295	617,060	52.79	79.35	160,629	2,730,693	8,193,224	79.18
18	329,328	5,791,859	18,296	635,356	55.97	81.70	142,333	2,561,994	8,353,853	80.73
19	318,212	6,110,071	16,748	652,104	59.05	83.85	125,585	2,386,115	8,496,186	82.10
20	289,240	6,399,311	14,462	666,566	61.84	85.71	111,123	2,222,460	8,621,771	83.32
25	1,111,046	7,510,357	48,856	715,422	72.58	91.99	62,267	1,556,675	9,067,032	87.62
30	662,954	8,173,311	23,902	739,324	78.98	95.07	38,365	1,150,950	9,324,261	90.11
35	420,997	8,594,308	12,829	752,153	83.05	96.72	25,536	893,760	9,488,068	91.69
40	257,577	8,851,885	6,811	758,964	85.54	97.59	18,725	749,000	9,600,885	92.78
45	172,908	9,024,793	4,040	763,004	87.21	98.11	14,685	660,825	9,685,618	93.60
50	131,759	9,156,552	2,754	765,758	88.49	98.47	11,931	596,550	9,753,102	94.25
55	103,506	9,260,058	1,958	767,716	89.49	98.72	9,973	548,515	9,808,573	94.79
60	86,521	9,346,579	1,493	769,209	90.32	98.91	8,480	508,800	9,855,379	95.24
65	71,945	9,418,524	1,143	770,352	91.02	99.06	7,337	476,905	9,895,429	95.63
70	63,495	9,482,019	936	771,288	91.63	99.18	6,401	448,070	9,930,089	95.96
75	50,433	9,532,452	691	771,979	92.12	99.27	5,710	428,250	9,960,702	96.26
80	49,112	9,581,564	631	772,610	92.59	99.35	5,079	406,320	9,987,884	96.52
85	42,402	9,623,966	511	773,121	93.00	99.41	4,568	388,280	10,012,246	96.76
90	36,006	9,659,972	410	773,531	93.35	99.47	4,158	374,220	10,034,192	96.97
95	39,684	9,699,656	427	773,958	93.73	99.52	3,731	354,445	10,054,101	97.16
100	32,703	9,732,359	334	774,292	94.05	99.56	3,397	339,700	10,072,059	97.33
105	29,238	9,761,597	284	774,576	94.33	99.60	3,113	326,865	10,088,462	97.49
110	25,355	9,786,952	235	774,811	94.58	99.63	2,878	316,580	10,103,532	97.64
115	26,260	9,813,212	233	775,044	94.83	99.66	2,645	304,175	10,117,387	97.77
120	21,741	9,834,953	184	775,228	95.04	99.68	2,461	295,320	10,130,273	97.90
125	20,914	9,855,867	170	775,398	95.24	99.71	2,291	286,375	10,142,242	98.01
130	23,150	9,879,017	181	775,579	95.47	99.73	2,110	274,300	10,153,317	98.12
135	19,154	9,898,171	144	775,723	95.65	99.75	1,966	265,410	10,163,581	98.22
140	17,076	9,915,247	124	775,847	95.82	99.76	1,842	257,880	10,173,127	98.31

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = JUNE

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	19,144	9,934,391	134	775,981	96.00	99.78	1,708	247,660	10,182,051	98.40
150	13,900	9,948,291	94	776,075	96.14	99.79	1,614	242,100	10,190,391	98.48
155	17,133	9,965,424	112	776,187	96.30	99.81	1,502	232,810	10,198,234	98.55
160	14,389	9,979,813	91	776,278	96.44	99.82	1,411	225,760	10,205,573	98.62
165	13,192	9,993,005	81	776,359	96.57	99.83	1,330	219,450	10,212,455	98.69
170	12,098	10,005,103	72	776,431	96.69	99.84	1,258	213,860	10,218,963	98.75
175	11,753	10,016,856	68	776,499	96.80	99.85	1,190	208,250	10,225,106	98.81
180	15,318	10,032,174	86	776,585	96.95	99.86	1,104	198,720	10,230,894	98.87
185	13,352	10,045,526	73	776,658	97.08	99.87	1,031	190,735	10,236,261	98.92
190	12,404	10,057,930	66	776,724	97.20	99.88	965	183,350	10,241,280	98.97
195	11,573	10,069,503	60	776,784	97.31	99.88	905	176,475	10,245,978	99.01
200	11,102	10,080,605	56	776,840	97.42	99.89	849	169,800	10,250,405	99.06
999,999	267,359	10,347,964	849	777,689	100.00	100.00	0	0	10,347,964	100.00
TOTAL	10,347,964		777,689							
AVG. USE	13.3									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = JULY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-172	-172	28,508	28,508	-0.00	3.66	750,570	0	-172	-0.00
1	11,060	10,888	11,060	39,568	0.12	5.08	739,510	739,510	750,398	8.59
2	31,890	42,778	15,945	55,513	0.49	7.13	723,565	1,447,130	1,489,908	17.06
3	125,325	168,103	41,775	97,288	1.93	12.49	681,790	2,045,370	2,213,473	25.35
4	191,380	359,483	47,845	145,133	4.12	18.63	633,945	2,535,780	2,895,263	33.16
5	256,735	616,218	51,347	196,480	7.06	25.22	582,598	2,912,990	3,529,208	40.42
6	333,636	949,854	55,606	252,086	10.88	32.36	526,992	3,161,952	4,111,806	47.10
7	392,770	1,342,624	56,110	308,196	15.38	39.56	470,882	3,296,174	4,638,798	53.13
8	429,248	1,771,872	53,656	361,852	20.29	46.45	417,226	3,337,808	5,109,680	58.52
9	485,172	2,257,044	53,908	415,760	25.85	53.37	363,318	3,269,862	5,526,906	63.30
10	454,240	2,711,284	45,424	461,184	31.05	59.20	317,894	3,178,940	5,890,224	67.46
11	479,039	3,190,323	43,549	504,733	36.54	64.79	274,345	3,017,795	6,208,118	71.11
12	461,712	3,652,035	38,476	543,209	41.83	69.72	235,869	2,830,428	6,482,463	74.25
13	401,804	4,053,839	30,908	574,117	46.43	73.69	204,961	2,664,493	6,718,332	76.95
14	377,552	4,431,391	26,968	601,085	50.76	77.15	177,993	2,491,902	6,923,293	79.30
15	348,525	4,779,916	23,235	624,320	54.75	80.14	154,758	2,321,370	7,101,286	81.34
16	319,056	5,098,972	19,941	644,261	58.40	82.70	134,817	2,157,072	7,256,044	83.11
17	299,115	5,398,087	17,595	661,856	61.83	84.95	117,222	1,992,774	7,390,861	84.65
18	270,882	5,668,969	15,049	676,905	64.93	86.89	102,173	1,839,114	7,508,083	86.00
19	246,069	5,915,038	12,951	689,856	67.75	88.55	89,222	1,695,218	7,610,256	87.17
20	227,900	6,142,938	11,395	701,251	70.36	90.01	77,827	1,556,540	7,699,478	88.19
25	804,106	6,947,044	35,444	736,695	79.57	94.56	42,383	1,059,575	8,006,619	91.71
30	473,373	7,420,417	17,087	753,782	84.99	96.75	25,296	758,880	8,179,297	93.68
35	276,904	7,697,321	8,455	762,237	88.16	97.84	16,841	589,435	8,286,756	94.91
40	177,208	7,874,529	4,691	766,928	90.19	98.44	12,150	486,000	8,360,529	95.76
45	127,209	8,001,738	2,971	769,899	91.65	98.82	9,179	413,055	8,414,793	96.38
50	95,331	8,097,069	1,994	771,893	92.74	99.08	7,185	359,250	8,456,319	96.86
55	74,400	8,171,469	1,409	773,302	93.59	99.26	5,776	317,680	8,489,149	97.23
60	63,144	8,234,613	1,091	774,393	94.32	99.40	4,685	281,100	8,515,713	97.54
65	49,228	8,283,841	782	775,175	94.88	99.50	3,903	253,695	8,537,536	97.79
70	39,466	8,323,307	581	775,756	95.33	99.57	3,322	232,540	8,555,847	98.00
75	33,973	8,357,280	465	776,221	95.72	99.63	2,857	214,275	8,571,555	98.18
80	29,458	8,386,738	378	776,599	96.06	99.68	2,479	198,320	8,585,058	98.33
85	25,134	8,411,872	303	776,902	96.35	99.72	2,176	184,960	8,596,832	98.47
90	24,178	8,436,050	275	777,177	96.62	99.76	1,901	171,090	8,607,140	98.58
95	21,629	8,457,679	233	777,410	96.87	99.79	1,668	158,460	8,616,139	98.69
100	17,012	8,474,691	174	777,584	97.07	99.81	1,494	149,400	8,624,091	98.78
105	16,374	8,491,065	159	777,743	97.25	99.83	1,335	140,175	8,631,240	98.86
110	15,517	8,506,582	144	777,887	97.43	99.85	1,191	131,010	8,637,592	98.93
115	15,804	8,522,386	140	778,027	97.61	99.87	1,051	120,865	8,643,251	99.00
120	9,894	8,532,280	84	778,111	97.73	99.88	967	116,040	8,648,320	99.06
125	10,786	8,543,066	88	778,199	97.85	99.89	879	109,875	8,652,941	99.11
130	9,097	8,552,163	71	778,270	97.95	99.90	808	105,040	8,657,203	99.16
135	8,517	8,560,680	64	778,334	98.05	99.90	744	100,440	8,661,120	99.20
140	8,408	8,569,088	61	778,395	98.15	99.91	683	95,620	8,664,708	99.24

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = JULY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	7,310	8,576,398	51	778,446	98.23	99.92	632	91,640	8,668,038	99.28
150	8,273	8,584,671	56	778,502	98.33	99.93	576	86,400	8,671,071	99.32
155	6,117	8,590,788	40	778,542	98.40	99.93	536	83,080	8,673,868	99.35
160	6,160	8,596,948	39	778,581	98.47	99.94	497	79,520	8,676,468	99.38
165	6,191	8,603,139	38	778,619	98.54	99.94	459	75,735	8,678,874	99.41
170	5,037	8,608,176	30	778,649	98.60	99.94	429	72,930	8,681,106	99.43
175	3,278	8,611,454	19	778,668	98.63	99.95	410	71,750	8,683,204	99.45
180	4,808	8,616,262	27	778,695	98.69	99.95	383	68,940	8,685,202	99.48
185	6,249	8,622,511	34	778,729	98.76	99.96	349	64,565	8,687,076	99.50
190	3,197	8,625,708	17	778,746	98.80	99.96	332	63,080	8,688,788	99.52
195	4,241	8,629,949	22	778,768	98.84	99.96	310	60,450	8,690,399	99.54
200	3,169	8,633,118	16	778,784	98.88	99.96	294	58,800	8,691,918	99.55
999,999	97,688	8,730,806	294	779,078	100.00	100.00	0	0	8,730,806	100.00
TOTAL	8,730,806		779,078							
AVG. USE	11.2									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = AUGUST

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	31,001	31,001	0.00	3.97	749,599	0	0	0.00
1	12,404	12,404	12,404	43,405	0.16	5.56	737,195	737,195	749,599	9.68
2	42,878	55,282	21,439	64,844	0.71	8.31	715,756	1,431,512	1,486,794	19.19
3	164,583	219,865	54,861	119,705	2.84	15.33	660,895	1,982,685	2,202,550	28.43
4	234,884	454,749	58,721	178,426	5.87	22.86	602,174	2,408,696	2,863,445	36.97
5	299,150	753,899	59,830	238,256	9.73	30.52	542,344	2,711,720	3,465,619	44.74
6	374,538	1,128,437	62,423	300,679	14.57	38.52	479,921	2,879,526	4,007,963	51.74
7	418,334	1,546,771	59,762	360,441	19.97	46.17	420,159	2,941,113	4,487,884	57.94
8	447,352	1,994,123	55,919	416,360	25.74	53.34	364,240	2,913,920	4,908,043	63.36
9	466,542	2,460,665	51,838	468,198	31.77	59.98	312,402	2,811,618	5,272,283	68.06
10	434,950	2,895,615	43,495	511,693	37.38	65.55	268,907	2,689,070	5,584,685	72.10
11	454,003	3,349,618	41,273	552,966	43.24	70.84	227,634	2,503,974	5,853,592	75.57
12	409,884	3,759,502	34,157	587,123	48.53	75.21	193,477	2,321,724	6,081,226	78.51
13	358,397	4,117,899	27,569	614,692	53.16	78.75	165,908	2,156,804	6,274,703	81.00
14	332,318	4,450,217	23,737	638,429	57.45	81.79	142,171	1,990,394	6,440,611	83.15
15	298,380	4,748,597	19,892	658,321	61.30	84.34	122,279	1,834,185	6,582,782	84.98
16	271,904	5,020,501	16,994	675,315	64.81	86.51	105,285	1,684,560	6,705,061	86.56
17	248,778	5,269,279	14,634	689,949	68.02	88.39	90,651	1,541,067	6,810,346	87.92
18	222,732	5,492,011	12,374	702,323	70.90	89.97	78,277	1,408,986	6,900,997	89.09
19	200,659	5,692,670	10,561	712,884	73.49	91.33	67,716	1,286,604	6,979,274	90.10
20	181,000	5,873,670	9,050	721,934	75.83	92.48	58,666	1,173,320	7,046,990	90.97
25	629,017	6,502,687	27,755	749,689	83.95	96.04	30,911	772,775	7,275,462	93.92
30	349,167	6,851,854	12,598	762,287	88.45	97.65	18,313	549,390	7,401,244	95.55
35	209,482	7,061,336	6,401	768,688	91.16	98.47	11,912	416,920	7,478,256	96.54
40	129,394	7,190,730	3,427	772,115	92.83	98.91	8,485	339,400	7,530,130	97.21
45	96,476	7,287,206	2,256	774,371	94.07	99.20	6,229	280,305	7,567,511	97.69
50	70,465	7,357,671	1,472	775,843	94.98	99.39	4,757	237,850	7,595,521	98.06
55	53,942	7,411,613	1,022	776,865	95.68	99.52	3,735	205,425	7,617,038	98.33
60	42,614	7,454,227	736	777,601	96.23	99.62	2,999	179,940	7,634,167	98.55
65	36,417	7,490,644	578	778,179	96.70	99.69	2,421	157,365	7,648,009	98.73
70	30,250	7,520,894	445	778,624	97.09	99.75	1,976	138,320	7,659,214	98.88
75	23,366	7,544,260	320	778,944	97.39	99.79	1,656	124,200	7,668,460	99.00
80	21,756	7,566,016	279	779,223	97.67	99.82	1,377	110,160	7,676,176	99.10
85	16,911	7,582,927	204	779,427	97.89	99.85	1,173	99,705	7,682,632	99.18
90	14,589	7,597,516	166	779,593	98.08	99.87	1,007	90,630	7,688,146	99.25
95	12,337	7,609,853	133	779,726	98.24	99.89	874	83,030	7,692,883	99.31
100	10,856	7,620,709	111	779,837	98.38	99.90	763	76,300	7,697,009	99.37
105	10,188	7,630,897	99	779,936	98.51	99.91	664	69,720	7,700,617	99.41
110	9,827	7,640,724	91	780,027	98.64	99.93	573	63,030	7,703,754	99.45
115	8,255	7,648,979	73	780,100	98.75	99.94	500	57,500	7,706,479	99.49
120	6,139	7,655,118	52	780,152	98.82	99.94	448	53,760	7,708,878	99.52
125	5,146	7,660,264	42	780,194	98.89	99.95	406	50,750	7,711,014	99.55
130	5,116	7,665,380	40	780,234	98.96	99.95	366	47,580	7,712,960	99.57
135	5,184	7,670,564	39	780,273	99.02	99.96	327	44,145	7,714,709	99.59
140	3,460	7,674,024	25	780,298	99.07	99.96	302	42,280	7,716,304	99.61

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-5 CLASS = RESIDENTIAL AREA = ARIZONA PERIOD = AUGUST

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	3,841	7,677,865	27	780,325	99.12	99.96	275	39,875	7,717,740	99.63
150	2,806	7,680,671	19	780,344	99.15	99.97	256	38,400	7,719,071	99.65
155	2,743	7,683,414	18	780,362	99.19	99.97	238	36,890	7,720,304	99.67
160	3,002	7,686,416	19	780,381	99.23	99.97	219	35,040	7,721,456	99.68
165	2,455	7,688,871	15	780,396	99.26	99.97	204	33,660	7,722,531	99.69
170	3,194	7,692,065	19	780,415	99.30	99.98	185	31,450	7,723,515	99.71
175	3,281	7,695,346	19	780,434	99.34	99.98	166	29,050	7,724,396	99.72
180	1,596	7,696,942	9	780,443	99.36	99.98	157	28,260	7,725,202	99.73
185	2,013	7,698,955	11	780,454	99.39	99.98	146	27,010	7,725,965	99.74
190	2,257	7,701,212	12	780,466	99.42	99.98	134	25,460	7,726,672	99.75
195	1,157	7,702,369	6	780,472	99.43	99.98	128	24,960	7,727,329	99.76
200	1,786	7,704,155	9	780,481	99.46	99.98	119	23,800	7,727,955	99.76
999,999	42,029	7,746,184	119	780,600	100.00	100.00	0	0	7,746,184	100.00
TOTAL	7,746,184		780,600							
AVG. USE	9.9									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = SEPTEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	844	844	0.00	2.68	30,620	0	0	0.00
1	526	526	526	1,370	0.16	4.35	30,094	30,094	30,620	9.30
2	1,364	1,890	682	2,052	0.57	6.52	29,412	58,824	60,714	18.45
3	5,244	7,134	1,748	3,800	2.17	12.08	27,664	82,992	90,126	27.39
4	8,224	15,358	2,056	5,856	4.67	18.61	25,608	102,432	117,790	35.79
5	11,145	26,503	2,229	8,085	8.05	25.70	23,379	116,895	143,398	43.58
6	13,254	39,757	2,209	10,294	12.08	32.72	21,170	127,020	166,777	50.68
7	15,148	54,905	2,164	12,458	16.68	39.59	19,006	133,042	187,947	57.11
8	18,184	73,089	2,273	14,731	22.21	46.82	16,733	133,864	206,953	62.89
9	17,559	90,648	1,951	16,682	27.55	53.02	14,782	133,038	223,686	67.97
10	23,520	114,168	2,352	19,034	34.69	60.49	12,430	124,300	238,468	72.46
11	19,008	133,176	1,728	20,762	40.47	65.99	10,702	117,722	250,898	76.24
12	17,616	150,792	1,468	22,230	45.82	70.65	9,234	110,808	261,600	79.49
13	18,057	168,849	1,389	23,619	51.31	75.07	7,845	101,985	270,834	82.30
14	16,324	185,173	1,166	24,785	56.27	78.77	6,679	93,506	278,679	84.68
15	14,205	199,378	947	25,732	60.59	81.78	5,732	85,980	285,358	86.71
16	14,128	213,506	883	26,615	64.88	84.59	4,849	77,584	291,090	88.45
17	11,764	225,270	692	27,307	68.45	86.79	4,157	70,669	295,939	89.93
18	11,448	236,718	636	27,943	71.93	88.81	3,521	63,378	300,096	91.19
19	10,203	246,921	537	28,480	75.03	90.52	2,984	56,696	303,617	92.26
20	8,800	255,721	440	28,920	77.71	91.91	2,544	50,880	306,601	93.17
25	31,451	287,172	1,388	30,308	87.26	96.33	1,156	28,900	316,072	96.05
30	17,728	304,900	640	30,948	92.65	98.36	516	15,480	320,380	97.36
35	8,833	313,733	271	31,219	95.34	99.22	245	8,575	322,308	97.94
40	3,774	317,507	101	31,320	96.48	99.54	144	5,760	323,267	98.23
45	2,446	319,953	57	31,377	97.23	99.72	87	3,915	323,868	98.42
50	1,189	321,142	25	31,402	97.59	99.80	62	3,100	324,242	98.53
55	1,310	322,452	25	31,427	97.99	99.88	37	2,035	324,487	98.60
60	748	323,200	13	31,440	98.21	99.92	24	1,440	324,640	98.65
65	316	323,516	5	31,445	98.31	99.94	19	1,235	324,751	98.68
70	67	323,583	1	31,446	98.33	99.94	18	1,260	324,843	98.71
75	71	323,654	1	31,447	98.35	99.95	17	1,275	324,929	98.74
80	546	324,200	7	31,454	98.52	99.97	10	800	325,000	98.76
85	81	324,281	1	31,455	98.54	99.97	9	765	325,046	98.77
90	0	324,281	0	31,455	98.54	99.97	9	810	325,091	98.79
95	91	324,372	1	31,456	98.57	99.97	8	760	325,132	98.80
100	197	324,569	2	31,458	98.63	99.98	6	600	325,169	98.81
105	102	324,671	1	31,459	98.66	99.98	5	525	325,196	98.82
110	107	324,778	1	31,460	98.69	99.99	4	440	325,218	98.83
115	0	324,778	0	31,460	98.69	99.99	4	460	325,238	98.83
120	0	324,778	0	31,460	98.69	99.99	4	480	325,258	98.84
125	124	324,902	1	31,461	98.73	99.99	3	375	325,277	98.84
130	0	324,902	0	31,461	98.73	99.99	3	390	325,292	98.85
135	132	325,034	1	31,462	98.77	99.99	2	270	325,304	98.85
140	0	325,034	0	31,462	98.77	99.99	2	280	325,314	98.85

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = SEPTEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	0	325,034	0	31,462	98.77	99.99	2	290	325,324	98.86
150	0	325,034	0	31,462	98.77	99.99	2	300	325,334	98.86
155	0	325,034	0	31,462	98.77	99.99	2	310	325,344	98.86
160	0	325,034	0	31,462	98.77	99.99	2	320	325,354	98.87
165	0	325,034	0	31,462	98.77	99.99	2	330	325,364	98.87
170	0	325,034	0	31,462	98.77	99.99	2	340	325,374	98.87
175	0	325,034	0	31,462	98.77	99.99	2	350	325,384	98.88
180	179	325,213	1	31,463	98.82	100.00	1	180	325,393	98.88
185	0	325,213	0	31,463	98.82	100.00	1	185	325,398	98.88
190	0	325,213	0	31,463	98.82	100.00	1	190	325,403	98.88
195	0	325,213	0	31,463	98.82	100.00	1	195	325,408	98.88
200	0	325,213	0	31,463	98.82	100.00	1	200	325,413	98.88
999,999	3,870	329,083	1	31,464	100.00	100.00	0	0	329,083	100.00
TOTAL	329,083		31,464							
AVG. USE	10.5									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = OCTOBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-10	-10	707	707	-0.00	2.24	30,914	0	-10	-0.00
1	455	445	455	1,162	0.12	3.67	30,459	30,459	30,904	8.67
2	1,234	1,679	617	1,779	0.47	5.63	29,842	59,684	61,363	17.22
3	4,143	5,822	1,381	3,160	1.63	9.99	28,461	85,383	91,205	25.60
4	7,120	12,942	1,780	4,940	3.63	15.62	26,681	106,724	119,666	33.59
5	9,770	22,712	1,954	6,894	6.38	21.80	24,727	123,635	146,347	41.08
6	12,168	34,880	2,028	8,922	9.79	28.22	22,699	136,194	171,074	48.02
7	14,686	49,566	2,098	11,020	13.91	34.85	20,601	144,207	193,773	54.39
8	17,384	66,950	2,173	13,193	18.79	41.72	18,428	147,424	214,374	60.17
9	17,208	84,158	1,912	15,105	23.62	47.77	16,516	148,644	232,802	65.34
10	24,780	108,938	2,478	17,583	30.58	55.61	14,038	140,380	249,318	69.98
11	17,919	126,857	1,629	19,212	35.61	60.76	12,409	136,499	263,356	73.92
12	19,164	146,021	1,597	20,809	40.99	65.81	10,812	129,744	275,765	77.40
13	17,017	163,038	1,309	22,118	45.76	69.95	9,503	123,539	286,577	80.44
14	19,026	182,064	1,359	23,477	51.10	74.24	8,144	114,016	296,080	83.11
15	16,155	198,219	1,077	24,554	55.64	77.65	7,067	106,005	304,224	85.39
16	15,760	213,979	985	25,539	60.06	80.77	6,082	97,312	311,291	87.38
17	15,079	229,058	887	26,426	64.29	83.57	5,195	88,315	317,373	89.08
18	12,888	241,946	716	27,142	67.91	85.84	4,479	80,622	322,568	90.54
19	11,381	253,327	599	27,741	71.11	87.73	3,880	73,720	327,047	91.80
20	11,480	264,807	574	28,315	74.33	89.54	3,306	66,120	330,927	92.89
25	39,961	304,768	1,757	30,072	85.55	95.10	1,549	38,725	343,493	96.41
30	22,059	326,827	796	30,868	91.74	97.62	753	22,590	349,417	98.08
35	12,392	339,219	381	31,249	95.22	98.82	372	13,020	352,239	98.87
40	6,678	345,897	177	31,426	97.09	99.38	195	7,800	353,697	99.28
45	3,245	349,142	76	31,502	98.00	99.62	119	5,355	354,497	99.50
50	2,251	351,393	47	31,549	98.63	99.77	72	3,600	354,993	99.64
55	1,166	352,559	22	31,571	98.96	99.84	50	2,750	355,309	99.73
60	578	353,137	10	31,581	99.12	99.87	40	2,400	355,537	99.80
65	944	354,081	15	31,596	99.39	99.92	25	1,625	355,706	99.84
70	483	354,564	7	31,603	99.52	99.94	18	1,260	355,824	99.88
75	74	354,638	1	31,604	99.54	99.95	17	1,275	355,913	99.90
80	233	354,871	3	31,607	99.61	99.96	14	1,120	355,991	99.92
85	501	355,372	6	31,613	99.75	99.97	8	680	356,052	99.94
90	176	355,548	2	31,615	99.80	99.98	6	540	356,088	99.95
95	184	355,732	2	31,617	99.85	99.99	4	380	356,112	99.96
100	0	355,732	0	31,617	99.85	99.99	4	400	356,132	99.96
105	0	355,732	0	31,617	99.85	99.99	4	420	356,152	99.97
110	106	355,838	1	31,618	99.88	99.99	3	330	356,168	99.97
115	115	355,953	1	31,619	99.91	99.99	2	230	356,183	99.98
120	0	355,953	0	31,619	99.91	99.99	2	240	356,193	99.98
125	0	355,953	0	31,619	99.91	99.99	2	250	356,203	99.98
130	128	356,081	1	31,620	99.95	100.00	1	130	356,211	99.98
135	0	356,081	0	31,620	99.95	100.00	1	135	356,216	99.99
140	0	356,081	0	31,620	99.95	100.00	1	140	356,221	99.99

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = OCTOBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	0	356,081	0	31,620	99.95	100.00	1	145	356,226	99.99
150	0	356,081	0	31,620	99.95	100.00	1	150	356,231	99.99
155	0	356,081	0	31,620	99.95	100.00	1	155	356,236	99.99
160	0	356,081	0	31,620	99.95	100.00	1	160	356,241	99.99
165	0	356,081	0	31,620	99.95	100.00	1	165	356,246	99.99
170	0	356,081	0	31,620	99.95	100.00	1	170	356,251	100.00
175	0	356,081	0	31,620	99.95	100.00	1	175	356,256	100.00
180	0	356,081	0	31,620	99.95	100.00	1	180	356,261	100.00
185	185	356,266	1	31,621	100.00	100.00	0	0	356,266	100.00
190	0	356,266	0	31,621	100.00	100.00	0	0	356,266	100.00
195	0	356,266	0	31,621	100.00	100.00	0	0	356,266	100.00
200	0	356,266	0	31,621	100.00	100.00	0	0	356,266	100.00
999,999	0	356,266	0	31,621	100.00	100.00	0	0	356,266	100.00
TOTAL	356,266		31,621							
AVG. USE	11.3									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = NOVEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-15	-15	340	340	-0.00	1.08	31,249	0	-15	-0.00
1	238	223	238	578	0.04	1.83	31,011	31,011	31,234	5.30
2	552	775	276	854	0.13	2.70	30,735	61,470	62,245	10.57
3	1,428	2,203	476	1,330	0.37	4.21	30,259	90,777	92,980	15.79
4	2,792	4,995	698	2,028	0.85	6.42	29,561	118,244	123,239	20.93
5	4,695	9,690	939	2,967	1.65	9.39	28,622	143,110	152,800	25.95
6	6,198	15,888	1,033	4,000	2.70	12.66	27,589	165,534	181,422	30.81
7	7,882	23,770	1,126	5,126	4.04	16.23	26,463	185,241	209,011	35.49
8	10,776	34,546	1,347	6,473	5.87	20.49	25,116	200,928	235,474	39.99
9	11,151	45,697	1,239	7,712	7.76	24.41	23,877	214,893	260,590	44.25
10	16,100	61,797	1,610	9,322	10.49	29.51	22,267	222,670	284,467	48.30
11	15,499	77,296	1,409	10,731	13.13	33.97	20,858	229,438	306,734	52.09
12	15,936	93,232	1,328	12,059	15.83	38.17	19,530	234,360	327,592	55.63
13	16,471	109,703	1,267	13,326	18.63	42.19	18,263	237,419	347,122	58.94
14	17,444	127,147	1,246	14,572	21.59	46.13	17,017	238,238	365,385	62.05
15	17,430	144,577	1,162	15,734	24.55	49.81	15,855	237,825	382,402	64.94
16	19,184	163,761	1,199	16,933	27.81	53.60	14,656	234,496	398,257	67.63
17	18,207	181,968	1,071	18,004	30.90	56.99	13,585	230,945	412,913	70.12
18	19,278	201,246	1,071	19,075	34.17	60.38	12,514	225,252	426,498	72.42
19	17,594	218,840	926	20,001	37.16	63.32	11,588	220,172	439,012	74.55
20	18,840	237,680	942	20,943	40.36	66.30	10,646	212,920	450,600	76.52
25	81,125	318,805	3,550	24,493	54.14	77.54	7,096	177,400	496,205	84.26
30	66,551	385,356	2,394	26,887	65.44	85.12	4,702	141,060	526,416	89.39
35	55,257	440,613	1,692	28,579	74.82	90.47	3,010	105,350	545,963	92.71
40	37,047	477,660	980	29,559	81.11	93.57	2,030	81,200	558,860	94.90
45	27,657	505,317	647	30,206	85.81	95.62	1,383	62,235	567,552	96.38
50	21,153	526,470	442	30,648	89.40	97.02	941	47,050	573,520	97.39
55	15,254	541,724	290	30,938	91.99	97.94	651	35,805	577,529	98.07
60	10,929	552,653	189	31,127	93.85	98.54	462	27,720	580,373	98.55
65	8,619	561,272	137	31,264	95.31	98.97	325	21,125	582,397	98.90
70	6,391	567,663	94	31,358	96.39	99.27	231	16,170	583,833	99.14
75	4,082	571,745	56	31,414	97.09	99.45	175	13,125	584,870	99.32
80	3,789	575,534	49	31,463	97.73	99.60	126	10,080	585,614	99.44
85	2,156	577,690	26	31,489	98.10	99.68	100	8,500	586,190	99.54
90	1,232	578,922	14	31,503	98.31	99.73	86	7,740	586,662	99.62
95	2,491	581,413	27	31,530	98.73	99.81	59	5,605	587,018	99.68
100	1,076	582,489	11	31,541	98.91	99.85	48	4,800	587,289	99.73
105	1,126	583,615	11	31,552	99.10	99.88	37	3,885	587,500	99.76
110	982	584,597	9	31,561	99.27	99.91	28	3,080	587,677	99.79
115	684	585,281	6	31,567	99.39	99.93	22	2,530	587,811	99.82
120	597	585,878	5	31,572	99.49	99.95	17	2,040	587,918	99.83
125	488	586,366	4	31,576	99.57	99.96	13	1,625	587,991	99.85
130	127	586,493	1	31,577	99.59	99.96	12	1,560	588,053	99.86
135	0	586,493	0	31,577	99.59	99.96	12	1,620	588,113	99.87
140	0	586,493	0	31,577	99.59	99.96	12	1,680	588,173	99.88

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = NOVEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	428	586,921	3	31,580	99.66	99.97	9	1,305	588,226	99.89
150	299	587,220	2	31,582	99.71	99.98	7	1,050	588,270	99.89
155	0	587,220	0	31,582	99.71	99.98	7	1,085	588,305	99.90
160	0	587,220	0	31,582	99.71	99.98	7	1,120	588,340	99.91
165	161	587,381	1	31,583	99.74	99.98	6	990	588,371	99.91
170	0	587,381	0	31,583	99.74	99.98	6	1,020	588,401	99.92
175	173	587,554	1	31,584	99.77	99.98	5	875	588,429	99.92
180	0	587,554	0	31,584	99.77	99.98	5	900	588,454	99.92
185	0	587,554	0	31,584	99.77	99.98	5	925	588,479	99.93
190	0	587,554	0	31,584	99.77	99.98	5	950	588,504	99.93
195	0	587,554	0	31,584	99.77	99.98	5	975	588,529	99.94
200	0	587,554	0	31,584	99.77	99.98	5	1,000	588,554	99.94
999,999	1,345	588,899	5	31,589	100.00	100.00	0	0	588,899	100.00
TOTAL	588,899		31,589							

AVG. USE 18.6

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = DECEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-1	-1	163	163	-0.00	0.52	31,370	0	-1	-0.00
1	74	73	74	237	0.00	0.75	31,296	31,296	31,369	1.96
2	132	205	66	303	0.01	0.96	31,230	62,460	62,665	3.91
3	321	526	107	410	0.03	1.30	31,123	93,369	93,895	5.85
4	436	962	109	519	0.06	1.65	31,014	124,056	125,018	7.79
5	710	1,672	142	661	0.10	2.10	30,872	154,360	156,032	9.73
6	906	2,578	151	812	0.16	2.58	30,721	184,326	186,904	11.65
7	1,267	3,845	181	993	0.24	3.15	30,540	213,780	217,625	13.56
8	1,632	5,477	204	1,197	0.34	3.80	30,336	242,688	248,165	15.47
9	1,908	7,385	212	1,409	0.46	4.47	30,124	271,116	278,501	17.36
10	3,140	10,525	314	1,723	0.66	5.46	29,810	298,100	308,625	19.24
11	2,860	13,385	260	1,983	0.83	6.29	29,550	325,050	338,435	21.09
12	3,492	16,877	291	2,274	1.05	7.21	29,259	351,108	367,985	22.94
13	4,199	21,076	323	2,597	1.31	8.24	28,936	376,168	397,244	24.76
14	4,410	25,486	315	2,912	1.59	9.23	28,621	400,694	426,180	26.56
15	4,980	30,466	332	3,244	1.90	10.29	28,289	424,335	454,801	28.35
16	5,408	35,874	338	3,582	2.24	11.36	27,951	447,216	483,090	30.11
17	5,253	41,127	309	3,891	2.56	12.34	27,642	469,914	511,041	31.85
18	6,462	47,589	359	4,250	2.97	13.48	27,283	491,094	538,683	33.57
19	7,353	54,942	387	4,637	3.42	14.71	26,896	511,024	565,966	35.28
20	6,960	61,902	348	4,985	3.86	15.81	26,548	530,960	592,862	36.95
25	49,289	111,191	2,139	7,124	6.93	22.59	24,409	610,225	721,416	44.96
30	61,666	172,857	2,199	9,323	10.77	29.57	22,210	666,300	839,157	52.30
35	77,294	250,151	2,344	11,667	15.59	37.00	19,866	695,310	945,461	58.93
40	83,414	333,565	2,198	13,865	20.79	43.97	17,668	706,720	1,040,285	64.84
45	91,117	424,682	2,121	15,986	26.47	50.70	15,547	699,615	1,124,297	70.08
50	94,682	519,364	1,972	17,958	32.37	56.95	13,575	678,750	1,198,114	74.68
55	102,849	622,213	1,945	19,903	38.78	63.12	11,630	639,650	1,261,863	78.65
60	95,750	717,963	1,651	21,554	44.75	68.35	9,979	598,740	1,316,703	82.07
65	90,488	808,451	1,437	22,991	50.39	72.91	8,542	555,230	1,363,681	85.00
70	85,621	894,072	1,259	24,250	55.73	76.90	7,283	509,810	1,403,882	87.50
75	89,301	983,373	1,224	25,474	61.29	80.79	6,059	454,425	1,437,798	89.61
80	75,805	1,059,178	973	26,447	66.02	83.87	5,086	406,880	1,466,058	91.38
85	71,277	1,130,455	860	27,307	70.46	86.60	4,226	359,210	1,489,665	92.85
90	60,916	1,191,371	693	28,000	74.26	88.80	3,533	317,970	1,509,341	94.07
95	54,999	1,246,370	592	28,592	77.68	90.67	2,941	279,395	1,525,765	95.10
100	47,737	1,294,107	488	29,080	80.66	92.22	2,453	245,300	1,539,407	95.95
105	45,225	1,339,332	439	29,519	83.48	93.61	2,014	211,470	1,550,802	96.66
110	37,892	1,377,224	351	29,870	85.84	94.73	1,663	182,930	1,560,154	97.24
115	34,681	1,411,905	307	30,177	88.00	95.70	1,356	155,940	1,567,845	97.72
120	29,105	1,441,010	247	30,424	89.82	96.48	1,109	133,080	1,574,090	98.11
125	23,127	1,464,137	188	30,612	91.26	97.08	921	115,125	1,579,262	98.43
130	20,603	1,484,740	161	30,773	92.54	97.59	760	98,800	1,583,540	98.70
135	20,064	1,504,804	151	30,924	93.79	98.07	609	82,215	1,587,019	98.92
140	15,032	1,519,836	109	31,033	94.73	98.41	500	70,000	1,589,836	99.09

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = DECEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	10,433	1,530,269	73	31,106	95.38	98.65	427	61,915	1,592,184	99.24
150	11,983	1,542,252	81	31,187	96.13	98.90	346	51,900	1,594,152	99.36
155	9,039	1,551,291	59	31,246	96.69	99.09	287	44,485	1,595,776	99.46
160	9,790	1,561,081	62	31,308	97.30	99.29	225	36,000	1,597,081	99.54
165	5,879	1,566,960	36	31,344	97.67	99.40	189	31,185	1,598,145	99.61
170	3,694	1,570,654	22	31,366	97.90	99.47	167	28,390	1,599,044	99.67
175	5,187	1,575,841	30	31,396	98.22	99.57	137	23,975	1,599,816	99.71
180	3,914	1,579,755	22	31,418	98.46	99.64	115	20,700	1,600,455	99.75
185	3,474	1,583,229	19	31,437	98.68	99.70	96	17,760	1,600,989	99.79
190	3,567	1,586,796	19	31,456	98.90	99.76	77	14,630	1,601,426	99.81
195	2,313	1,589,109	12	31,468	99.05	99.79	65	12,675	1,601,784	99.84
200	1,188	1,590,297	6	31,474	99.12	99.81	59	11,800	1,602,097	99.86
999,999	14,121	1,604,418	59	31,533	100.00	100.00	0	0	1,604,418	100.00
TOTAL	1,604,418		31,533							
AVG. USE	50.9									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = JANUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	154	154	0.00	0.49	31,527	0	0	0.00
1	59	59	59	213	0.00	0.67	31,468	31,468	31,527	1.48
2	104	163	52	265	0.01	0.84	31,416	62,832	62,995	2.96
3	204	367	68	333	0.02	1.05	31,348	94,044	94,411	4.44
4	304	671	76	409	0.03	1.29	31,272	125,088	125,759	5.91
5	495	1,166	99	508	0.05	1.60	31,173	155,865	157,031	7.38
6	660	1,826	110	618	0.09	1.95	31,063	186,378	188,204	8.85
7	931	2,757	133	751	0.13	2.37	30,930	216,510	219,267	10.31
8	1,176	3,933	147	898	0.18	2.83	30,783	246,264	250,197	11.76
9	1,359	5,292	151	1,049	0.25	3.31	30,632	275,688	280,980	13.21
10	1,450	6,742	145	1,194	0.32	3.77	30,487	304,870	311,612	14.65
11	2,090	8,832	190	1,384	0.42	4.37	30,297	333,267	342,099	16.08
12	2,004	10,836	167	1,551	0.51	4.90	30,130	361,560	372,396	17.50
13	2,392	13,228	184	1,735	0.62	5.48	29,946	389,298	402,526	18.92
14	2,534	15,762	181	1,916	0.74	6.05	29,765	416,710	432,472	20.33
15	2,895	18,657	193	2,109	0.88	6.66	29,572	443,580	462,237	21.73
16	3,456	22,113	216	2,325	1.04	7.34	29,356	469,696	491,809	23.12
17	3,604	25,717	212	2,537	1.21	8.01	29,144	495,448	521,165	24.50
18	3,870	29,587	215	2,752	1.39	8.69	28,929	520,722	550,309	25.87
19	4,408	33,995	232	2,984	1.60	9.42	28,697	545,243	579,238	27.23
20	5,060	39,055	253	3,237	1.84	10.22	28,444	568,880	607,935	28.58
25	26,054	65,109	1,131	4,368	3.06	13.79	27,313	682,825	747,934	35.16
30	34,559	99,668	1,229	5,597	4.68	17.67	26,084	782,520	882,188	41.47
35	47,298	146,966	1,433	7,030	6.91	22.19	24,651	862,785	1,009,751	47.46
40	60,532	207,498	1,596	8,626	9.75	27.23	23,055	922,200	1,129,698	53.10
45	70,909	278,407	1,650	10,276	13.09	32.44	21,405	963,225	1,241,632	58.36
50	79,823	358,230	1,661	11,937	16.84	37.68	19,744	987,200	1,345,430	63.24
55	95,539	453,769	1,804	13,741	21.33	43.37	17,940	986,700	1,440,469	67.71
60	95,256	549,025	1,643	15,384	25.81	48.56	16,297	977,820	1,526,845	71.77
65	104,243	653,268	1,656	17,040	30.71	53.79	14,641	951,665	1,604,933	75.44
70	107,812	761,080	1,586	18,626	35.78	58.79	13,055	913,850	1,674,930	78.73
75	113,390	874,470	1,552	20,178	41.11	63.69	11,503	862,725	1,737,195	81.66
80	110,078	984,548	1,411	21,589	46.28	68.14	10,092	807,360	1,791,908	84.23
85	106,962	1,091,510	1,290	22,879	51.31	72.22	8,802	748,170	1,839,680	86.48
90	105,838	1,197,348	1,203	24,082	56.28	76.01	7,599	683,910	1,881,258	88.43
95	97,361	1,294,709	1,048	25,130	60.86	79.32	6,551	622,345	1,917,054	90.11
100	93,617	1,388,326	957	26,087	65.26	82.34	5,594	559,400	1,947,726	91.55
105	81,400	1,469,726	791	26,878	69.09	84.84	4,803	504,315	1,974,041	92.79
110	81,435	1,551,161	754	27,632	72.91	87.22	4,049	445,390	1,996,551	93.85
115	64,118	1,615,279	568	28,200	75.93	89.01	3,481	400,315	2,015,594	94.74
120	61,215	1,676,494	519	28,719	78.81	90.65	2,962	355,440	2,031,934	95.51
125	54,379	1,730,873	442	29,161	81.36	92.05	2,520	315,000	2,045,873	96.17
130	46,689	1,777,562	365	29,526	83.56	93.20	2,155	280,150	2,057,712	96.72
135	40,423	1,817,985	304	29,830	85.46	94.16	1,851	249,885	2,067,870	97.20
140	38,381	1,856,366	278	30,108	87.26	95.03	1,573	220,220	2,076,586	97.61

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = JANUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	34,583	1,890,949	242	30,350	88.89	95.80	1,331	192,995	2,083,944	97.96
150	29,594	1,920,543	200	30,550	90.28	96.43	1,131	169,650	2,090,193	98.25
155	26,925	1,947,468	176	30,726	91.54	96.99	955	148,025	2,095,493	98.50
160	20,731	1,968,199	131	30,857	92.52	97.40	824	131,840	2,100,039	98.71
165	22,647	1,990,846	139	30,996	93.58	97.84	685	113,025	2,103,871	98.89
170	17,626	2,008,472	105	31,101	94.41	98.17	580	98,600	2,107,072	99.04
175	16,785	2,025,257	97	31,198	95.20	98.48	483	84,525	2,109,782	99.17
180	13,900	2,039,157	78	31,276	95.85	98.72	405	72,900	2,112,057	99.28
185	12,812	2,051,969	70	31,346	96.45	98.94	335	61,975	2,113,944	99.37
190	7,504	2,059,473	40	31,386	96.81	99.07	295	56,050	2,115,523	99.44
195	7,712	2,067,185	40	31,426	97.17	99.20	255	49,725	2,116,910	99.51
200	7,717	2,074,902	39	31,465	97.53	99.32	216	43,200	2,118,102	99.56
999,999	52,490	2,127,392	216	31,681	100.00	100.00	0	0	2,127,392	100.00
TOTAL	2,127,392		31,681							
AVG. USE	67.2									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = FEBRUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	146	146	0.00	0.46	31,595	0	0	0.00
1	55	55	55	201	0.00	0.63	31,540	31,540	31,595	1.54
2	112	167	56	257	0.01	0.81	31,484	62,968	63,135	3.07
3	198	365	66	323	0.02	1.02	31,418	94,254	94,619	4.60
4	320	685	80	403	0.03	1.27	31,338	125,352	126,037	6.13
5	505	1,190	101	504	0.06	1.59	31,237	156,185	157,375	7.66
6	726	1,916	121	625	0.09	1.97	31,116	186,696	188,612	9.18
7	882	2,798	126	751	0.14	2.37	30,990	216,930	219,728	10.69
8	1,264	4,062	158	909	0.20	2.86	30,832	246,656	250,718	12.20
9	1,503	5,565	167	1,076	0.27	3.39	30,665	275,985	281,550	13.70
10	1,810	7,375	181	1,257	0.36	3.96	30,484	304,840	312,215	15.19
11	2,354	9,729	214	1,471	0.47	4.63	30,270	332,970	342,699	16.67
12	2,484	12,213	207	1,678	0.59	5.29	30,063	360,756	372,969	18.14
13	2,483	14,696	191	1,869	0.71	5.89	29,872	388,336	403,032	19.61
14	2,898	17,594	207	2,076	0.86	6.54	29,665	415,310	432,904	21.06
15	2,775	20,369	185	2,261	0.99	7.12	29,480	442,200	462,569	22.50
16	3,680	24,049	230	2,491	1.17	7.85	29,250	468,000	492,049	23.94
17	3,791	27,840	223	2,714	1.35	8.55	29,027	493,459	521,299	25.36
18	4,104	31,944	228	2,942	1.55	9.27	28,799	518,382	550,326	26.77
19	4,237	36,181	223	3,165	1.76	9.97	28,576	542,944	579,125	28.17
20	4,480	40,661	224	3,389	1.98	10.68	28,352	567,040	607,701	29.56
25	28,569	69,230	1,238	4,627	3.37	14.58	27,114	677,850	747,080	36.34
30	37,453	106,683	1,336	5,963	5.19	18.79	25,778	773,340	880,023	42.81
35	48,818	155,501	1,477	7,440	7.56	23.44	24,301	850,535	1,006,036	48.94
40	60,596	216,097	1,591	9,031	10.51	28.45	22,710	908,400	1,124,497	54.70
45	71,793	287,890	1,670	10,701	14.00	33.71	21,040	946,800	1,234,690	60.06
50	85,903	373,793	1,791	12,492	18.18	39.36	19,249	962,450	1,336,243	65.00
55	96,461	470,254	1,819	14,311	22.88	45.09	17,430	958,650	1,428,904	69.51
60	107,132	577,386	1,848	16,159	28.09	50.91	15,582	934,920	1,512,306	73.57
65	104,911	682,297	1,667	17,826	33.19	56.16	13,915	904,475	1,586,772	77.19
70	110,426	792,723	1,623	19,449	38.56	61.27	12,292	860,440	1,653,163	80.42
75	109,960	902,683	1,507	20,956	43.91	66.02	10,785	808,875	1,711,558	83.26
80	115,381	1,018,064	1,480	22,436	49.52	70.68	9,305	744,400	1,762,464	85.74
85	105,243	1,123,307	1,269	23,705	54.64	74.68	8,036	683,060	1,806,367	87.87
90	95,799	1,219,106	1,089	24,794	59.30	78.11	6,947	625,230	1,844,336	89.72
95	93,118	1,312,224	1,001	25,795	63.83	81.27	5,946	564,870	1,877,094	91.31
100	86,933	1,399,157	888	26,683	68.06	84.06	5,058	505,800	1,904,957	92.67
105	78,017	1,477,174	758	27,441	71.86	86.45	4,300	451,500	1,928,674	93.82
110	71,820	1,548,994	666	28,107	75.35	88.55	3,634	399,740	1,948,734	94.80
115	62,242	1,611,236	551	28,658	78.38	90.29	3,083	354,545	1,965,781	95.63
120	62,274	1,673,510	528	29,186	81.41	91.95	2,555	306,600	1,980,110	96.32
125	48,217	1,721,727	392	29,578	83.76	93.19	2,163	270,375	1,992,102	96.91
130	45,399	1,767,126	355	29,933	85.96	94.30	1,808	235,040	2,002,166	97.40
135	38,703	1,805,829	291	30,224	87.85	95.22	1,517	204,795	2,010,624	97.81
140	36,023	1,841,852	261	30,485	89.60	96.04	1,256	175,840	2,017,692	98.15

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = FEBRUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	29,305	1,871,157	205	30,690	91.02	96.69	1,051	152,395	2,023,552	98.44
150	22,633	1,893,790	153	30,843	92.13	97.17	898	134,700	2,028,490	98.68
155	22,636	1,916,426	148	30,991	93.23	97.64	750	116,250	2,032,676	98.88
160	21,006	1,937,432	133	31,124	94.25	98.06	617	98,720	2,036,152	99.05
165	15,320	1,952,752	94	31,218	94.99	98.35	523	86,295	2,039,047	99.19
170	13,954	1,966,706	83	31,301	95.67	98.61	440	74,800	2,041,506	99.31
175	12,786	1,979,492	74	31,375	96.29	98.85	366	64,050	2,043,542	99.41
180	11,220	1,990,712	63	31,438	96.84	99.05	303	54,540	2,045,252	99.49
185	9,315	2,000,027	51	31,489	97.29	99.21	252	46,620	2,046,647	99.56
190	6,572	2,006,599	35	31,524	97.61	99.32	217	41,230	2,047,829	99.62
195	6,563	2,013,162	34	31,558	97.93	99.42	183	35,685	2,048,847	99.67
200	4,149	2,017,311	21	31,579	98.13	99.49	162	32,400	2,049,711	99.71
999,999	38,358	2,055,669	162	31,741	100.00	100.00	0	0	2,055,669	100.00
TOTAL	2,055,669		31,741							
AVG. USE	64.8									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = MARCH

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	136	136	0.00	0.43	31,485	0	0	0.00
1	87	87	87	223	0.01	0.71	31,398	31,398	31,485	2.12
2	116	203	58	281	0.01	0.89	31,340	62,680	62,883	4.24
3	336	539	112	393	0.04	1.24	31,228	93,684	94,223	6.35
4	448	987	112	505	0.07	1.60	31,116	124,464	125,451	8.45
5	660	1,647	132	637	0.11	2.01	30,984	154,920	156,567	10.55
6	996	2,643	166	803	0.18	2.54	30,818	184,908	187,551	12.63
7	1,239	3,882	177	980	0.26	3.10	30,641	214,487	218,369	14.71
8	1,792	5,674	224	1,204	0.38	3.81	30,417	243,336	249,010	16.77
9	2,178	7,852	242	1,446	0.53	4.57	30,175	271,575	279,427	18.82
10	2,580	10,432	258	1,704	0.70	5.39	29,917	299,170	309,602	20.85
11	4,004	14,436	364	2,068	0.97	6.54	29,553	325,083	339,519	22.87
12	3,864	18,300	322	2,390	1.23	7.56	29,231	350,772	369,072	24.86
13	4,134	22,434	318	2,708	1.51	8.56	28,913	375,869	398,303	26.83
14	4,788	27,222	342	3,050	1.83	9.65	28,571	399,994	427,216	28.77
15	5,520	32,742	368	3,418	2.21	10.81	28,203	423,045	455,787	30.70
16	6,736	39,478	421	3,839	2.66	12.14	27,782	444,512	483,990	32.60
17	7,429	46,907	437	4,276	3.16	13.52	27,345	464,865	511,772	34.47
18	8,136	55,043	452	4,728	3.71	14.95	26,893	484,074	539,117	36.31
19	9,329	64,372	491	5,219	4.34	16.50	26,402	501,638	566,010	38.12
20	9,200	73,572	460	5,679	4.96	17.96	25,942	518,840	592,412	39.90
25	56,597	130,169	2,458	8,137	8.77	25.73	23,484	587,100	717,269	48.31
30	75,553	205,722	2,695	10,832	13.86	34.26	20,789	623,670	829,392	55.86
35	89,860	295,582	2,729	13,561	19.91	42.89	18,060	632,100	927,682	62.48
40	88,869	384,451	2,339	15,900	25.89	50.28	15,721	628,840	1,013,291	68.25
45	93,846	478,297	2,186	18,086	32.21	57.20	13,535	609,075	1,087,372	73.24
50	96,566	574,863	2,015	20,101	38.72	63.57	11,520	576,000	1,150,863	77.51
55	91,728	666,591	1,732	21,833	44.90	69.05	9,788	538,340	1,204,931	81.16
60	91,518	758,109	1,580	23,413	51.06	74.04	8,208	492,480	1,250,589	84.23
65	77,483	835,592	1,232	24,645	56.28	77.94	6,976	453,440	1,289,032	86.82
70	73,953	909,545	1,088	25,733	61.26	81.38	5,888	412,160	1,321,705	89.02
75	71,049	980,594	973	26,706	66.05	84.46	4,915	368,625	1,349,219	90.87
80	62,896	1,043,490	807	27,513	70.28	87.01	4,108	328,640	1,372,130	92.42
85	55,022	1,098,512	664	28,177	73.99	89.11	3,444	292,740	1,391,252	93.71
90	53,558	1,152,070	609	28,786	77.60	91.03	2,835	255,150	1,407,220	94.78
95	45,532	1,197,602	490	29,276	80.66	92.58	2,345	222,775	1,420,377	95.67
100	39,584	1,237,186	405	29,681	83.33	93.86	1,940	194,000	1,431,186	96.39
105	33,934	1,271,120	329	30,010	85.61	94.91	1,611	169,155	1,440,275	97.01
110	32,140	1,303,260	298	30,308	87.78	95.85	1,313	144,430	1,447,690	97.51
115	25,536	1,328,796	226	30,534	89.50	96.56	1,087	125,005	1,453,801	97.92
120	25,839	1,354,635	219	30,753	91.24	97.25	868	104,160	1,458,795	98.25
125	16,600	1,371,235	135	30,888	92.36	97.68	733	91,625	1,462,860	98.53
130	13,582	1,384,817	106	30,994	93.27	98.02	627	81,510	1,466,327	98.76
135	15,006	1,399,823	113	31,107	94.28	98.37	514	69,390	1,469,213	98.96
140	11,022	1,410,845	80	31,187	95.02	98.63	434	60,760	1,471,605	99.12

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = MARCH

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	10,140	1,420,985	71	31,258	95.71	98.85	363	52,635	1,473,620	99.25
150	8,893	1,429,878	60	31,318	96.31	99.04	303	45,450	1,475,328	99.37
155	8,561	1,438,439	56	31,374	96.88	99.22	247	38,285	1,476,724	99.46
160	5,361	1,443,800	34	31,408	97.24	99.33	213	34,080	1,477,880	99.54
165	4,895	1,448,695	30	31,438	97.57	99.42	183	30,195	1,478,890	99.61
170	4,034	1,452,729	24	31,462	97.85	99.50	159	27,030	1,479,759	99.67
175	4,495	1,457,224	26	31,488	98.15	99.58	133	23,275	1,480,499	99.72
180	3,376	1,460,600	19	31,507	98.38	99.64	114	20,520	1,481,120	99.76
185	3,655	1,464,255	20	31,527	98.62	99.70	94	17,390	1,481,645	99.79
190	2,820	1,467,075	15	31,542	98.81	99.75	79	15,010	1,482,085	99.82
195	2,118	1,469,193	11	31,553	98.95	99.78	68	13,260	1,482,453	99.85
200	1,783	1,470,976	9	31,562	99.07	99.81	59	11,800	1,482,776	99.87
999,999	13,738	1,484,714	59	31,621	100.00	100.00	0	0	1,484,714	100.00
TOTAL	1,484,714		31,621							
AVG. USE	47.0									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = APRIL

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	214	214	0.00	0.68	31,199	0	0	0.00
1	185	185	185	399	0.03	1.27	31,014	31,014	31,199	5.00
2	384	569	192	591	0.09	1.88	30,822	61,644	62,213	9.98
3	1,080	1,649	360	951	0.26	3.03	30,462	91,386	93,035	14.92
4	1,972	3,621	493	1,444	0.58	4.60	29,969	119,876	123,497	19.81
5	2,935	6,556	587	2,031	1.05	6.47	29,382	146,910	153,466	24.62
6	4,290	10,846	715	2,746	1.74	8.74	28,667	172,002	182,848	29.33
7	6,440	17,286	920	3,666	2.77	11.67	27,747	194,229	211,515	33.93
8	8,280	25,566	1,035	4,701	4.10	14.97	26,712	213,696	239,262	38.38
9	9,387	34,953	1,043	5,744	5.61	18.29	25,669	231,021	265,974	42.66
10	11,810	46,763	1,181	6,925	7.50	22.05	24,488	244,880	291,643	46.78
11	17,226	63,989	1,566	8,491	10.26	27.03	22,922	252,142	316,131	50.71
12	15,144	79,133	1,262	9,753	12.69	31.05	21,660	259,920	339,053	54.38
13	16,003	95,136	1,231	10,984	15.26	34.97	20,429	265,577	360,713	57.86
14	17,192	112,328	1,228	12,212	18.02	38.88	19,201	268,814	381,142	61.13
15	18,390	130,718	1,226	13,438	20.97	42.78	17,975	269,625	400,343	64.21
16	20,496	151,214	1,281	14,719	24.25	46.86	16,694	267,104	418,318	67.10
17	19,873	171,087	1,169	15,888	27.44	50.58	15,525	263,925	435,012	69.77
18	20,412	191,499	1,134	17,022	30.72	54.19	14,391	259,038	450,537	72.26
19	21,584	213,083	1,136	18,158	34.18	57.80	13,255	251,845	464,928	74.57
20	20,980	234,063	1,049	19,207	37.54	61.14	12,206	244,120	478,183	76.70
25	99,512	333,575	4,342	23,549	53.50	74.97	7,864	196,600	530,175	85.04
30	79,525	413,100	2,857	26,406	66.26	84.06	5,007	150,210	563,310	90.35
35	64,102	477,202	1,956	28,362	76.54	90.29	3,051	106,785	583,987	93.67
40	42,737	519,939	1,128	29,490	83.40	93.88	1,923	76,920	596,859	95.73
45	27,975	547,914	653	30,143	87.88	95.96	1,270	57,150	605,064	97.05
50	20,567	568,481	430	30,573	91.18	97.33	840	42,000	610,481	97.92
55	15,075	583,556	286	30,859	93.60	98.24	554	30,470	614,026	98.49
60	10,433	593,989	180	31,039	95.27	98.81	374	22,440	616,429	98.87
65	6,738	600,727	107	31,146	96.35	99.15	267	17,355	618,082	99.14
70	5,508	606,235	81	31,227	97.24	99.41	186	13,020	619,255	99.33
75	4,165	610,400	57	31,284	97.90	99.59	129	9,675	620,075	99.46
80	2,499	612,899	32	31,316	98.31	99.69	97	7,760	620,659	99.55
85	1,400	614,299	17	31,333	98.53	99.75	80	6,800	621,099	99.62
90	1,494	615,793	17	31,350	98.77	99.80	63	5,670	621,463	99.68
95	746	616,539	8	31,358	98.89	99.82	55	5,225	621,764	99.73
100	1,273	617,812	13	31,371	99.09	99.87	42	4,200	622,012	99.77
105	516	618,328	5	31,376	99.18	99.88	37	3,885	622,213	99.80
110	644	618,972	6	31,382	99.28	99.90	31	3,410	622,382	99.83
115	115	619,087	1	31,383	99.30	99.90	30	3,450	622,537	99.85
120	943	620,030	8	31,391	99.45	99.93	22	2,640	622,670	99.87
125	0	620,030	0	31,391	99.45	99.93	22	2,750	622,780	99.89
130	646	620,676	5	31,396	99.55	99.95	17	2,210	622,886	99.91
135	535	621,211	4	31,400	99.64	99.96	13	1,755	622,966	99.92
140	413	621,624	3	31,403	99.71	99.97	10	1,400	623,024	99.93

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = APRIL

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	144	621,768	1	31,404	99.73	99.97	9	1,305	623,073	99.94
150	0	621,768	0	31,404	99.73	99.97	9	1,350	623,118	99.94
155	308	622,076	2	31,406	99.78	99.98	7	1,085	623,161	99.95
160	0	622,076	0	31,406	99.78	99.98	7	1,120	623,196	99.96
165	163	622,239	1	31,407	99.80	99.98	6	990	623,229	99.96
170	168	622,407	1	31,408	99.83	99.98	5	850	623,257	99.97
175	173	622,580	1	31,409	99.86	99.99	4	700	623,280	99.97
180	0	622,580	0	31,409	99.86	99.99	4	720	623,300	99.97
185	185	622,765	1	31,410	99.89	99.99	3	555	623,320	99.98
190	0	622,765	0	31,410	99.89	99.99	3	570	623,335	99.98
195	0	622,765	0	31,410	99.89	99.99	3	585	623,350	99.98
200	0	622,765	0	31,410	99.89	99.99	3	600	623,365	99.98
999,999	698	623,463	3	31,413	100.00	100.00	0	0	623,463	100.00
TOTAL	623,463		31,413							

AVG. USE 19.8

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = MAY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	-7	-7	396	396	-0.00	1.27	30,687	0	-7	-0.00
1	293	286	293	689	0.06	2.22	30,394	30,394	30,680	6.53
2	672	958	336	1,025	0.20	3.30	30,058	60,116	61,074	13.00
3	1,842	2,800	614	1,639	0.60	5.27	29,444	88,332	91,132	19.40
4	3,856	6,656	964	2,603	1.42	8.37	28,480	113,920	120,576	25.67
5	5,915	12,571	1,183	3,786	2.68	12.18	27,297	136,485	149,056	31.73
6	8,076	20,647	1,346	5,132	4.39	16.51	25,951	155,706	176,353	37.54
7	10,318	30,965	1,474	6,606	6.59	21.25	24,477	171,339	202,304	43.06
8	13,064	44,029	1,633	8,239	9.37	26.51	22,844	182,752	226,781	48.27
9	13,365	57,394	1,485	9,724	12.22	31.28	21,359	192,231	249,625	53.14
10	18,440	75,834	1,844	11,568	16.14	37.22	19,515	195,150	270,984	57.68
11	19,536	95,370	1,776	13,344	20.30	42.93	17,739	195,129	290,499	61.84
12	18,636	114,006	1,553	14,897	24.27	47.93	16,186	194,232	308,238	65.61
13	17,667	131,673	1,359	16,256	28.03	52.30	14,827	192,751	324,424	69.06
14	19,152	150,825	1,368	17,624	32.11	56.70	13,459	188,426	339,251	72.21
15	18,270	169,095	1,218	18,842	35.99	60.62	12,241	183,615	352,710	75.08
16	20,704	189,799	1,294	20,136	40.40	64.78	10,947	175,152	364,951	77.68
17	18,241	208,040	1,073	21,209	44.28	68.23	9,874	167,858	375,898	80.01
18	17,820	225,860	990	22,199	48.08	71.42	8,884	159,912	385,772	82.12
19	18,373	244,233	967	23,166	51.99	74.53	7,917	150,423	394,656	84.01
20	16,480	260,713	824	23,990	55.50	77.18	7,093	141,860	402,573	85.69
25	73,557	334,270	3,222	27,212	71.15	87.55	3,871	96,775	431,045	91.75
30	47,264	381,534	1,702	28,914	81.21	93.02	2,169	65,070	446,604	95.07
35	31,155	412,689	952	29,866	87.85	96.08	1,217	42,595	455,284	96.91
40	19,178	431,867	507	30,373	91.93	97.72	710	28,400	460,267	97.97
45	12,414	444,281	291	30,664	94.57	98.65	419	18,855	463,136	98.58
50	7,105	451,386	149	30,813	96.08	99.13	270	13,500	464,886	98.96
55	4,911	456,297	93	30,906	97.13	99.43	177	9,735	466,032	99.20
60	3,468	459,765	60	30,966	97.87	99.62	117	7,020	466,785	99.36
65	1,749	461,514	28	30,994	98.24	99.71	89	5,785	467,299	99.47
70	1,820	463,334	27	31,021	98.63	99.80	62	4,340	467,674	99.55
75	949	464,283	13	31,034	98.83	99.84	49	3,675	467,958	99.61
80	852	465,135	11	31,045	99.01	99.88	38	3,040	468,175	99.66
85	661	465,796	8	31,053	99.15	99.90	30	2,550	468,346	99.69
90	616	466,412	7	31,060	99.28	99.93	23	2,070	468,482	99.72
95	188	466,600	2	31,062	99.32	99.93	21	1,995	468,595	99.75
100	290	466,890	3	31,065	99.38	99.94	18	1,800	468,690	99.77
105	206	467,096	2	31,067	99.43	99.95	16	1,680	468,776	99.79
110	429	467,525	4	31,071	99.52	99.96	12	1,320	468,845	99.80
115	112	467,637	1	31,072	99.54	99.96	11	1,265	468,902	99.81
120	0	467,637	0	31,072	99.54	99.96	11	1,320	468,957	99.82
125	122	467,759	1	31,073	99.57	99.97	10	1,250	469,009	99.83
130	0	467,759	0	31,073	99.57	99.97	10	1,300	469,059	99.85
135	0	467,759	0	31,073	99.57	99.97	10	1,350	469,109	99.86
140	275	468,034	2	31,075	99.63	99.97	8	1,120	469,154	99.87

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = MAY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	0	468,034	0	31,075	99.63	99.97	8	1,160	469,194	99.87
150	0	468,034	0	31,075	99.63	99.97	8	1,200	469,234	99.88
155	0	468,034	0	31,075	99.63	99.97	8	1,240	469,274	99.89
160	0	468,034	0	31,075	99.63	99.97	8	1,280	469,314	99.90
165	0	468,034	0	31,075	99.63	99.97	8	1,320	469,354	99.91
170	166	468,200	1	31,076	99.66	99.98	7	1,190	469,390	99.92
175	173	468,373	1	31,077	99.70	99.98	6	1,050	469,423	99.92
180	0	468,373	0	31,077	99.70	99.98	6	1,080	469,453	99.93
185	181	468,554	1	31,078	99.74	99.98	5	925	469,479	99.93
190	0	468,554	0	31,078	99.74	99.98	5	950	469,504	99.94
195	192	468,746	1	31,079	99.78	99.99	4	780	469,526	99.94
200	196	468,942	1	31,080	99.82	99.99	3	600	469,542	99.95
999,999	844	469,786	3	31,083	100.00	100.00	0	0	469,786	100.00
TOTAL	469,786		31,083							

AVG. USE 15.1

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = JUNE

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	569	569	0.00	1.86	29,961	0	0	0.00
1	417	417	417	986	0.11	3.23	29,544	29,544	29,961	7.82
2	908	1,325	454	1,440	0.35	4.72	29,090	58,180	59,505	15.52
3	2,937	4,262	979	2,419	1.11	7.92	28,111	84,333	88,595	23.11
4	5,832	10,094	1,458	3,877	2.63	12.70	26,653	106,612	116,706	30.44
5	8,045	18,139	1,609	5,486	4.73	17.97	25,044	125,220	143,359	37.39
6	10,536	28,675	1,756	7,242	7.48	23.72	23,288	139,728	168,403	43.93
7	12,698	41,373	1,814	9,056	10.79	29.66	21,474	150,318	191,691	50.00
8	15,592	56,965	1,949	11,005	14.86	36.05	19,525	156,200	213,165	55.60
9	15,822	72,787	1,758	12,763	18.99	41.80	17,767	159,903	232,690	60.70
10	16,970	89,757	1,697	14,460	23.41	47.36	16,070	160,700	250,457	65.33
11	22,825	112,582	2,075	16,535	29.37	54.16	13,995	153,945	266,527	69.52
12	18,636	131,218	1,553	18,088	34.23	59.25	12,442	149,304	280,522	73.17
13	18,135	149,353	1,395	19,483	38.96	63.82	11,047	143,611	292,964	76.42
14	18,354	167,707	1,311	20,794	43.75	68.11	9,736	136,304	304,011	79.30
15	17,205	184,912	1,147	21,941	48.23	71.87	8,589	128,835	313,747	81.84
16	17,904	202,816	1,119	23,060	52.90	75.53	7,470	119,520	322,336	84.08
17	16,915	219,731	995	24,055	57.32	78.79	6,475	110,075	329,806	86.03
18	13,968	233,699	776	24,831	60.96	81.33	5,699	102,582	336,281	87.72
19	13,585	247,284	715	25,546	64.50	83.68	4,984	94,696	341,980	89.20
20	12,540	259,824	627	26,173	67.77	85.73	4,357	87,140	346,964	90.50
25	50,410	310,234	2,215	28,388	80.92	92.98	2,142	53,550	363,784	94.89
30	29,807	340,041	1,072	29,460	88.70	96.50	1,070	32,100	372,141	97.07
35	16,008	356,049	489	29,949	92.87	98.10	581	20,335	376,384	98.18
40	9,375	365,424	248	30,197	95.32	98.91	333	13,320	378,744	98.79
45	5,848	371,272	137	30,334	96.85	99.36	196	8,820	380,092	99.15
50	3,330	374,602	70	30,404	97.71	99.59	126	6,300	380,902	99.36
55	2,117	376,719	40	30,444	98.27	99.72	86	4,730	381,449	99.50
60	1,159	377,878	20	30,464	98.57	99.78	66	3,960	381,838	99.60
65	1,004	378,882	16	30,480	98.83	99.84	50	3,250	382,132	99.68
70	883	379,765	13	30,493	99.06	99.88	37	2,590	382,355	99.74
75	734	380,499	10	30,503	99.25	99.91	27	2,025	382,524	99.78
80	470	380,969	6	30,509	99.37	99.93	21	1,680	382,649	99.81
85	250	381,219	3	30,512	99.44	99.94	18	1,530	382,749	99.84
90	174	381,393	2	30,514	99.49	99.95	16	1,440	382,833	99.86
95	280	381,673	3	30,517	99.56	99.96	13	1,235	382,908	99.88
100	199	381,872	2	30,519	99.61	99.96	11	1,100	382,972	99.90
105	306	382,178	3	30,522	99.69	99.97	8	840	383,018	99.91
110	106	382,284	1	30,523	99.72	99.98	7	770	383,054	99.92
115	341	382,625	3	30,526	99.81	99.99	4	460	383,085	99.93
120	0	382,625	0	30,526	99.81	99.99	4	480	383,105	99.93
125	0	382,625	0	30,526	99.81	99.99	4	500	383,125	99.94
130	0	382,625	0	30,526	99.81	99.99	4	520	383,145	99.94
135	0	382,625	0	30,526	99.81	99.99	4	540	383,165	99.95
140	0	382,625	0	30,526	99.81	99.99	4	560	383,185	99.95

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = JUNE

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	0	382,625	0	30,526	99.81	99.99	4	580	383,205	99.96
150	0	382,625	0	30,526	99.81	99.99	4	600	383,225	99.96
155	0	382,625	0	30,526	99.81	99.99	4	620	383,245	99.97
160	160	382,785	1	30,527	99.85	99.99	3	480	383,265	99.97
165	164	382,949	1	30,528	99.89	99.99	2	330	383,279	99.98
170	0	382,949	0	30,528	99.89	99.99	2	340	383,289	99.98
175	0	382,949	0	30,528	99.89	99.99	2	350	383,299	99.98
180	0	382,949	0	30,528	99.89	99.99	2	360	383,309	99.99
185	0	382,949	0	30,528	99.89	99.99	2	370	383,319	99.99
190	190	383,139	1	30,529	99.94	100.00	1	190	383,329	99.99
195	0	383,139	0	30,529	99.94	100.00	1	195	383,334	99.99
200	0	383,139	0	30,529	99.94	100.00	1	200	383,339	99.99
999,999	227	383,366	1	30,530	100.00	100.00	0	0	383,366	100.00
TOTAL	383,366		30,530							

AVG. USE 12.6

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = JULY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	751	751	0.00	2.51	29,170	0	0	0.00
1	408	408	408	1,159	0.12	3.87	28,762	28,762	29,170	8.74
2	1,156	1,564	578	1,737	0.47	5.81	28,184	56,368	57,932	17.37
3	4,254	5,818	1,418	3,155	1.74	10.54	26,766	80,298	86,116	25.82
4	7,388	13,206	1,847	5,002	3.96	16.72	24,919	99,676	112,882	33.84
5	9,300	22,506	1,860	6,862	6.75	22.93	23,059	115,295	137,801	41.31
6	12,126	34,632	2,021	8,883	10.38	29.69	21,038	126,228	160,860	48.22
7	13,692	48,324	1,956	10,839	14.49	36.23	19,082	133,574	181,898	54.53
8	15,848	64,172	1,981	12,820	19.24	42.85	17,101	136,808	200,980	60.25
9	16,812	80,984	1,868	14,688	24.28	49.09	15,233	137,097	218,081	65.38
10	17,350	98,334	1,735	16,423	29.48	54.89	13,498	134,980	233,314	69.94
11	19,118	117,452	1,738	18,161	35.21	60.70	11,760	129,360	246,812	73.99
12	20,532	137,984	1,711	19,872	41.37	66.41	10,049	120,588	258,572	77.52
13	16,770	154,754	1,290	21,162	46.39	70.73	8,759	113,867	268,621	80.53
14	16,576	171,330	1,184	22,346	51.36	74.68	7,575	106,050	277,380	83.15
15	14,520	185,850	968	23,314	55.71	77.92	6,607	99,105	284,955	85.42
16	14,352	200,202	897	24,211	60.02	80.92	5,710	91,360	291,562	87.40
17	13,413	213,615	789	25,000	64.04	83.55	4,921	83,657	297,272	89.12
18	12,546	226,161	697	25,697	67.80	85.88	4,224	76,032	302,193	90.59
19	11,286	237,447	594	26,291	71.18	87.87	3,630	68,970	306,417	91.86
20	10,460	247,907	523	26,814	74.32	89.62	3,107	62,140	310,047	92.95
25	38,675	286,582	1,704	28,518	85.91	95.31	1,403	35,075	321,657	96.43
30	20,312	306,894	733	29,251	92.00	97.76	670	20,100	326,994	98.03
35	10,798	317,692	329	29,580	95.24	98.86	341	11,935	329,627	98.82
40	5,155	322,847	137	29,717	96.78	99.32	204	8,160	331,007	99.23
45	3,168	326,015	74	29,791	97.73	99.57	130	5,850	331,865	99.49
50	2,304	328,319	48	29,839	98.42	99.73	82	4,100	332,419	99.65
55	1,526	329,845	29	29,868	98.88	99.82	53	2,915	332,760	99.76
60	1,044	330,889	18	29,886	99.19	99.88	35	2,100	332,989	99.82
65	816	331,705	13	29,899	99.44	99.93	22	1,430	333,135	99.87
70	272	331,977	4	29,903	99.52	99.94	18	1,260	333,237	99.90
75	360	332,337	5	29,908	99.63	99.96	13	975	333,312	99.92
80	77	332,414	1	29,909	99.65	99.96	12	960	333,374	99.94
85	334	332,748	4	29,913	99.75	99.97	8	680	333,428	99.96
90	90	332,838	1	29,914	99.78	99.98	7	630	333,468	99.97
95	186	333,024	2	29,916	99.83	99.98	5	475	333,499	99.98
100	98	333,122	1	29,917	99.86	99.99	4	400	333,522	99.98
105	102	333,224	1	29,918	99.89	99.99	3	315	333,539	99.99
110	0	333,224	0	29,918	99.89	99.99	3	330	333,554	99.99
115	223	333,447	2	29,920	99.96	100.00	1	115	333,562	100.00
120	0	333,447	0	29,920	99.96	100.00	1	120	333,567	100.00
125	0	333,447	0	29,920	99.96	100.00	1	125	333,572	100.00
130	129	333,576	1	29,921	100.00	100.00	0	0	333,576	100.00
135	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
140	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = JULY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
150	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
155	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
160	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
165	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
170	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
175	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
180	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
185	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
190	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
195	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
200	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
999,999	0	333,576	0	29,921	100.00	100.00	0	0	333,576	100.00
TOTAL	333,576		29,921							

AVG. USE 11.1

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = AUGUST

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	831	831	0.00	2.70	29,900	0	0	0.00
1	506	506	506	1,337	0.16	4.35	29,394	29,394	29,900	9.65
2	1,518	2,024	759	2,096	0.65	6.82	28,635	57,270	59,294	19.13
3	5,556	7,580	1,852	3,948	2.45	12.85	26,783	80,349	87,929	28.36
4	8,752	16,332	2,188	6,136	5.27	19.97	24,595	98,380	114,712	37.00
5	10,970	27,302	2,194	8,330	8.81	27.11	22,401	112,005	139,307	44.94
6	13,890	41,192	2,315	10,645	13.29	34.64	20,086	120,516	161,708	52.16
7	15,274	56,466	2,182	12,827	18.22	41.74	17,904	125,328	181,794	58.64
8	16,576	73,042	2,072	14,899	23.56	48.48	15,832	126,656	199,698	64.42
9	18,207	91,249	2,023	16,922	29.44	55.06	13,809	124,281	215,530	69.53
10	18,330	109,579	1,833	18,755	35.35	61.03	11,976	119,760	229,339	73.98
11	20,383	129,962	1,853	20,608	41.92	67.06	10,123	111,353	241,315	77.84
12	18,780	148,742	1,565	22,173	47.98	72.15	8,558	102,696	251,438	81.11
13	16,354	165,096	1,258	23,431	53.26	76.25	7,300	94,900	259,996	83.87
14	15,386	180,482	1,099	24,530	58.22	79.82	6,201	86,814	267,296	86.23
15	14,370	194,852	958	25,488	62.86	82.94	5,243	78,645	273,497	88.23
16	13,136	207,988	821	26,309	67.09	85.61	4,422	70,752	278,740	89.92
17	12,325	220,313	725	27,034	71.07	87.97	3,697	62,849	283,162	91.34
18	9,864	230,177	548	27,582	74.25	89.75	3,149	56,682	286,859	92.54
19	8,550	238,727	450	28,032	77.01	91.22	2,699	51,281	290,008	93.55
20	8,940	247,667	447	28,479	79.89	92.67	2,252	45,040	292,707	94.42
25	28,763	276,430	1,270	29,749	89.17	96.80	982	24,550	300,980	97.09
30	13,926	290,356	505	30,254	93.66	98.45	477	14,310	304,666	98.28
35	6,832	297,188	208	30,462	95.87	99.12	269	9,415	306,603	98.91
40	4,037	301,225	107	30,569	97.17	99.47	162	6,480	307,705	99.26
45	2,748	303,973	64	30,633	98.06	99.68	98	4,410	308,383	99.48
50	1,433	305,406	30	30,663	98.52	99.78	68	3,400	308,806	99.62
55	1,312	306,718	25	30,688	98.94	99.86	43	2,365	309,083	99.71
60	704	307,422	12	30,700	99.17	99.90	31	1,860	309,282	99.77
65	569	307,991	9	30,709	99.35	99.93	22	1,430	309,421	99.81
70	342	308,333	5	30,714	99.46	99.94	17	1,190	309,523	99.85
75	287	308,620	4	30,718	99.56	99.96	13	975	309,595	99.87
80	234	308,854	3	30,721	99.63	99.97	10	800	309,654	99.89
85	85	308,939	1	30,722	99.66	99.97	9	765	309,704	99.91
90	88	309,027	1	30,723	99.69	99.97	8	720	309,747	99.92
95	94	309,121	1	30,724	99.72	99.98	7	665	309,786	99.93
100	0	309,121	0	30,724	99.72	99.98	7	700	309,821	99.94
105	0	309,121	0	30,724	99.72	99.98	7	735	309,856	99.96
110	323	309,444	3	30,727	99.82	99.99	4	440	309,884	99.96
115	0	309,444	0	30,727	99.82	99.99	4	460	309,904	99.97
120	119	309,563	1	30,728	99.86	99.99	3	360	309,923	99.98
125	0	309,563	0	30,728	99.86	99.99	3	375	309,938	99.98
130	256	309,819	2	30,730	99.94	100.00	1	130	309,949	99.99
135	0	309,819	0	30,730	99.94	100.00	1	135	309,954	99.99
140	0	309,819	0	30,730	99.94	100.00	1	140	309,959	99.99

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-10 CLASS = LOW INCOME RESIDENTIAL AREA = ARIZONA PERIOD = AUGUST

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	0	309,819	0	30,730	99.94	100.00	1	145	309,964	99.99
150	0	309,819	0	30,730	99.94	100.00	1	150	309,969	99.99
155	0	309,819	0	30,730	99.94	100.00	1	155	309,974	99.99
160	0	309,819	0	30,730	99.94	100.00	1	160	309,979	99.99
165	0	309,819	0	30,730	99.94	100.00	1	165	309,984	100.00
170	0	309,819	0	30,730	99.94	100.00	1	170	309,989	100.00
175	0	309,819	0	30,730	99.94	100.00	1	175	309,994	100.00
180	176	309,995	1	30,731	100.00	100.00	0	0	309,995	100.00
185	0	309,995	0	30,731	100.00	100.00	0	0	309,995	100.00
190	0	309,995	0	30,731	100.00	100.00	0	0	309,995	100.00
195	0	309,995	0	30,731	100.00	100.00	0	0	309,995	100.00
200	0	309,995	0	30,731	100.00	100.00	0	0	309,995	100.00
999,999	0	309,995	0	30,731	100.00	100.00	0	0	309,995	100.00
TOTAL	309,995		30,731							

AVG. USE 10.1

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = SEPTEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	3	3	0.00	1.89	156	0	0	0.00
1	2	2	2	5	0.01	3.14	154	154	156	0.64
2	0	2	0	5	0.01	3.14	154	308	310	1.28
3	18	20	6	11	0.08	6.92	148	444	464	1.91
4	12	32	3	14	0.13	8.81	145	580	612	2.52
5	15	47	3	17	0.19	10.69	142	710	757	3.11
6	18	65	3	20	0.27	12.58	139	834	899	3.70
7	21	86	3	23	0.35	14.47	136	952	1,038	4.27
8	32	118	4	27	0.49	16.98	132	1,056	1,174	4.83
9	90	208	10	37	0.86	23.27	122	1,098	1,306	5.37
10	50	258	5	42	1.06	26.42	117	1,170	1,428	5.87
11	22	280	2	44	1.15	27.67	115	1,265	1,545	6.36
12	0	280	0	44	1.15	27.67	115	1,380	1,660	6.83
13	52	332	4	48	1.37	30.19	111	1,443	1,775	7.30
14	28	360	2	50	1.48	31.45	109	1,526	1,886	7.76
15	30	390	2	52	1.60	32.70	107	1,605	1,995	8.21
16	80	470	5	57	1.93	35.85	102	1,632	2,102	8.65
17	68	538	4	61	2.21	38.36	98	1,666	2,204	9.07
18	18	556	1	62	2.29	38.99	97	1,746	2,302	9.47
19	57	613	3	65	2.52	40.88	94	1,786	2,399	9.87
20	20	633	1	66	2.60	41.51	93	1,860	2,493	10.25
25	141	774	6	72	3.18	45.28	87	2,175	2,949	12.13
30	57	831	2	74	3.42	46.54	85	2,550	3,381	13.91
35	68	899	2	76	3.70	47.80	83	2,905	3,804	15.65
40	152	1,051	4	80	4.32	50.31	79	3,160	4,211	17.32
45	217	1,268	5	85	5.22	53.46	74	3,330	4,598	18.91
50	149	1,417	3	88	5.83	55.35	71	3,550	4,967	20.43
55	53	1,470	1	89	6.05	55.97	70	3,850	5,320	21.88
60	115	1,585	2	91	6.52	57.23	68	4,080	5,665	23.30
65	0	1,585	0	91	6.52	57.23	68	4,420	6,005	24.70
70	70	1,655	1	92	6.81	57.86	67	4,690	6,345	26.10
75	147	1,802	2	94	7.41	59.12	65	4,875	6,677	27.46
80	156	1,958	2	96	8.05	60.38	63	5,040	6,998	28.79
85	0	1,958	0	96	8.05	60.38	63	5,355	7,313	30.08
90	175	2,133	2	98	8.77	61.64	61	5,490	7,623	31.36
95	185	2,318	2	100	9.53	62.89	59	5,605	7,923	32.59
100	96	2,414	1	101	9.93	63.52	58	5,800	8,214	33.79
105	0	2,414	0	101	9.93	63.52	58	6,090	8,504	34.98
110	0	2,414	0	101	9.93	63.52	58	6,380	8,794	36.17
115	0	2,414	0	101	9.93	63.52	58	6,670	9,084	37.37
120	120	2,534	1	102	10.42	64.15	57	6,840	9,374	38.56
125	124	2,658	1	103	10.93	64.78	56	7,000	9,658	39.73
130	127	2,785	1	104	11.46	65.41	55	7,150	9,935	40.87
135	267	3,052	2	106	12.55	66.67	53	7,155	10,207	41.99
140	277	3,329	2	108	13.69	67.92	51	7,140	10,469	43.06

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = SEPTEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	0	3,329	0	108	13.69	67.92	51	7,395	10,724	44.11
150	292	3,621	2	110	14.89	69.18	49	7,350	10,971	45.13
155	0	3,621	0	110	14.89	69.18	49	7,595	11,216	46.14
160	160	3,781	1	111	15.55	69.81	48	7,680	11,461	47.14
165	0	3,781	0	111	15.55	69.81	48	7,920	11,701	48.13
170	169	3,950	1	112	16.25	70.44	47	7,990	11,940	49.11
175	346	4,296	2	114	17.67	71.70	45	7,875	12,171	50.06
180	0	4,296	0	114	17.67	71.70	45	8,100	12,396	50.99
185	0	4,296	0	114	17.67	71.70	45	8,325	12,621	51.91
190	0	4,296	0	114	17.67	71.70	45	8,550	12,846	52.84
195	0	4,296	0	114	17.67	71.70	45	8,775	13,071	53.77
200	199	4,495	1	115	18.49	72.33	44	8,800	13,295	54.69
999,999	19,816	24,311	44	159	100.00	100.00	0	0	24,311	100.00
TOTAL	24,311		159							
AVG. USE	152.9									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = OCTOBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	3	3	0.00	1.89	156	0	0	0.00
1	1	1	1	4	0.01	2.52	155	155	156	0.90
2	0	1	0	4	0.01	2.52	155	310	311	1.80
3	12	13	4	8	0.08	5.03	151	453	466	2.70
4	16	29	4	12	0.17	7.55	147	588	617	3.57
5	25	54	5	17	0.31	10.69	142	710	764	4.42
6	12	66	2	19	0.38	11.95	140	840	906	5.24
7	42	108	6	25	0.62	15.72	134	938	1,046	6.05
8	32	140	4	29	0.81	18.24	130	1,040	1,180	6.83
9	27	167	3	32	0.97	20.13	127	1,143	1,310	7.58
10	20	187	2	34	1.08	21.38	125	1,250	1,437	8.31
11	44	231	4	38	1.34	23.90	121	1,331	1,562	9.04
12	60	291	5	43	1.68	27.04	116	1,392	1,683	9.74
13	26	317	2	45	1.83	28.30	114	1,482	1,799	10.41
14	70	387	5	50	2.24	31.45	109	1,526	1,913	11.07
15	30	417	2	52	2.41	32.70	107	1,605	2,022	11.70
16	16	433	1	53	2.50	33.33	106	1,696	2,129	12.31
17	51	484	3	56	2.80	35.22	103	1,751	2,235	12.93
18	54	538	3	59	3.11	37.11	100	1,800	2,338	13.52
19	38	576	2	61	3.33	38.36	98	1,862	2,438	14.10
20	40	616	2	63	3.56	39.62	96	1,920	2,536	14.67
25	230	846	10	73	4.89	45.91	86	2,150	2,996	17.33
30	116	962	4	77	5.56	48.43	82	2,460	3,422	19.79
35	130	1,092	4	81	6.32	50.94	78	2,730	3,822	22.11
40	77	1,169	2	83	6.76	52.20	76	3,040	4,209	24.35
45	128	1,297	3	86	7.50	54.09	73	3,285	4,582	26.50
50	338	1,635	7	93	9.46	58.49	66	3,300	4,935	28.55
55	107	1,742	2	95	10.08	59.75	64	3,520	5,262	30.44
60	57	1,799	1	96	10.41	60.38	63	3,780	5,579	32.27
65	0	1,799	0	96	10.41	60.38	63	4,095	5,894	34.09
70	68	1,867	1	97	10.80	61.01	62	4,340	6,207	35.90
75	289	2,156	4	101	12.47	63.52	58	4,350	6,506	37.63
80	155	2,311	2	103	13.37	64.78	56	4,480	6,791	39.28
85	84	2,395	1	104	13.85	65.41	55	4,675	7,070	40.90
90	89	2,484	1	105	14.37	66.04	54	4,860	7,344	42.48
95	93	2,577	1	106	14.91	66.67	53	5,035	7,612	44.03
100	395	2,972	4	110	17.19	69.18	49	4,900	7,872	45.53
105	204	3,176	2	112	18.37	70.44	47	4,935	8,111	46.92
110	0	3,176	0	112	18.37	70.44	47	5,170	8,346	48.28
115	226	3,402	2	114	19.68	71.70	45	5,175	8,577	49.61
120	234	3,636	2	116	21.03	72.96	43	5,160	8,796	50.88
125	492	4,128	4	120	23.88	75.47	39	4,875	9,003	52.08
130	0	4,128	0	120	23.88	75.47	39	5,070	9,198	53.20
135	131	4,259	1	121	24.64	76.10	38	5,130	9,389	54.31
140	0	4,259	0	121	24.64	76.10	38	5,320	9,579	55.41

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = OCTOBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	284	4,543	2	123	26.28	77.36	36	5,220	9,763	56.47
150	149	4,692	1	124	27.14	77.99	35	5,250	9,942	57.51
155	308	5,000	2	126	28.92	79.25	33	5,115	10,115	58.51
160	318	5,318	2	128	30.76	80.50	31	4,960	10,278	59.45
165	0	5,318	0	128	30.76	80.50	31	5,115	10,433	60.35
170	335	5,653	2	130	32.70	81.76	29	4,930	10,583	61.22
175	175	5,828	1	131	33.71	82.39	28	4,900	10,728	62.05
180	178	6,006	1	132	34.74	83.02	27	4,860	10,866	62.85
185	182	6,188	1	133	35.79	83.65	26	4,810	10,998	63.62
190	373	6,561	2	135	37.95	84.91	24	4,560	11,121	64.33
195	0	6,561	0	135	37.95	84.91	24	4,680	11,241	65.02
200	199	6,760	1	136	39.10	85.53	23	4,600	11,360	65.71
999,999	10,528	17,288	23	159	100.00	100.00	0	0	17,288	100.00
TOTAL	17,288		159							
AVG. USE	108.7									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = NOVEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	2	2	0.00	1.26	157	0	0	0.00
1	1	1	1	3	0.01	1.89	156	156	157	1.34
2	0	1	0	3	0.01	1.89	156	312	313	2.67
3	3	4	1	4	0.03	2.52	155	465	469	4.00
4	8	12	2	6	0.10	3.77	153	612	624	5.32
5	5	17	1	7	0.14	4.40	152	760	777	6.62
6	12	29	2	9	0.25	5.66	150	900	929	7.92
7	0	29	0	9	0.25	5.66	150	1,050	1,079	9.20
8	24	53	3	12	0.45	7.55	147	1,176	1,229	10.48
9	54	107	6	18	0.91	11.32	141	1,269	1,376	11.73
10	20	127	2	20	1.08	12.58	139	1,390	1,517	12.93
11	11	138	1	21	1.18	13.21	138	1,518	1,656	14.12
12	12	150	1	22	1.28	13.84	137	1,644	1,794	15.29
13	78	228	6	28	1.94	17.61	131	1,703	1,931	16.46
14	84	312	6	34	2.66	21.38	125	1,750	2,062	17.58
15	30	342	2	36	2.92	22.64	123	1,845	2,187	18.64
16	48	390	3	39	3.32	24.53	120	1,920	2,310	19.69
17	68	458	4	43	3.90	27.04	116	1,972	2,430	20.72
18	90	548	5	48	4.67	30.19	111	1,998	2,546	21.71
19	38	586	2	50	5.00	31.45	109	2,071	2,657	22.65
20	40	626	2	52	5.34	32.70	107	2,140	2,766	23.58
25	392	1,018	17	69	8.68	43.40	90	2,250	3,268	27.86
30	399	1,417	14	83	12.08	52.20	76	2,280	3,697	31.52
35	162	1,579	5	88	13.46	55.35	71	2,485	4,064	34.65
40	115	1,694	3	91	14.44	57.23	68	2,720	4,414	37.63
45	264	1,958	6	97	16.69	61.01	62	2,790	4,748	40.48
50	188	2,146	4	101	18.29	63.52	58	2,900	5,046	43.02
55	320	2,466	6	107	21.02	67.30	52	2,860	5,326	45.40
60	113	2,579	2	109	21.99	68.55	50	3,000	5,579	47.56
65	191	2,770	3	112	23.61	70.44	47	3,055	5,825	49.66
70	338	3,108	5	117	26.50	73.58	42	2,940	6,048	51.56
75	293	3,401	4	121	28.99	76.10	38	2,850	6,251	53.29
80	152	3,553	2	123	30.29	77.36	36	2,880	6,433	54.84
85	85	3,638	1	124	31.01	77.99	35	2,975	6,613	56.38
90	176	3,814	2	126	32.51	79.25	33	2,970	6,784	57.83
95	277	4,091	3	129	34.88	81.13	30	2,850	6,941	59.17
100	97	4,188	1	130	35.70	81.76	29	2,900	7,088	60.43
105	207	4,395	2	132	37.47	83.02	27	2,835	7,230	61.64
110	0	4,395	0	132	37.47	83.02	27	2,970	7,365	62.79
115	224	4,619	2	134	39.38	84.28	25	2,875	7,494	63.89
120	0	4,619	0	134	39.38	84.28	25	3,000	7,619	64.95
125	124	4,743	1	135	40.43	84.91	24	3,000	7,743	66.01
130	0	4,743	0	135	40.43	84.91	24	3,120	7,863	67.03
135	131	4,874	1	136	41.55	85.53	23	3,105	7,979	68.02
140	0	4,874	0	136	41.55	85.53	23	3,220	8,094	69.00

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = NOVEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	429	5,303	3	139	45.21	87.42	20	2,900	8,203	69.93
150	0	5,303	0	139	45.21	87.42	20	3,000	8,303	70.78
155	154	5,457	1	140	46.52	88.05	19	2,945	8,402	71.63
160	157	5,614	1	141	47.86	88.68	18	2,880	8,494	72.41
165	165	5,779	1	142	49.27	89.31	17	2,805	8,584	73.18
170	0	5,779	0	142	49.27	89.31	17	2,890	8,669	73.90
175	0	5,779	0	142	49.27	89.31	17	2,975	8,754	74.63
180	0	5,779	0	142	49.27	89.31	17	3,060	8,839	75.35
185	0	5,779	0	142	49.27	89.31	17	3,145	8,924	76.08
190	0	5,779	0	142	49.27	89.31	17	3,230	9,009	76.80
195	385	6,164	2	144	52.55	90.57	15	2,925	9,089	77.49
200	397	6,561	2	146	55.93	91.82	13	2,600	9,161	78.10
999,999	5,169	11,730	13	159	100.00	100.00	0	0	11,730	100.00
TOTAL	11,730		159							
AVG. USE	73.8									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = DECEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	2	2	0.00	1.26	157	0	0	0.00
1	0	0	0	2	0.00	1.26	157	157	157	0.75
2	0	0	0	2	0.00	1.26	157	314	314	1.50
3	0	0	0	2	0.00	1.26	157	471	471	2.24
4	0	0	0	2	0.00	1.26	157	628	628	2.99
5	5	5	1	3	0.02	1.89	156	780	785	3.74
6	0	5	0	3	0.02	1.89	156	936	941	4.48
7	0	5	0	3	0.02	1.89	156	1,092	1,097	5.23
8	0	5	0	3	0.02	1.89	156	1,248	1,253	5.97
9	0	5	0	3	0.02	1.89	156	1,404	1,409	6.71
10	10	15	1	4	0.07	2.52	155	1,550	1,565	7.46
11	0	15	0	4	0.07	2.52	155	1,705	1,720	8.20
12	12	27	1	5	0.13	3.14	154	1,848	1,875	8.94
13	0	27	0	5	0.13	3.14	154	2,002	2,029	9.67
14	14	41	1	6	0.20	3.77	153	2,142	2,183	10.40
15	0	41	0	6	0.20	3.77	153	2,295	2,336	11.13
16	16	57	1	7	0.27	4.40	152	2,432	2,489	11.86
17	0	57	0	7	0.27	4.40	152	2,584	2,641	12.59
18	0	57	0	7	0.27	4.40	152	2,736	2,793	13.31
19	0	57	0	7	0.27	4.40	152	2,888	2,945	14.03
20	20	77	1	8	0.37	5.03	151	3,020	3,097	14.76
25	116	193	5	13	0.92	8.18	146	3,650	3,843	18.31
30	231	424	8	21	2.02	13.21	138	4,140	4,564	21.75
35	165	589	5	26	2.81	16.35	133	4,655	5,244	24.99
40	305	894	8	34	4.26	21.38	125	5,000	5,894	28.09
45	340	1,234	8	42	5.88	26.42	117	5,265	6,499	30.97
50	372	1,606	8	50	7.65	31.45	109	5,450	7,056	33.63
55	271	1,877	5	55	8.94	34.59	104	5,720	7,597	36.20
60	174	2,051	3	58	9.77	36.48	101	6,060	8,111	38.65
65	317	2,368	5	63	11.28	39.62	96	6,240	8,608	41.02
70	822	3,190	12	75	15.20	47.17	84	5,880	9,070	43.22
75	441	3,631	6	81	17.30	50.94	78	5,850	9,481	45.18
80	389	4,020	5	86	19.16	54.09	73	5,840	9,860	46.99
85	338	4,358	4	90	20.77	56.60	69	5,865	10,223	48.72
90	437	4,795	5	95	22.85	59.75	64	5,760	10,555	50.30
95	91	4,886	1	96	23.28	60.38	63	5,985	10,871	51.81
100	294	5,180	3	99	24.69	62.26	60	6,000	11,180	53.28
105	618	5,798	6	105	27.63	66.04	54	5,670	11,468	54.65
110	435	6,233	4	109	29.70	68.55	50	5,500	11,733	55.91
115	336	6,569	3	112	31.30	70.44	47	5,405	11,974	57.06
120	0	6,569	0	112	31.30	70.44	47	5,640	12,209	58.18
125	246	6,815	2	114	32.48	71.70	45	5,625	12,440	59.28
130	257	7,072	2	116	33.70	72.96	43	5,590	12,662	60.34
135	927	7,999	7	123	38.12	77.36	36	4,860	12,859	61.28
140	419	8,418	3	126	40.12	79.25	33	4,620	13,038	62.13

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = DECEMBER

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	144	8,562	1	127	40.80	79.87	32	4,640	13,202	62.91
150	0	8,562	0	127	40.80	79.87	32	4,800	13,362	63.68
155	153	8,715	1	128	41.53	80.50	31	4,805	13,520	64.43
160	312	9,027	2	130	43.02	81.76	29	4,640	13,667	65.13
165	0	9,027	0	130	43.02	81.76	29	4,785	13,812	65.82
170	169	9,196	1	131	43.82	82.39	28	4,760	13,956	66.51
175	0	9,196	0	131	43.82	82.39	28	4,900	14,096	67.17
180	178	9,374	1	132	44.67	83.02	27	4,860	14,234	67.83
185	181	9,555	1	133	45.53	83.65	26	4,810	14,365	68.46
190	0	9,555	0	133	45.53	83.65	26	4,940	14,495	69.08
195	192	9,747	1	134	46.45	84.28	25	4,875	14,622	69.68
200	0	9,747	0	134	46.45	84.28	25	5,000	14,747	70.28
999,999	11,237	20,984	25	159	100.00	100.00	0	0	20,984	100.00
TOTAL	20,984		159							
AVG. USE	132.0									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = JANUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	0	0	0.00	0.00	159	0	0	0.00
1	2	2	2	2	0.01	1.26	157	157	159	0.61
2	0	2	0	2	0.01	1.26	157	314	316	1.22
3	0	2	0	2	0.01	1.26	157	471	473	1.83
4	0	2	0	2	0.01	1.26	157	628	630	2.43
5	5	7	1	3	0.03	1.89	156	780	787	3.04
6	0	7	0	3	0.03	1.89	156	936	943	3.64
7	0	7	0	3	0.03	1.89	156	1,092	1,099	4.24
8	0	7	0	3	0.03	1.89	156	1,248	1,255	4.85
9	0	7	0	3	0.03	1.89	156	1,404	1,411	5.45
10	0	7	0	3	0.03	1.89	156	1,560	1,567	6.05
11	0	7	0	3	0.03	1.89	156	1,716	1,723	6.65
12	0	7	0	3	0.03	1.89	156	1,872	1,879	7.25
13	13	20	1	4	0.08	2.52	155	2,015	2,035	7.86
14	14	34	1	5	0.13	3.14	154	2,156	2,190	8.46
15	0	34	0	5	0.13	3.14	154	2,310	2,344	9.05
16	0	34	0	5	0.13	3.14	154	2,464	2,498	9.64
17	0	34	0	5	0.13	3.14	154	2,618	2,652	10.24
18	18	52	1	6	0.20	3.77	153	2,754	2,806	10.83
19	0	52	0	6	0.20	3.77	153	2,907	2,959	11.42
20	0	52	0	6	0.20	3.77	153	3,060	3,112	12.01
25	21	73	1	7	0.28	4.40	152	3,800	3,873	14.95
30	57	130	2	9	0.50	5.66	150	4,500	4,630	17.88
35	101	231	3	12	0.89	7.55	147	5,145	5,376	20.76
40	111	342	3	15	1.32	9.43	144	5,760	6,102	23.56
45	87	429	2	17	1.66	10.69	142	6,390	6,819	26.33
50	284	713	6	23	2.75	14.47	136	6,800	7,513	29.01
55	425	1,138	8	31	4.39	19.50	128	7,040	8,178	31.57
60	237	1,375	4	35	5.31	22.01	124	7,440	8,815	34.03
65	250	1,625	4	39	6.27	24.53	120	7,800	9,425	36.39
70	746	2,371	11	50	9.15	31.45	109	7,630	10,001	38.61
75	215	2,586	3	53	9.98	33.33	106	7,950	10,536	40.68
80	158	2,744	2	55	10.59	34.59	104	8,320	11,064	42.72
85	583	3,327	7	62	12.85	38.99	97	8,245	11,572	44.68
90	350	3,677	4	66	14.20	41.51	93	8,370	12,047	46.51
95	283	3,960	3	69	15.29	43.40	90	8,550	12,510	48.30
100	99	4,059	1	70	15.67	44.03	89	8,900	12,959	50.03
105	513	4,572	5	75	17.65	47.17	84	8,820	13,392	51.70
110	760	5,332	7	82	20.59	51.57	77	8,470	13,802	53.29
115	564	5,896	5	87	22.76	54.72	72	8,280	14,176	54.73
120	476	6,372	4	91	24.60	57.23	68	8,160	14,532	56.11
125	370	6,742	3	94	26.03	59.12	65	8,125	14,867	57.40
130	380	7,122	3	97	27.50	61.01	62	8,060	15,182	58.62
135	665	7,787	5	102	30.06	64.15	57	7,695	15,482	59.77
140	694	8,481	5	107	32.74	67.30	52	7,280	15,761	60.85

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = JANUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	426	8,907	3	110	34.39	69.18	49	7,105	16,012	61.82
150	296	9,203	2	112	35.53	70.44	47	7,050	16,253	62.75
155	153	9,356	1	113	36.12	71.07	46	7,130	16,486	63.65
160	0	9,356	0	113	36.12	71.07	46	7,360	16,716	64.54
165	487	9,843	3	116	38.00	72.96	43	7,095	16,938	65.40
170	336	10,179	2	118	39.30	74.21	41	6,970	17,149	66.21
175	346	10,525	2	120	40.64	75.47	39	6,825	17,350	66.99
180	359	10,884	2	122	42.02	76.73	37	6,660	17,544	67.73
185	0	10,884	0	122	42.02	76.73	37	6,845	17,729	68.45
190	563	11,447	3	125	44.20	78.62	34	6,460	17,907	69.14
195	0	11,447	0	125	44.20	78.62	34	6,630	18,077	69.79
200	790	12,237	4	129	47.25	81.13	30	6,000	18,237	70.41
999,999	13,664	25,901	30	159	100.00	100.00	0	0	25,901	100.00
TOTAL	25,901		159							
AVG. USE	162.9									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = FEBRUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	1	1	0.00	0.63	158	0	0	0.00
1	0	0	0	1	0.00	0.63	158	158	158	0.69
2	0	0	0	1	0.00	0.63	158	316	316	1.38
3	0	0	0	1	0.00	0.63	158	474	474	2.06
4	0	0	0	1	0.00	0.63	158	632	632	2.75
5	5	5	1	2	0.02	1.26	157	785	790	3.44
6	0	5	0	2	0.02	1.26	157	942	947	4.12
7	0	5	0	2	0.02	1.26	157	1,099	1,104	4.81
8	0	5	0	2	0.02	1.26	157	1,256	1,261	5.49
9	0	5	0	2	0.02	1.26	157	1,413	1,418	6.17
10	10	15	1	3	0.07	1.89	156	1,560	1,575	6.86
11	0	15	0	3	0.07	1.89	156	1,716	1,731	7.53
12	12	27	1	4	0.12	2.52	155	1,860	1,887	8.21
13	13	40	1	5	0.17	3.14	154	2,002	2,042	8.89
14	0	40	0	5	0.17	3.14	154	2,156	2,196	9.56
15	0	40	0	5	0.17	3.14	154	2,310	2,350	10.23
16	16	56	1	6	0.24	3.77	153	2,448	2,504	10.90
17	0	56	0	6	0.24	3.77	153	2,601	2,657	11.56
18	0	56	0	6	0.24	3.77	153	2,754	2,810	12.23
19	0	56	0	6	0.24	3.77	153	2,907	2,963	12.90
20	0	56	0	6	0.24	3.77	153	3,060	3,116	13.56
25	47	103	2	8	0.45	5.03	151	3,775	3,878	16.88
30	56	159	2	10	0.69	6.29	149	4,470	4,629	20.15
35	131	290	4	14	1.26	8.81	145	5,075	5,365	23.35
40	154	444	4	18	1.93	11.32	141	5,640	6,084	26.48
45	261	705	6	24	3.07	15.09	135	6,075	6,780	29.51
50	193	898	4	28	3.91	17.61	131	6,550	7,448	32.42
55	158	1,056	3	31	4.60	19.50	128	7,040	8,096	35.24
60	350	1,406	6	37	6.12	23.27	122	7,320	8,726	37.98
65	123	1,529	2	39	6.66	24.53	120	7,800	9,329	40.61
70	477	2,006	7	46	8.73	28.93	113	7,910	9,916	43.16
75	366	2,372	5	51	10.32	32.08	108	8,100	10,472	45.58
80	316	2,688	4	55	11.70	34.59	104	8,320	11,008	47.91
85	328	3,016	4	59	13.13	37.11	100	8,500	11,516	50.12
90	705	3,721	8	67	16.20	42.14	92	8,280	12,001	52.24
95	554	4,275	6	73	18.61	45.91	86	8,170	12,445	54.17
100	681	4,956	7	80	21.57	50.31	79	7,900	12,856	55.96
105	620	5,576	6	86	24.27	54.09	73	7,665	13,241	57.63
110	432	6,008	4	90	26.15	56.60	69	7,590	13,598	59.19
115	113	6,121	1	91	26.64	57.23	68	7,820	13,941	60.68
120	585	6,706	5	96	29.19	60.38	63	7,560	14,266	62.09
125	122	6,828	1	97	29.72	61.01	62	7,750	14,578	63.45
130	255	7,083	2	99	30.83	62.26	60	7,800	14,883	64.78
135	532	7,615	4	103	33.14	64.78	56	7,560	15,175	66.05
140	414	8,029	3	106	34.95	66.67	53	7,420	15,449	67.24

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = FEBRUARY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	423	8,452	3	109	36.79	68.55	50	7,250	15,702	68.34
150	592	9,044	4	113	39.36	71.07	46	6,900	15,944	69.40
155	154	9,198	1	114	40.03	71.70	45	6,975	16,173	70.39
160	472	9,670	3	117	42.09	73.58	42	6,720	16,390	71.34
165	493	10,163	3	120	44.24	75.47	39	6,435	16,598	72.24
170	502	10,665	3	123	46.42	77.36	36	6,120	16,785	73.06
175	174	10,839	1	124	47.18	77.99	35	6,125	16,964	73.84
180	179	11,018	1	125	47.96	78.62	34	6,120	17,138	74.59
185	366	11,384	2	127	49.55	79.87	32	5,920	17,304	75.32
190	187	11,571	1	128	50.36	80.50	31	5,890	17,461	76.00
195	384	11,955	2	130	52.03	81.76	29	5,655	17,610	76.65
200	399	12,354	2	132	53.77	83.02	27	5,400	17,754	77.28
999,999	10,621	22,975	27	159	100.00	100.00	0	0	22,975	100.00
TOTAL	22,975		159							

AVG. USE 144.5

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = MARCH

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	0	0	0.00	0.00	159	0	0	0.00
1	0	0	0	0	0.00	0.00	159	159	159	0.82
2	0	0	0	0	0.00	0.00	159	318	318	1.64
3	0	0	0	0	0.00	0.00	159	477	477	2.46
4	4	4	1	1	0.02	0.63	158	632	636	3.28
5	0	4	0	1	0.02	0.63	158	790	794	4.09
6	0	4	0	1	0.02	0.63	158	948	952	4.90
7	0	4	0	1	0.02	0.63	158	1,106	1,110	5.72
8	16	20	2	3	0.10	1.89	156	1,248	1,268	6.53
9	9	29	1	4	0.15	2.52	155	1,395	1,424	7.33
10	0	29	0	4	0.15	2.52	155	1,550	1,579	8.13
11	0	29	0	4	0.15	2.52	155	1,705	1,734	8.93
12	0	29	0	4	0.15	2.52	155	1,860	1,889	9.73
13	26	55	2	6	0.28	3.77	153	1,989	2,044	10.53
14	0	55	0	6	0.28	3.77	153	2,142	2,197	11.32
15	30	85	2	8	0.44	5.03	151	2,265	2,350	12.10
16	32	117	2	10	0.60	6.29	149	2,384	2,501	12.88
17	0	117	0	10	0.60	6.29	149	2,533	2,650	13.65
18	18	135	1	11	0.70	6.92	148	2,664	2,799	14.42
19	19	154	1	12	0.79	7.55	147	2,793	2,947	15.18
20	0	154	0	12	0.79	7.55	147	2,940	3,094	15.94
25	114	268	5	17	1.38	10.69	142	3,550	3,818	19.66
30	138	406	5	22	2.09	13.84	137	4,110	4,516	23.26
35	231	637	7	29	3.28	18.24	130	4,550	5,187	26.72
40	256	893	7	36	4.60	22.64	123	4,920	5,813	29.94
45	384	1,277	9	45	6.58	28.30	114	5,130	6,407	33.00
50	338	1,615	7	52	8.32	32.70	107	5,350	6,965	35.87
55	267	1,882	5	57	9.69	35.85	102	5,610	7,492	38.59
60	403	2,285	7	64	11.77	40.25	95	5,700	7,985	41.13
65	315	2,600	5	69	13.39	43.40	90	5,850	8,450	43.52
70	407	3,007	6	75	15.49	47.17	84	5,880	8,887	45.77
75	363	3,370	5	80	17.36	50.31	79	5,925	9,295	47.87
80	393	3,763	5	85	19.38	53.46	74	5,920	9,683	49.87
85	333	4,096	4	89	21.10	55.97	70	5,950	10,046	51.74
90	350	4,446	4	93	22.90	58.49	66	5,940	10,386	53.49
95	92	4,538	1	94	23.37	59.12	65	6,175	10,713	55.18
100	391	4,929	4	98	25.39	61.64	61	6,100	11,029	56.80
105	408	5,337	4	102	27.49	64.15	57	5,985	11,322	58.31
110	215	5,552	2	104	28.59	65.41	55	6,050	11,602	59.75
115	670	6,222	6	110	32.05	69.18	49	5,635	11,857	61.07
120	351	6,573	3	113	33.85	71.07	46	5,520	12,093	62.28
125	248	6,821	2	115	35.13	72.33	44	5,500	12,321	63.46
130	511	7,332	4	119	37.76	74.84	40	5,200	12,532	64.54
135	269	7,601	2	121	39.15	76.10	38	5,130	12,731	65.57
140	273	7,874	2	123	40.55	77.36	36	5,040	12,914	66.51

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = MARCH

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	141	8,015	1	124	41.28	77.99	35	5,075	13,090	67.42
150	296	8,311	2	126	42.80	79.25	33	4,950	13,261	68.30
155	0	8,311	0	126	42.80	79.25	33	5,115	13,426	69.15
160	476	8,787	3	129	45.26	81.13	30	4,800	13,587	69.98
165	0	8,787	0	129	45.26	81.13	30	4,950	13,737	70.75
170	337	9,124	2	131	46.99	82.39	28	4,760	13,884	71.51
175	0	9,124	0	131	46.99	82.39	28	4,900	14,024	72.23
180	180	9,304	1	132	47.92	83.02	27	4,860	14,164	72.95
185	362	9,666	2	134	49.78	84.28	25	4,625	14,291	73.60
190	188	9,854	1	135	50.75	84.91	24	4,560	14,414	74.24
195	0	9,854	0	135	50.75	84.91	24	4,680	14,534	74.86
200	398	10,252	2	137	52.80	86.16	22	4,400	14,652	75.46
999,999	9,164	19,416	22	159	100.00	100.00	0	0	19,416	100.00
TOTAL	19,416		159							
AVG. USE	122.1									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = APRIL

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	0	0	0.00	0.00	157	0	0	0.00
1	0	0	0	0	0.00	0.00	157	157	157	1.28
2	4	4	2	2	0.03	1.27	155	310	314	2.56
3	3	7	1	3	0.06	1.91	154	462	469	3.83
4	4	11	1	4	0.09	2.55	153	612	623	5.08
5	10	21	2	6	0.17	3.82	151	755	776	6.33
6	0	21	0	6	0.17	3.82	151	906	927	7.56
7	14	35	2	8	0.29	5.10	149	1,043	1,078	8.79
8	16	51	2	10	0.42	6.37	147	1,176	1,227	10.01
9	54	105	6	16	0.86	10.19	141	1,269	1,374	11.21
10	40	145	4	20	1.18	12.74	137	1,370	1,515	12.36
11	44	189	4	24	1.54	15.29	133	1,463	1,652	13.47
12	36	225	3	27	1.84	17.20	130	1,560	1,785	14.56
13	26	251	2	29	2.05	18.47	128	1,664	1,915	15.62
14	84	335	6	35	2.73	22.29	122	1,708	2,043	16.66
15	30	365	2	37	2.98	23.57	120	1,800	2,165	17.66
16	112	477	7	44	3.89	28.03	113	1,808	2,285	18.64
17	34	511	2	46	4.17	29.30	111	1,887	2,398	19.56
18	18	529	1	47	4.31	29.94	110	1,980	2,509	20.46
19	95	624	5	52	5.09	33.12	105	1,995	2,619	21.36
20	120	744	6	58	6.07	36.94	99	1,980	2,724	22.22
25	227	971	10	68	7.92	43.31	89	2,225	3,196	26.07
30	253	1,224	9	77	9.98	49.04	80	2,400	3,624	29.56
35	165	1,389	5	82	11.33	52.23	75	2,625	4,014	32.74
40	346	1,735	9	91	14.15	57.96	66	2,640	4,375	35.69
45	342	2,077	8	99	16.94	63.06	58	2,610	4,687	38.23
50	292	2,369	6	105	19.32	66.88	52	2,600	4,969	40.53
55	316	2,685	6	111	21.90	70.70	46	2,530	5,215	42.54
60	232	2,917	4	115	23.79	73.25	42	2,520	5,437	44.35
65	0	2,917	0	115	23.79	73.25	42	2,730	5,647	46.06
70	139	3,056	2	117	24.93	74.52	40	2,800	5,856	47.77
75	221	3,277	3	120	26.73	76.43	37	2,775	6,052	49.36
80	235	3,512	3	123	28.65	78.34	34	2,720	6,232	50.83
85	0	3,512	0	123	28.65	78.34	34	2,890	6,402	52.22
90	264	3,776	3	126	30.80	80.25	31	2,790	6,566	53.56
95	187	3,963	2	128	32.32	81.53	29	2,755	6,718	54.80
100	97	4,060	1	129	33.12	82.17	28	2,800	6,860	55.95
105	101	4,161	1	130	33.94	82.80	27	2,835	6,996	57.06
110	108	4,269	1	131	34.82	83.44	26	2,860	7,129	58.15
115	225	4,494	2	133	36.66	84.71	24	2,760	7,254	59.17
120	237	4,731	2	135	38.59	85.99	22	2,640	7,371	60.12
125	0	4,731	0	135	38.59	85.99	22	2,750	7,481	61.02
130	257	4,988	2	137	40.69	87.26	20	2,600	7,588	61.89
135	0	4,988	0	137	40.69	87.26	20	2,700	7,688	62.71
140	0	4,988	0	137	40.69	87.26	20	2,800	7,788	63.52

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = APRIL

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	0	4,988	0	137	40.69	87.26	20	2,900	7,888	64.34
150	0	4,988	0	137	40.69	87.26	20	3,000	7,988	65.15
155	0	4,988	0	137	40.69	87.26	20	3,100	8,088	65.97
160	0	4,988	0	137	40.69	87.26	20	3,200	8,188	66.79
165	0	4,988	0	137	40.69	87.26	20	3,300	8,288	67.60
170	168	5,156	1	138	42.06	87.90	19	3,230	8,386	68.40
175	0	5,156	0	138	42.06	87.90	19	3,325	8,481	69.18
180	0	5,156	0	138	42.06	87.90	19	3,420	8,576	69.95
185	0	5,156	0	138	42.06	87.90	19	3,515	8,671	70.73
190	0	5,156	0	138	42.06	87.90	19	3,610	8,766	71.50
195	193	5,349	1	139	43.63	88.54	18	3,510	8,859	72.26
200	198	5,547	1	140	45.24	89.17	17	3,400	8,947	72.98
999,999	6,713	12,260	17	157	100.00	100.00	0	0	12,260	100.00
TOTAL	12,260		157							
AVG. USE	78.1									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = MAY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	0	0	0.00	0.00	154	0	0	0.00
1	0	0	0	0	0.00	0.00	154	154	154	1.12
2	6	6	3	3	0.04	1.95	151	302	308	2.24
3	3	9	1	4	0.07	2.60	150	450	459	3.34
4	4	13	1	5	0.09	3.25	149	596	609	4.43
5	30	43	6	11	0.31	7.14	143	715	758	5.52
6	24	67	4	15	0.49	9.74	139	834	901	6.56
7	14	81	2	17	0.59	11.04	137	959	1,040	7.57
8	16	97	2	19	0.71	12.34	135	1,080	1,177	8.57
9	27	124	3	22	0.90	14.29	132	1,188	1,312	9.55
10	50	174	5	27	1.27	17.53	127	1,270	1,444	10.51
11	77	251	7	34	1.83	22.08	120	1,320	1,571	11.44
12	48	299	4	38	2.18	24.68	116	1,392	1,691	12.31
13	13	312	1	39	2.27	25.32	115	1,495	1,807	13.16
14	28	340	2	41	2.48	26.62	113	1,582	1,922	13.99
15	15	355	1	42	2.58	27.27	112	1,680	2,035	14.82
16	80	435	5	47	3.17	30.52	107	1,712	2,147	15.63
17	34	469	2	49	3.41	31.82	105	1,785	2,254	16.41
18	90	559	5	54	4.07	35.06	100	1,800	2,359	17.18
19	76	635	4	58	4.62	37.66	96	1,824	2,459	17.90
20	20	655	1	59	4.77	38.31	95	1,900	2,555	18.60
25	115	770	5	64	5.61	41.56	90	2,250	3,020	21.99
30	160	930	6	70	6.77	45.45	84	2,520	3,450	25.12
35	232	1,162	7	77	8.46	50.00	77	2,695	3,857	28.08
40	311	1,473	8	85	10.72	55.19	69	2,760	4,233	30.82
45	167	1,640	4	89	11.94	57.79	65	2,925	4,565	33.24
50	190	1,830	4	93	13.32	60.39	61	3,050	4,880	35.53
55	157	1,987	3	96	14.47	62.34	58	3,190	5,177	37.69
60	293	2,280	5	101	16.60	65.58	53	3,180	5,460	39.75
65	251	2,531	4	105	18.43	68.18	49	3,185	5,716	41.62
70	136	2,667	2	107	19.42	69.48	47	3,290	5,957	43.37
75	293	2,960	4	111	21.55	72.08	43	3,225	6,185	45.03
80	310	3,270	4	115	23.81	74.68	39	3,120	6,390	46.52
85	251	3,521	3	118	25.64	76.62	36	3,060	6,581	47.91
90	266	3,787	3	121	27.57	78.57	33	2,970	6,757	49.20
95	94	3,881	1	122	28.26	79.22	32	3,040	6,921	50.39
100	97	3,978	1	123	28.96	79.87	31	3,100	7,078	51.53
105	0	3,978	0	123	28.96	79.87	31	3,255	7,233	52.66
110	0	3,978	0	123	28.96	79.87	31	3,410	7,388	53.79
115	225	4,203	2	125	30.60	81.17	29	3,335	7,538	54.88
120	116	4,319	1	126	31.45	81.82	28	3,360	7,679	55.91
125	121	4,440	1	127	32.33	82.47	27	3,375	7,815	56.90
130	0	4,440	0	127	32.33	82.47	27	3,510	7,950	57.88
135	264	4,704	2	129	34.25	83.77	25	3,375	8,079	58.82
140	137	4,841	1	130	35.25	84.42	24	3,360	8,201	59.71

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = MAY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	141	4,982	1	131	36.27	85.06	23	3,335	8,317	60.55
150	295	5,277	2	133	38.42	86.36	21	3,150	8,427	61.35
155	0	5,277	0	133	38.42	86.36	21	3,255	8,532	62.12
160	0	5,277	0	133	38.42	86.36	21	3,360	8,637	62.88
165	161	5,438	1	134	39.59	87.01	20	3,300	8,738	63.62
170	166	5,604	1	135	40.80	87.66	19	3,230	8,834	64.32
175	0	5,604	0	135	40.80	87.66	19	3,325	8,929	65.01
180	0	5,604	0	135	40.80	87.66	19	3,420	9,024	65.70
185	182	5,786	1	136	42.13	88.31	18	3,330	9,116	66.37
190	188	5,974	1	137	43.49	88.96	17	3,230	9,204	67.01
195	0	5,974	0	137	43.49	88.96	17	3,315	9,289	67.63
200	0	5,974	0	137	43.49	88.96	17	3,400	9,374	68.25
999,999	7,761	13,735	17	154	100.00	100.00	0	0	13,735	100.00
TOTAL	13,735		154							
AVG. USE	89.2									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = JUNE

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	3	3	0.00	1.94	152	0	0	0.00
1	2	2	2	5	0.01	3.23	150	150	152	0.91
2	0	2	0	5	0.01	3.23	150	300	302	1.82
3	6	8	2	7	0.05	4.52	148	444	452	2.72
4	8	16	2	9	0.10	5.81	146	584	600	3.61
5	15	31	3	12	0.19	7.74	143	715	746	4.49
6	42	73	7	19	0.44	12.26	136	816	889	5.35
7	21	94	3	22	0.57	14.19	133	931	1,025	6.16
8	32	126	4	26	0.76	16.77	129	1,032	1,158	6.96
9	63	189	7	33	1.14	21.29	122	1,098	1,287	7.74
10	50	239	5	38	1.44	24.52	117	1,170	1,409	8.47
11	33	272	3	41	1.64	26.45	114	1,254	1,526	9.18
12	36	308	3	44	1.85	28.39	111	1,332	1,640	9.86
13	26	334	2	46	2.01	29.68	109	1,417	1,751	10.53
14	28	362	2	48	2.18	30.97	107	1,498	1,860	11.19
15	60	422	4	52	2.54	33.55	103	1,545	1,967	11.83
16	64	486	4	56	2.92	36.13	99	1,584	2,070	12.45
17	17	503	1	57	3.03	36.77	98	1,666	2,169	13.05
18	90	593	5	62	3.57	40.00	93	1,674	2,267	13.63
19	38	631	2	64	3.80	41.29	91	1,729	2,360	14.19
20	40	671	2	66	4.04	42.58	89	1,780	2,451	14.74
25	183	854	8	74	5.14	47.74	81	2,025	2,879	17.32
30	82	936	3	77	5.63	49.68	78	2,340	3,276	19.70
35	133	1,069	4	81	6.43	52.26	74	2,590	3,659	22.01
40	111	1,180	3	84	7.10	54.19	71	2,840	4,020	24.18
45	45	1,225	1	85	7.37	54.84	70	3,150	4,375	26.31
50	237	1,462	5	90	8.79	58.06	65	3,250	4,712	28.34
55	265	1,727	5	95	10.39	61.29	60	3,300	5,027	30.23
60	236	1,963	4	99	11.81	63.87	56	3,360	5,323	32.01
65	126	2,089	2	101	12.56	65.16	54	3,510	5,599	33.67
70	66	2,155	1	102	12.96	65.81	53	3,710	5,865	35.27
75	290	2,445	4	106	14.70	68.39	49	3,675	6,120	36.81
80	77	2,522	1	107	15.17	69.03	48	3,840	6,362	38.26
85	245	2,767	3	110	16.64	70.97	45	3,825	6,592	39.65
90	0	2,767	0	110	16.64	70.97	45	4,050	6,817	41.00
95	92	2,859	1	111	17.19	71.61	44	4,180	7,039	42.33
100	195	3,054	2	113	18.37	72.90	42	4,200	7,254	43.63
105	0	3,054	0	113	18.37	72.90	42	4,410	7,464	44.89
110	0	3,054	0	113	18.37	72.90	42	4,620	7,674	46.15
115	0	3,054	0	113	18.37	72.90	42	4,830	7,884	47.42
120	118	3,172	1	114	19.08	73.55	41	4,920	8,092	48.67
125	245	3,417	2	116	20.55	74.84	39	4,875	8,292	49.87
130	258	3,675	2	118	22.10	76.13	37	4,810	8,485	51.03
135	0	3,675	0	118	22.10	76.13	37	4,995	8,670	52.14
140	136	3,811	1	119	22.92	76.77	36	5,040	8,851	53.23

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = JUNE

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	566	4,377	4	123	26.32	79.35	32	4,640	9,017	54.23
150	296	4,673	2	125	28.10	80.65	30	4,500	9,173	55.17
155	308	4,981	2	127	29.96	81.94	28	4,340	9,321	56.06
160	156	5,137	1	128	30.90	82.58	27	4,320	9,457	56.88
165	163	5,300	1	129	31.88	83.23	26	4,290	9,590	57.68
170	168	5,468	1	130	32.89	83.87	25	4,250	9,718	58.45
175	0	5,468	0	130	32.89	83.87	25	4,375	9,843	59.20
180	180	5,648	1	131	33.97	84.52	24	4,320	9,968	59.95
185	0	5,648	0	131	33.97	84.52	24	4,440	10,088	60.67
190	0	5,648	0	131	33.97	84.52	24	4,560	10,208	61.39
195	0	5,648	0	131	33.97	84.52	24	4,680	10,328	62.12
200	0	5,648	0	131	33.97	84.52	24	4,800	10,448	62.84
999,999	10,979	16,627	24	155	100.00	100.00	0	0	16,627	100.00
TOTAL	16,627		155							
AVG. USE	107.3									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = JULY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	3	3	0.00	1.95	151	0	0	0.00
1	3	3	3	6	0.02	3.90	148	148	151	0.77
2	4	7	2	8	0.04	5.19	146	292	299	1.52
3	9	16	3	11	0.08	7.14	143	429	445	2.26
4	24	40	6	17	0.20	11.04	137	548	588	2.98
5	20	60	4	21	0.30	13.64	133	665	725	3.68
6	24	84	4	25	0.43	16.23	129	774	858	4.35
7	14	98	2	27	0.50	17.53	127	889	987	5.01
8	32	130	4	31	0.66	20.13	123	984	1,114	5.65
9	45	175	5	36	0.89	23.38	118	1,062	1,237	6.28
10	30	205	3	39	1.04	25.32	115	1,150	1,355	6.87
11	121	326	11	50	1.65	32.47	104	1,144	1,470	7.46
12	48	374	4	54	1.90	35.06	100	1,200	1,574	7.98
13	65	439	5	59	2.23	38.31	95	1,235	1,674	8.49
14	28	467	2	61	2.37	39.61	93	1,302	1,769	8.97
15	0	467	0	61	2.37	39.61	93	1,395	1,862	9.45
16	32	499	2	63	2.53	40.91	91	1,456	1,955	9.92
17	51	550	3	66	2.79	42.86	88	1,496	2,046	10.38
18	18	568	1	67	2.88	43.51	87	1,566	2,134	10.83
19	19	587	1	68	2.98	44.16	86	1,634	2,221	11.27
20	20	607	1	69	3.08	44.81	85	1,700	2,307	11.70
25	137	744	6	75	3.77	48.70	79	1,975	2,719	13.79
30	148	892	5	80	4.53	51.95	74	2,220	3,112	15.79
35	102	994	3	83	5.04	53.90	71	2,485	3,479	17.65
40	155	1,149	4	87	5.83	56.49	67	2,680	3,829	19.42
45	346	1,495	8	95	7.58	61.69	59	2,655	4,150	21.05
50	48	1,543	1	96	7.83	62.34	58	2,900	4,443	22.54
55	106	1,649	2	98	8.37	63.64	56	3,080	4,729	23.99
60	233	1,882	4	102	9.55	66.23	52	3,120	5,002	25.38
65	64	1,946	1	103	9.87	66.88	51	3,315	5,261	26.69
70	0	1,946	0	103	9.87	66.88	51	3,570	5,516	27.98
75	220	2,166	3	106	10.99	68.83	48	3,600	5,766	29.25
80	0	2,166	0	106	10.99	68.83	48	3,840	6,006	30.47
85	249	2,415	3	109	12.25	70.78	45	3,825	6,240	31.66
90	88	2,503	1	110	12.70	71.43	44	3,960	6,463	32.79
95	0	2,503	0	110	12.70	71.43	44	4,180	6,683	33.90
100	96	2,599	1	111	13.18	72.08	43	4,300	6,899	35.00
105	103	2,702	1	112	13.71	72.73	42	4,410	7,112	36.08
110	106	2,808	1	113	14.25	73.38	41	4,510	7,318	37.12
115	0	2,808	0	113	14.25	73.38	41	4,715	7,523	38.16
120	0	2,808	0	113	14.25	73.38	41	4,920	7,728	39.20
125	242	3,050	2	115	15.47	74.68	39	4,875	7,925	40.20
130	128	3,178	1	116	16.12	75.32	38	4,940	8,118	41.18
135	0	3,178	0	116	16.12	75.32	38	5,130	8,308	42.15
140	0	3,178	0	116	16.12	75.32	38	5,320	8,498	43.11

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = JULY

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	143	3,321	1	117	16.85	75.97	37	5,365	8,686	44.06
150	0	3,321	0	117	16.85	75.97	37	5,550	8,871	45.00
155	0	3,321	0	117	16.85	75.97	37	5,735	9,056	45.94
160	0	3,321	0	117	16.85	75.97	37	5,920	9,241	46.88
165	162	3,483	1	118	17.67	76.62	36	5,940	9,423	47.80
170	336	3,819	2	120	19.37	77.92	34	5,780	9,599	48.70
175	0	3,819	0	120	19.37	77.92	34	5,950	9,769	49.56
180	0	3,819	0	120	19.37	77.92	34	6,120	9,939	50.42
185	182	4,001	1	121	20.30	78.57	33	6,105	10,106	51.27
190	186	4,187	1	122	21.24	79.22	32	6,080	10,267	52.09
195	194	4,381	1	123	22.23	79.87	31	6,045	10,426	52.89
200	396	4,777	2	125	24.23	81.17	29	5,800	10,577	53.66
999,999	14,935	19,712	29	154	100.00	100.00	0	0	19,712	100.00
TOTAL	19,712		154							
AVG. USE	128.0									

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = AUGUST

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
0	0	0	6	6	0.00	3.82	151	0	0	0.00
1	1	1	1	7	0.00	4.46	150	150	151	0.63
2	2	3	1	8	0.01	5.10	149	298	301	1.26
3	9	12	3	11	0.05	7.01	146	438	450	1.88
4	20	32	5	16	0.13	10.19	141	564	596	2.50
5	25	57	5	21	0.24	13.38	136	680	737	3.09
6	18	75	3	24	0.31	15.29	133	798	873	3.66
7	21	96	3	27	0.40	17.20	130	910	1,006	4.21
8	48	144	6	33	0.60	21.02	124	992	1,136	4.76
9	36	180	4	37	0.75	23.57	120	1,080	1,260	5.28
10	80	260	8	45	1.09	28.66	112	1,120	1,380	5.78
11	44	304	4	49	1.27	31.21	108	1,188	1,492	6.25
12	24	328	2	51	1.37	32.48	106	1,272	1,600	6.70
13	39	367	3	54	1.54	34.39	103	1,339	1,706	7.14
14	14	381	1	55	1.60	35.03	102	1,428	1,809	7.57
15	45	426	3	58	1.78	36.94	99	1,485	1,911	8.00
16	0	426	0	58	1.78	36.94	99	1,584	2,010	8.42
17	17	443	1	59	1.85	37.58	98	1,666	2,109	8.83
18	18	461	1	60	1.93	38.22	97	1,746	2,207	9.24
19	38	499	2	62	2.09	39.49	95	1,805	2,304	9.65
20	40	539	2	64	2.26	40.76	93	1,860	2,399	10.05
25	136	675	6	70	2.83	44.59	87	2,175	2,850	11.93
30	27	702	1	71	2.94	45.22	86	2,580	3,282	13.74
35	263	965	8	79	4.04	50.32	78	2,730	3,695	15.47
40	113	1,078	3	82	4.51	52.23	75	3,000	4,078	17.08
45	171	1,249	4	86	5.23	54.78	71	3,195	4,444	18.61
50	185	1,434	4	90	6.00	57.32	67	3,350	4,784	20.03
55	55	1,489	1	91	6.23	57.96	66	3,630	5,119	21.43
60	60	1,549	1	92	6.49	58.60	65	3,900	5,449	22.82
65	61	1,610	1	93	6.74	59.24	64	4,160	5,770	24.16
70	68	1,678	1	94	7.03	59.87	63	4,410	6,088	25.49
75	72	1,750	1	95	7.33	60.51	62	4,650	6,400	26.80
80	77	1,827	1	96	7.65	61.15	61	4,880	6,707	28.08
85	0	1,827	0	96	7.65	61.15	61	5,185	7,012	29.36
90	86	1,913	1	97	8.01	61.78	60	5,400	7,313	30.62
95	93	2,006	1	98	8.40	62.42	59	5,605	7,611	31.87
100	194	2,200	2	100	9.21	63.69	57	5,700	7,900	33.08
105	209	2,409	2	102	10.09	64.97	55	5,775	8,184	34.27
110	0	2,409	0	102	10.09	64.97	55	6,050	8,459	35.42
115	226	2,635	2	104	11.03	66.24	53	6,095	8,730	36.55
120	238	2,873	2	106	12.03	67.52	51	6,120	8,993	37.66
125	122	2,995	1	107	12.54	68.15	50	6,250	9,245	38.71
130	129	3,124	1	108	13.08	68.79	49	6,370	9,494	39.75
135	131	3,255	1	109	13.63	69.43	48	6,480	9,735	40.76
140	0	3,255	0	109	13.63	69.43	48	6,720	9,975	41.77

SOUTHWEST GAS CORPORATION

BILL FREQUENCY ANALYSIS

HISTORICAL TEST YEAR

RATE SCHEDULE = G-15 CLASS = SPECIAL RESIDENTIAL AREA = ARIZONA PERIOD = AUGUST

INTERVAL UPPER LIMIT	THERMS IN INTERVAL	CUMULATIVE THERMS	BILLS IN INTERVAL	CUMULATIVE BILLS	CUMULATIVE USAGE PERCENT	CUMULATIVE BILLS PERCENT	BILLS PASSING INTERVAL UPPER LIMIT	THERMS FROM BILLS PASSING UPPER LIMIT	CONSOLIDATED FACTOR THERMS	CONSOLIDATED FACTOR PERCENT
145	141	3,396	1	110	14.22	70.06	47	6,815	10,211	42.76
150	0	3,396	0	110	14.22	70.06	47	7,050	10,446	43.74
155	155	3,551	1	111	14.87	70.70	46	7,130	10,681	44.72
160	160	3,711	1	112	15.54	71.34	45	7,200	10,911	45.69
165	162	3,873	1	113	16.22	71.97	44	7,260	11,133	46.62
170	0	3,873	0	113	16.22	71.97	44	7,480	11,353	47.54
175	0	3,873	0	113	16.22	71.97	44	7,700	11,573	48.46
180	0	3,873	0	113	16.22	71.97	44	7,920	11,793	49.38
185	0	3,873	0	113	16.22	71.97	44	8,140	12,013	50.30
190	374	4,247	2	115	17.78	73.25	42	7,980	12,227	51.20
195	191	4,438	1	116	18.58	73.89	41	7,995	12,433	52.06
200	0	4,438	0	116	18.58	73.89	41	8,200	12,638	52.92
999,999	19,444	23,882	41	157	100.00	100.00	0	0	23,882	100.00
TOTAL	23,882		157							
AVG. USE	152.1									

GIESEKING

Southwest Gas Corporation
Docket No. G-01551A-04-0876

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of
Prepared Rebuttal Testimony
of
EDWARD B. GIESEKING

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Southwest Gas Corporation
Docket No. G-01551A-04-0876

BEFORE THE ARIZONA CORPORATION COMMISSION

Prepared Rebuttal Testimony
of
EDWARD B. GIESEKING

INTRODUCTION/BACKGROUND

Q. 1 Please state your name and business address.

A. 1 My name is Edward B. Gieseking. My business address is 5241 Spring Mountain Road, Las Vegas, Nevada 89150-0002.

Q. 2 By whom are you employed and in what capacity?

A. 2 I am employed by Southwest Gas Corporation (Southwest or Company) in the Pricing and Tariffs Department as Director/Pricing and Tariffs.

Q. 3 Did you sponsor prepared direct testimony in this proceeding?

A. 3 Yes, I did.

Q. 4 What is the purpose of your rebuttal testimony?

A. 4 The purpose of my testimony is to respond to the direct testimonies of Mr. William Musgrove and Mr. Robert Gray, witnesses for the Arizona Corporation Commission Utilities Division Staff (Staff), the direct testimony of Ms. Marylee Diaz Cortez, witness for the Residential Utility Consumer Office (RUCO), and the direct testimony of Mr. Jeff Schlegel, witness for the Southwest Energy Efficiency Project and Natural Resources Defense Council (SWEEP/NRDC), regarding their recommendations concerning

Southwest's margin decoupling mechanism (Conservation Margin Tracker or CMT) and residential rate design.

Q. 5 Please summarize your testimony.

A. 5 My rebuttal testimony addresses the following issues:

- Staff's assertion that it is inappropriate to make tariff changes in the instant proceeding.
- The fallacy of Staff's and RUCO's assertion that limiting the application of the CMT to the residential class of customers is biased or unfair.
- Staff's mischaracterization of my testimony with regard to Southwest's experience of declining average residential consumption.
- RUCO's and Staff's conclusions regarding Public Utility Commission of Nevada's (PUCN) Decision on Southwest's proposed Nevada margin decoupling mechanism.
- Why RUCO's assertion that the CMT would have customers pay for something they did not consume is in error.
- Staff's incorrect assertion that Southwest failed to recognize that the Joint Resolution of the American Gas Association and the National Resources Defense Counsel recognizes there may be solutions other than a CMT-like mechanisms when considering the dilemma between promoting energy efficiency and protecting utilities from margin erosion.

- SWEEP/NRDC's recommendation for a review and an evaluation of mechanisms that remove a utility's financial disincentive for supporting energy efficiency.
- Why Southwest's proposed rate design will not discourage conservation, contrary to both Staff's and RUCO's proposed rate designs.

THIS PROCEEDING IS THE PROPER VENUE FOR ADDRESSING SOUTHWEST'S PROPOSED RECOVERY OF AUTHORIZED MARGIN

Q. 6 Has any party challenged the appropriateness of addressing Southwest's proposals for margin recovery in this proceeding?

A. 6 No. Staff opines that the correct venue to consider rate design proposals of the significance Southwest is proposing in this case is within the "boundaries of full discovery and the evidentiary processes that are integral parts of formal rate case proceedings."[1/] There is no better time for the Commission to consider these issues than during a general rate case, wherein the parties can propound discovery requests and fully debate the issues.

Q. 7 Have Staff and other parties been accorded the opportunity to perform full discovery during this proceeding?

A. 7 Yes. The Administrative Law Judge established a procedural schedule that provided interveners approximately 25 weeks from the date of the Procedural

1/ Direct Testimony of W.H. Musgrove, p. 4, l. 23 through p. 5, l. 2

Order[2/] to propound discovery, prepare their direct cases, and file testimony. It is my understanding that every party's questions have been responded to on a timely basis throughout the discovery process. There has been ample opportunity to develop a full evidentiary record during the processing of the instant filing.

Q. 8 Contrary to their earlier testimony, stating a rate case is the proper venue to consider Southwest's ratemaking proposals, Staff claims it is "totally inappropriate" for Southwest to develop tariff language that describes its CMT proposal.[3/] Is it appropriate for Southwest to propose alternate margin recovery and tariff language that describes its proposals in this general rate case filing?

A. 8 Yes. Contrary to Staff's assertions, this general rate case is the proper time for Southwest to propose cost recovery mechanisms that differ from current mechanisms. Staff is wrong to assert that it is improper for Southwest to propose anything different from what was authorized in the last general rate case. Southwest has presented ample evidence and justification to support a change in the existing rate structure for the recovery of authorized margin.

2/ Approximately 33 weeks elapsed between the December 9 filing date and the July 26 Staff and Intervenor direct testimony filing date. There are approximately 25 weeks between the February 7 issuance of the ALJ Procedural Order and the testimony filing date.

3/ Direct Testimony of W. H. Musgrove, p. 6, ll. 19-23

APPLICATION OF THE PROPOSED CMT TO THE RESIDENTIAL CUSTOMER CLASSES IS APPROPRIATE

Q. 9 Why does Southwest propose that the CMT be applied to only the residential customer classes?

A. 9 The margin decoupling proposed by Southwest in the CMT is more appropriate to customer classes that: 1) have a large number of customers within the class and 2) possess homogeneous cost of service characteristics. The majority of Southwest's customers are classified residential and the customers in the residential class have a relatively narrow range of cost of service characteristics. On the other hand, there are far fewer customers in the general service classes and their costs of service characteristics are not as homogeneous as the residential class. As such, Southwest determined that the CMT would be more appropriate for the residential classes than Southwest's other customer classes.

Q. 10 Are there any other reasons that Southwest limited the applicability of the proposed CMT to the residential customer classes?

A. 10 Yes. In response to a Staff data request which inquired about the decline in non-residential customer class average consumption and why Southwest only proposed the CMT for the residential class, Southwest presented data demonstrating that from the 1999 rate case through the Company's present rate case filing that the decline in annual consumption per customer for the residential

classes is approximately four to five times greater than the decline in annual consumption for the small-general and medium-general customers.[4/] Furthermore, Southwest has been unable to identify a discernible trend of declining consumption per customer for its other customer classes.

This data demonstrates that the declining annual usage per customer experienced by the Company is primarily associated with the residential customer classes. Because the CMT is principally designed to mitigate the effects of declining usage and weather variations, applying the CMT to classes of customers that are not experiencing declining usage provides minimum benefit to the Company or its customers. In addition, it is more appropriate to assess the unrecovered cost of service associated with declining usage to the class of customers whose usage is declining.

Ultimately, Southwest determined that it would accept the risk of recovering its non-residential authorized margin in order to simplify its CMT proposal. Contrary to Staff/RUCO's contentions, the Company's acceptance of this risk in no way presents a bias, unfairness, or any burden to residential customers. In the event Southwest is unable to recover its non-residential authorized margin level, it will not impact the residential classes in any way.

4/ Response to Staff Data Request No. BGG-7-5

Q. 11 Is it proper to employ cost recovery techniques to recover non-residential customer class margin that differ from those used to recover authorized margin from residential customers?

A. 11 Yes. It is proper to employ rate design or cost recovery techniques that are different for different classes of service. Rate design for each class should be structured to fit the unique characteristics of that class. For example, proposed monthly fixed charges applicable to the general service classes are higher than Southwest's proposed residential basic service charges. Southwest's proposed small-general basic service charge is more than double Southwest's proposed residential basic service charge associated with the implementation of the CMT. For the largest general service class, Southwest has requested the continuation of a demand billing rate, in addition to a higher basic service charge.

Q. 12 Does the CMT provide any benefit to residential customers?

A. 12 Yes. In the event Southwest recovers more than the authorized margin level, which would likely occur if Arizona were to experience a colder than normal month or season, Southwest would credit the CMT balancing account with all margin amounts recovered that exceed the authorized levels to the residential customers; whereas, this would not be applicable to non-residential customers.

Q. 13 Could the CMT be made applicable to non-residential customer classes?

A. 13 Yes. If the Commission prefers that the proposed CMT apply to all customer classes, Southwest would be willing to apply it to all customer classes.

CUSTOMER EFFICIENCY IMPROVEMENTS FROM BOTH NEW AND VINTAGE RESIDENTIAL CUSTOMERS HAVE IMPACTED SOUTHWEST'S EARNED RATE OF RETURN

Q. 14 Please respond to Staff's claim that Southwest incorrectly asserts that its total residential sales have decreased?[5/]

A. 14 Staff reached an incorrect conclusion regarding the evidence Southwest presented on the issue of declining residential sales. Southwest does not claim that total residential sales decreased but provides evidence that the consumption per customer has decreased. One of the underlying themes in Southwest's filing is that its residential costs of service are essentially fixed and do not change considerably with changes in customer consumption, and that Southwest has struggled to recover its fixed costs of service due to the volumetric recovery of these fixed costs in an environment of declining consumption per customer. This underlying theme is addressed in Southwest's Application and testimonies of several witnesses, including Mr. Shaw, Mr. Fetter,

5/ Direct Testimony of W. H. Musgrove, p.6, ll. 5-6

Mr. Cattanach, Mr. Congdon, and my direct testimony.[6/]

Q. 15 Both Staff and RUCO have acknowledged that Southwest has, for the past several years, experienced the phenomenon of declining residential use per customer and have not disputed Southwest's contention that the trend is likely to continue. Yet both have presented rate design proposals that exacerbate Southwest's ability to recover its authorized margin levels by designing an even greater amount of its margin recovery in the volumetric portion of its rates. What can be concluded from these recommendations?

A. 15 If costs are designed to be recovered in a volumetric rate and the empirical evidence suggests there is little expectation that all of the volumes will actually be sold, the result of these proposals is to acknowledge that Southwest will not be afforded an opportunity to recover its fixed costs. This violates one of the fundamental rate design goals, which is to give the company a fair opportunity to realize its authorized rate of return.[7/]

Q. 16 Is Staff's conclusion that declining average use per residential customer is dominated by increases in the number of new customers correct? [8/]

A. 16 No. The empirical evidence is overwhelming that Southwest

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6/ Direct Testimony of E.B. Gieseking p. 5, ll. 26-27; p. 6, ll. 10-11; p.21, ll. 16-19

7/ Direct Testimony of M. D. Cortez, p. 3, ll. 11-18

8/ Direct Testimony of W. H. Musgrove, p. 15, ll. 4-7

has not recovered its authorized margin per customer because a significant portion of Southwest's margin recovery is dependent upon the volumes of gas sold, and Southwest has been experiencing a steady decline in average use per customer for both new and vintage customers.

Staff has not properly interpreted the evidence presented in the filed case and the information presented to Staff in discovery. For instance, Company witness James L. Cattanach presented evidence in his direct testimony that annual consumption per customer in Southwest's last general rate case (with a test period ended December 1999) was 388 therms per customer and in response to Staff Data Request BGG-7-18, Southwest indicated that current test period annual use per customer for vintage customers prior to 1999 was 346 therms per customer. A simple comparison of these annual per customer consumption levels shows that vintage customer annual consumption has declined 42 therms over this four- to five-year period.

Although Staff is accurate in its observation that new customers generally have an annual consumption level lower than vintage customers, its conclusion that Southwest's declining consumption per customer is dominated by the addition of new more efficient customers is contrary to the evidence.

Q. 17 Regardless of the reason for the decline in average

residential consumption, is there any dispute that the decline will have a negative impact on Southwest's ability to recover the fixed costs associated with serving its customers?

A. 17 No. Southwest has presented uncontradicted evidence that the cost to serve its customers is essentially fixed and does not vary with changes in customer consumption. Simply put, when costs are constant and revenue declines due to declining consumption, Southwest will not recover its cost of service. Invariably, this will have a negative impact on earned rates of return.

Q. 18 Staff infers that the increase in Southwest's total residential sales over time, due to the growth in customers (although admitting that usage per customer has declined), should have a positive effect on Southwest's rate of return.[9/] Is this a logical conclusion given the facts in this case?

A. 18 No. Staff has failed to recognize that the addition of customers requires a corresponding addition of distribution facilities and expenses to serve those customers. The uncontested facts in this case are that Southwest's cost of providing service are essentially fixed, Southwest's use per customer is declining, and fixed cost recovery through volumetric rates has led, and will continue to lead, to an under-recovery of fixed

9/ Direct Testimony of W. H. Musgrove, p. 8, ll. 12-14

costs. Providing service to a customer, whether vintage or new, where the revenue stream is not sufficient to support the cost of service will lead to erosion in the experienced rate of return.

THE PUBLIC UTILITIES COMMISSION OF NEVADA ADOPTED ALTERNATIVES TO SOUTHWEST'S PROPOSED RESIDENTIAL MARGIN DECOUPLING MECHANISM

Q. 19 Staff and RUCO cite the PUCN Order in Southwest's last Nevada general rate case where the PUCN denied Southwest's request to establish a margin decoupling mechanism. Staff and RUCO urge the Commission to similarly reject Southwest's request to implement the CMT, but neglect to address how the PUCN addressed Southwest's alternative margin stabilization efforts. How did the PUCN address the issue of Southwest's inability to recover its authorized margin in light of declining average residential consumption?

A. 19 Similar to Southwest's presentation of declining use per customer and possible solutions in this proceeding, in its Nevada filing Southwest requested rate design changes and/or a margin decoupling mechanism. In denying the proposed margin decoupling mechanism, the PUCN stated that "Southwest can re-evaluate the statutory authority and the need for an MCB [margin decoupling mechanism] approach after the benefits of these alternatives are experienced and evaluated."[10/] The PUCN further stated: "Southwest is experiencing problems achieving revenue and

10/ PUCN Docket No. 04-3011, p. 77

income stability due to declining average residential customer usage, and that Southwest's declining block rates are designed to help correct these problems."

Accordingly, in lieu of a margin decoupling mechanism, the PUCN granted an increase in the monthly basic service charge, but more importantly, it authorized the implementation of a rate design that provides for recovery of a significant portion of Southwest's fixed costs in the first consumption block in its declining block rate design.[11/] Additionally, the PUCN recognized the benefit of weather normalization and ordered Southwest to file a weather normalization plan in its next general rate case.

Q. 20 What margin stabilization alternatives should the Commission consider if it determines that implementation of the CMT is not appropriate?

A 20 In addition to the CMT, Southwest has presented the Commission with two alternatives to address fixed cost recovery: (1) increased fixed charges and (2) a block rate structure that recovers a significant amount of fixed costs in the first block and establishes the second block rate closer to the marginal cost of providing service. Similar to the PUCN, if the Commission is not prepared to embrace Southwest's decoupling mechanism

11/ PUCN Docket No. 04-3011, p. 83 "The Commission also believes that Staff's proposed minor modification [to Southwest's proposed rate design] to capture Southwest's percent usage in both summer and winter periods are appropriate and encapsulate Southwest's same rate design, which recovers a significant portion of its fixed costs in the first block."

(CMT), the Commission should address the issue through other rate design options.

Q. 21 Did the California Public Utilities Commission (CPUC) provide any rationale when it approved Southwest's request for margin decoupling in California?

A. 21 Yes. The CPUC stated: "this decision adopts a revenue balancing account that protects ratepayers against over-collections, and Southwest against under-collections due to differences between forecasted sales and actual sales." Clearly the CPUC recognized the balancing of interests between customers and shareholders and acted accordingly. Furthermore, contrary to Staff's assertions, the adoption of the margin balancing mechanism in California was not simply a rubber stamp procedure by the CPUC.[12/]

THE CMT WILL NEITHER CHARGE CUSTOMERS FOR A PREDETERMINED LEVEL OF GAS SERVICE NOR HAVE CUSTOMERS PAY FOR THERMS THEY DO NOT CONSUME

Q. 22 What is the fallacy in RUCO's assertion that the CMT would require customers to pay for a predetermined level of gas service regardless of whether that level was actually used?

A. 22 RUCO's belief is based upon the incorrect presumption that a customer's "level of service" for gas distribution is dependent upon the volume of gas that the customer consumes. This is simply not true. As Mr. Shaw stated in his prepared direct testimony, "Virtually everything

12/ Direct Testimony of W. H. Musgrove, p. 10, ll. 1-5

Southwest does in the natural gas distribution business centers on assuring the availability of safe and reliable natural gas service and, accordingly, substantially all of its costs (excluding the cost of gas itself, which is recovered through the Purchased Gas Adjustment mechanism with no profit) are fixed."[13/]

Whether a customer consumes 10 therms or 100 therms, Southwest provides the same level of distribution service. From a purely economic pricing perspective, an argument could be made that the appropriate price for this level of distribution service should be a fixed monthly charge (Straight Fixed/Variable or SFV rates). This pricing structure, which would price all gas consumption at the marginal cost of production (i.e. the cost of gas or actual variable cost), would result in the most economically efficient use of the gas, allow Southwest the best opportunity to recover its fixed cost of service, and would require customers to pay for only the gas they consumed.

However, as I stated in my direct testimony, in consideration of other ratemaking goals, Southwest proposed the CMT, as one of a number of alternatives, to minimize the problem associated with a volumetric rate design and to permit Southwest a better opportunity to recover the fixed costs of service that have been

13/ Direct Testimony of J. W. Shaw, p. 10, ll. 2-8

approved by the Commission in this proceeding. Simply put, customers will not pay for a single therm of gas they do not consume.

Q. 23 What evidence has RUCO presented to support its contention that the CMT would be counterproductive, especially when coupled with increased conservation efforts?

A. 23 None. RUCO's contention appears to be based on a presumption that customers will not benefit monetarily for their efficiency efforts due to the potential CMT balancing account deferrals. This is simply not true. As previously discussed, customers will benefit immediately if they reduce their gas consumption because they will save gas costs.

Q. 24 What is your reaction to RUCO's characterizations that the CMT is "conceptually unacceptable" and "an extreme and unprecedented resolution to a routine rate design issue"?[14/]

A. 24 It is important to not lose sight of what is presumably the rate design goal of all parties to this case, to wit, a revenue recovery mechanism that will provide Southwest a realistic opportunity to recover the cost of providing service. Although establishing cost recovery in a general rate case to recover the authorized costs of service is seemingly a routine rate design issue, Southwest's

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14/ Direct Testimony of M. D. Cortez, p. 31, ll. 4-6

recovery of its actual costs has been anything but a routine event. It cannot be over emphasized that Southwest has presented uncontradicted evidence that the cost to serve its customers is virtually fixed and therefore does not vary with changes in customer consumption. Further, average consumption has steadily declined after each rate case for the past 18 years. Yet, despite these important and undisputed facts, the rate designs proposed by the parties in this case rely significantly on the volumetric recovery of costs. The evidence is overwhelming that this type of cost recovery simply does not work!

Although the concept of a margin decoupling mechanism for gas distribution companies is unprecedented in the state of Arizona, there should be no rush to judgment that such a mechanism is conceptually unacceptable. Other regulatory jurisdictions have incorporated the concept of margin decoupling in their regulatory constructs,[15/] and Arizonians have already experienced a form of margin/sales decoupling in other services; telephone, cable, and garbage disposal services are examples of services that are usually a fixed price for a set amount or unlimited consumption of the service provided.[16/]

Furthermore, any cost recovery structure that does

15/ Response to Staff Data Request No. BGG-7-3

16/ In response to Staff Data Request No. BGG-7-3, Southwest listed eleven gas utilities which have or have requested a form of margin decoupling.

not produce revenue sufficient to recover the cost of providing service should be considered an unacceptable design.

Q. 25 Has Southwest quantified the increase in margin recovery risk associated with the various residential rate design proposals?

A. 25 Yes. Southwest has calculated the margin decrease that would occur with an average reduction in usage of 10 therms per customer. This is demonstrated in the rebuttal testimony of Company witness Mr. Brooks Congdon. The results of his analysis demonstrate the effect on Southwest's margin recovery under Southwest's, Staff's and RUCO's rate designs. This table compares the difference in margin recovery for each of the rate designs if Southwest's average residential consumption decreased by 10 therms per customer subsequent to establishing rates in this proceeding.[17/]

With the CMT in place, there is no change in Southwest's margin recovery with a decrease in sales per customer. The difference, or under-recovery, that would occur with the Staff and RUCO rate designs would be $4.95 million and $4.55 million, respectively. Southwest's proposed alternate rates, which are designed to enhance the opportunity of fixed cost recovery if the CMT is not implemented, would moderate the under-recovery

17/ Rebuttal Testimony of A. B. Congdon, p. 17

to $2.31 million if average residential sales decrease subsequent to the setting of rates in this proceeding.

Mr. Congdon's analysis also shows that under Southwest's current rate design, the under-recovery associated with a 10 therm average reduction in residential consumption would be $3.51 million.

A comparison of these hypothetical margin losses demonstrate that the Staff and RUCO proposed rate designs put Southwest at greater risk of collecting authorized levels of margin.

Q. 26 Please respond to RUCO's assertion that the CMT violates a myriad of ratemaking principles.[18]

A. 26 The National Association of Regulatory Utility Commissioners Board of Directors recently issued a Resolution on Gas and Electric Energy Efficiency that encourages state commissions to review and consider such recommendations.[19/] It is highly doubtful the regulatory commissioner's association would promote a ratemaking concept that violated a myriad of ratemaking principles.

CONSIDERATION OF THE JOINT STATEMENT OF THE AMERICAN GAS ASSOCIATION AND THE NATURAL RESOURCES DEFENSE COUNCIL ADDRESSING INHERENT UTILITY DISINCENTIVES

Q. 27 Please respond to Staff's assertion that Southwest narrowly focused on certain points in the AGA/NRDC Joint Statement in order to manufacture a link between the

18/ Direct Testimony of M. D. Cortez, p. 27, ll. 7-20
19/ Direct Testimony of S. M. Fetter, Exhibit No.___(SMF-3)

Joint Statement and Southwest's CMT Proposal.[20/]

A. 27 Contrary to Staff's assertion, Southwest has taken great care in this case to explain that a CMT-like mechanism is but one approach to decouple the recovery of margin from the level of sales and therefore eliminates or minimizes the inherent utility disincentive to encourage energy efficiency. For Staff to infer that Southwest focused on the innovative programs referenced in the Joint Statement, and ignored the Joint Statement in regards to a recommendation for "utility rate proposals" as another equally viable alternative to help utilities recover authorized fixed costs, shows a lack of understanding of the total Southwest cost of service recovery proposal. In fact, Southwest proposed a margin decoupling mechanism as well as a rate structure that is more closely aligned with the cost of service.

REVIEW AND EVALUATION OF MECHANISMS FOR REMOVING THE FINANCIAL DISINCENTIVE FOR SUPPORTING ENERGY EFFICIENCY

Q. 28 Have there been any recent developments that address the issue of removing the utility financial disincentive to implement energy efficiency programs?

A. 28 Yes. The recently enacted National Energy Policy Act of 2005 (Act) addresses this issue directly. Section 139 of the Act requires the Secretary of Energy, in consultation with NARUC and the National Association of State Energy Officials to conduct a study of energy reduction and

20/ Direct Testimony of W. H. Musgrove, p. 14, ll. 5-24

energy efficiency policies. The Act states that the Secretary shall take into consideration methods of: a) removing disincentives for utilities to implement energy efficiency programs; b) encouraging utilities to undertake voluntary energy efficiency programs; and c) ensuring appropriate returns on energy efficiency programs.

Q. 29 Why is it important for the Commission to take notice of this recent development in this proceeding?

A. 29 Incorporation of Section 139 into the National Energy Policy Act provides evidence that the issue of reducing or eliminating the utility financial disincentive to energy efficiency is a national issue, not an issue fabricated by Southwest to sell its margin recovery proposals.

Q. 30 Does Southwest concur with the SWEEP/NRDC witness' recommendation that the gas utility financial disincentive issue and a full analysis of mechanisms for removing the disincentive be reviewed and evaluated prior to adoption of a specific mechanism?

A. 30 Yes. Southwest agrees and encourages the Commission to do so in this proceeding. However, SWEEP/NRDC indicate that in the event the Commission decides not to address the issue in the instant proceeding, it would be appropriate to conduct this review and analysis subsequent to the issuance of an order in this proceeding; yet they encourage the Commission to expand the package of

efficiency measures Southwest has proposed. Southwest developed its recommendation of efficiency programs as a package of interrelated proposals, including recommendations for the CMT and rate relief. Southwest tied these together in recognition that successful efficiency programs would have a further detrimental effect on Southwest's ability to recover its cost of service if fixed costs are recovered in volumetric rates.

Q. 31 If the Commission does not address the gas utility financial disincentive issue, how does this affect Southwest's support of its proposed efficiency measures?

A. 31 Southwest proposed new and expanded efficiency programs because it believes the conservation of and efficient use of natural gas is the right thing to do, and will ultimately benefit its customers. However, in addition to its obligation to its customers to provide safe and reliable gas distribution service at reasonable prices, Southwest has an obligation to its shareholders to provide a return on their investment. The efficiency programs together with the CMT and proposed rate design are designed to balance these interests.

No party has opposed Southwest's efficiency programs; however, Staff and RUCO oppose Southwest's CMT and rate design proposals. SWEEP/NRDC also opposes Southwest's rate design but suggests the decoupling issue could be addressed after the implementation of expanded efficiency programs. These proposals do not provide for

regulatory equity.

The testimony filed in this case has not altered Southwest's belief that implementing programs that improve energy efficiency is beneficial for its customers and is the right thing to do. However, Southwest cannot, in good faith, support implementation of new and expanded efficiency programs, unless or until the interests of customers and shareholders are in balance. As such, Southwest requests that the new and expanded efficiency programs, if approved, not be implemented until such time as an appropriate mechanism removing the financial disincentive has been decided upon and approved by the Commission.

Q. 32 Are there any steps the Commission can take to bridge Southwest's concern about margin erosion associated with enhanced efficiency programs and the SWEEP/NRDC desire to conduct a more thorough review of mechanisms that address the utility financial disincentive?

A. 32 Yes. If the Commission is hesitant about approving the proposed CMT, Southwest encourages the Commission to consider a modified CMT or some other decoupling mechanism in conjunction with the new and expanded efficiency programs.

Q. 33 Please describe what you mean.

A. 33 The Commission could address specific objections to the CMT and make adjustments to Southwest's proposal or propose other decoupling mechanisms.

Southwest submits that the issues that have been raised by various parties in this proceeding can be addressed through simple adjustments to Southwest's CMT proposal or through other potential decoupling mechanisms that Southwest would be willing to consider. For instance, simply deleting paragraph three of Southwest's proposed Tariff Sheet 98 would accomplish the elimination of the interest component of Southwest's proposal.

SOUTHWEST'S PROPOSED RATE DESIGN WILL NOT DISCOURAGE CONSERVATION, WHEREAS STAFF'S AND RUCO'S PROPOSED RATE DESIGNS COULD INCREASE GAS CONSUMPTION

Q. 34 Have Staff and RUCO provided evidence supporting their claim that Southwest's proposed declining block rate structure will discourage conservation?

A. 34 No. The likely reason they have not is because there is no such evidence. In fact, the evidence is overwhelming that a declining block distribution rate does not discourage conservation. Mr. Cattanach, in his prepared direct testimony, presented evidence that shows since the implementation of declining block rates in Southwest's 1996 general rate case, average annual weather normalized residential consumption has declined from 409 therms per year to 347 therms per year in this case. The difference of 62 therms is a measure of the conservation that has taken place since the implementation of declining block rates in Arizona.

Southwest has also seen this same phenomenon in its

Nevada distribution service territory.

Q. 35 Why doesn't customers' gas use increase as the cost of distribution decreases?

A. 35 While this concept may seem counterintuitive, the answer is very simple. The cost of distribution is only one component of the bill customers receive. The total of a customer's bill contains both the distribution charges as well as the cost of the gas itself. At the present time, the gas cost portion of a residential customer's bill is approximately 50 percent of the total bill. Regardless of the distribution pricing structure, 100 percent fixed monthly charge, 50 percent fixed/volumetric with a flat volumetric charge, 50 percent fixed/volumetric with a declining volumetric charge, or any other combination of fixed and volumetric components, customers will continue to conserve because the gas cost portion of their bill sends a strong price signal.

Simply put, the more gas a customer uses, the more the customer will pay. This is true regardless of the distribution pricing structure. The empirical evidence shows that even if the second block of the distribution rate decreases, the simple fact a customer has a lower gas bill if he/she conserves is a strong incentive to conserve.

Q. 36 Why not extract as much conservation as possible by distorting the marginal price of gas through heavily loaded volumetric rates?

A. 36 As previously explained, this unfairly increases Southwest's risk of not being able to recover the cost of providing distribution service to it customers, and would be harmful to both the Company and the Company's customers. Moreover, the inappropriate pricing of natural gas could, over the long-term, lead to customer choices that actually increase overall gas consumption. Mr. Congdon discusses this very important consideration in his rebuttal testimony.

Q. 37 Please recap the rate strategy Southwest is proposing in this proceeding.

A. 37 Southwest has proposed a "package" of proposals that: 1) recognize deficiencies in Southwest's current rate structure given the conditions under which Southwest operates; 2) expand upon Southwest's efforts to promote the conservation of natural gas; and 3) protect Southwest's shareholders from successful conservation efforts. Southwest's proposals may not be traditional rate design recommendations; however, Southwest believes its approach to addressing the issues outlined in its prepared direct case warrant careful consideration by the Commission. Southwest is confident that if its proposals are carefully scrutinized for their intent and potential outcomes, they will be seen as improvements for both customers and shareholders. It is important to recognize that the proposals are closely interrelated and adjustments to any one of them should not be viewed in

isolation, but should be considered in terms of their effect on the entire package.

Q. 39 Does this conclude your prepared rebuttal testimony?

A. 39 Yes, it does.