ORIGINAL

OTS Statement No. 1
Witness: Michael J. Gruber
JUN 16 2006

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

EQUITABLE GAS COMPANY

Docket No. R-00061295



Direct Testimony

of

Michael J. Gruber

Office of Trial Staff



Concerning:

Performance Based Rates
Discounting Tariff Rates
Hedging

**Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?**

A. My name is Michael J. Gruber. My business address is P. O. Box 3265, Harrisburg, Pennsylvania 17105-3265.

**Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

A. I am employed by the Pennsylvania Public Utility Commission in the Technical Division of the Office of Trial Staff as a Fixed Utility Valuation Engineer.

**Q. PLEASE DESCRIBE THE ROLE OF OTS IN RATE PROCEEDINGS.**

A. OTS was established by the legislature and is responsible for protecting the public interest in rate proceedings. The OTS analysis in this proceeding is based on its responsibility to represent the public interest. This responsibility requires the balancing of the interests of ratepayers and the Company.

**Q. WHAT IS YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND?**

A. Attached to my testimony as Appendix A is a statement which describes my educational background and my employment experience.

**Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

A. The purpose of my testimony is to present the OTS position on three issues in this proceeding. The first issue concerns the Company's Performance Based Rate initiatives. Second, I address the Company's practice of discounting various tariff charges to customers who claim a competitive alternative and charging the 1307(f) customers for the revenues lost due to the discount. Third, the Office of Trial Staff is opposed to the Company's desire for pre-approval of its hedging plan.

## PERFORMANCE BASED RATES

**Q. WHAT ARE PERFORMANCE BASED RATES (PBR) PLANS?**

A. A performance based rate plan refers to any device by which the Company retains revenue it would not be entitled to as a way of giving the Company an incentive to enhance its performance to the benefit of PGC customers by further reducing the PGC rate.

**Q. HAS THE COMPANY HAD PBR PLANS IN THE PAST?**

**A.** Yes. The Company has had two separate and distinct plans in the past. The first PBR dealt with Other Capacity Revenue and the second dealt with the recovery of no notice service costs.

**Q. WHAT IS THE HISTORY OF THE COMPANY'S PBR INCENTIVE PLAN FOR OTHER CAPACITY REVENUE?**

A. In the Company's 2001 Section 1307(f) proceeding, Docket No. R-00027135, the Commission approved a plan for the Company to provide a guaranteed credit and performance based incentive which would reward the Company for its efforts in the management of its capacity release and off-system sales. Under this plan, the Company guaranteed a $1.2 million annual credit to offset PGC costs for the period of October 31, 2001 through September 30, 2003. Subsequently, in the Company's 2002 Section 1307(f) proceeding, Docket No. R-00027135, the Commission approved a one year extension of the plan to September 30, 2004. Under the extension, the guaranteed credit was reduced to $1.0 million, with the provision for an additional credit for the first $200,000 of any capacity release and/or off-system sale over the $1.0 million level. The Company is permitted to retain any revenue generated over and above the $1.2 million dollar level. In the Company's 2003 PGC proceeding, Docket No. R-00038166, the parties agreed to extend the PBR Design No. 1 through September 30, 2005. The sharing of the net revenue during the extension year (beginning October 1, 2004) was $1.5 million to the ratepayer with the Company keeping any net revenue over $1.5 million. In the Company's 2004 PGC proceeding, Docket No. R-00049154, the annual credit was raised to $1.75 million for the PGC period October 1, 2004 through September 30, 2005.

However, in the Company's 2005 PGC proceeding, Docket No. R-00050272, the guaranteed credit mechanism was abandoned because the Commission determined that it disproportionately benefited Equitable's shareholders at the expense of PGC customers. The Commission determined that

a properly designed PBR provides a 75% credit to the PGC customers of the revenue from off-system sales and capacity release with the Company retaining the remaining 25% on a pre-tax basis.

**Q. WHAT IS CAPACITY RELEASE?**

A. Capacity release is a mechanism through which a holder of firm transportation capacity on upstream pipelines can allocate, release or assign, on a permanent or temporary basis, all or part of such capacity to others. Normally, this is accomplished through pre-arranged transportation or through the pipeline's electronic bulletin board. The original holder of the firm transportation capacity may recover up to the maximum tariffed rate through a bidding of the capacity.

**Q. WHAT ARE OFF-SYSTEM SALES?**

A. An off-system sale is the sale of natural gas to a customer who is not located within the Natural Gas Distribution Company's ("NGDC") service territory. The off-system sale is usually made by using off-peak downstream interstate pipeline capacity that is reserved for the firm retail customers of the NGDC.

**Q. WHAT ARE THE THREE CATEGORIES OF OFF-SYSTEM SALES?**

A. The three categories of off-system sales are: (1) Market Area Sales; (2) Production Area Sales; and (3) Specific Purchase Sales.

Market Area Sales are those sales that have a delivery point in the market area relatively close to the company's system. Gas is delivered using the company's capacity on its upstream pipelines. The Company uses upstream capacity to make off-system sales.

Production Area Sales are those sales which have a delivery point in the natural gas production area. If no capacity or only production area capacity is used to market the sale then the sale is considered to be a Production Area Sale.

Specific Area Sales are those sales made after the first of the month, where there was a specific gas purchase made for the sale. If, after the company's first of the month purchases are nominated and scheduled, the company has the opportunity to purchase additional gas and couple it with available capacity to make an off-system sale, the company will do so.

**Q. WHEN CAN AN OFF-SYSTEM SALE BE MADE?**

A. Off-system sales can be made when the company does not need firm gas supplies and capacity for sales to the PGC customers.

**Q. DOES THE COMPANY'S TESTIMONY PRESENT A PROPOSAL FOR A PBR INCENTIVE CREDIT FOR OFF SYSTEM SALES AND CAPACITY RELEASE?**

A. No. On page 36 of Equitable Statement No. 4, Mr. Rafferty states that the Company is not making a recommendation on how the PBR would be structured and expressed a desire to discuss the PBR structure in settlement negotiations.

**Q. IF THE COMMISSION DOES NOT ACT TO EXTEND THE SHARING OF THE REVENUE FROM OFF SYSTEM SALES AND CAPACITY RELEASE, WHAT WOULD HAPPEN?**

A. My counsel advises me that the Company would no longer be permitted to retain any of the savings from off-system sales or capacity release and the total revenue would revert to the PGC customers.

**Q. WHAT DO YOU RECOMMEND FOR THE SHARING OF OFF SYSTEM SALES AND CAPACITY RELEASE REVENUE?**

A. I recommend that the Commission order the Company to continue the 75% (PGC customers)/25% (Company) sharing mechanism.

**Q. WHY IS THE 75%/25% SHARING MECHANISM AN APPROPRIATE DIVISION OF THE REVENUE FROM OTHER CAPACITY REVENUE?**

A. The revenue from the transactions in other capacity revenue belongs to the ratepayer. The sharing of profits is merely a device to provide the Company an incentive to make additional revenues for the ratepayer. The Commission has previously determined that a 75%/25% split of the profits provides a sufficient incentive for the

Company to make off-system sales and capacity release transactions. This incentive benefits the Company and ratepayers because, as the Company seeks to maximize its profits under the sharing mechanism, the PGC portion increases. The Commission's adoption of a 75%/25% sharing mechanism in the 2005 Equitable PGC proceeding should continue in the 2006 proceeding.

## FLEXING OF FUEL RETENTION/SHRINKAGE AND TRANSPORTATION MIGRATION RIDERS

**Q. WHAT IS FLEXING?**

A. Flexing is the waiving of all or part of any explicitly tariffed charge for competitive reasons.

**Q. HAS THE COMMISSION RECENTLY CONSIDERED THIS ISSUE?**

A. Yes. On pages 43-44 of the Commission Order in the 2005 Equitable PGC proceeding, Docket No. R-00050272, the Commission stated:

> "It is unreasonable to allow a gas utility to transfer the costs of discounts in retainage and other gas delivery requirements to captive PGC customers where these costs were incurred in order to entice a customer from a jurisdictional NGDC or as a reaction to defend against another jurisdictional gas utility... [I]n the next Section 1307 (f) investigations, any discounts incurred in order to compete with a jurisdictional natural gas utility will not be allowed to be recovered from other customers, including any PGC customers."

**Q. DO YOU HAVE ANY ADJUSTMENT IN THIS PROCEEDING FOR THE EFFECT OF FLEXING?**

A. No. The Commission's 2005 Order determined that recovery of discounts/waivers from PGC customers commencing with the 1307(f) rate effective October 1, 2006 will not be permitted unless the Company meets the exceptions outlined in the Commission Order. Given that the Company is permitted to recover retainage and migration rider discounts for the October 1, 2005 to September 30, 2006 historic period, OTS does not have any adjustments at this time. However, to the extent that the Company will seek recovery of the costs of these discounts from PGC customers prospectively, OTS will oppose such cost recovery and make the necessary adjustments to ensure that Equitable complies with the Commission's 2005 Order.

**Q. AS ALTERNATIVE RELIEF TO THE COMPANY RECOVERING THE COST DEFICIENCY OF FLEXING FROM PGC CUSTOMERS, WHAT HAS THE COMPANY REQUESTED?**

A. If the Commission does not permit Equitable continued recovery of the retainage cost deficiency from PGC customers, on advice of counsel, Company witness Quinn requested that the Commission issue an order declaring that delivery service agreements containing retainage discounts executed prior to the Commission's 2005 Order be declared against public policy, illegal and unenforceable.

**Q. DO YOU AGREE WITH THE COMPANY'S REQUESTED ALTERNATIVE RELIEF?**

A. No. Because the Company is permitted recovery of discounts during the historic period, OTS maintains that the Company's requested relief is not appropriate at this time. Moreover, I have been instructed by counsel that the contractual relief requested is inappropriate in Equitable's PGC proceeding because its purpose is to determine the proper recovery of purchased gas costs. The agreements between the Company and its delivery service customers are not at issue in the present proceeding because the Commission's 2005 Order clearly prohibits utilities from recovering discounted retainage costs solely from PGC customers to entice a customer from a jurisdictional NGDC or as a reaction to defend against a jurisdictional gas utility, but it did not prohibit the actual discounting or waiving of those costs. Accordingly, Equitable's requested alternative relief is improper at this time and is raised in an improper forum.

## HEDGING

**Q. HAS THE COMPANY PRESENTED A HEDGING PLAN?**

A. Yes. Attachment B to Equitable Statement No. 4 is titled "Proposed 2006 Gas Supply Hedging Program".

**Q. WOULD YOU EXPLAIN YOUR UNDERSTANDING OF THE COMPANY'S HEDGING PLAN AS IT IS SET FORTH IN ATTACHMENT A TO EQUITABLE STATEMENT 4?**

A. The Company's hedging proposal has two parts. The first part deals with the Company's "Appalachian Supplies" and the second part is its Interstate pipeline supplies.

The Appalachian supplies part of the plan would allow local producers to lock-in a price for a given quantity of gas for a given period of time. When this is done the Company would sell identical NYMEX contracts for the identical volumes and terms of gas. The intent is to establish a price that is representative of current market conditions.

With respect to the interstate pipeline aspect of the plan, the Company is attempting to fix the price of gas on an amount of gas between 25% and 50% in the summer period and between 10% and 20% of the purchased gas for the winter period.

**Q. HAS THE COMPANY PLACED ANY LIMITATIONS ON ITS HEDGING PLAN?**

A. Yes. The Company will only proceed with the plan if there is a consensus among the Office of Consumer Advocate (OCA), the Office of Small Business Advocate (OSBA) and the Office of Trial Staff (OTS) that the program is appropriate and is consistent with least cost purchasing obligations (Equitable Statement No. 4, p. 7).

**Q. DO YOU AGREE WITH THE COMPANY'S HEDGING PLAN?**

A. No.

**Q. WHY DO YOU DISAGREE WITH THE COMPANY'S HEDGING PLAN?**

A. The Company is legally required to pursue a least cost procurement policy. To the extent that the Company is seeking pre-approval that its proposed hedging program satisfies its least cost procurement obligations under the Public Utility Code, OTS cannot agree to the Company's condition requiring a consensus that it has satisfied its 1307(f) obligations. OTS will not waive its right to examine the results of the plan and the reasons behind the actions taken in connection with the hedging in the Company's PGC proceedings. Therefore, to the extent that the plan requires OTS to find that the Company's future hedging satisfies its least cost procurement obligation, it is my recommendation that OTS not sign off on Equitable's proposed hedging plan.

**Q. DO YOU HAVE ANYTHING ELSE TO ADD AT THIS TIME?**

A. I have nothing further at this time, but I am awaiting several interrogatory responses concerning spot market purchases and off system sales. Therefore, I reserve the right to file supplemental testimony when I have finished my analysis.

## MICHAEL J. GRUBER

## Appendix A

### Education and Professional Background

In May 1976, I received a B. S. in Civil Engineering from The Pennsylvania State University. After graduation, I was hired by the Pennsylvania Public Utility Commission and worked in the Valuation Section of the Bureau of Rates and Research in the area of electric and telephone valuation and depreciation. When the Bureau was realigned into Divisions, I specialized in telephone valuation and depreciation. Later, I was transferred to the Engineering Section of the Electric Division to work on electric company valuation and depreciation.

In October 1977, I participated in a special depreciation training program sponsored by Western Michigan University in Kalamazoo, Michigan, entitled "Fundamentals of Service Life Forecasting".

In the fall of 1977 and spring of 1979, I successfully completed accounting courses at the Harrisburg University Center, which were sponsored by Elizabethtown College.

From 1977 through early 1987, I was a Fixed Utility Valuation Engineer responsible for review and evaluation of claims for depreciation, original and trended original cost valuations, construction work in progress, plant held for future use, materials and supplies, and extraordinary property loss claim in many electric and telephone rate proceedings before this Commission.

In July 1978, I participated in a special depreciation training program sponsored by Western Michigan University at Calvin College in Grand Rapids, Michigan, entitled "Dynamics of Life Estimation".

I took part in the early stages of the "*1979 Triennial Review of The Bell Telephone Company of Pennsylvania Depreciation Review*", which was submitted to this Commission and the Federal Communications Commission (FCC) for review and comment prior to the FCC's prescribing of annual depreciation rates for the next three-year period.

Under the Commission's reorganization in 1987, I was assigned to the Office of Trial Staff, Engineering Section, and Analysis Division. In May of 1987, I was appointed as Supervisor of the Engineering Section, Engineering and Rate Design Division of the Office of Trial Staff, and was responsible for all rate-base, engineering and depreciation issues.

When the Office of Trial Staff reorganized in February of 1994, I was assigned the position of Assistant to the Division Chief, (of the newly formed) Telecommunications/Water Division of the Office of Trial Staff.

My duties, as Assistant to the Division Chief of the Telecommunications/Water Division of the Office of Trial Staff, involved informal training of entry level engineers and work on unusual issues which occur in the various rate proceedings before the Commission in which the Office of Trial Staff becomes involved.

I currently work as a Fixed Utility Valuation Engineer III working on a variety of utility filings.

Early in my time at the Public Utility Commission, I was a Fixed Utility Valuation Engineer in the following major rate proceedings before the Pennsylvania Public Utility Commission:

1) The Duquesne Light Company at Docket No. R.I.D 373
2) The Pennsylvania Electric Company at Docket No. R.I.D 392
3) The Metropolitan Edison Company at Docket No. R.I.D 434
4) The Bell Telephone Company of Pennsylvania at Docket Nos. R.I.D 367 and R-79060719
5) The Bethel and Mt. Aetna Telephone and Telegraph Co. at Docket No. R-77090452
6) The Mid-Penn Telephone Corporation at Docket No. R-77090462
7) The Commonwealth Telephone Company at Docket No.R-77090482

In addition, I have been a Fixed Utility Valuation Engineer in various other informal rate investigations.

I have testified in the following cases:

General Telephone Company of Pennsylvania at R-7910062
West Penn Power Company at R-80021082, F-842632, and R-850220
Pennsylvania Power & Light Company at R-8003114, R-822169, R-842651, and R-00973954
Philadelphia Electric Company at R-80061225, and R-842590
Metropolitan Edison Company at R-80051196, R-811601, and R-842770
Pennsylvania Electric Company at R-80051197, R-811602, and R-842771

Pennsylvania Power Company at R-811510, R-832409, R-850267, and R-870732
UGI Gas at R-821899, and R-870602
Duquesne Light Company at R-850021, R-860378, and R-870651

Shickshinny Water Company at R-870764
Marion Height Water Company at R-870774
National Fuel Gas Distribution Company at R-881125, R-891218,
R-00942991, and R-00963779
Arrowhead Public Service Corporation at R-891557
Duquesne Light Company at P-900485
General Public Utilities at P-910502, and G-900240
LP Water & Sewer at G-910255, A-230242, A-211770
Sunshine Hills Water Company at R-912023
West Penn Power at R-00922378
MPW Utilities Inc. at A-230026
Public Service Water Company at A-210025F002
UGI Utilities Inc., (Electric) at R-00932862, and R-00973975
Pennsylvania American Water Company at R-00932670
National Utilities Inc. at R-00932670
Newtown Artesian Water Company at R-00943157
IntraLATA Interconnection Investigation at I-00940034
MFS Intelenet of PA at A-310203
Alltel at P-981423
Equitable Gas Co., 1307(f), Docket Nos. R-00016132, and R-00005067
Pike County Power & Light, Docket No. R-00011872
UGI Utilities, Inc. – Gas Division, Docket No. R-00016376
Wellsboro Electric Company, Docket No. R-00016356
T. W. Phillips Gas and Oil Company, Docket No. R-0005807
Equitable Gas Co. Restructuring Filing, Docket No. R-00099784
P.F.G. Gas, Inc. and North Penn Gas Companies, Docket No. R-0005277
T. W. Phillips Gas and Oil Company – Restructuring Filing, R-994790
T. W. Phillips Gas & Oil Company, R-00016898
The Peoples Natural Gas Company d/b/a Dominion Peoples, R-00027134;
The Peoples Natural Gas Company, P-00021952
Philadelphia Gas Works – Restructuring Filing, M-00021612
Duquesne Light Company - POLR, P-00032071
Penn Estates Utilities-Water, R-00038429
Penn Estates Utilities-Sewer, R-00038498
National Fuel Gas Distribution, R-00049108
Equitable Gas Company, R-00049154
PPL Electric Utilities Corporation, R-00049255
Valley Energy, Inc., R-00049345
UGI Utilities, Inc., R-00049422
Township of Falls - Sewer, R-00049557
National Fuel Gas Distribution Corp., R-00049656
National Fuel Gas Distribution Corp., R-00050216
Equitable Gas Company, R-00050272

Some of the issues I have testified on include:

1) Depreciation and Service Life Analysis
2) Customer Contributions In Aid of Construction
3) Customer Advances for Construction
4) Construction Work in Progress
5) Material and Supplies
6) Post Test Year Plant Additions
7) Loan Financing and Repayment
8) Utility Plant Used and Useful in the Public Service
9) Cost of Gas
10) Take or Pay Obligations of Gas Utilities
11) Rules and Regulations for New Telecommunications Services
12) Contractual Obligations Between Utilities
13) Rate Structure and Tariff Issue
14) Excess Utility Plant Investment
15) Cost of Service and
16) General Prudence Issues
17) 1307(f) Gas Purchase Issues
18) Stranded Electric Costs
19) Chapter 30 Issues

ORIGINAL

OTS Statement No. 1-SR
Witness: Michael J. Gruber
JUN 16 2006

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

EQUITABLE GAS COMPANY

Docket No. R-00061295



Surrebuttal Testimony

of

Michael J. Gruber

Office of Trial Staff





Concerning:

Performance Based Rates
Discounting Tariff Rates
Hedging
Storage

**Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?**

A. My name is Michael J. Gruber. My business address is P.O. Box 3265, Harrisburg, Pennsylvania 17105-3265.

**Q. ARE YOU THE SAME MICHAEL GRUBER WHO SUBMITTED OTS STATEMENT NO. 1?**

A. Yes, I am.

**Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?**

A. This testimony will respond to rebuttal testimony presented by Company Witnesses Quinn (Equitable Statement No. 3-R) and Rafferty (Equitable Statement No. 4-R).

**Q. WHAT SPECIFIC ISSUES WILL YOUR SURREBUTTAL ADDRESS?**

A. I will address portions of Company Witness Quinn's testimony dealing with off-system sales and capacity release revenue and the discounting of tariff charges, and Company Witness Rafferty's testimony dealing with negotiated discounted pipeline capacity contracts, carrying charges on unused gas in storage, and hedging.

**Q. WHAT DID MR. QUINN SAY ABOUT THE OWNERSHIP OF OFF-SYSTEM SALES AND CAPACITY RELEASE?**

A. On page 2 of his rebuttal testimony Mr. Quinn states:

> "...Equitable's believes that if PBR Design No. 1 is not extended the program terminates and the Company will retain 100% of the savings or revenue generated from transactions historically covered by PBR Design No. 1. "

**Q. DO YOU AGREE WITH MR. QUINN'S STATEMENT?**

A. No.

**Q. WHY DON'T YOU AGREE WITH MR. QUINN'S STATEMENT?**

A. If, as the Company believes, it was entitled to retain the entire amount of the capacity release and off-system sales revenue (margin) barring action by the Commission, the Company would be in violation of the law. The statue which controls the PGC procedure does not allow the Company to make a profit on the sale of gas. It is only by special permission of the Commission that the Company can retain any profit as an incentive to work harder at capacity release and off-system sales. Further, all of the expenses which make it possible for the Company to make capacity releases and off-system sales are being paid for by ratepayers, not stockholders. As such, any revenue from capacity release and off-system sales should reimburse the PGC customers for the use of assets paid for by the PGC customers. Therefore, it is clear that, barring any action by the Commission, 100% of the revenue from capacity release and off-system sales would belong to PGC ratepayers.

**Q. HAS MR. QUINN RESPONDED TO OTS TESTIMONY CONCERNING DISCOUNTED TARIFF CHARGES?**

A. Yes, Mr. Quinn stated that OTS ignored Equitable's 2005 demonstration that it satisfied the Commission's requirements set forth in the Commission Order at Docket R-00050272. Accordingly, Mr. Quinn concluded that the methodology is acceptable to OTS and that it complies with the requirements.

**Q. DO YOU AGREE WITH MR. QUINN'S INTERPETATION OF YOUR TESTIMONY?**

A. No. Mr. Quinn completely misunderstood my direct testimony. He is of the opinion that OTS is agreeing that the Company has met the burden of proof with regard to the discounted tariff rates. However, if you read my direct testimony, it is clear that the OTS position is that this is not the proper time to address this issue. The Commission has allowed the Company to continue its discounting of tariff provisions through September 2006. However, after September 2006, there are certain conditions which must be met to continue allowing the inclusion of these discounts in rates. Whether the ratepayers have received a net benefit cannot be determined until the actual gas costs and the cost of flexing are known. The appropriate time to address this issue is when the Company actually makes its claim in the E-factor for the value of the discounted retainage.

**Q. WHAT HAS COMPANY WITNESS RAFFERTY SAID ABOUT THE RENEGOTIATION OF ITS PIPELINE CAPACITY CONTRACT?**

A. On pages 7 and 8 of his rebuttal testimony Company witness Rafferty states;

> Q. HAS THE COMPANY ATTEMPTED TO RENEGOTIATE ANY OF ITS CAPACITY CONTRACTS?
>
> A. Yes. The Company has aggressively pursued opportunities to renegotiate some of its capacity contracts. Specifically, Equitable has attempted to renegotiate and restructure its contract with Texas Eastern. To date, these attempts have been unsuccessful.
>
> Q. HOW DOES THE COMPANY BELIEVE DISCOUNTED RATES ASSOCIATED WITH THESE CAPACITY CONTRACTS SHOULD BE TREATED?
>
> A. As described above, the negotiated rate discount could be in lieu of a standard capacity release transaction. The net effect is that PGC customers would ultimately pay less whether it is through a capacity release mechanism credited to maximum rates or a negotiated discount from maximum rates. Therefore, the Company believes that these types of transactions, if they would materialize, should also be considered part of PBR Design No. 1.

**Q. DO YOU AGREE WITH THIS POSITION?**

A. No.

**Q. WHY DO YOU DISAGREE WITH THIS POSITION?**

A. *If the Company is successful and is able to renegotiate its pipeline capacity* contracts to obtain a lower rate, this lower renegotiated rate should go into the calculation of the PGC. A lower negotiated rate is not a capacity release and should not be considered part of PBR No. 1. The Company has a duty to follow a least cost procurement strategy. Therefore, the Company should not be rewarded for doing what is expected in pursuing its normal responsibilities.

**Q. WHAT DOES MR. RAFFERTY SAY ABOUT CARRYING CHARGES ON UNUSED STORAGE GAS?**

A. On page 19 of his rebuttal testimony, Mr. Rafferty states:

> The Company is proposing to recover in PGC rates the carrying charges associated with deferred storage withdrawals or "rolling the storage inventory to a future period". The Company is only proposing to recover these costs if it can demonstrate that this action provided benefits to PGC customers.

**Q. WHAT JUSTIFICATION DOES THE COMPANY PROVIDE FOR ALLOWING THIS CARRYING CHARGE?**

A. The Company points out that its last base rate case was almost ten years ago and that it has increased its storage assets considerably since that proceeding. Mr. Rafferty argues that storage assets have been added since the last base rate case, therefore, they are not included in base rates.

**Q. WHAT IS YOUR POSITION ON ALLOWING THE COMPANY TO RECOVER A CARRYING CHARGE ON ITS ROLLED OVER STORAGE INVENTORY?**

A. The Commission should not allow the Company to include a carrying charge on the rolled over storage. An NGDC is permitted to earn a return on its 13 month average stored gas in base rates. To permit the Company to accrue carrying charges in a PGC proceeding allows the Company to collect twice for the same assets.

The fact that the Company did not have these assets at the time of its last base rate proceeding is not a justification to allow these proposed carrying charges in a PGC proceeding. NGDC's are permitted to collect a return on its investment in stored gas in a base rate proceeding. In the absence of a base rate proceeding, this PGC proceeding should not be a forum for single issue ratemaking.

**Q. WHAT DOES MR. RAFFERTY SAY ABOUT THE COMPANY'S GAS HEDGING PROPOSAL?**

A. On page 22 of his rebuttal testimony, Mr. Rafferty states:

> "Equitable is <u>not</u> seeking pre-approval that its proposed Program satisfies least cost procurement obligations...The Company is asking the OTS, as well as the OCA and the OSBA, to recognize that the Program is appropriate and the "hedging concept" is consistent with least cost purchasing obligations."

**Q. DOES THIS CHANGE YOUR POSITION ON WHETHER OTS SHOULD BE WILLING TO AGREE TO THE COMPANY'S HEDGING PLAN?**

A. No. The plan as set forth by the Company does not necessarily comply with its least cost procurement obligation. It may act as a surrogate for least cost purchasing but the main intent of the Company's plan seems to be stable rates rather than lowest rates.

**Q. DO YOU HAVE ANYTHING ELSE TO ADD AT THIS TIME?**

A. No.

ORIGINAL

RECEIVED

JUN 21 2006

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

OTS Statement No. 1-R
Witness: Janet Markovich

JUN 16 2006

# PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

# EQUITABLE GAS COMPANY

**Docket No. R-00061295**

DOCKETED
SEP 22 2006

**Rebuttal Testimony**

**of**

**Janet Markovich**

**Office of Trial Staff**

DOCUMENT FOLDER

**Concerning:**

**Equitrans Refund**

**Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?**

A. My name is Janet Markovich. My business address is P. O. Box 3265, Harrisburg, Pennsylvania 17105-3265.

**Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

A. I am employed by the Pennsylvania Public Utility Commission in the Technical Division of the Office of Trial Staff as a Fixed Utility Financial Analyst.

**Q. PLEASE DESCRIBE THE ROLE OF OTS IN RATE PROCEEDINGS.**

A. OTS was established by the legislature and is responsible for protecting the public interest in rate proceedings. The OTS analysis in this proceeding is based on its responsibility to represent the public interest. This responsibility requires the balancing of the interests of ratepayers and the Company.

**Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

A. The purpose of my testimony is to present the OTS position on the Equitrans refund issue in response to the OSBA endorsement of a refund proposal that has yet to be put forth by the Company.

## EQUITRANS REFUND

**Q. WHAT IS THE EQUITRANS REFUND?**

A. Equitrans filed a general rate case with FERC on December 1, 2003, and has been collecting its filed-for rates, subject to refund, since September 1, 2004. Since that time, Equitable has been paying the higher filed-for rates for Equtirans' interstate services and has recovered those costs from its PGC customers. A settlement of the Equitrans general rate case has occurred at FERC. Accordingly, PGC customers are entitled to a refund of the difference between the filed-for rates and settled rates.

**Q. WHAT IS THE AMOUNT OF THE EQUITRANS REFUND?**

**A.** The Company estimates that the refund will be in excess of $9 million.

**Q. WILL THE ENTIRE REFUND BE CREDITED AGAINST FUTURE PURCHASED GAS COSTS?**

A. No. On November 23, 2005, the Company filed a Petition, Docket No. P-00052192, with the Commission requesting the authority to use approximately $7 million of the $9 million refund for the benefit of low-income customers during the 2005-2006 winter heating season. In that Petition, Equitable stated that residential PGC customers paid for 81.4% (approximately $7 million) and commercial customers paid for 18.6% (approximately $2 million) of the Equitrans interstate services provided to Equitable by its pipeline supplier Equitrans. Because low income energy assistance is available only to residential customers, Equitable

proposed to use only the $7 million residential customer portion of the refund for the benefit of its low-income customers. By Order entered December 15, 2005, the Commission granted Equitable's Petition.

**Q. WHAT IS THE COMPANY'S PLAN FOR REFUNDING AMOUNTS IN EXCESS OF $7 MILLION TO PGC CUSTOMERS?**

A. The Company did not provide a refund proposal in its Direct Testimony or exhibits. However, in response to an OSBA interrogatory, the Company stated that it will credit the difference between the $7 million and $9 million to commercial customers and credit any refund amount in excess of the $9 million to both residential and commercial customers.

**Q. DID OSBA DIRECT TESTIMONY ADDRESS THE EQUITRANS REFUND ISSUE?**

Yes. In the Direct Testimony of OSBA witness Brian Kalcic, the OSBA agreed with the Company's proposal to assign $2 million to commercial customers and to credit any refund in excess of $9 million to both residential and non-residential customers.

**Q. DO YOU AGREE WITH THIS PLAN?**

A. No.

**Q. WHY DO YOU DISAGREE WITH THE REFUND PROPOSAL?**

A. The commercial and industrial (C&I) customers are entitled to their proportionate share of the Equtirans supplier refund. However, C&I are entitled to no more or less then they would have received had the refund been flowed through the E-factor in normal fashion without any advancement of the refund to the residential customers. Under the proposal endorsed by the OSBA, C&I customers would receive a disproportionate amount of the refund.

**Q. HOW WOULD A SUPPLIER REFUND NORMALLY BE RETURNED TO PGC CUSTOMERS?**

A. Supplier refunds are included as a component of the E-factor. Had the refund been received prior to the filing of the annual PGC and handled in the normal fashion, the refund would have been reported on line 4 of Item 53.64(a), Section I, Part A, Sheet 2 of 6. The refund would be divided by 24,249,100 Mcf in PGC sales and all PGC customers would have received the same credit on a per Mcf basis.

**Q. WHAT PROPORTIONATE AMOUNT WOULD FLOW TO RESIDENTIAL CUSTOMERS AND C&I CUSTOMERS?**

A. At Item 53.64(a), Section I, Part B, Sheet 1 of 8, the Company broke down the projected PGC sales by customer class. The residential class sales are 20,208,839 Mcf, or 83.3% of total sales. The C&I classes comprise 16.7% of total sales.

**Q. IF THE COMPANY WERE TO RECEIVE A $9 MILLION REFUND, WOULD THE C&I CUSTOMERS BE ENTITLED TO $2 MILLION?**

A. No. The proper distribution would be $7,497,000 (83.3%) to residential and $1,503,000 (16.7%) to C&I customers. Since the residential customer class has already been advanced $7 million of its proportionate share, the residential customer class would be entitled to an additional $497,000 based on a refund of $9 million.

**Q. WHAT IS OTS' RECOMMENDATION FOR THE APPROPRIATE DISTRIBUTION OF THE EQUITRANS REFUND?**

A. The refund is projected to be in excess of $9 million. Obviously the first $7 million would go to Equitable to reimburse the Company for the advanced CAP funding. The next $1,403,361 would go to the C&I customers. All amounts in excess of $8,403,361 would be flowed through the E-factor to the benefit of all PGC customers.

**Q. HOW DID YOU DETERMINE THE C&I CUSTOMERS PROPORTIONATE SHARE OF $1,403,361?**

A. As I previously stated, residential customer sales are 83.3% of total sales. The $7 million advance would be the residential customer's proportionate share (83.3%) of some total amount that would be calculated by dividing the $7 million by .833 the result being $8,403,361. By crediting C&I customers with the first $1,403,361, balance has been restored between the residential and the C&I customer classes. Any refund in excess of $8,403,361 should be shared equally by all PGC customers.

**Q. DO YOU HAVE ANYTHING ELSE TO ADD AT THIS TIME?**

A. No, that concludes my testimony.

**APPENDIX A**

## Janet M. Markovich

### Applicable Educational and Professional Background

**Education:**

Master of Science in Business Administration, Concentration in Finance,
St. Joseph's University, Philadelphia, Pa. 1994
Bachelor of Science in Business Administration, Elmhurst College, Elmhurst Ill. 1981

**Additional Education:**

NARUC Utility Rate School - October 2004
The Many Voices of Wall Street – October 2004
Telephony and Telecommunications – December 2004

**Business Experience:**

Commonwealth of Pennsylvania
Public Utility Commission
Office of Trial Staff
Fixed Utility Financial Analyst 2004 - Present
Responsible for performing studies and analysis of revenues and expenses and other related financial and economic data as required to process rate increase requests, 1307 (f) purchased gas cost filings and general tariff revisions.

Commonwealth of Pennsylvania
Department of Corrections
Budget Analyst I and II 2003-2004
Responsible for coordinating the General Fund section of the business office as required to monitor spending, collect data and generate budgets, re-budgets and various projections.

Borough of Minersville
Borough Manager 1997-2000
Responsibilities under the direction of the Borough Council included the supervision of the business office, and the coordination of the activities of the following departments:

Streets, Sewer Treatment Plant and Collection System, Code, Health, and Grant Administration. Addition responsibilities included the development and administration of budgets for the General, Water, and Sewer Funds.

Pepperidge Farm, Inc
Plant Manager 1982-1991
As Resident Executive, my responsibilities included all activities related to the manufacture and distribution of fresh and frozen bakery, cookie and cracker products at facilities in Downers Grove, Illinois and Lakeland, Florida. Major responsibilities included the development and administration of plant operating and capital budgets and the coordination of the following functions: Engineering, Maintenance, Production, Distribution, Accounting, Purchasing, Human Resources, and Information Systems.

**Assisted in the following Cases :**

Borough of Quakertown – Rate Case – R-00049555
National Fuel Gas Distribution – Rate Case – R-00049656
TW Phillips Gas and Oil Co. – 1307(f) – R- 00040059
Myers Gas Company – Rate Case – R-00050259
PECO Energy Company – 1307(f) – R – 00050537
UGI Utilities, Inc. Gas Division – 1307(f) – R – 00050539
Trigen- Philadelphia Energy Corporation – R – 00050781

**Participated in the following Cases:**

City of Bethlehem Water Fund – Rate Case - R-00050671
Wonderview Water Inc. – Rate Case - R-00050659
Meadows Sewer Co. – Rate Case – R-00050672
Wilcox Water Co. – Rate Case – R-00050781
Lancaster Waterfund – Rate Case – R-000501167

**Testified in the following Cases:**

City of Lancaster Sewer Fund – Rate Case – R-00049862
Mesco Inc. – Rate Case – R- 00050678
TW Phillips 1307(f) – R-00051134
Aqua Pa – Rate Case – R-00051030

ORIGINAL

OSBA STATEMENT NO. 1

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

| | | |
|---|---|---|
| Pennsylvania Public Utility Commission | : | |
| v. | : | Docket No. R-00061295 |
| Equitable Gas Company | : | |

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Direct Testimony of

BRIAN KALCIC

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On Behalf of the

Office of Small Business Advocate



Date Served: May 19, 2006

Date Submitted for the Record: _____

# Direct Testimony of Brian Kalcic

**Q. Please state your name and business address.**

A. Brian Kalcic, 225 S. Meramec Avenue, Suite 720, St. Louis, Missouri 63105.

**Q. What is your occupation?**

A. I am an economist and consultant in the field of public utility regulation, and principal of Excel Consulting. My qualifications are described in the Appendix to this testimony.

**Q. On whose behalf are you testifying in this case?**

A. I am testifying on behalf of the Office of Small Business Advocate ("OSBA"), which is representing small business customers served by Equitable Gas Company ("Equitable" or "Company").

**Q. What is the subject of your testimony?**

A. I will address Equitable's proposals regarding: a) the Performance Based Rate (PBR) Design No. 1 credit mechanism; and b) the 2006 Gas Supply Hedging Program.

In addition, I will discuss the Company's response to the events surrounding the Energy Information Administration's ("EIA") release of its November 24, 2004 Weekly Gas Storage Report ("Report"), and explain how the Company's expected refund from Equitrans, L.P. ("Equitrans") should be credited to customer classes.

**Q. Please summarize your recommendations.**

A. Based upon my analysis of the Company's filing, I recommend that Your Honor and the Commission:

- extend the current PBR Design No. 1 mechanism, which credits PGC customers with 75% of applicable revenues and allows Equitable to retain 25% of such revenues;
- approve the Company's proposed 2006 Gas Supply Hedging Program; and
- approve a PGC rate for non-residential customers that is $0.495 per Mcf *lower* than that of residential customers at the conclusion of this proceeding.

## PBR Design No. 1

**Q. Mr. Kalcic, please describe the Company's current Performance Based Rate (PBR) Design No. 1 crediting mechanism.**

A. PBR Design No. 1 is the sharing mechanism that applies to the revenues that the Company receives from capacity release, off-system sales and certain other transactions that involve use of Equitable's upstream pipeline capacity or storage assets. PBR Design No. 1 currently provides a credit to PGC customers in the amount of 75% of the above revenues. Equitable retains the remaining 25%.

**Q. When does the current PBR Design No. 1 mechanism expire?**

A. The mechanism expires on September 30, 2006.

**Q. What is Equitable's proposal with respect to PBR Design No. 1?**

A. Equitable has declined to provide a specific proposal with regard to PBR Design No. 1. Instead, the Company indicates its desire to negotiate a new PBR Design No. 1 mechanism "in settlement discussions with the parties."[1]

[1] See Equitable Statement No. 4 at 36.

**Q. Does the Company's filing reflect any PBR Design No. 1 credits for the projected period, i.e., October 1, 2006 through September 30, 2007?**

A. No, it does not.

**Q. When was the Company's current PBR Design No. 1 mechanism established?**

A. The mechanism was established in the Company's last 1307(f) proceeding, i.e., Docket No. R-00050272.

**Q. Was the PBR Design No. 1 mechanism litigated in Docket No. R-00050272?**

A. Yes.

**Q. What did the Commission conclude?**

A. In its Opinion and Order, entered September 28, 2005, in Docket No. R-00050272, the Commission stated, in part:

> We believe that under a properly designed PBR construct, these revenues will provide credits to PGC customers and provide a market incentive to Equitable to maximize asset value by enhancing shareholder returns. To attain this balance, the OTS correctly argued that a PBR construct that provides a 75% credit

to PGC customers and allows Equitable to retain 25% of revenues on a Pre-Tax basis is a fair distribution of benefits. Without this level of sharing, the incentive to Equitable to maximize these revenues, at the expense of minimizing PGC gas costs, becomes counterproductive to consumers. The surrebuttal testimony of Brian Kalcic in this case clearly established that this recommendation lies within the bounds of reasonableness in relation to other Commission-approved PBR mechanisms. (Order at 33.)

**Q. What do you recommend with respect to PBR Design No. 1?**

A. Given the extensive litigation of this issue in Docket No. R-00050272, I conclude that it is both reasonable and appropriate that the current 75%/25% sharing mechanism be continued.

## Hedging Program

**Q. Mr. Kalcic, does Equitable have a formal hedging program in place at this time?**

A. No.

**Q. Has the Company submitted such a hedging proposal in this proceeding?**

A. Yes. The Company's proposed 2006 Gas Supply Hedging Program ("Program") is presented in Attachment B to Equitable Statement No. 4.

**Q. Is Equitable requesting comment from the parties on its proposed Program?**

Yes. In fact, Equitable indicates that unless a consensus is reached among the OSBA, OCA and OTS that the Program is appropriate, the Company will not go forward with its implementation.

**Q. What are the main features of the Program?**

A. Equitable proposes to hedge from 25% to 50% of its total projected interstate pipeline purchases during the April through October period. In addition, the Company proposes to hedge from 10% to 20% of its projected interstate pipeline purchases during the November through March period. Equitable indicates that its hedging would be executed via purchases of either: a) New York Mercantile Exchange ("NYMEX") natural gas futures contracts; or b) fixed-price supplies. Finally, Equitable states that any gains or losses that might result from its hedging activities would flow through the PGC mechanism.

**Q. Does the OSBA have any concerns about the Company's hedging proposal at this time?**

A. No. The Company's plan to hedge a portion of its interstate purchases in each month should help reduce the exposure of Equitable's sales customers to gas price volatility.

**EIA's November 24, 2004 Weekly Storage Report**

**Q. Mr. Kalcic, please provide a brief description of the OSBA's position concerning the events surrounding the release of the Report, as presented in Docket No. R-00050272.**

A. In Docket No. R-00050272, the OSBA presented testimony describing the events that led to a spike in natural gas market prices. Those events were triggered by an erroneous storage report issued by EIA on November 24, 2004, which in turn arose out of an apparent clerical error by an employee of Dominion Transmission, Incorporated ("DTI"). The OSBA argued that the Company had an obligation to take legal action to recover the excess purchased gas costs attributable to the reporting error.

**Q. Did the OSBA and Equitable reach a settlement on this issue?**

A. Yes. The parties agreed that Equitable would report on the status of any class action related to the EIA Report in its next 1307(f) proceeding.

**Q. Has Equitable done so?**

A. Yes. The Company has identified a class action complaint that was filed in Kanawha County Circuit Court, West Virginia, in February 2005, which was subsequently removed to the U. S. District Court.[2]

**Q. What is Equitable's status in the West Virginia complaint case?**

A. The Company indicates that it is presently monitoring the proceeding, but that it intends to seek class action intervention upon final determination of a proper venue (unless a "more appropriate action" is instituted in the interim).

**Equitrans Refund**

**Q. Mr. Kalcic, does Equitable expect to receive a refund from Equitrans before the conclusion of this proceeding?**

A. Yes, it does.

[2] See Equitable Statement No. 4 at 41-42.

**Q. What is the source of the Equitrans refund?**

A. As explained by Mr. Rafferty, Equitrans filed a general rate case (at Docket No. RP04-97) before FERC on December 1, 2003, and has been collecting its filed-for rates from Equitable, subject to refund, since September 1, 2004. As a result of a recent settlement in the Equitrans case, Equitable's customers will experience "a significant reduction" from the current (i.e., filed-for) Equitrans rates, along with a refund pertaining to the difference between the Equitrans settlement- and filed-for rates, dating back to September 1, 2004.

**Q. What is the expected amount of the refund?**

A. Equitable indicates that it expects to receive a refund in excess of $9 million.

**Q. Was the refund available at the time of the Company's filing on April 1, 2006?**

A. No. FERC did not issue its Final Order approving the Equitrans settlement until April 5, 2006. As a result, the refund is not reflected as a credit to Equitable's expected future purchased gas costs.

**Q. When does Equitable expect to receive the refund?**

A. The effective date of the Equitrans settlement is June 1, 2006. Equitrans is required to refund customers no later than sixty (60) days after the effective date, which means Equitable should receive the refund by August 1, 2006.

**Q. Will the total refund be credited against future purchased gas costs at the conclusion of this proceeding?**

A. No.

**Q. Why not?**

A. The Commission issued an order in Docket No. P-00052192 granting the Company's petition to advance $7 million of the expected refund toward a program to maintain service to low-income customers during the 2005-2006 winter heating season. As Equitable did advance the $7.0 million, only the amount of the actual refund in excess of $7.0 million is available for credit against future purchased gas costs in this proceeding.

**Q. How does the Company propose to credit the amount of the refund in excess of $7.0 million to its PGC customers?**

A. In response to OSBA-I-4, part (a), the Company explains that it intends to credit the difference between $7 million and $9 million to commercial (i.e., non-residential) customers, and to credit any refund amount in excess of $9.0 million to both residential and commercial customers.

**Q. What is Equitable's reason for applying the credit in the above fashion?**

A. In its petition, Equitable identified a total expected refund of $9.0 million. The Company also calculated that the residential portion of the Equitrans refund was approximately $7.0 million, while the commercial portion was approximately $2.0 million. In its Order in Docket No. P-00052192 at 14-15 approving the petition, the Commission stated:

> Accordingly, the Commission accepts Equitable's proposal to use the *residential customer portion* of the one-time supplier refund from Equitrans to assist low-income customers in meeting their energy needs this winter. (Emphasis supplied.)

Thus, Equitable maintains that its proposed application of any refund in excess of $7.0 million "fully comports with the Commission's Order in Docket No. P-00052192."[3]

[3] See the Company's response to OSBA-I-4, parts (a) and (c).

**Q. Do you agree?**

A. Yes, I do. The Company's proposal recognizes that residential customers have already received their proper share of the (first) $9.0 million in refunds. Assigning the next $2.0 million (i.e., $9.0 million minus $7.0 million) to commercial customers is necessary to credit non-residential customers with their fair share of the (first) $9.0 million. Finally, the Company's proposal to credit any refund in excess of $9.0 million to *all* customers will insure that both residential and non-residential customers benefit from any excess amounts.

**Q. Would the Company's proposal to assign $2.0 million of the Equitrans refund to commercial customers result in a different PGC rate for residential and non-residential customers at the conclusion of this proceeding?**

A. Yes, it would.

**Q. By how much would the residential and non-residential PGC rates differ?**

A. The Company's proposed PGC rate, before the application of any Equitrans refund, is $11.28 per Mcf. Per the Company's response to OCA-I-2, the total

projected throughput (i.e., usage) of non-residential sales customers over the October 1, 2006 through September 30, 2007 1307(f) period is 4,040,261 Mcf. Dividing $2.0 million by 4,040,261 Mcf produces a non-residential credit of $0.495 per Mcf, or a non-residential PGC rate of $11.28 minus $0.495 or $10.785 per Mcf.

**Q. Do you recommend that the Commission recognize the above PGC rate differential of $0.495 per Mcf at the conclusion of this proceeding?**

A. Yes, I do.

**Q. Does this conclude your direct testimony?**

A. Yes.

## APPENDIX

Qualifications of Brian Kalcic

Mr. Kalcic graduated from Illinois Benedictine College with a Bachelor of Arts degree in Economics in December, 1974. In May, 1977 he received a Master of Arts degree in Economics from Washington University, St. Louis. In addition, he has completed all course requirements at Washington University for a Ph.D. in Economics.

From 1977 to 1982, Mr. Kalcic taught courses in economics at both Washington University and Webster University, including such subjects as Microeconomic and Macroeconomic Theory, Labor Economics and Public Finance.

During 1980 and 1981, Mr. Kalcic was a consultant to the Equal Employment Opportunity Commission, St. Louis District Office. His responsibilities included data collection and organization, statistical analysis and trial testimony.

From 1982 to 1996, Mr. Kalcic joined the firm of Cook, Eisdorfer & Associates, Inc. During that time, he participated in the analysis of electric, gas and water utility rate case filings. His primary responsibilities included cost-of-service and economic analysis, model building, and statistical analysis.

In March 1996, Mr. Kalcic founded Excel Consulting, a consulting practice which offers business and regulatory services.

Mr. Kalcic has previously testified before the state regulatory commissions of Delaware, Kansas, Kentucky, Maine, Massachusetts, Minnesota, Missouri, New Jersey, New York, Ohio, Oregon, Pennsylvania, Texas, and the Bonneville Power Administration.

## REFERENCED INTERROGATORY RESPONSES

OSBA – I-4

OCA – I-2

Docket No. R-00061295
Item: OSBA-I-4
Respondent: Stephen C. Rafferty
Position: Vice-President, Utility Asset Management

EQUITABLE GAS COMPANY
Response to Interrogatories of the
Office of Consumer Advocate

Item: OSBA-I-4

Reference page 22, lines 5-11 of Equitable Statement No. 4.

a. Please explain in detail how any actual refund amount in excess of $7.0 million would be "reflected in the future purchased gas costs."

b. Would Equitable propose to reflect any refund in excess of $7.0 million toward purchased gas costs in this proceeding? If so, please identify the latest date Equitable could receive an Equitrans refund in order to reflect the actual refund amount in excess of $7.0 million in this proceeding.

c. Please explain in detail how the Company's proposed application of any refund amount in excess of $7.0 million, as given in response to part (a) above, comports with the Commission's Order in Docket No. P-00052192, at 14-15, which states: "Accordingly, the Commission accepts Equitable's proposal to use the *residential customer portion* of the one-time supplier refund from Equitrans to assist low-income customers in meeting their energy needs this winter." (Emphasis supplied.)

Response:

a. Any actual refund amount in excess of $7.0 million would be "reflected in the future purchased gas costs" as a separate credit or interstate pipeline refund. Pursuant to the Commission's Order in Docket No. P-00052192, at 4, "...Equitable explains that the refund related to services paid for by PGC customers can be broken down as follows: 81.4 % (or approximately $7 million) is for residential customer service and 18.6 % (or approximately $2 million) is for commercial customer service..." Therefore, the refund portion between $7 million and $9 million will be credited to commercial customer service. Any refund amount in excess of $9 million will be credited to residential *and* commercial customer service.

b. Equitrans received a Final Order from FERC approving their Stipulation and Agreement ("Settlement") on April 5, 2006. The effective date of this Settlement is June 1, 2006. Pursuant to the Settlement, Equitrans agreed to refund customers no later than sixty (60) days after the effective date. Therefore, Equitable expects to receive a refund no later than August 1, 2006.

c. The Company believes the proposed application of any refund amount in excess of $7.0 million, as detailed in the response to part a above, fully comports with the Commission's Order in Docket No. P-00052192.

Docket No. R-00061295
Item: OCA-I-2
Respondent: Robert M. Narkevic
Position: Manager, Rates

EQUITABLE GAS COMPANY
Response to Interrogatories of the
Office of Consumer Advocate

Item: OCA-I-2

Please provide an explanation and all workpapers, calculations and supporting documentation, showing the derivation of projected monthly sales and transportation volumes separately by customer class for the period February 2006 through September 2007.

Response:

Please see the attached workpapers. The Company looks at several factors when preparing its projections, including: A historic use per heating degree day, a base use per customer and the number of customers.

Equitable Gas Company
1307f Interim Period Projected Throughput
(Mcf)

Item: OCA-I-2
Respondent: Robert M. Narkevic
Position: Manager, Rates

| | Feb-06 | Mar-06 | Apr-06 | May-06 | Jun-06 | Jul-06 | Aug-06 | Sep-06 | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Sales** | | | | | | | | | |
| Residential | 3,382,609 | 2,736,776 | 1,639,446 | 669,743 | 354,297 | 363,505 | 362,726 | 402,455 | 9,911,557 |
| Commercial | 619,242 | 529,083 | 321,718 | 165,125 | 111,016 | 106,497 | 112,936 | 119,698 | 2,085,315 |
| Industrial | 8,636 | 7,428 | 4,802 | 2,606 | 2,065 | 1,898 | 1,948 | 1,871 | 31,254 |
| Total | 4,010,487 | 3,273,287 | 1,965,966 | 837,474 | 467,378 | 471,900 | 477,610 | 524,024 | 12,028,126 |
| **Transportation** | | | | | | | | | |
| Residential | 478,660 | 387,600 | 234,874 | 96,449 | 51,322 | 53,033 | 53,033 | 58,837 | 1,413,808 |
| Commercial | 1,368,907 | 1,280,814 | 807,323 | 507,274 | 394,879 | 352,962 | 340,070 | 385,285 | 5,437,514 |
| Industrial | 1,400,417 | 1,224,862 | 761,348 | 422,399 | 334,738 | 346,965 | 343,341 | 352,722 | 5,186,792 |
| Total | 3,247,984 | 2,893,276 | 1,803,545 | 1,026,122 | 780,939 | 752,960 | 736,444 | 796,844 | 12,038,114 |

Equitable Gas Company
1307f Projected Period Projected Throughput
(Mcf)

Item: OCA-I-2
Respondent: Robert M. Narkevic
Position: Manager, Rates

| | Oct-06 | Nov-06 | Dec-06 | Jan-07 | Feb-07 | Mar-07 | Apr-07 | May-07 | Jun-07 | Jul-07 | Aug-07 | Sep-07 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sales** | | | | | | | | | | | | | |
| Residential | 1,079,353 | 2,108,612 | 3,222,205 | 3,887,113 | 3,382,608 | 2,736,776 | 1,639,446 | 669,742 | 354,297 | 363,505 | 362,726 | 402,456 | 20,208,839 |
| Commercial | 229,199 | 381,233 | 573,422 | 712,893 | 619,242 | 529,083 | 321,718 | 165,126 | 111,016 | 106,497 | 112,936 | 119,698 | 3,982,063 |
| Industrial | 3,453 | 5,445 | 8,213 | 9,833 | 8,636 | 7,428 | 4,802 | 2,606 | 2,065 | 1,898 | 1,948 | 1,871 | 58,198 |
| Total | 1,312,005 | 2,495,290 | 3,803,840 | 4,609,839 | 4,010,486 | 3,273,287 | 1,965,966 | 837,474 | 467,378 | 471,900 | 477,610 | 524,025 | 24,249,100 |
| **Transportation** | | | | | | | | | | | | | |
| Residential | 156,923 | 303,338 | 459,248 | 551,215 | 478,660 | 387,600 | 234,874 | 96,449 | 51,322 | 53,033 | 53,033 | 58,837 | 2,884,532 |
| Commercial | 650,148 | 925,583 | 1,303,451 | 1,531,553 | 1,368,907 | 1,280,814 | 807,323 | 507,274 | 394,879 | 352,962 | 340,070 | 385,285 | 9,848,249 |
| Industrial | 577,908 | 895,742 | 1,323,830 | 1,616,538 | 1,400,417 | 1,224,862 | 761,348 | 422,399 | 334,738 | 346,965 | 343,341 | 352,722 | 9,600,810 |
| Total | 1,384,979 | 2,124,663 | 3,086,529 | 3,699,306 | 3,247,984 | 2,893,276 | 1,803,545 | 1,026,122 | 780,939 | 752,960 | 736,444 | 796,844 | 22,333,591 |

ORIGINAL

OSBA STATEMENT NO. 1-S
1hbg TR 6/16/06

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

| | | |
|---|---|---|
| Pennsylvania Public Utility Commission | : | |
| v. | : | Docket No. R-00061295 |
| Equitable Gas Company | : | |

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*Surrebuttal Testimony of*

**BRIAN KALCIC**

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**On Behalf of the**

**Office of Small Business Advocate**



**Date Served: June 13, 2006**

**Date Submitted for the Record:** _____

# Surrebuttal Testimony of Brian Kalcic

**Q. Please state your name and business address.**

A. Brian Kalcic, 225 S. Meramec Avenue, St. Louis, Missouri 63105.

**Q. Have you previously submitted direct testimony in this proceeding?**

A. Yes.

**Q. What is the subject of your surrebuttal testimony?**

A. My surrebuttal testimony responds to certain points raised in the rebuttal testimony of Company witness Robert M. Narkevic and OTS witness Janet Markovich on the subject of the Equitrans Refund.

## Company Witness Narkevic

**Q. On pages 4-5 of his rebuttal testimony, Mr. Narkevic discusses how the Company would propose to credit Commercial and Industrial ("C&I") customers with their separate share of the Equitrans refund. In particular, Mr. Narkevic indicates that Equitable does not intend to create two different PGC rates, as suggested in your direct testimony. Instead, Equitable proposes to provide a one-time bill credit to C&I customers based upon annual usage.[1] Is the Company's proposal for a one-time C&I refund acceptable to the OSBA?**

A. Yes, it is.

## OTS Witness Markovich

**Q. On page 4 of her rebuttal testimony, Ms. Markovich states that she disagrees with your proposal to assign $2.0 million of the Equitrans**

[1] At page 5 of Equitable Statement No. 1-R, Mr. Narkevic states:
"The total credit for the C&I customers will be divided by the annual throughput of the C&I customers identified to determine a unit rate. The unit rate will then be multiplied by the throughput for each of these customers to determine the individual credit to be applied. The one-time bill credit will completely refund the portion due C&I customers while alleviating the confusion of two separate PGC rates."

**refund to C&I customers, and to credit any refund in excess of $9.0 million (i.e., the initial $7.0 million residential advance plus the $2.0 million C&I credit) to both residential and C&I customers via the PGC. Why does Ms. Markovich disagree with your proposal?**

A. While Ms. Markovich agrees that C&I customers are entitled to their proportionate share of the Equitrans supplier refund, she claims "C&I are entitled to no more or less then (sic) they would have received had the refund been flowed through the E-factor in normal fashion without any advancement of the refund to the residential customers."

**Q. How would Ms. Markovich calculate the C&I refund?**

A. Ms. Markovich proposes to calculate the separate C&I refund on the basis of the Company's *projected* E-factor throughput (i.e., Mcf) for the period October 1, 2006 through September 30, 2007. Specifically, Ms. Markovich notes that the Company's total projected annual E-factor throughput is 24,249,100 Mcf, of which 83.3% is residential sales and 16.7% is non-residential sales. Ms. Markovich divides the $7.0 million residential advance by OTS' deemed residential share of 83.3% to arrive at $8,403,361.[2] Of the $8,403,361 figure, residential customers have received an advance of $7.0 million. Ms. Markovich concludes that by crediting C&I customers with $8,403,361 minus $7.0 million, or $1,403,361, the balance will have been restored between the Company's residential and C&I customers.[3]

**Q. Do you agree with OTS' proposed 83.3%-residential / 16.7%-C&I split?**

A. No. As previously noted, the OTS' proposed split is based on projected rather than actual usage figures. Counsel informs me that the Commission's Order at Docket No. P-00052192 did not adopt a sharing formula based on projected sales, as proposed by OTS.

[2] Working backwards, a residential share of 83.3% times $8,403,361 equates to the $7.0 million advanced by Equitable to residential customers.

[3] Under the OTS' proposal, any Equitrans refund in excess of $8,403,361 would be shared on an equal (i.e., $/Mcf) basis by all PGC customers, via an E-factor credit.

**Q. What are the sharing percentages that appear in the Commission's Order at Docket No. P-00052192?**

A. The Commission adopted Equitable's representation that residential PGC customers paid for 81.4% (or approximately $7.0 million) of the Equitrans interstate services provided to Equitable, and that non-residential customers paid for 18.6% (or approximately $2.0 million).

**Q. Mr. Kalcic, if the Commission intended that the 81.4%/18.6% sharing percentages (rather than the cited $7.0 million and $2.0 million dollar figures) be applied to the Equitrans refund, what would be the resulting split between residential and C&I customers?**

A. Residential customers have been advanced $7.0 million. Dividing $7.0 million by 81.4% equals $8,599,509, which would equate to a one-time C&I refund of $1,599,509 (i.e., $8,599,509 minus $7.0 million). Any Equitrans refund in excess of $8,599,509 would be shared proportionately by all customers via a credit to Equitable's E-factor.

**Q. Does this conclude your surrebuttal testimony?**

A. Yes.

OCA Statement No. 1
JUN 16 2006 mbg

ORIGINAL

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

| | | |
|---|---|---|
| PENNSYLVANIA PUBLIC UTILITY COMMISSION | ) | |
| v. | ) | DOCKET NO. R-00061295 |
| EQUITABLE GAS COMPANY | ) | |



# DIRECT TESTIMONY

OF

JEROME D. MIERZWA



ON BEHALF OF THE

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE



MAY 2006

EXETER
ASSOCIATES, INC.
5565 Sterrett Place
Suite 310
Columbia, Maryland 21044

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## I. INTRODUCTION

Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jerome D. Mierzwa. I am a principal and Vice President with Exeter Associates, Inc. My business address is 5565 Sterrett Place, Suite 310, Columbia, Maryland 21044. Exeter specializes in providing public utility-related consulting services.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. I graduated from Canisius College in Buffalo, New York, in 1981 with a Bachelor of Science Degree in Marketing. In 1985, I received a Masters Degree in Business Administration with a concentration in finance, also from Canisius College. In July 1986, I joined National Fuel Gas Distribution Corporation ("NFGD") as a Management Trainee in the Research and Statistical Services Department ("RSS"). I was promoted to Supervisor RSS in January 1987. While employed with NFGD, I conducted various financial and statistical analyses related to the company's market research activity and state regulatory affairs. In April 1987, as part of a corporate reorganization, I was transferred to National Fuel Gas Supply Corporation's ("NFG Supply's") rate department where my responsibilities included utility cost of service and rate design analysis, expense and revenue requirement forecasting and activities related to federal regulation. I was also responsible for preparing NFG Supply's Purchased Gas Adjustment ("PGA") filings and developing interstate pipeline and spot market supply gas price projections. These forecasts were utilized for internal planning purposes as well as in NFGD's 1307(f) proceedings.

In April 1990, I accepted a position as a Utility Analyst with Exeter Associates, Inc. In December 1992, I was promoted to Senior Regulatory Analyst. Effective April 1, 1996, I became a principal of Exeter Associates. Since joining Exeter Associates, I have specialized in evaluating the gas purchasing practices and policies of natural gas utilities, utility class cost of service and rate design analysis, sales and rate forecasting, performance-based incentive regulation, revenue requirement analysis, the unbundling of utility services and evaluation of customer choice natural gas transportation programs.

Q. HAVE YOU PREVIOUSLY TESTIFIED IN REGULATORY PROCEEDINGS ON UTILITY RATES?

A. Yes. I have provided testimony on more than 100 occasions in proceedings before the Federal Energy Regulatory Commission ("FERC"), utility regulatory commissions in Delaware, Georgia, Illinois, Indiana, Louisiana, Montana, Nevada, New Jersey, Ohio, Rhode Island, Texas and Virginia, as well as before this Commission.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. Exeter Associates, Inc. was retained by the Pennsylvania Office of Consumer Advocate ("OCA") to review Equitable Gas Company's ("Equitable" or "the Company") 2006 1307(f) Purchased Gas Cost ("PGC") filing. My testimony presents the results of my review.

Q. HAVE YOU PREPARED EXHIBITS TO ACCOMPANY YOUR TESTIMONY?

A. Yes, I have. Schedules JDM-1 through JDM-6 are attached to my direct testimony. Schedule JDM-1 summarizes my adjustments to the Company's projected purchased gas costs and presents a revised 2006 PGC rate.

Q. PLEASE SUMMARIZE YOUR FINDINGS AND RECOMMENDATIONS.

A. My findings and recommendations are as follows:

- Historically, Equitable has reserved sufficient interstate pipeline capacity to meet the design peak day requirements of its PGC and choice transportation customers, and the standby service and balancing requirements of its general transportation customers. In response to the recent significant increase in the price of natural gas, Equitable's customers have reduced their demand for natural gas. The model utilized by the Company to estimate its customers' design peak day requirements fails to adequately account for this decrease in demand, and overstates the Company's design peak day requirements by approximately 30,000 Dth. Equitable should aggressively pursue the realignment of its interstate pipeline capacity portfolio to match the design peak day requirements of its customers;

- The fuel retention charge included in the Company's analysis of whether customers receiving a fuel charge discount provide a contribution to fixed costs should be increased to 7.9 percent to reflect actual recent lost and unaccounted-for ("LUFG") and company use experience;

- The costs associated with fuel retention discounts should be recovered from all customers by increasing the Company's generally applicable fuel retention charge to 10 percent;

- Standards should be adopted with respect to the discounting of fuel retention and base rate charges under which Equitable cannot discount fuel retention charges by a greater percentage than it has discounted the applicable base rate charges;

- Equitable's proposal to include carrying charges on deferred storage withdrawals should be rejected;

- Equitable should be given authority to proceed with its hedging program;

- Equitable's exchange transactions have had an adverse impact on PGC customers, and PGC rates should be adjusted to eliminate the adverse impact of these transactions; and

- Equitable should make a demonstration that its decision not to proceed under Virginia Power Energy Marketing storage management services arrangement was consistent with least cost gas procurement. If it cannot do so, PGC customers should be credited with the benefits which would have accrued under the arrangement.

Q. WHAT IS THE OVERALL IMPACT OF YOUR RECOMMENDATIONS ON EQUITABLE'S 2006 PGC RATE?

A. As shown on Schedule JDM-1, my recommendations result in a decrease in Equitable's 2006 PGC rate of 14 cents to $11.14 per Mcf from the $11.28 per Mcf rate proposed by the Company.

## II. BACKGROUND

Q. BEFORE CONTINUING, PLEASE DESCRIBE THE TIME PERIODS RELEVANT TO YOUR INVESTIGATION.

A. The historic review period refers to the time period February 1, 2005 through January 31, 2006. As part of the 1307(f) review process, Equitable's actual gas procurement activity during the historic review period is examined for consistency with least cost gas procurement standards. The 2005 PGC period consists of the period October 1, 2005 through September 30, 2006. Actual and projected purchased gas costs and revenues experienced by Equitable during the 2005 period are reconciled, and any undercollections or overcollections are reflected in determining the PGC rate applicable during the 2006 PGC period. The 2006 PGC period extends from October 1, 2006 through September 30, 2007. The 2006 PGC rate will reflect estimated purchased gas costs for that period, adjusted for 2005 PGC period purchased gas cost net undercollections or overcollections.

Q. BRIEFLY DESCRIBE EQUITABLE'S CURRENT GAS SUPPLY DELIVERY ARRANGEMENTS.

A. Gas supplies are delivered to Equitable under various transportation arrangements with its interstate pipeline affiliate, Equitrans L.P. ("Equitrans").

Equitable is not directly interconnected with any other interstate pipeline. Equitrans' facilities are located primarily in the Appalachian region of Pennsylvania and West Virginia. Insufficient quantities of gas are available for purchase in Equitrans' and Equitable's service territories to meet Equitable's requirements. Therefore, gas must be delivered to Equitrans from other producing regions such as the Gulf Coast of the United States. To accomplish this, Equitable reserves firm capacity on interstate pipelines upstream of Equitrans which provides for the delivery of gas from more remote gas producing regions to Equitrans. The primary upstream interstate pipeline delivering gas to Equitrans on Equitable's behalf is Texas Eastern Transmission. Gas delivered by Texas Eastern or other interstate pipelines to Equitrans may be delivered to Equitable on a current basis, or injected into Equitrans' storage facilities and redelivered at a later time. Equitable purchases storage service from Equitrans under several rate schedules. Equitable also purchases storage service from Dominion Transmission, Inc. ("DTI"). Deliveries by Texas Eastern are utilized to fill DTI storage. Gas withdrawn from DTI storage is delivered to Equitable by Equitrans. Small quantities of Appalachian region gas supplies are delivered directly to Equitable's system.

## III. DESIGN PEAK DAY AND CAPACITY ENTITLEMENTS

Q. WHAT IS A DESIGN PEAK DAY?

A. Design peak day is an extremely cold day that is expected to occur once every 10 to 20 years which a natural gas distribution company ("NGDC") selects and utilizes for capacity planning purposes. An NGDC would generally estimate its

customers' requirements (or demands) under design peak day conditions and secure various capacity resources sufficient to meet those requirements.

Q. WHAT DESIGN PEAK DAY CRITERIA IS USED BY EQUITABLE FOR CAPACITY PLANNING PURPOSES?

A. The design peak day utilized by Dominion Peoples is a winter day with a mean temperature of -10°F (75 heating degree days) and an average windspeed of 15.8 mph.

Q. DOES EQUITABLE SECURE CAPACITY TO PROVIDE FOR THE DELIVERY OF GAS SUPPLIES TO ITS SYSTEM IN SUFFICIENT QUANTITIES TO SERVE ALL OF ITS CUSTOMERS?

A. No. Equitable reserves sufficient capacity to meet the design peak day requirements of its PGC sales and its small customer choice transportation customers. General transportation customers are responsible for securing their own capacity. Equitable reserves capacity to meet the balancing and standby requirements of its general transportation customers.

Q. HOW DO THE CAPACITY REQUIREMENTS OF EQUITABLE'S CUSTOMERS COMPARE TO THE CAPACITY PORTFOLIO SECURED BY EQUITABLE?

A. Equitable has secured a total of 473,091 Dth per day of capacity. This includes 458,091 Dth of interstate pipeline capacity and 15,000 Dth of Appalachian gas supplies which are delivered directly to the Equitable system. Equitable projects the total design peak day capacity requirements of its customers to be 480,883 Dth. Of these requirements, 443,430 Dth is necessary to serve PGC sales and choice transportation customers, 24,168 Dth is necessary for the provision of standby service and 13,285 Dth is necessary for the provision of balancing

service to general delivery service transportation customers. Thus, based on Equitable's projections, the Company currently has a capacity shortfall of approximately 8,000 Dth (480,833 Dth minus 473,091 Dth).

Q. BRIEFLY DESCRIBE HOW EQUITABLE DEVELOPED ITS ESTIMATE OF DESIGN PEAK DAY DEMANDS.

A. Equitable utilized a multiple regression analysis to develop a predictive equation that models total daily system requirements (or sendout). That is, based on historical daily data, Equitable develops an equation that forecasts the daily sendout of all customers on its system based on daily heating degree days ("HDD") and windspeed. The Company's selected design peak day criteria are then input into the equation to arrive at a forecast of total system sendout under design peak day conditions. The sendout of general transportation customers is deducted from the total system design peak day sendout estimate to determine the amount of capacity that Equitable should reserve to serve its PGC and choice transportation customers.

Q. WHAT IS THE PREDICTIVE EQUATION CURRENTLY UTILIZED BY EQUITABLE PEOPLES FOR ESTIMATING TOTAL SYSTEM SENDOUT?

A. The predictive equation utilized by Equitable in this proceeding is as follows (Dth):

Total Sendout = 38,539.8 + (8,032.8 x 75 HDD) + (-233.7 x 15.8 MPH)

This equation is determined from Equitable's multiple regression analysis. The constant in the equation (38,539.8) reflects estimated daily non-temperature sensitive usage on the Equitable's system. The equation further indicates that daily sendout will increase by 8,032.8 Dth for each heating degree day

experienced and will decline by 233.7 Dth for each 1 MPH increase in the average daily windspeed.

Q. WHAT IS THE COMPANY'S TOTAL SYSTEM DESIGN PEAK DAY SENDOUT FORECAST?

A. The total system sendout forecasted by the Company's predictive equation under design peak day conditions is 637,308 Dth.

Q. HOW ARE THE PREDICTIVE CAPABILITIES OF A MODEL SUCH AS THE COMPANY'S TYPICALLY MEASURED?

A. In multiple regression analysis, the value of a dependent variable is estimated based on the values of the independent variables. In the Company's model, the dependent variable is total system sendout, and the independent variables are heating degree days and windspeed. The accuracy of the predictive capabilities of a model such as the Company's sendout model can typically be measured by the R-Squared. The R-Squared measures the degree to which the equation explains the historical variation in the dependent variable, and the equation's ability to explain historical variation can sometimes be used as a proxy to gauge the model's predictive capabilities. At one extreme, an R-Squared of 0 indicates that the equation cannot explain any of the historical variation of the dependent variable. An R-Squared of 1 indicates that the model fully explains the variation in the dependent variable. The R-Squared of the Company's model is .9434. This means that during the historical period analyzed by the Company, the independent variables were able to predict approximately 94 percent of the variation in the dependent variable sendout.

Q. UNDER WHAT CIRCUMSTANCES WOULD THE R-SQUARED NOT BE A GOOD INDICATOR OF A MODEL'S PREDICTIVE CAPABILITIES?

A. The R-Squared would not be a good indicator of a model's predictive capabilities if the underlying behavior experienced during the historical period is not reflective of behavior during the future period.

Q. WHAT HISTORICAL TIME PERIOD WAS UTILIZED TO DEVELOP THE COMPANY'S PREDICTIVE EQUATION?

A. Equitable utilized January and February 2005 daily sendout, temperature and windspeed data to develop its predictive equation.

Q. DOES THE MODEL DEVELOPED BY EQUITABLE PROVIDE A REASONABLE ESTIMATE OF THE COMPANY'S DESIGN PEAK DAY SENDOUT?

A. No, it does not. As shown on Schedule JDM-2, I have utilized the Company's predictive equation to calculate projected total sendout for each day during the period January 2006 through February 2006 based on actual heating degree days and windspeed. As shown there, on all but one day during this 59-day period, the Company's model overestimated actual sendout. For the entire period, on average, the Company's model overestimated actual sendout by over 11 percent. If the Company's model produced reasonable estimates, it would be expected that the model would have both overestimated and underestimated actual sendout on a nearly equal number of days, and that on average, the difference between estimated and actual sendout would be near 0 percent. This is because arithmetically, under multiple regression analysis, the sum of the errors of the regression equation is zero. That is, the resulting regression equation reflects the line which minimizes forecast error. To do this, the sum of the errors must be zero.

Q. WHY DO YOU BELIEVE THAT THE COMPANY'S MODEL CONSISTENTLY OVERESTIMATES ACTUAL SENDOUT?

A. Gas prices during the winter of 2005-2006, like energy prices in general, were significantly higher than the prices that existed during the period utilized to develop the Company's model. In response to these high gas prices, Equitable's customers have reduced their demand for natural gas. It is anticipated that natural gas prices will remain high for the foreseeable future.

Q. HAVE YOU PREPARED AN ALTERNATIVE FORECAST OF EQUITABLE'S TOTAL SYSTEM DESIGN PEAK DAY SENDOUT?

A. Yes. I have prepared an alternative forecast of Equitable's total system design peak day sendout using the Company's model structure based on data from the period January through February 2006. The alternative forecast is presented on Schedule JDM-3. The alternative forecast estimates total system design peak day sendout to be 575,307 Dth, which is approximately 62,000 Dth less than the Company's projection. A portion of the decline in Equitable's design peak day sendout is attributable to reduced usage by general transportation customers for which Equitable does not secure capacity. As shown on Schedule JDM-4, I estimate that of the 62,000 Dth reduction to design peak day requirements, approximately 25,000 Dth is attributable to the reduced demands of general transportation customers. In addition, as previously indicated, Equitable had secured approximately 8,000 Dth less capacity to meet the requirements of the customers on whose behalf it secures capacity. Thus, Equitable currently secures approximately 30,000 Dth of capacity in excess of its customers design peak day requirements.

Q. WHAT COURSE OF ACTION DO YOU RECOMMEND EQUITABLE PURSUE?

A. Equitable just recently entered into 5-year contracts for capacity based on its overstated design peak day forecast. Equitable should have recognized that high gas prices could impact on its customers' requirements, and incorporated the potential for such in its contracting practices. It did not. Equitable should aggressively pursue the realignment of its interstate pipeline capacity portfolio to match the design peak day sendout requirements of its customers. This would include attempting to renegotiate its current contracts, releasing excess capacity and examining whether its proposed merger with Dominion Peoples will provide opportunities to shed capacity.

Q. HAVE YOU PREPARED A SCHEDULE QUANTIFYING THE IMPACT OF YOUR RECOMMENDATION?

A. No. At this time, the extent to which Equitable will be able to realign its capacity portfolio and any associated cost savings is uncertain, therefore, an adjustment to purchased gas costs is not warranted at this time.

## IV. FUEL RETENTION CHARGES

Q. WHAT ARE FUEL RETENTION CHARGES?

A. A portion of the gas delivered to an NGDC is lost or otherwise unaccounted-for ("LUFG"). In addition, a portion of the gas delivered to an NGDC is used in company operations. Currently, approximately 5.0 percent of deliveries to Equitable are either LUFG or used in company operations (collectively "losses"). That is, for example, if 1,000 Mcf is delivered to Equitable, only 9,500 Mcf is delivered to customers. For sales customers, LUFG and company-use gas is

recovered through PGC rates. For transportation customers, these losses are typically recovered through a fuel retention charge. That is, if the fuel retention charge is 5.0 percent, and if a transportation customer expects to consume 9,500 Mcf, it must deliver 1,000 Mcf to Equitable. The 500 Mcf difference would be retained by Equitable as compensation for LUFG and company use gas.

Q. HAS THE COMPANY HISTORICALLY DISCOUNTED ITS FUEL RETENTION CHARGE?

A. Yes. The discounting of fuel retention charges was addressed by the Commission in the Company's 2005 1307(f) proceeding (Docket No. R-00050272).

Q. WHAT DID THE COMMISSION FIND WITH RESPECT TO THE DISCOUNTING OF FUEL RETENTION CHARGES IN THE COMPANY'S 2005 1307(f) PROCEEDING?

A. The Commission found that Equitable was discounting fuel retention charges in response to competition from other Pennsylvania NGDCs, and that the costs associated with these discounts were being recovered from PGC customers. The Commission found that this was not a reasonable practice, and ruled that fuel retention charges could only be discounted under certain circumstances.

More specifically, the Commission determined that, effective October 1, 2006, a two pronged test must be administered in order to determine if it is reasonable to discount fuel retention charges. First, the individual customer must fall under at least one of the following circumstances:

1. A customer may obtain service through a direct bypass;
2. A customer receives service through facilities which do not incur the system average retainage percentage;

3. A competitive offer is received from a non-jurisdictional entity;

4. Economic development and job retention issues impact the rate paid by the customer;

5. A customer receives a bona fide competitive offer from an alternative energy source; or

6. Other instances in which a utility has properly exercised its discretion.

Second, the existing customer charges should also recover the marginal cost of delivering gas to ensure a contribution to fixed costs.

Q. WHAT IS THE COMPANY PROPOSING WITH RESPECT TO THE DISCOUNTING OF FUEL RETENTION CHARGES IN THIS PROCEEDING?

A. There are currently seven customers that Equitable offers discounts from the otherwise applicable 5 percent fuel retention charge. These customers are identified numerically on Equitable Exhibit JMQ-1. For Customer 1, effective October 1, 2006, this discount will no longer be offered. Therefore, there are six customers for whom the discounting of fuel retention charges remains an issue. For Customer 2, the Company claims that the actual level of losses from the pipeline facilities which serve this customer is 1.5 percent, and based on a fuel retention charge of 1.5 percent, Customer 2 will provide a contribution to fixed costs. Customers 3 and 4 provide a contribution to fixed costs at the otherwise applicable 5 percent fuel retention charge. Customers 5 and 6 also provide a contribution to fixed costs based on the 5 percent fuel retention charge; however, none of the six circumstances which the Commission required to offer a fuel retention charge discount apply to Customers 5 and 6. Customers 5 and 6 receive a fuel retention charge discount as a result of competition with another Pennsylvania NGDC. The Company contends that Customer 7 receives service

through dedicated facilities served directly by an interstate pipeline, and that no fuel retention charge should be assessed to this customer.

With respect to the fuel retention charge discounts currently provided to Customers 5 and 6, if the Commission denies recovery of the costs associated with the discount, the Company is requesting that the Commission issue an order declaring that the contracts with these customers are illegal and unenforceable and order Equitable to immediately begin negotiation with these customers to obtain a fuel retention charge consistent with the Commission's policy.

Q. DOES THE COMPANY'S ANALYSIS SUPPORT A FINDING THAT THE DISCOUNTS OFFERED TO THE REMAINING SIX CUSTOMERS SATISFY THE COMMISSION'S REQUIREMENTS AS SET FORTH IN THE COMMISSION'S ORDER AT DOCKET NO. R-00050272?

A. For Customers 1-4 and 7, the Company's analysis appears to support a finding that the discounts satisfy the requirements set forth by the Commission in Docket No. R-00050272. However, as discussed below, there are several modifications to the discounting of fuel retention charges and the recovery of the associated costs that should be adopted. First, the fuel retention charge included in the analysis of whether a customer provides a contribution to fixed costs should be increased to 7.9 percent. Second, the costs associated with fuel retention charge discounts should be recovered from all customers, not just PGC sales customers. Finally, standards should be adopted with respect to the discounting of retainage charges and base rates.

Q. WHY SHOULD EQUITABLE UTILIZE A FUEL RETENTION CHARGE OF 7.9 PERCENT IN ITS ANALYSIS OF WHETHER A CUSTOMER PROVIDES A CONTRIBUTION TO FIXED COSTS?

A. Over the past three years, LUFG has averaged 6.9 percent of total deliveries. Company use is approximately 1.0 percent of total deliveries. Since the fuel retention charge is intended to recover the costs associated with LUFG and company-use, the fuel retention charge utilized in the Company's analysis should be increased to 7.9 percent.

Q. WHY SHOULD THE COSTS ASSOCIATED WITH FUEL RETENTION CHARGE DISCOUNTS NOT BE RECOVERED SOLELY FROM PGC CUSTOMERS?

A. Approximately 50 percent of the Company's throughput is transportation service. Since all gas is subject to being lost and otherwise unaccounted for, and since all services are supported by company operations that also utilize gas, there is no basis to limit the recovery of fuel retention charge discounts to only PGC customers.

Q. HOW COULD FUEL RETENTION CHARGE DISCOUNTS BE RECOVERED FROM TRANSPORTATION CUSTOMERS WHO DO NOT RECEIVE A DISCOUNT?

A. To recover fuel retention charge discounts from transportation customers who do not receive a discount, the fuel retention charge assessed to these customers should be increased to recover a *pro rata* share of the discounts. This would be accomplished by raising the generally applicable retainage charge to 10 percent (Schedule JDM-5). This recommended fuel retention charge reflects Equitable's recent loss experience of 7.9 percent and a *pro rata* allocation of discounts. If the retainage charge is not increased, transportation customers would continue to be assessed a retainage charge of 5 percent, while PGC customers would effectively pay a retainage charge of nearly 13 percent (Schedule JDM-5). This

disparity would occur because in addition to paying for retainage on a system average basis, PGC customers would also be paying for all of the fuel retention charges not collected from transportation customers.

Q. WHAT IS YOUR CONCERN WITH RESPECT TO THE ABILITY OF EQUITABLE TO DISCOUNT BOTH BASE RATES AND FUEL RETENTION CHARGES?

A. By granting discounts to fuel retention charges, Equitable is able to increase the recovery of base rate margins from the transportation customers to whom discounts are granted. The cost of these fuel retention discounts would then be automatically recovered from other customers through the operation of the PGC mechanism. These discounts may be substantial, especially as gas costs have increased. It is unreasonable to leave to Equitable's discretion the extent to which fuel retention charge discounts should be granted to select customers in competitive situations, while offering Equitable the ability to automatically collect these discounts through its PGC rates. Standards should be established with respect to the discounting of base rates and fuel retention charges.

Q. WHAT STANDARDS DO YOU RECOMMEND?

A. I recommend that Equitable not discount fuel retention charges to a transportation customer by a greater percentage than it has discounted the applicable base rate charges.

Q. ARE YOU PROPOSING AN ADJUSTMENT TO PGC RATES TO REFLECT THE ADOPTION OF YOUR RECOMMENDATIONS CONCERNING FUEL RETENTION CHARGES AND DISCOUNTS?

A. No. The PGC rates projected in the Company's filing generally assume that the same retainage charge assessed to transportation customers will be applicable

to PGC customers. As just explained, Equitable is proposing to recover fuel retention charge discounts solely from PGC customers, and the fuel retention charge currently assessed to other non-discounted transportation customers (5 percent) is less than the Company's recent loss experience (7.9 percent). As a result, PGC customers will effectively pay a higher fuel retention charge than transportation customers. This higher charge is not reflected in the Company's PGC rate projections. The cost consequences of the higher fuel retention charge to PGC customers will not be realized until actual gas costs and gas cost recoveries are reconciled. Therefore, I am not proposing an adjustment to PGC rates to reflect my recommendations concerning retainage charges. However, I have prepared Schedule JDM-5 to show the impact of adopting my recommendations on the gas costs of PGC customers during the reconciliation of actual gas costs and recoveries. As shown here, my recommendations would decrease the gas costs of PGC customers by approximately $9.0 million.

## V. CARRYING COSTS ON GAS IN STORAGE INVENTORY

Q. WHAT IS EQUITABLE PROPOSING IN THIS PROCEEDING WITH RESPECT TO CARRYING COSTS ON GAS IN STORAGE INVENTORY?

A. The costs associated with purchasing gas supplies that are injected into storage during the summer are initially paid for by the Company. During the winter, when those gas supplies are withdrawn, the Company is reimbursed by PGC customers for the cost of the gas injected into storage. The Company is responsible for the carrying charges associated with the gas in storage inventory. As explained in greater detail in the testimony of Equitable witness Stephen C. Rafferty, there are times when the cost of purchasing gas may be less expensive

than the cost of gas in storage inventory. Under such circumstances, the Company claims that it may be beneficial to PGC customers to defer the withdrawal of gas from storage. The Company is proposing that if such circumstances are presented, that it be able to include as a purchased gas cost the carrying charges associated with the deferred storage withdrawals.

Q. SHOULD EQUITABLE'S PROPOSAL CONCERNING THE CARRYING CHARGES ON DEFERRED STORAGE WITHDRAWALS BE ADOPTED?

A. No, Equitable's proposal should be rejected. The recovery of carrying charges on gas in storage inventory is provided for in an NGDC's base rates. Equitable's current base rates currently include an allowance for the recovery of storage inventory carrying charges. Since its last base rate case in 1996, Equitable has experienced cost increases as well as cost decreases which affect the level of base rate margins it is able to realize. The Company's desire to selectively adjust one element of base rates while ignoring other items which may have increased base rate margins constitutes single issue ratemaking and should be rejected. In addition, the Company's proposal is vague and incomplete, containing no details as to how carrying charges on deferred withdrawals will be determined.

## VI. HEDGING PROGRAM

Q. DOES EQUITABLE CURRENTLY HAVE A FORMAL HEDGING PROGRAM?

A. No. However, the Commission's Order in last year's 1307(f) proceeding at Docket No. R-00050272 directed the Company to prepare and submit a formal

hedging program. The Company's proposed hedging program is included as Attachment B to the testimony of witness Rafferty.

Q. BRIEFLY DESCRIBE SOME OF THE SALIENT FEATURES OF EQUITABLE'S PROPOSED HEDGING PROGRAM.

A. Equitable is proposing to hedge between 25 and 50 percent of its projected summer monthly purchases and 10 to 20 percent of its monthly winter purchases. Equitable will use NYMEX futures contracts and fixed priced physical purchases to hedge its gas supplies. Generally, purchases will be hedged 4 to 18 months prior to delivery. Equitable met with stakeholders to explain its hedging plan proposal and to answer questions.

Q. SHOULD EQUITABLE BE GIVEN APPROVAL TO PROCEED WITH ITS HEDGING PROGRAM?

A. Yes. Equitable's proposed hedging program appears reasonable.

## VII. EXCHANGE REVENUES

Q. BRIEFLY DESCRIBE EXCHANGE TRANSACTIONS.

A. There are two primary types of exchange transactions -- parks and loans. Under a park transaction, an NGDC accepts the delivery of gas from a third-party during a particular period, typically over a month, and returns the gas to the third-party at a later point in time. Under a loan transaction, an NGDC delivers gas to a third-party during a particular period, and the gas is returned by the third-party at a later point in time. NGDCs are compensated by third-parties for performing these transactions.

Q. COULD YOU IDENTIFY IN GREATER DETAIL THE COMPANY'S REVIEW PERIOD EXCHANGE TRANSACTIONS?

A. Yes. Equitable engaged in three park transactions during the period subject to review in this proceeding. Shown below are the salient features of each transaction.

| Summary of Review Period Exchange Park Activity | | | | |
|---|---|---|---|---|
| No. | Delivery to Company | Returned by Company | Monthly Quantity | Total Fee |
| 1 | April 2005 | December 2005 | 200,000 | $150,000 |
| 2 | May 2005 | November 2005 | 300,000 | 165,000 |
| 3 | July 2005 | December 2005 | 155,000 | 155,000 |
| **Total** | | | | **$470,000** |

Q. HOW ARE THE REVENUES GENERATED BY THESE EXCHANGE TRANSACTIONS TREATED?

A. Exchange transaction revenues are shared 75 percent to PGC customers and the Company retains 25 percent.

Q. DID EQUITABLE'S EXCHANGE TRANSACTIONS HAVE AN ADVERSE IMPACT ON PGC CUSTOMERS?

A. Yes. When Equitable accepts the delivery of gas under an exchange transaction, that gas is either injected into storage or is used by Equitable to meet current customer requirements. When the gas is returned, Equitable must either withdraw additional gas from storage or purchase additional gas supplies. Under the identified exchange transactions, the price of gas was significantly less when gas was delivered to Equitable than when Equitable returned the gas. This adversely affected PGC customers as the following example demonstrates.

Under exchange transaction one, Equitable accepted the delivery of gas in April 2005, when the market price of gas was $7.323 per Dth, and returned that gas in November 2005 when the market price of gas was $11.180 per Dth. In

order to return this gas, Equitable would have been required to purchase more $11.180 per Dth gas than it would have absent the obligation to return the gas. The gas returned in November 2005 may have been withdrawn from storage, but the withdrawn gas could have permitted Equitable to defer the purchase of $11.180 per Dth gas. Either way, the exchange transaction caused Equitable to purchase additional gas at $11.180 per Dth. In essence, Equitable accepted gas worth $7.323 per Dth and paid it back with $11.180 per Dth gas, with PGC customers responsible for the cost difference.

Q. IS THE REVEALED FUTURE MARKET PRICE OF GAS AT THE TIME EQUITABLE AGREED TO THESE EXCHANGE TRANSACTIONS A RELEVANT CONSIDERATION?

A. No. By agreeing to these exchange transactions as it did, all of the risk that gas prices would be higher when gas was returned was placed on PGC customers. Equitable bore none of the risk. This is unreasonable. Equitable could have engaged in financial transactions which would have reduced this risk for PGC customers, but it elected not to do so.

Q. WHAT WAS THE ADVERSE IMPACT OF EQUITABLE'S EXCHANGE ACTIVITIES ON PGC CUSTOMERS?

A. As shown on Schedule JDM-6, the adverse impact of these transactions on PGC customers was increased costs of $3,548,200, and PGC rates should be adjusted accordingly.

Q. HAS THE COMMISSION PREVIOUSLY FOUND THAT EQUITABLE'S EXCHANGE TRANSACTIONS ADVERSELY AFFECTED PGC CUSTOMERS?

A. Yes. In the Company's 2005 1307(f) proceeding at Docket No. R-00050272, the Commission found that Equitable's exchange activities adversely affected PGC customers and ordered the Company to compensate PGC customers for the adverse impact.

## VIII. VIRGINIA POWER ENERGY MARKETING STORAGE MANAGEMENT ARRANGEMENT

Q. PLEASE DESCRIBE THE STORAGE MANAGEMENT ARRANGEMENT PROPOSAL EQUITABLE RECEIVED FROM VIRGINIA POWER ENERGY MARKETING ("VPEM").

A. On December 10, 2004, Equitable received a proposal from VPEM for storage management services. Under that proposal, effective December 1, 2005 through March 31, 2007, Equitable would release 1,750,000 Dth of its seasonal DTI storage capacity and 35,000 Dth per day of related daily storage transportation capacity. VPEM would then deliver gas from DTI storage during the winter at predetermined daily quantities. These daily quantities ranged from 9,695 Dth to 15,062 Dth. In the summer, VPEM would refill the DTI storage and charge Equitable DTI index prices for this gas. In return, VPEM agreed to pay Equitable $2.6 million over the term of the arrangement. Equitable initially accepted VPEM's storage management services proposal. Equitable had a similar arrangement with VPEM during the 2004 PGC period.

Under the proposed arrangement with VPEM, Equitable was to be paid $1.3 million in June 2005, and the remaining payment was to be made after the December 1, 2005 effective date. At the time of the proposal, Equitable had in place an incentive mechanism which would have entitled the Company to fully

retain the initial June 2005 payment of $1.3 million. The remaining payment would have been shared with PGC customers.

Q. DID VPEM BEGIN PROVIDING STORAGE MANAGEMENT SERVICES TO EQUITABLE ON DECEMBER 1, 2005?

A. No. In last year's 1307(f) proceeding, the OCA argued that this arrangement with VPEM created additional risk of higher gas costs for PGC customers. Because of this increased risk, the OCA argued that the $2.6 million fee to be realized under the arrangement should be fully credited to PGC customers. In his Recommended Decision ("RD"), the ALJ agreed with the OCA that the VPEM arrangement placed additional risks upon PGC customers and recommended that the VPEM payment be fully credited to PGC costs. In response to the ALJ's RD, Equitable made a decision to rescind the VPEM storage services arrangement. The parties and the Commission did not learn of Equitable's decision to rescind the VPEM agreement until Equitable filed Exceptions in that proceeding. In the Commission's September 28, 2005 Order, the Commission granted Equitable's exception in part and found that it was within Equitable's managerial discretion to cancel the VPEM agreement and, therefore, there was no longer an issue surrounding disposition of the VPEM storage services fee. However, the Commission's September 28, 2005 Order expressly made no finding whether Equitable's rescission of the VPEM agreement was consistent with least cost procurement principles and stated that the issue could be raised in Equitable's 2006 1307(f) proceeding. Equitable filed a Petition for Reconsideration seeking reconsideration of the Commission's determination that the decision to rescind the VPEM agreement could be reviewed in Equitable's 1307(f) proceeding. In its Order on Reconsideration entered February 27, 2006,

the Commission granted Equitable's request for reconsideration and held that the decision to rescind the VPEM contract was within Equitable's managerial discretion and that there was no longer any issue remaining for review in the 2006 1307(f) proceeding. The OCA has appealed this Order, and one of the issues pending in that appeal is whether the Commonwealth Court should remand to the Commission the issue of whether Equitable's decision to rescind the contract should be subject to review in this year's 1307(f) proceeding.

Q. WHAT IS YOUR CONCERN WITH EQUITABLE'S DECISION NOT TO PROCEED WITH THE VPEM ARRANGEMENT?

A. Least cost gas procurement principles should have determined whether to proceed under the VPEM storage services arrangement. That is, if the payments from VPEM to Equitable represented a reasonable payment for incurring the additional risk posed by the VPEM agreement, Equitable should have proceeded with the arrangement.

Q. DID EQUITABLE PERFORM ANY SORT OF ANALYSIS TO DETERMINE THE IMPACT OF THE VPEM ARRANGEMENT ON PGC CUSTOMERS BEFORE DECLINING THE PROPOSAL?

A. No.

Q. WHAT DO YOU RECOMMEND?

A. I recommend that Equitable make a demonstration that its decision not to proceed under the VPEM arrangement was consistent with least cost gas procurement. If Equitable cannot do so, I recommend that PGC customers be credited with the benefit that would have accrued under the VPEM arrangement.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

| | | |
|---|---|---|
| PENNSYLVANIA PUBLIC UTILITY COMMISSION | ) | |
| v. | ) | DOCKET NO. R-00061295 |
| EQUITABLE GAS COMPANY | ) | |

SCHEDULES ACCOMPANYING THE

DIRECT TESTIMONY

OF

JEROME D. MIERZWA

ON BEHALF OF THE

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

MAY 2006

Schedule JDM-1

# EQUITABLE GAS COMPANY

Summary of OCA Adjustments to 2006 PGC Rate
(Mcf)

| Company Projection | Amount | Source |
|---|---|---|
| Adjusted Cost of Gas | $273,622,391 | Item 53.64(a), Section I, Part A, Sheet 1 |
| **OCA Adjustments** | | |
| Exchange Transactions | ($3,548,220) | Schedule JDM-6 |
| OCA Adjusted Cost of Gas | $270,074,171 | |
| Projected Sales | 24,249,100 | Item 53.64(a), Section I, Part A, Sheet 1 |
| OCA 2006 PGC Rate | $11.14 | |
| Company 2006 PGC Rate | $11.28 | Item 53.64(a), Section I, Part A, Sheet 1 |
| OCA 2006 PGC Rate Adjustment | ($0.14) | |

Schedule JDM-2

**EQUITABLE GAS COMPANY**

Comparison of Actual and Projected Sendout Utilizing Company Model
(Dth)

| | January 2006 | | | | February 2006 | | |
|---|---|---|---|---|---|---|---|
| Day | Actual | Projected | Difference | Day | Actual | Projected | Difference |
| 1 | 195,397 | 246,061 | 50,664 | 1 | 225,579 | 245,850 | 20,271 |
| 2 | 194,377 | 213,906 | 19,529 | 2 | 163,208 | 181,915 | 18,707 |
| 3 | 200,957 | 230,369 | 29,412 | 3 | 193,045 | 237,677 | 44,632 |
| 4 | 178,219 | 205,406 | 27,187 | 4 | 215,643 | 228,756 | 13,113 |
| 5 | 261,378 | 293,393 | 32,015 | 5 | 311,762 | 331,967 | 20,205 |
| 6 | 333,980 | 357,585 | 23,605 | 6 | 295,587 | 324,776 | 29,189 |
| 7 | 294,148 | 309,856 | 15,708 | 7 | 308,091 | 349,879 | 41,788 |
| 8 | 188,322 | 189,340 | 1,018 | 8 | 330,091 | 374,165 | 44,074 |
| 9 | 185,712 | 204,821 | 19,109 | 9 | 324,675 | 365,805 | 41,130 |
| 10 | 162,702 | 206,107 | 43,405 | 10 | 285,347 | 318,356 | 33,009 |
| 11 | 161,135 | 172,737 | 11,602 | 11 | 281,701 | 325,921 | 44,220 |
| 12 | 165,051 | 173,508 | 8,457 | 12 | 327,337 | 373,534 | 46,197 |
| 13 | 116,491 | 149,386 | 32,895 | 13 | 314,960 | 332,926 | 17,966 |
| 14 | 315,989 | 323,514 | 7,525 | 14 | 214,867 | 236,953 | 22,086 |
| 15 | 297,129 | 342,080 | 44,951 | 15 | 142,823 | 149,059 | 6,236 |
| 16 | 244,024 | 262,336 | 18,312 | 16 | 123,956 | 148,989 | 25,033 |
| 17 | 204,459 | 220,537 | 16,078 | 17 | 271,565 | 356,042 | 84,477 |
| 18 | 320,777 | 300,210 | (20,567) | 18 | 420,517 | 477,703 | 57,186 |
| 19 | 171,881 | 197,116 | 25,235 | 19 | 364,563 | 422,478 | 57,915 |
| 20 | 117,371 | 124,938 | 7,567 | 20 | 296,048 | 341,987 | 45,939 |
| 21 | 244,440 | 253,299 | 8,859 | 21 | 269,905 | 293,673 | 23,768 |
| 22 | 222,483 | 261,939 | 39,456 | 22 | 209,534 | 246,224 | 36,690 |
| 23 | 262,504 | 294,398 | 31,894 | 23 | 225,510 | 268,336 | 42,826 |
| 24 | 266,417 | 276,626 | 10,209 | 24 | 244,831 | 269,715 | 24,884 |
| 25 | 341,130 | 348,384 | 7,254 | 25 | 257,103 | 268,149 | 11,046 |
| 26 | 365,871 | 366,132 | 261 | 26 | 343,070 | 389,763 | 46,693 |
| 27 | 252,946 | 278,425 | 25,479 | 27 | 320,627 | 373,978 | 53,351 |
| 28 | 175,237 | 181,798 | 6,561 | 28 | 268,934 | 334,071 | 65,137 |
| 29 | 160,417 | 164,681 | 4,264 | | | | |
| 30 | 171,024 | 213,509 | 42,485 | | | | |
| 31 | 268,422 | 293,556 | 25,134 | | | | |
| Subtotal | 7,040,390 | 7,655,951 | 615,561 | | 7,550,879 | 8,568,647 | 1,017,768 |
| | | | 8.7% | | | | 13.5% |
| TOTAL | | | | | 14,591,269 | 16,224,598 | 1,633,329 |
| | | | | | | | 11.2% |

**EQUITABLE GAS COMPANY**

Estimate of Design Peak Day Sendout
Based on Sendout from January - February 2006
(Dth)

Dependent Variable: Dth
Method: Least Squares
Sample(adjusted): 1/02/2006 2/28/2006
Included observations: 58 after adjusting endpoints
Convergence achieved after 7 iterations

| Variable | Coefficient | Standard Error | t-Statistic | Probability |
|---|---|---|---|---|
| Constant | 26,158.44 | 9,075.80 | 2.88 | 0.0057 |
| Heating Degree Days | 6,997.79 | 258.28 | 27.09 | 0.0000 |
| Average Wind Speed | 1,538.87 | 686.88 | 2.24 | 0.0292 |
| AR(1) | 0.17 | 0.15 | 1.18 | 0.2425 |

| | | | |
|---|---|---|---|
| R-squared | 0.9540 | Mean dependent var | 248,204.7000 |
| Adjusted R-squared | 0.9515 | S.D. dependent var | 70,711.3000 |
| S.E. of regression | 15,573.5700 | Akaike info criterion | 22.2110 |
| Sum squared resid | 13,100,000,000.0000 | Schwarz criterion | 22.3531 |
| Log likelihood | (640.1193) | F-statistic | 373.7012 |
| Durbin-Watson stat | 1.9374 | Prob(F-statistic) | 0.0000 |

Inverted AR Roots 0.1700

| Projected Design Day Sendout: | | |
|---|---|---|
| Constant | | 26,158 |
| Heating Degree Days | 75 | 524,834 |
| Wind | 15.8 | 24,314 |
| Total | | 575,307 |
| Company Forecast | | 637,308 |
| OCA Adjustment | | (62,001) |

Schedule JDM-4

**EQUITABLE GAS COMPANY**

Calculation of Excess Capacity
(Dth)

| | | |
|---|---|---|
| OCA Adjustment to Desigh Peak Day Forecast | | (62,001) |
| Excess Capacity in Current Portfolio | | (8,000) |
| Projected Transportation Requirements | | |
| 2005 (Exhibit JSN-3) | 193,879 | |
| 2006 | 169,422 | |
| Change in Design Day Transportation Requirements | | (24,457) |
| Adjustment to Capacity Requirements | | (29,544) |

**EQUITABLE GAS COMPANY**

Estimated Impact of Retainage Recommendations on PGC Customers
(Mcf)

| Line No. | | | | Source/Calculation |
|---|---|---|---|---|
| 1 | Projected 2006 PGC Period Volumes | | | |
| 2 | | | | |
| 3 | PGC Sales | | 24,249,100 | OCA-I-2 |
| 4 | Transportation | | 22,333,591 | OCA-I-2 |
| 5 | | | | |
| 6 | Total | | 46,582,691 | Lines 3 + 4 |
| 7 | | | | |
| 8 | Fuel Charge Discounted Volumes | | 7,499,641 | OCA-II-16, less Customer 1 |
| 9 | | | | |
| 10 | Total Non-Fuel Discounted Volumes | | 39,083,050 | Line 6 - Line 8 |
| 11 | Total Transportation Non-Fuel Discounted Volumes | | 14,833,950 | Line 4 - 9 |
| 12 | | | | |
| 13 | Actual Loss Experience | 7.90% | | OCA Statement No. 1 |
| 14 | | | | |
| 15 | Required Retainage | | 3,995,692 | (Line 6/(1 - Line 13) - Line 6 |
| 16 | | | | |
| 17 | Retainage from Discounted Volumes | | 109,734 | OCA-II-16 |
| 18 | | | | |
| 19 | Additional Retainage to be Recovered | | 3,885,958 | Line 15 - 17 |
| 20 | | | | |
| 21 | Retainage as a Percent of Non-Discounted Volumes | 9.94% | | Line 19 / Line 10 |
| 22 | | | | |
| 23 | Current Retainage Charge | 5.00% | | Per Tariff |
| 24 | | | | |
| 25 | Required Increase in Retainage Charge | 4.94% | | Line 21 - 23 |
| 26 | | | | |
| 27 | Retainage Collected from Transportation Customers at Existing Charge | | 780,734 | (Line 11/(1 - Line 23) - Line 11 |
| 28 | | | | |
| 29 | Retainage from Transportation Customers at Sytem Average | | 1,637,752 | (Line 11/(1 - Line 21) - Line 11 |
| 30 | | | | |
| 31 | Overcollection of Retainage from PGC Customers | | 857,018 | Line 29 - 27 |
| 32 | | | | |
| 33 | Cost of Gas | | $10.5400 | Item 53.64(a), Section I, Part A, Sheet 1 |
| 34 | | | | |
| 35 | Cost Impact on PGC Customers | | $9,032,967 | Line 31 x 33 |
| 36 | | | | |
| 37 | Effective Retainage Charge to PGC Customers | | 12.8% | (Line 19 - 27)/ Line 15 |

Schedule JDM-6

## EQUITABLE GAS COMPANY

Adjustment to the PGC Rates to Remove the
Adverse Impact of Exchange Activities
(Dth)

| | Delivery to Equitable | | Delivery to Shipper | | | Market Price | |
|---|---|---|---|---|---|---|---|
| Transaction | Month | Market Price | Month | Market Price | Quantity | Difference | Adjustment |
| 1 | April 2005 | $7.323 | December 2005 | $11.180 | 200,000 | $3.857 | $771,400 |
| 2 | May 2005 | $6.748 | November 2005 | $13.832 | 300,000 | $7.084 | $2,125,200 |
| 3 | July 2005 | $6.976 | December 2005 | $11.180 | 155,000 | $4.204 | $651,620 |
| Total | | | | | | | $3,548,220 |

ORIGINAL

OCA Statement No. 1-S

JUN 16 2006 klg TK

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

| | | |
|---|---|---|
| PENNSYLVANIA PUBLIC UTILITY COMMISSION | ) | |
| v. | ) | DOCKET NO. R-0061295 |
| EQUITABLE GAS COMPANY | ) | |



# SURREBUTTAL TESTIMONY

OF



JEROME D. MIERZWA



ON BEHALF OF THE

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

JUNE 2006

EXETER
ASSOCIATES, INC.
5565 Sterrett Place
Suite 310
Columbia, Maryland 21044

SURREBUTTAL TESTIMONY OF JEROME D. MIERZWA

## I. Introduction

Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jerome D. Mierzwa. I am a principal and Vice President with Exeter Associates, Inc. My business address is 5565 Sterrett Place, Suite 310, Columbia, Maryland 21044. Exeter specializes in providing public utility-related consulting services.

Q. HAVE YOU PREVIOUSLY PRESENTED TESTIMONY IN THIS PROCEEDING?

A. Yes. My prepared direct testimony was presented as OCA Statement No. 1.

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A. The purpose of my surrebuttal testimony is to respond to those portions of the rebuttal testimony of Equitable's witnesses Jeffrey S. Nehr, John M. Quinn and Stephen C. Rafferty that address my direct testimony.

## II. Witness Jeffrey S. Nehr

**Issue: Design Day Analysis**

Q. WITNESS NEHR CRITICIZES THE DESIGN DAY STUDY PRESENTED IN YOUR DIRECT TESTIMONY AND PRESENTS AN ALTERNATIVE DESIGN DAY STUDY UTILIZING BOTH 2005 AND 2006 HISTORICAL DATA. THE ALTERNATIVE STUDY INDICATES THAT THE COMPANY'S DESIGN DAY REQUIREMENTS AND CAPACITY ENTITLEMENTS ARE IN BALANCE. WHAT IS YOUR RESPONSE?

A. At this time I cannot completely respond to witness Nehr's criticisms and the alternative study because I cannot validate the results of witness Nehr's alternative study. I will respond further to witness Nehr upon the receipt and analysis of the data utilized by witness Nehr. This data has been requested through discovery.

Q. IS IT UNDERSTANDABLE THAT WITNESS NEHR HAS ELECTED TO ABANDON THE DESIGN DAY STUDY PRESENTED IN HIS DIRECT TESTIMONY?

A. Yes. The design day study presented in witness Nehr's initial testimony was flawed and simply not defendable. This initial study concluded that customer usage decreased as wind speed increased. This is inconsistent with rational relationships and thus witness Nehr's initial study should be given no consideration.

Q. WITNESS NEHR CLAIMS THAT YOU DID NOT QUANTIFY YOUR FORECAST THAT NATURAL GAS PRICES WOULD REMAIN HIGH. WHAT IS YOUR RESPONSE?

A. It is unnecessary for me to independently prepare a forecast of natural gas prices. Market prices for natural gas in the future are currently listed on the New York Merchantile Exchange ("NYMEX"). NYMEX prices are widely used as a natural gas price benchmark. As shown on Schedule JDM-7 attached, natural gas prices are expected to remain high for the foreseeable future.

Q. WITNESS NEHR CLAIMS THAT THE LACK OF SNOW FALL OR SNOW COVER CAN REDUCE CUSTOMER USAGE. WHAT IS YOUR REPLY?

A. Snow cover can also reduce customer usage. For example, snow can increase reflective solar heat gain and can also serve to insulate homes and other structures.

## III. Witness John M. Quinn

**Issue: PBR Design No. 1**

Q. THE COMPANY BELIEVES THAT IT IS ENTITLED TO RETAIN 100 PERCENT OF THE REVENUES GENERATED FROM TRANSACTIONS HISTORICALLY COVERED BY PBR DESIGN NO. 1 IF THE PBR DESIGN NO. 1 INCENTIVE MECHANISM EXPIRES. DOES THE OCA AGREE?

A. No. The transactions historically covered by PBR Design No. 1 include capacity release, off-system sales and exchange activities. Also included are asset management arrangements. Counsel advises me that if the PBR Design No. 1 incentive mechanism expires, the Company is not entitled to retain any of the revenues from these transactions. From a policy perspective, the Company's proposal is unreasonable. It would result in ratepayers paying all the costs incurred to support the program, while being totally excluded from any share of the benefits.

**Issue: Fuel Retention Discounts**

Q. WITNESS QUINN CLAIMS THAT YOU HAVE COMMITTED TWO ERRORS IN SCHEDULE JDM-5 WHICH DEVELOP THE FUEL RETENTION CHARGES APPLICABLE TO THE VARIOUS CUSTOMER CLASSES. PLEASE ADDRESS MR. QUINN'S FIRST CONCERN.

A. Witness Quinn claims that I have incorrectly calculated the fuel retention rate for all transportation throughput to be 7.9 percent. He claims that the appropriate fuel retention charge for transportation customers with temperature and pressure compensating meters should be 2.5 percent. Witness Quinn relies on witness Rafferty for the 2.5 percent charge. Witness Quinn then concludes that I have overstated the fuel retention charge applicable to PGC customers. Witness Quinn claims that the fuel retention charge assessed to PGC customers is 6.4 percent, not the 12.8 percent set forth on Schedule JDM-5.

Witness Rafferty's 2.5 percent fuel retention charge for customers with temperature and pressure compensating meters is based on an overall system lost and unaccounted-for gas ("LUFG") and company-use factor of 5 percent (collectively "losses"). Fuel retention charges should be set to recover experienced losses. As I explained in my direct testimony, the 5 percent figure is well below Equitable's actual loss experience. Thus, the 2.5 percent charge claimed by witness Quinn is inaccurate. I address witness Rafferty's fuel retention charge claims later in my surrebuttal testimony.

Witness Quinn's claim that the effective fuel retention charge assessed to PGC customers is 6.4 percent is based on a calculation which is flawed and illogical. As subsequently explain in greater detail, witness Quinn's proposed alternative calculation incorrectly assumes that losses will decline if certain customers are charged a lower fuel retention charge when, in fact, Equitable's loss experience is unaffected by the fuel retention charge assessed to individual customers. Fuel retention volumes are a physical measure, and that measurement does not affect losses. Therefore, witness Quinn's calculation is simply wrong.

As shown on Schedule JDM-5, based on actual experience, Equitable's losses are expected to be 3,995,692 Mcf.[1] Under witness Quinn's calculation losses are expected to be only 2,451,721 Mcf. Maintaining the fuel retention charge at 5 percent will not reduce Equitable's loss experience by 1,543,971 Mcf (3,995,692 Mcf minus 2,451,721 Mcf) as witness Quinn's calculation implies.

Q. WHAT ABOUT THE SECOND ERROR WITNESS QUINN CLAIMS IS INCLUDED ON SCHEDULE JDM-5?

A. Witness Quinn claims that the Company's projected commodity cost of gas, rather than its PGC rate, should be utilized to show the effect of my recommendations. The actual effect of my recommendations would be based on the actual commodity cost of gas experienced by Equitable during the 2006 PGC period. Thus, I will not dispute witness Quinn's claim to base my estimate of the impact of my recommendations on Equitable's projected commodity cost of gas rather than its PGC rate. Attached to my surrebuttal is a Revised Schedule JDM-5 which reflects Equitable's projected commodity cost of gas. Revised Schedule JDM-5 also contains other modifications which I explain in my response to witness Rafferty.

Q. WITNESS QUINN DISAGREES WITH YOUR PROPOSAL TO LIMIT FUEL RETENTION CHARGE DISCOUNTS TO THE PERCENTAGE DISCOUNT APPLIED TO BASE RATES CHARGES. WHAT IS YOUR RESPONSE?

A. It appears that witness Quinn believes that it is inappropriate for the Commission to refine any policy it has adopted. There are a number of reasons why witness Quinn's belief is wrong. The Commission should not have its hands tied and be

[1] In Revised Schedule JDM-5, I adjust this amount to 3,820,567 Mcf.

restricted from even considering additional policy related to an area of existing policy. Moreover, in my opinion, the Commission has not adopted a specific policy with respect to trade-offs between the discounting of base rates and fuel retention charges. Further, I would note that in T.W. Phillips Gas & Oil Company Docket No. R-00051134, the ALJ approved similar discounting procedures and a final order in that docket is pending before the Commission. Finally, no party to Equitable's 2005 1307(f) at Docket No. R-0050272 recommended that a net benefits test be adopted for the discounting of fuel retention charges. Thus, no party should be prohibited from adopting a position not raised in last year's proceeding.

## IV. Witness Stephen C. Rafferty

**Issue: Design Peak Day**

Q. WITNESS RAFFERTY CLAIMS THAT THE COMPANY'S CAPACITY SHORTFALL IS 22,792 DTH, NOT 8,000 DTH AS YOU CLAIM IN YOUR DIRECT TESTIMONY. DO YOU HAVE ANY COMMENTS?

A. Yes, the difference between the capacity amounts is 15,000 Dth, and relates to 15,000 Dth of Appalachian gas which Equitable has secured. This is recognized by witness Rafferty, and is clearly explained in my direct testimony. The difference has no impact on either of our positions. This is because in determining the amount of capacity which Equitable should shed, the 15,000 Dth of Appalachian gas is considered a capacity resource. Thus, this portion of witness Rafferty's rebuttal is of no consequence and does not impact my recommendation.

Q. AT PAGE 7, LINES 19-21 OF HIS REBUTTAL TESTIMONY, WITNESS RAFFERTY IN REFERENCING YOUR DIRECT TESTIMONY STATES, "IN LIEU OF THE STANDARD CAPACITY RELEASE TRANSACTIONS THE COMPANY COULD ATTEMPT TO NEGOTIATE RATES THAT ARE DISCOUNTED FROM THE PIPELINE'S MAXIMUM TARIFF RATES." IS THIS STATEMENT IN YOUR DIRECT TESTIMONY?

A. No, it is not.

Q. WITNESS RAFFERTY THEN RECOMMENDS THAT ANY DISCOUNTS ASSOCIATED WITH CAPACITY CONTRACTS WHICH THE COMPANY MAY BE ABLE TO REALIZE SHOULD BE CONSIDERED UNDER PBR DESIGN NO. 1. DO YOU HAVE ANY COMMENTS?

A. Yes. Witness Rafferty raises this proposal for the first time in his rebuttal testimony and the proposal should, therefore, be rejected. In addition, for all other NGDC's in Pennsylvania, the benefits from such discounts are flowed through to PGC customers. Similar treatment is warranted for any discounts realized by Equitable.

**Issue: Fuel Retention Discounts**

Q. WITNESS RAFFERTY IS UNCERTAIN AS TO HOW YOU DEVELOPED THE 7.9 PERCENT FIGURE TO BE USED IN THE NET BENEFITS TEST TO DETERMINE WHETHER A CUSTOMER PROVIDES A CONTRIBUTION TO FIXED COSTS. PLEASE RESPOND.

A. Witness Rafferty claims that he is not sure how I arrived at my 7.9 percent figure because supporting documents were not provided. This is surprising since the supporting documents were Company-supplied data responses and were

identified in the OCA's response to Company data request No. 11 (see Schedule JDM-8). Witness Rafferty is aware of this response. In Schedule SCR-1-R, witness Rafferty utilizes information from data request No. 11 to identify the Company's recent LUFG experience.

Q. WITNESS RAFFERTY CLAIMS THAT THE COMPANY'S RECENT LUFG EXPERIENCE IS 6.58 PERCENT, NOT THE 7.9 PERCENT WHICH YOU HAVE CLAIMED. WHAT IS YOUR RESPONSE?

A. I do not claim in my direct testimony that the Company's LUFG experience has been 7.9 percent. In my direct testimony I explain that the Company's fuel retention charges should be sufficient to recover LUFG and company-use gas. In my direct testimony, I collectively refer to LUFG and company-use gas as "losses". The 7.9 percent figure included in my direct testimony reflects the Company's recent LUFG experience of 6.9 percent plus company-use experience of 1.0 percent.

Q. WITNESS RAFFERTY CLAIMS THAT THE COMPANY'S LUFG EXPERIENCE HAS BEEN 6.58 PERCENT, NOT 6.9 PERCENT. PLEASE EXPLAIN THIS DIFFERENCE.

A. The 6.9 percent LUFG figure identified in my direct testimony is based on an average of the Company's actual annual LUFG experience recorded in 2003, 2004 and 2005 (See Schedule JDM-8). Witness Rafferty's 6.58 percent figure is based on actual experience for the same 3-year period. However, under witness Rafferty's calculation, LUFG for the entire 3-year period was divided by actual throughput for the entire 3-year period rather than calculating an LUFG percent for each year separately and then computing an average. I will accept witness

Rafferty's methodology and utilize 6.58 percent as the Company's recent LUFG experience.

Q. WITNESS RAFFERTY CLAIMS THAT EVEN THOUGH THE COMPANY'S RECENT LUFG EXPERIENCE HAS BEEN 6.58 PERCENT, 5 PERCENT SHOULD CONTINUE TO BE UTILIZED IN THE NET BENEFITS TEST. WHAT IS YOUR RESPONSE?

A. Witness Rafferty claims that customers with temperature and/or pressure compensating meters should not be held to the same contribution to LUFG as those customers without temperature and/or pressure compensating meters. As subsequently discussed, I will adjust my fuel retention recommendations to differentiate between these two categories of customers. In addition, as previously explained, company-use gas should be recovered through fuel retention charges. Witness Rafferty's recommendations completely ignore company-use gas.

Q. WHY SHOULD FUEL RETENTION CHARGES PROVIDE FOR THE RECOVERY OF A PORTION OF COMPANY-USE GAS?

A. The costs associated with gas used in company operations are not included in base rates. Unless company-use gas is reflected in the design of fuel retention charges, as I have done, all company-use gas would be recovered from PGC customers. As I explained in my direct testimony, this result, which is included in witness Rafferty's proposal, would be unreasonable.

Q. WITNESS RAFFERTY CLAIMS THAT LUFG RESPONSIBILITY FOR CUSTOMERS WITH TEMPERATURE AND/OR PRESSURE COMPENSATING METERS IS 2.5 PERCENT. DO YOU AGREE?

A. No. In a *Lost and Unaccounted for Gas Study* ("LUFG Study") prepared several years ago, the Company determined that the LUFG attributable to the lack of temperature and pressure compensating meters was 979,863 Mcf, which at the time represented 58 percent of total LUFG (See Schedule JDM-9, at pages 9 and 11). He thus concludes that the LUFG attributable to customers with temperature/pressure compensating meters is approximately one-half the current fuel retention charge of 5.0 percent. However, when the LUFG Study was prepared, Equitable's LUFG experience was only 3.4 percent. Even witness Rafferty acknowledges that Equitable's LUFG experience has increased significantly since that time (3.4 percent to 6.58 percent, which is a 94 percent increase). The LUFG amount associated with the lack of temperature and pressure compensating meters is relatively fixed, and may have actually declined since the LUFG Study was prepared. This is because Equitable is continually replacing non-temperature/pressure compensating meters with temperature/pressure compensating meters. Thus, the impact of temperature/pressure compensating meters on LUFG has likely declined.

Q. EARLIER YOU INDICATED THAT YOU WOULD MODIFY YOUR FUEL RETENTION CHARGE RECOMMENDATIONS TO ACCOUNT FOR THE LUFG ASSOCIATED WITH THE LACK OF TEMPERATURE/PRESSURE COMPENSATING METERS. PLEASE DISCUSS YOUR MODIFICATIONS.

A. The modifications to my fuel retention charge recommendations to reflect the LUFG associated with non-temperature/pressure compensating meters are presented on Revised Schedule JDM-5. There I attribute 979,863 Mcf of LUFG to the lack of temperature/pressure compensating meters, and assume that PGC

and residential transportation customers do not have temperature/pressure compensating meters. As shown on revised Schedule JDM-5, the fuel retention charge which should be assessed to commercial and industrial transportation (collectively "general transportation") customers is 6.53 percent, and the fuel retention charge applicable to PGC and residential transportation customers is 10.02 percent. Failure to increase the generally applicable fuel retention charge for general transportation customers to 6.53 percent would improperly result in the collection of approximately $1.767 million from PGC customers.

Q. WITNESS RAFFERTY CLAIMS THAT NONE OF THE PARTIES TO THIS PROCEEDING CHALLENGED THE COMPANY'S TESTIMONY THAT CUSTOMERS HAVING TEMPERATURE AND PRESSURE COMPENSATING METERS SHOULD NOT BE ASSESSED A FUEL RETENTION CHARGE OF 5.0 PERCENT. IS THIS ACCURATE?

A. No. In my direct testimony I recommended that the fuel retention charge assessed to non-fuel charge discounted transportation customers be increased to 10 percent. Customers with temperature/pressure compensating meters were certainly included in that group.

Q. THE COMPANY CLAIMS THAT FUEL RETENTION CHARGE DISCOUNTS ARE BEING RECOVERED FROM ALL CUSTOMERS AS YOU SUGGEST IN YOUR DIRECT TESTIMONY. IS THIS CORRECT?

A. No. Witness Rafferty's claim is based on his belief that customers with temperature and pressure compensating meters are paying a retention charge of 5.0 percent, when the appropriate fuel retention charge for these customers is 2.5 percent. As I just explained, the appropriate retention charge for such customers is 6.53 percent, not 2.5 percent.

Q. WITNESS RAFFERTY CLAIMS THAT DUE TO THE BENEFITS RECEIVED BY TRANSPORTATION CUSTOMERS FROM THE COMPANY'S NORTHERN ASSET OPTIMIZATION PROGRAM ("NAOP"), PGC CUSTOMERS SHOULD PAY A HIGHER FUEL RETENTION CHARGE THAN TRANSPORTATION CUSTOMERS. DO YOU HAVE ANY COMMENTS?

A. Yes. Both PGC and transportation customers benefit from Equitable's NAOP. In the response to OCA-I-59, witness Rafferty stated with respect to the NAOP:

> "*Transportation customers would receive the same benefits* that the PGC does. In other words, there is less reliance on the upstream interstate pipelines and there are variable transportation cost savings."

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS CONCERNING FUEL RETENTION CHARGES.

A. The fuel retention charge, which should be included in the Company's net benefits test and assessed to general transportation customers, is 6.53 percent. The fuel retention charge, which should be assessed to residential transportation customers, is 10.0 percent. Under these recommendations, the fuel retention charge effectively assessed to PGC customers would also be 10.0 percent.

**Issue: VPEM Storage Management Arrangement**

Q. IN YOUR DIRECT TESTIMONY YOU RECOMMENDED THAT PGC CUSTOMERS BE CREDITED WITH THE $2.6 MILLION FEE WHICH WOULD HAVE ACCRUED TO PGC CUSTOMERS IF EQUITABLE HAD NOT RESCINDED THE VPEM OFFER. WITNESS RAFFERTY DISAGREES WITH THIS RECOMMENDATION. WHAT IS YOUR RESPONSE?

A. Witness Rafferty claims that I have failed to provide any evidence that PGC customers were adversely impacted by the Company's decision to rescind the VPEM offer and, therefore, the Company's decision was consistent with least cost gas procurement. Counsel informs me that the burden of such a demonstration rests with the Company. Equitable has failed to meet its burden of proof on this issue.

Q. WITNESS RAFFERTY CLAIMS THAT YOUR RECOMMENDATION CONCERNING THE VPEM STORAGE MANAGEMENT ARRANGEMENT IS ANALYSIS BY HINDSIGHT. WHAT IS YOUR RESPONSE?

A. In last year's proceeding, it was my recommendation to fully credit the VPEM fee to PGC customers, with PGC customers being held responsible for any increase in purchased gas costs resulting from the Arrangement. I have not changed my position on this issue. Therefore, witness Rafferty's claim of hindsight analysis is misplaced.

Q. AFTER REVIEWING THE REBUTTAL TESTIMONY OF WITNESS RAFFERTY ON THE VPEM ARRANGEMENT, ARE YOU PROPOSING ANY MODIFICATIONS TO THE AMOUNT TO BE CREDITED TO PGC CUSTOMERS?

A. Yes. Witness Rafferty claims that PGC customers received a capacity release credit of $560,000 which would not have been received had the Company performed under the VPEM Arrangement. Thus, the $2.6 million credit to PGL customers would be reduced accordingly (see Schedule JDM-10). I accept witness Rafferty's refinement to my proposed $2.6 million credit.

**Issue: Time Differentiated Exchanges**

Q. WITNESS RAFFERTY CLAIMS THAT THE COMPANY'S PARK TRANSACTIONS HAD NO ADVERSE IMPACT ON PGC CUSTOMERS AS YOU CLAIM IN YOUR DIRECT TESTIMONY. WHAT IS THE BASIS FOR THIS POSITION?

A. Witness Rafferty claims that the gas delivered to it under the three park transactions was carried as an imbalance, or "stored," on the Equitrans system until it was returned to the counter parties. The Company claims it did not withdraw additional gas from storage or purchase additional gas to effectuate these transactions. In support of his claim, witness Rafferty identifies certain monthly imbalances that Equitable carried on Equitrans.

Q. DO YOU HAVE ANY INITIAL COMMENTS CONCERNING WITNESS RAFFERTY'S CLAIMS?

A. Yes, If Equitable was able to park third-party gas on the Equitrans system during the summer months and accept delivery of the parked gas during the winter for third parties, it should have engaged in such transactions for PGC customers, not third parties. Engaging in park transactions for PGC customers could have reduced Equitable's purchased gas costs. That is because Equitable could have purchased lower cost gas during the period April-July 2005, and "stored" that gas

on Equitrans until November and December 2005. Thus, during November and December 2005 when gas prices were much higher, Equitable could have taken delivery of the lower cost stored gas, thereby reducing Equitable's need to purchase higher cost gas during November and December 2005. Therefore, failure to perform such transactions for PGC customers is inconsistent with least cost gas procurement.

Q. BEYOND WHETHER EQUITABLE SHOULD HAVE PERFORMED PARK TRANSACTIONS FOR THE BENEFIT OF PGC CUSTOMERS, HAS WITNESS RAFFERTY ADEQUATELY DEMONSTRATED THAT THE PARK TRANSACTION GAS WAS CARRIED AS AN IMBALANCE ON EQUITRANS ?

A. No. Witness Rafferty's explanation and demonstration is incomplete, selective and misleading. The total quantity of gas associated with the park transactions was 655,000 Dth. Shown on Schedule JDM-11 are the monthly imbalances Equitable carried on Equitrans during the term of the park transactions. As shown there, by the time all of the park volumes were initially delivered to Equitable by the end of July 2005, the imbalances which Equitable carried on Equitrans exceeded the park volume quantity of 655,000 Dth. As further shown on Schedule JDM-11, it appears that the parked gas was carried on Equitrans until the end of September 2005. However, by the end of October 2005, Equitable's imbalance on Equitrans declined to only 83,314 Dth. Thus, Equitable could not have utilized the imbalance gas on Equitrans to return the parked gas in November and December 2005. The gas which was returned under the park transactions must have either been purchased during November and December 2005 or withdrawn from storage as I explained in my direct testimony.

Q. WITNESS RAFFERTY CLAIMS THAT THE NYMEX PRICES YOU UTILIZE IN DEVELOPING YOUR ADJUSTMENT HAVE NOTHING TO DO WITH THE PARK TRANSACTIONS. WHAT IS YOUR RESPONSE?

A. Witness Rafferty believes NYMEX prices have nothing to do with the park transactions because he claims that Equitable purchased no gas to effectuate these transactions. As just explained, this is wrong because these park transactions were supported by the purchase of additional gas supplies in November and December 2005.

I have used NYMEX prices as a proxy for the market price of gas at the time the gas was accepted by Equitable and returned by Equitable. NYMEX prices closely reflect the prices paid by Equitable for the gas it purchases. In last year's proceeding in which the Commission accepted a similar adjustment, NYMEX prices were utilized to calculate the amount of the adjustment.

Q. WITNESS RAFFERTY CLAIMS THAT EVEN IF HE ACCEPTS YOUR CLAIM CONCERNING THE SOURCE OF THE GAS RETURNED UNDER THE PARK TRANSACTIONS, YOU DID NOT TAKE INTO CONSIDERATION THE POSSIBILITY OF WITHDRAWING ADDITIONAL GAS FROM STORAGE. IS THIS CORRECT?

A. No. As I explained in my direct testimony, if the gas came from storage, it could have been used to serve PGC customers rather than effectuate the park transactions. This would have reduced the quantity of high cost gas the Company would have been required to purchase in November and December 2005. Thus, witness Rafferty's alternative calculation of the adverse impact of the park transactions, based on the assumption that the gas came from storage, is wrong and is without merit.

Q. WITNESS RAFFERTY CLAIMS THAT BECAUSE THE WEATHER EXPERIENCED IN ITS SERVICE TERRITORY WAS WARMER THAN NORMAL, THERE WAS A SURPLUS OF STORAGE WHICH COULD HAVE BEEN USED TO SUPPORT THE PARK TRANSACTIONS. WHAT IS YOUR RESPONSE?

A. Witness Rafferty's claim is hindsight analysis and is simply wrong and misleading. The gas under the park transactions was returned to third parties in November and December 2005. Together, November and December 2005 were colder than normal. It was not until January that the weather turned warmer - than-normal. Unless the Company had the ability to accurately predict the future, the Company could not have known the winter was going to be warmer than normal. As just explained, if the gas was withdrawn from storage to complete the park transactions, the withdrawn gas could have been used to serve PGC customers, and would have reduced the need to purchase high-cost gas on behalf of PGC customers.

Q. WITNESS RAFFERTY RECOMMENDS THAT THE FEE CREDITED TO PGC CUSTOMERS AS A RESULTS OF THE EXCHANGE TRANSACTIONS BE USED AS AN OFFSET TO THE AMOUNT OF YOUR PROPOSED DISALLOWANCE. SHOULD THE $470,000 FEE CREDITED TO PGC CUSTOMERS OFF-SET A PORTION OF YOUR RECOMMENDED DISALLOWANCE?

A. No. PGC customers are entitled to the fee under the PBR Design No. 1 sharing procedures. Those sharing procedures implicitly assume no adverse gas cost impact from the eligible transactions. Considering the fee credited to PGC customers would be inconsistent with the PBR Design No. 1 sharing procedures.

**Issue: Carrying Charges on Deferred Storage Withdrawals**

Q. IN HIS REBUTTAL TESTIMONY, WITNESS RAFFERTY PRESENTS A NUMERICAL EXAMPLE INDICATING HOW THE COMPANY'S PROPOSAL WOULD BE STRUCTURED. WHAT IS YOUR RESPONSE TO THE COMPANY'S EXAMPLE DEMONSTRATING THE OPERATION OF ITS PROPOSAL?

A. In my direct testimony, I recommended that the Company proposal to collect carrying charges on deferred storage withdrawals should be rejected because, among other things, the proposal was vague and incomplete, containing no details as to how carrying charges on deferred withdrawals will be determined. Witness Rafferty's Schedule SCR-4-R, which attempts to provide additional detail, reveals little insight into how the Company's proposal will operate. It does not explain of how deferred inventory balances will be determined. Equitable's proposal is ill-conceived and unexplained, and should be rejected. Attempting to provide additional detail during the rebuttal phase of this proceeding should not be permitted. Such detail should have been included in the Company's direct case.

Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY?

A. Yes, it does.

89263

OCA Statement No. 1-S

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

| | | |
|---|---|---|
| PENNSYLVANIA PUBLIC UTILITY COMMISSION | ) | |
| | ) | DOCKET NO. R-0061295 |
| EQUITABLE GAS COMPANY | ) | |

SCHEDULES TO THE

SURREBUTTAL TESTIMONY

OF

JEROME D. MIERZWA

ON BEHALF OF THE

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

Schedule JDM-1
Revised 6/13/2006

# EQUITABLE GAS COMPANY

Summary of OCA Adjustments to 2006 PGC Rate
(Mcf)

| Company Projection | Amount | Source |
|---|---|---|
| Adjusted Cost of Gas | $273,622,391 | Item 53.64(a), Section I, Part A, Sheet 1 |
| **OCA Adjustments** | | |
| Exchange Transactions | ($3,548,220) | Schedule JDM-6 |
| VPEM Arrangement | ($2,040,000) | Schedule JDM-10 |
| OCA Adjusted Cost of Gas | $268,034,171 | |
| Projected Sales | 24,249,100 | Item 53.64(a), Section I, Part A, Sheet 1 |
| OCA 2006 PGC Rate | $11.05 | |
| Company 2006 PGC Rate | $11.28 | Item 53.64(a), Section I, Part A, Sheet 1 |
| OCA 2006 PGC Rate Adjustment | ($0.23) | |

Schedule JDM-5
Revised 6/13/2006

**EQUITABLE GAS COMPANY**

Estimated Impact of Retainage Recommendations on PGC Customers
(Mcf)

| Line No. | | | | Source/Calculation |
|---|---|---|---|---|
| 1 | Projected 2006 PGC Period Volumes | | | |
| 2 | | | | |
| 3 | PGC Sales | | 24,249,100 | OCA-I-2 |
| 3a | Residential Transportation | | 2,884,532 | OCA-I-2 |
| 4 | General Transportation | | 19,449,059 | OCA-I-2 |
| 5 | | | | |
| 6 | Total | | 46,582,691 | Lines 3 + 4 |
| 7 | | | | |
| 8 | Fuel Charge Discounted Volumes | | 7,499,641 | OCA-II-16, less Customer 1 |
| 9 | | | | |
| 10 | Total Non-Fuel Discounted Volumes | | 39,083,050 | Line 6 - Line 8 |
| 11 | Total General Transportation Non-Fuel Discounted Volumes | | 11,949,418 | Line 4 - 9 |
| 12 | | | | |
| 13 | Actual Loss Experience | 7.58% | | OCA Statement No. 1 |
| 14 | | | | |
| 15 | Required Retainage | | 3,820,567 | (Line 6/(1 - Line 13) - Line 6 |
| 15a | | | | |
| 15b | Non-Temperature/Pressure Compensated LUFG | | (979,863) | |
| 15c | | | | |
| 15d | Retainage to be Collected from All Customers | | 2,840,704 | |
| 16 | | | | |
| 17 | Retainage from Discounted Volumes | | (109,734) | OCA-II-16 |
| 18 | | | | |
| 19 | Retainage to be Recovered from All Non-Discounted Customers | | 2,730,970 | Line 15 - 17 |
| 20 | | | | |
| 21 | Retainage to Recover Line 19 from Non-Discounted Volumes | 6.53% | | (Line 19 / Line 10) + Line 19 |
| 22 | | | | |
| 23 | Current Retainage Charge | 5.00% | | Per Tariff |
| 24 | | | | |
| 25 | Required Increase in Retainage Charge | 1.53% | | Line 21 - 23 |
| 26 | | | | |
| 27 | Retainage Collected from General Transportation Customers at Existing Charge | | 628,917 | (Line 11)/(1 - Line 23) - Line 11 |
| 28 | | | | |
| 29 | Retainage from General Transportation Customers at System Average | | 834,978 | (Line 11/(1 - Line 21) - Line 11 |
| 30 | | | | |
| 31 | Overcollection of Retainage from PGC Customers | | 206,062 | Line 29 - 27 |
| 32 | | | | |
| 33 | Cost of Gas | | $8.5760 | Exhibit JMQ-3 |
| 34 | | | | |
| 35 | Cost Impact on PGC Customers | | $1,767,184 | Line 31 x 33 |
| 36 | | | | |
| 37 | Effective Retainage Charge to PGC/Residential Transport Customers | | | |
| 37a | Retainage Assessed to All Non-Discounted Customers | | 6.53% | Line 21 |
| 37b | Non-Temperature/Pressure Meter LUFG | | 3.49% | (Line 15b/(Line 16 + 17 - 15b) |
| 37c | Total | | 10.02% | Line 37a + 37b |

Schedule JDM-7

**EQUITABLE GAS COMPANY**

Listed NYMEX Prices as of June 12, 2005
(Dth)

| Month | Price | Month | Price |
|---|---|---|---|
| July 2006 | $6.172 | April | $7.367 |
| August | 6.454 | May | 7.157 |
| September | 6.796 | June | 7.252 |
| October | 7.236 | July | 7.352 |
| November | 8.416 | August | 7.452 |
| December | 9.666 | September | 7.592 |
| January 2007 | 10.246 | October | 7.772 |
| February | 10.266 | November | 8.522 |
| March | 10.071 | December | 9.272 |
| April | 8.201 | January 2010 | 9.747 |
| May | 8.026 | February | 9.772 |
| June | 8.126 | March | 9.552 |
| July | 8.241 | April | 7.082 |
| August | 8.336 | May | 6.892 |
| September | 8.456 | June | 7.012 |
| October | 8.626 | July | 7.122 |
| November | 9.356 | August | 7.227 |
| December | 10.056 | September | 7.322 |
| January 2008 | 10.546 | October | 7.472 |
| February | 10.561 | November | 8.267 |
| March | 10.301 | December | 9.022 |
| April | 7.751 | January 2011 | 9.482 |
| May | 7.516 | February | 9.472 |
| June | 7.611 | March | 9.247 |
| July | 7.706 | April | 6.737 |
| August | 7.806 | May | 6.567 |
| September | 7.927 | June | 6.682 |
| October | 8.092 | July | 6.797 |
| November | 8.857 | August | 6.892 |
| December | 9.577 | September | 6.977 |
| January 2009 | 10.042 | October | 7.092 |
| February | 10.067 | November | 7.832 |
| March | 9.827 | December | 8.572 |

**PENNSYLVANIA PUBLIC UTILITY COMMISSION**
**v.**
**EQUITABLE GAS COMPANY**
**Docket No. R-00061295**

**Office of Consumer Advocate's Responses to**
**Equitable Gas Company's Interrogatories and Requests for Production of Documents**

11. Refer to page 15, lines 1-2 of OCA Witness Mierzwa's Direct Testimony. Provide copies of all workpapers, analysis, or studies relied upon supporting your statement that over the last three years LUFG has averaged 6.9 percent of total deliveries and company use is approximately 1.0 percent of total deliveries.

    a. Please explain whether your statement that Company use is approximately 1.0 percent of total deliveries is also based on a three-year average.

Response

Please see the responses to OCA-III-4 and OCA-I-31 which show LUFG experience for the last three years as follows:

| | LUFG |
|---|---|
| 2003 | 5.4% |
| 2004 | 6.8 |
| 2005 | 8.5 |
| **Average** | **6.9%** |

a. Please see the response to OCA-III-4 for the 1.0 percent company-use figure.

This reflects actual experience in 2005 (472,545/49,045,723).

Docket No. R-00061295
Item: OCA-II-35
Respondent: Stephen C. Rafferty
Position: Vice-President, Utility Asset Management

EQUITABLE GAS COMPANY
Response to Interrogatories of the
Office of Consumer Advocate

Item: OCA-II-35

Please provide all supporting calculations and workpapers for the Company's proposed 2.5 percent retainage factor.

Response:

Please reference page 11 of the attached Lost and Unaccounted for Gas Study ("LAUF Study"). The total unaccounted for gas during this study period was 1,676,144 Mcf. The amounts associated with temperature and pressure affects are 667,811 Mcf and 312,052 Mcf, respectively. Therefore, temperature and pressure combined represent approximately 50% of the total lost and unaccounted for gas [(667,811 + 312,052) ÷ 1,676,144 = 58.46%]. The Company's current total system lost and unaccounted for gas is approximately 5%. Therefore, 50% of 5% equals 2.5%.

# EQUITABLE GAS COMPANY

## PENNSYLVANIA DIVISION

### LOST AND UNACCOUNTED FOR GAS STUDY

PENNSYLVANIA UNACCOUNTED FOR GAS (UFG) STUDY REPORT

Table of Contents

## INTRODUCTION

Equitable Gas Company conducted a study to more accurately define and understand, the magnitude and causes of unaccounted-for-gas (UFG) in its Pennsylvania Distribution Operations. Establishing the UFG level for a year's operation is necessary because it is an operating expense considered yearly when the Company files its annual 1307(f) gas cost proceedings. In order to determine the level of UFG over a twelve month period covering the annual cost adjustment period, this study will identify the specific factors contributing to the losses and then determine the UFG volumes associated with each factor. This report will also provide a solid foundation for making recommendations to reduce or more accurately measure UFG. Equitable recognizes the fact that determining or accounting for UFG, and allocating the respective volumes to all the different causes identified, is generally not an easy task. UFG has been an industry concern for many years and this is no exception to Equitable Gas Company.

## DEFINITION OF UFG

UFG is generally defined as the difference between the measured gas volume received into the distribution system and the measured gas volume that is recorded as deliveries. More specifically, Intelligence Press, Inc. defines UFG in their "Natural Gas and Electricity Glossary" as follows:

> "The difference between the total gas available from all sources and the total gas accounted for as sales, nat interchange and company use. This difference includes leakage or other actual losses, discrepancies due to meter inaccuracies, variations of temperature and/or pressure, and other variants, particularly billing lag."

The UFG level can be either a positive number, which would indicate that more gas was purchased than sold, or it can be a negative number, which would indicate the opposite ,i.e., more gas was sold than purchased. In either situation it is important to identify the causes that contributed to the UFG level and eliminate or reduce them. The reasons this is necessary are economics and public safety. Leakage, gas theft and third party damage contribute to UFG and can affect the safety of the customers. Economically, UFG represents gas that was purchased but not sold or delivered thereby indicating lost revenues.

There are basically two types of unaccounted for gas:

- Operational
- Accounting

Operational UFG occurs because of the operational practices of purchasing, transporting and selling gas. Some of the factors that contribute to operational UFG are; measurement inaccuracies, leakage, temperature and pressure compensation, theft, third party damage, etc.

Accounting UFG results from transferring the actual information into data and later compiling it into various reports. Some of the factors that contribute to accounting UFG are; manual data entries, chart integration, etc.

Individually or together, operational UFG and accounting UFG comprise the total UFG volume for a natural gas distribution or transmission system. These various factors are described in detail throughout this report.

## WHY PERFORM A UFG STUDY?

One of the recommendations contained in the Company's most recent management audit performed pursuant to Section 516 of the Public Utility Code, is to undertake a thorough program to determine and alleviate the specific causes of lost and unaccounted for gas. The Company's implementation plan that was filed in response to the management audit calls for this UFG study to be completed by December 31, 1997.

The study will determine and alleviate, where applicable, the specific causes of lost and unaccounted for gas. The study will identify the components of UFG, with particular emphasis on leakage in the distribution system. Although UFG is inevitable, knowing the quantity and the sources is critical to complying with regulations and developing rate structures.

Typically, unaccounted for gas expenses are recovered in the Annual Purchased Gas Cost Filings (1307(f). In the filing Equitable forecasts the quantity of UFG volumes for the upcoming projected period. Using a forecast, and a projected cost of gas, Equitable develops a total annual projected expense (in dollars) which includes the cost associated with UFG.

Equitable chose the ACA period October 1996 to September 1997, as the test year for quantifying an annual UFG volume for the following reasons:

a. It coincides with the period new rates go into effect ,i.e., October 1 of each year, thereby making it easier to adjust rates on an annual basis, if necessary.

b. Data used will represent the most current information available and will be more representative of the current distribution system efficiency as opposed to historical experience.

## STUDY APPROACH AND METHODOLOGIES

The objective of the study was to identify and quantify, with some degree of certainty, the various sources of Unaccounted For Gas (UFG) in Equitable's Pennsylvania distribution system for a twelve-month period ending September 30 1997 (the ACA period) . The selected period (October 1996 through September 1997) spans both winter and summer seasons thereby guaranteeing:

(1). that the study approach captures the reality of our accounting procedures, and,

(2). a thorough examination, at a minimal cost, and within a reasonable time frame, the major operational factors that contribute to UFG.

These operational factors were grouped into four major components.

- accounting methodologies
- gas leakage
- measurement inaccuracies, and
- gas theft

The allocation criteria for all of the factors identified was based on valid historical experience, industry-wide accepted theoretical review and sound statistical analysis. For instance, when considering measurement inaccuracies, Boyle's Law states that the volume of a gas is inversely proportional to the absolute pressure of the gas while Charle's Law states that the amount of change in either the pressure or volume of a gas is directly proportional to the changes in the absolute temperature of that gas. In calculating the temperature and pressure effects on UFG ,therefore, these well known and accepted facts will be recognized. Furthermore, since we are dealing with non-ideal gas under non-ideal situations, all applicable formulae used in calculating UFG levels, will have correction factors where necessary. These factors will compensate for the effect of an individual meter's operating environment as it relates to temperature, pressure, elevation, and gas quality.

Equitable records gas on both volumetric (Mcf), and energy or heat content basis (Dth). Equitable conducted this study on a volumetric basis to eliminate any difficulties with converting between volumetric measurements and energy values. This approach will also present a common measurement platform for all contributing factors. Furthermore, adjustments were reconciled to minimize, if not totally eliminate, the effects of accounting estimates and prior period adjustments.

The study quantifies overall system UFG level experienced over the study period by subtracting deliveries metered out of Equitable's distribution system from the volume metered into Equitable's distribution system. These results will be compared to the UFG levels

obtained for a twelve-month rolling average beginning in June 1996 up to and including September 1997. This approach is designed to demonstrate the dynamic nature of UFG. Also, It is important to choose a period that minimizes the effect of abnormal weather conditions. By choosing the period October 1996 through September 1997 the objective of ending the study during light load conditions is achieved. This minimizes the effect of billing cycle adjustments and assures that weather conditions have a minimal impact.

An additional objective of this study was to isolate sections of the distribution system with the intent to target areas with high UFG rates and then control activities within that section to reduce the UFG level. The entire Pennsylvania distribution system was manually investigated for segments that are; fed by custody meters between Equitable Gas Company and Equitrans L. P., and are naturally isolated so that comparing physical deliveries with metered consumption volumes, is achievable without any major equipment expenditure. Basically these segments are dead-end systems which are supplied by one or two delivery meters. This analysis identified 28 segments that had these characteristics. The metered consumption volumes from each end user associated with these segments were downloaded over a couple of months and compared to physical deliveries from each of the segment's city gate delivery custody meters. The UFG level observed from these 28 segments were then extrapolated to overall system UFG. The 28 naturally occurring, isolated segments presents a zero-cost solution because equipment currently in service can be utilized.

While a greater number of isolated systems would be desirable, the looped configuration of the urban and suburban distribution system, makes the installation of sub-meters economically in-feasible. The download from these segments, which covers a geographically diverse area, represents consumption data for about 4,000 customers, most of which are residential.

## DESCRIPTION OF SYSTEM

Equitable's Pennsylvania Distribution System consists of approximately 3,081 miles of pipe including 479 miles of 2" dia. or less, 1,405 miles between 2" dia. and 4" dia., 906 miles between 4" dia. and 8" dia., 186 miles between 8" dia. and 12" dia., and 205 miles over 12" dia. The system covers 4,225 square miles and delivers gas to approximately 253,715 customers in the Southwestern Pennsylvania counties of Allegheny, Armstrong, Butler, Green, Indiana, Washington, and Westmoreland.

Gas supply to the system is delivered from pipeline interconnects with Equitrans and by Pennsylvania Appalachian Wells feeding directly into the system. Equitable Gas does not own storage facilities but utilizes upstream pipeline storage.

Equitrans' interstate transmission system delivers supply from the Southwest via Tennessee Gas Pipeline at the Bradford Woods interconnect and from Texas Eastern Pipeline at the Delmont, Morris, and Pratt interconnects. Kentucky Appalachian production is delivered into the Equitrans system at the Waynesburg and Fallen Timber interconnects. West Virginia and Pennsylvania Appalachian production is delivered directly into Equitrans from various production field systems. Equitrans Gas Control Department utilizes a Pandata SCADA system to monitor Equitable's daily gas demand and provide a safe and reliable supply which is delivered through 113 custody meters into the distribution system. These meters include 40 with flow computers which are on-line with the SCADA system, 64 with electronic gauges correcting for temperature and pressure as the gas flows, and 9 miscellaneous meters corrected for pressure. These meters are tested no less than annually to verify accuracy and reliability.

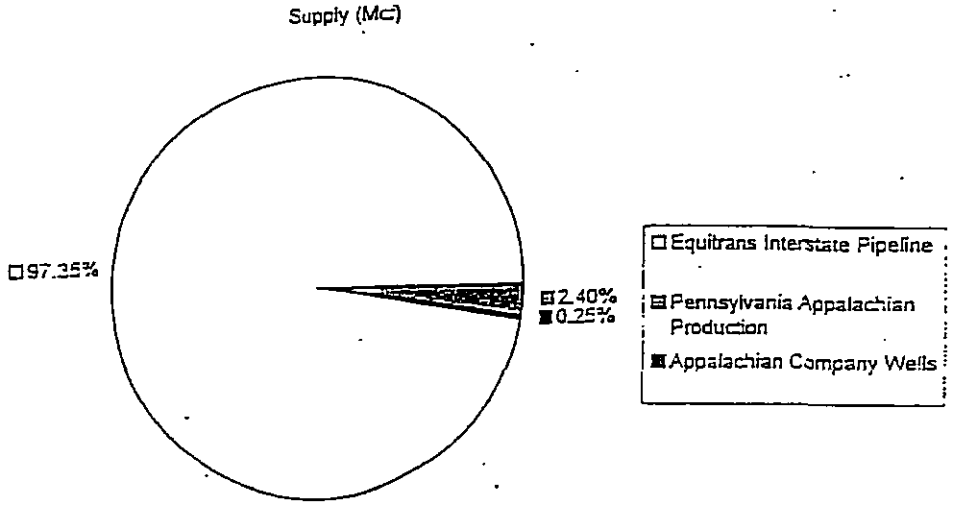
Equitable Gas has 83 meters measuring Pennsylvania Appalachian production directly into the distribution system. This measurement is reported monthly with gauges that are corrected for pressure.

Equitable Gas has 49 company owned Pennsylvania Appalachian wells feeding directly into the distribution system.

The following schedule reflects the various deliveries by source of supply for October 1996 through September 1997:

| Supply Description | Mcf. | % of Total |
|---|---|---|
| Equitrans Interstate Pipeline | 47,918,725 | 97.35% |
| Pennsylvania Appalachian Production | 1,181,947 | 2.40% |
| Appalachian Company Wells | 123,657 | .25% |
| Total | 49,224,329 | 100.00% |

See Attachment 1 which reports the various points of deliveries (POIs) into Equitable's distribution system and Attachment 2 which is an Equitable system map.


Supply (Mcf)
97.35%
2.40%
0.25%
Equitrans Interstate Pipeline
Pennsylvania Appalachian Production
Appalachian Company Wells

## STUDY RESULTS SUMMARY

The UFG study period of October 1996 through September 1997 was selected to represent the current ACA period. The following details the UFG calculation for this specific study.

| | | |
|---|---|---|
| Total Supply | 49,224,329 | Mcf |
| Accrued Throughput | 47,548,185 | Mcf |
| Unaccounted for Gas | 1,676,144 | Mcf |
| UFG Percentage | 3.4 % | |

Additionally, UFG levels have been calculated based upon 12 month rolling periods beginning in June 1996 and ending in September 1997. The results from this analysis reflect a range of UFG between 3.3 and 3.6 percent.

## ACCOUNTING RESULTS SUMMARY

Accounting components can bias the reported gas receipt of delivery volumes and thus contribute to the overall UFG level. Adjustments were made from the following accounting elements to either the total supply volumes or the accrued throughput volumes to reflect the correct UFG volume for this study period.

- Recorded gas purchases were approximately 20,134 Mcf higher than the metered deliveries.
- Industrial and commercial sales reflected the actual delivered volumes of these customer classes during this study.
- Exchange gas totaled 10,201 Mcf. 8,161 Mcf belongs to a third party and was subtracted from the total supply volume. 2,040 Mcf belongs to the Company and was added to the total supply volume.
- Third party transport gas is included in the total supply volumes and also is included in the accrued throughput volumes.
- The volumes associated with the Company wells, many of which do not have meters, are included in the total supply volumes.
- An analysis of cycle billing resulted in an increase to the accrued throughput volumes of 41,981 Mcf.

The daily, normal operation of the distribution system requires the Company to use gas that is unmetered and/or unreported. Every attempt is made to record significant losses of gas, associated with these operations, to assist in the determination of appropriate UFG levels. Six (6) operations were analyzed to determine what portion of the total UFG volumes consisted of operational company gas usage. The volumes associated with these operations amounted to approximately 711 Mcf.

## LEAKAGE RESULTS SUMMARY

System leakage is a major contributor to unaccounted for gas. Although leakage surveys are conducted regularly within the distribution system, the exact number of outstanding leaks at any one time is difficult to determine. During this study period it was estimated that 623,384 Mcf of the total UFG volume can be attributed to leakage in the Pennsylvania distribution system.

Equitable has numerous programs designed to mitigate the effects of system leakage. Some of these programs include: the reduction of idle service lines, the renewal of service lines and mainlines and the abandonment of dual facilities.

## MEASUREMENT RESULTS SUMMARY

The meter's operational environment has a direct impact on the volume of gas that is actually registered by the meter. Several of the factors that affect the measurement of the gas include; temperature effects, pressure effects, meter inaccuracies including the effects of fast and slow meters, gas quality and elevation differences.

- Temperature effects contributed approximately 667,811 Mcf to the UFG volume.
- Pressure effects contributed approximately 312,052 Mcf to the UFG volume.

Meter inaccuracies can occur from several things, including dirt and debris in the gas stream, distillates, etc. As the meter becomes worn it may have a tendency to register fast or slow. The analysis of fast and slow meters indicated that an effect of 40,866 Mcf can be attributed to fast meters within the distribution system. This result will decrease the total UFG volume by an identical amount, i.e., the volumes registered on the meters were actually higher than what the meter physically passed.

## THEFT RESULTS SUMMARY

Theft occurs when someone tampers with a meter or its piping in such a way that the volume registered is less than the actual gas usage, or, when someone illegally restores their service and uses metered gas without Company permission. Regardless of the method used to steal gas, theft contributes to the Company's unaccounted for gas volume.

Investigations of potential theft activity are initiated by internal audit controls, company employees, law enforcement personnel, and third party hot line tips. Investigations are performed by a dedicated full-time staff of employees, including field investigators, and an Investigation Coordinator. Training sessions are conducted annually with both law enforcement and company employees to reinforce theft detection techniques in the field.

During this study period it was determined that approximately 12,976 Mcf was the result of theft.

The following table summarizes the breakdown of the UFG volumes for this study:

| Description | Mcf |
|---|---|
| Total Unaccounted for Gas | 1,676,144 |
| Operational Company Gas Usage | (711) |
| Effect of Fast and Slow Meters | 40,866 |
| Leakage | (623,384) |
| Temperature | (667,811) |
| Pressure | (312,052) |
| Theft | (12,976) |
| Unexplained/Other UFG | 100,076 |

## ACCOUNTING RESULTS

Inherent in UFG are accounting components that bias the reported gas receipt of delivery volumes and thus contribute to the overall UFG. Depending on the size and complexity of a company's system, this accounting data may not truly indicate what is actually received into the system and what is delivered out of the system during a specified time period. Accounting adjustments are necessary and are a routine function to correct for estimates made at end-of-period closings and for other errors that may occur as a result of manual entries. These adjustments are recorded in the period of discovery and prior period numbers are usually not revised. This exercise causes records to reflect volume corrections for prior periods that have no relation to the actual operating conditions that occurred during the specific period of study. It is important to recognize these factors when analyzing a specific period to determine the appropriate UFG level. These factors may

include; the cycle billing adjustments, recorded gas purchases, industrial and commercial sales, exchange gas and third party transport gas. Other activities where gas usage is not billed and affect UFG levels include unmetered and/or unreported operational company gas usage. All of these elements are described in detail below.

- Recorded Gas Purchases

  Recorded gas purchases are utilized to calculate Accounting UFG. These purchases, however, may include adjustments to prior periods. Each month estimates are recorded to calculate that months total gas purchases. The following month, adjustments are made to the previous months estimates to accurately reflect the purchased volumes. The goal of this analysis is to make any necessary adjustments to the gas purchases for the period October 1996 through September 1997 to reflect actual purchases and compare this Accounting UFG to the measured Operational UFG.

  Over a long period of time these adjustments, due to averaging, are less influenced by current short-term fluctuations. Multiyear averages would therefore represent actual gas metered into and out of the system and represent a UFG level indicative of the operating UFG. However, when analyzing a specific period this type of analysis can be deceiving. The Company determined, as a result of the above analysis, that the study period recorded purchases were approximately 20,134 Mcf higher than the metered deliveries during this period. This analysis revealed that the actual gas purchases were extremely close to the metered deliveries and would have an insignificant effect on the total UFG. The Company has concluded that using the actual metered deliveries as opposed to the gas purchases recorded during the study period would result in a UFG level that was more accurate and precise.

- Industrial and Commercial Sales

  Monthly usage is estimated at times by the Billing Department for any industrial or commercial customer whose meter read is not received in time for the monthly recording of throughput. This estimate of consumption is "trued-up" to actual once the meter read volume is received by the Billing Department. This "true-up" typically occurs the following month.

  Any adjustments that may have occurred during October 1996 that were for September 1996 consumption should be removed from the throughput associated with the industrial and commercial sales classes for October 1996. Similarly, any adjustments that occurred in October 1997 that were associated with consumption during September 1997 should be added to the throughput associated with the industrial and commercial sales classes for that period.

During this study period there were no incidences of estimated reads for the industrial or large commercial sales classes. All meters associated with these groups were read as scheduled. The small commercial customers were not analyzed since any variance between the actual read and the estimated read would have an insignificant effect on the total UFG for this period.

- Exchange Gas

Exchange gas is gas which is received from one party in exchange for gas delivered to that party, usually at another location and often in a displacement arrangement. Equitable currently has one such agreement whereby Equitable receives gas on behalf of a customer and delivers that same volume to that customer at another location. If the volume received on behalf of that customer is not exchanged during the same month then UFG levels can be distorted.

During the study period it was determined that a total exchange volume of 10,201 Mcf was delivered into the distribution system. 8,161 Mcf belongs to a third party and was deducted from the total system supply. The difference of 2,040 Mcf was added to the total system supply and included in the calculations to determine the UFG volume for the study period.

- Third Party Transport Gas

As previously mentioned, the final Pennsylvania PUC Order in Equitable's 1997 1307(f) proceedings stipulates that system-wide UFG level should be retained on all throughput, regardless of class. UFG can be calculated in two ways. The first method is to exclude all the end user transport gas from the total volumes received into the system and also from the total volumes delivered out of the system. This method would determine the UFG level associated with only retail sales classes. This UFG level can be distorted and misleading however, if appropriate UFG level is not assigned to the transport class. The second method is to include the transport volumes in the total volumes received into the system and the total volumes delivered out of the system. This method which determines a system-wide UFG, is the method utilized by the Company in this study. First of all, it complies with the Commissions ruling and secondly, it indicates more accurate UFG levels.

- Company Wells

Equitable Gas currently owns forty-nine (49) gas wells, which feed directly into the Pennsylvania distribution system. Only five (5) of these wells are equipped with meters, which measure the delivery volume. For the remaining unmetered wells, delivery volume is estimated monthly using the Minute Rise Test method. The Minute Rise

Test (see attachment 3) calculates deliverability by comparing the field line pressure (with gas flowing) to the increase in pressure inside the well casing immediately after the well has been shut-in for a specified time period/interval. This method has been used in the natural gas industry for over 60 years. Since this is only a scientific estimate, measurement error will be inherent in delivery volumes calculated with this method. Additional inaccuracies are introduced by uncalibrated gauges, and taking pressure readings at improper time intervals. An internal study was conducted back in 1979, which compared metered production to calculated production , and the results indicated that there was a difference of approximately two (2%) percent for the Pennsylvania wells. Any discrepancy between the estimated deliveries and the actual deliveries from these Company wells contributes directly to the UFG.

- Cycle Billing

Sales to most of Equitable's 253,715 customers are read and recorded on a billing cycle basis. Not all meters can be read on the last day of each month therefore, meters are separated into different routes or books and are read by the meter reader on approximately the same day each month. Each route or book refers to a separate billing cycle. Equitable currently has 21 billing cycles. Most large meters and all transport meters are read on a calendar month basis so their volumes are not considered in this analysis.

The billing cycle effect is the difference between sales on a calendar year basis and sales on a billing cycle basis. To illustrate the effect cycle billing can have on UFG, consider the following example: Volumes read from meters between the first of the month and the 15th of the month are reported and accounted for in that particular month. However, some of that consumption applies to the previous month. Because accounting records are prepared on a calendar month basis, consumption read on a cycle basis must be converted to obtain an approximate calendar month volume, referred to as the monthly accrued throughput. If in this particular example, the current month was extremely warm, representing lower usage, compared to the previous month then simply dividing the volume by the number of days would tend to overstate the current months consumption and understate the previous months consumption. The previous months understatement would have a positive impact, an increase, on the UFG level for that period. In summary, during periods when the gas load is increasing, e.g. the fall, gas purchases tend to be higher than the deliveries and UFG levels would be artificially high. Conversely, during periods when the gas load is decreasing, e.g. the spring, gas purchases tend to be lower than the deliveries and the corresponding UFG is artificially low or in some cases could be negative. (refer to schematic)

Equitable records sales volumes on an accrual basis. To assign the cycle billing volumes more accurately, the Company uses a computer-based unbilled revenue model to allocate. Based on daily temperatures and corresponding degree days, the variable and baseload component of the cycle billing monthly data is used to obtain the calendar month consumption. The sales volumes recorded each month would then represent sales made during the calendar month. Consequently, the UFG levels as determined based on the difference between recorded gas purchases and accrued throughput volumes are not subject to the significant distortions that would result when sales are recorded on as billed basis.

As a result of cycle billing, accrued throughput volumes must be estimated and differences between actual and estimated accrual sales volume will occur. This method subsequently produces inaccurate UFG levels. In order to determine the effect of such differences on the UFG level for this study period the Company re-estimated the original unbilled throughput volumes. This new estimate was based on the billed usage per degree day for the months of October 1996 and October 1997. The billed usage per degree day for October 1996 was used to re-estimate the unbilled volumes for September 1996. Once this was calculated the revised unbilled throughput for October 1996 could be determined. Similarly, the billed usage for October 1997 was utilized to recalculate the unbilled throughput volume for September 1997. This analysis resulted in an increase in the accrued throughput during the study period of 41,982 Mcf. This increase is included in the total accrued throughput volumes.

UNMETERED AND/OR UNREPORTED OPERATIONAL COMPANY GAS USAGE

The daily, normal operation of the distribution system requires Equitable to use gas that is unmetered and/or unreported. This gas was metered as a receipt into the system, but was not metered as a delivery. Therefore, the recorded delivery volumes are understated causing a positive contribution to UFG. Equitable identified seven specific operations which were considered to be contributors to the UFG level calculated during this study period. These six operations are; facility blow-down and purge gas, drip operations, pneumatic instrument usage, gas sampling and analysis equipment, pressure reduction on intermediate-pressure service line installations and relief valve operations. In all, the company gas usage during the study period is approximately 711 Mcf.

- Facility Blow-down and Purge Gas

Unmetered or unrecorded gas usage occurs during several operations which require gas volumes to be vented to the atmosphere. These operations include; new pipe installations ( including mainlines and service lines), mainline and service line renewals (excluding intermediate-pressure service line renewals which are discussed below), mainline and service line abandonments, meter or regulator changes (including meter bypasses), meter or regulator inspections and new meter or new regulator installations. The study period contribution to UFG from these combined sources is estimated to be 410 Mcf.

- Drip Operations

The Distribution Department maintains a composite list of all pipeline drip locations that are periodically checked to ensure gas is capable of flowing without any restrictions. If blockage is detected the pipeline is purged to remove any liquids and restore flow capabilities. When these locations are checked and liquids are purged, some unreported gas volume is also vented. The contribution to UFG from this source is estimated to be 20 Mcf.

- Pneumatic Instrument Usage

The design of many of the instruments that are used in the distribution system to position and control valves, which ultimately control gas pressure and flow, require them to vent gas to the atmosphere. The volume of gas that is vented to the atmosphere from these instruments is considered company usage. The study period contribution of instrument usage is approximately 245 Mcf.

- Gas Sampling and Analysis Equipment

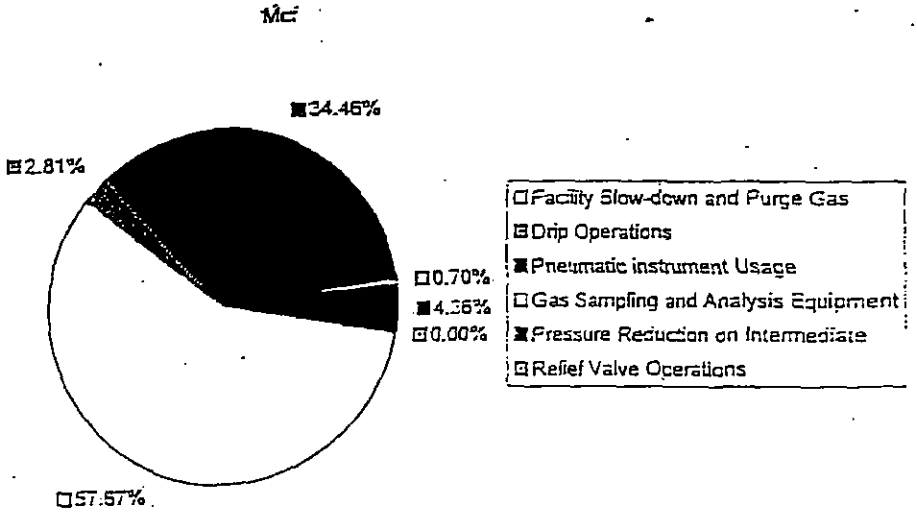
Gas is vented to atmosphere and also consumed in sampling and analyzing the physical properties of the gas, such as the Btu content or the specific gravity. This information is essential to determine the correct billing volumes and also to convert these volumes to dekatherms for billing purposes. These volumes are not metered and thus, they contribute directly to UFG. It is estimated that a volume of 5 Mcf was a result of gas sampling and analysis equipment used in operations.

- Pressure Reduction on Intermediate-pressure service line renewals

During intermediate-pressure and high-pressure service line renewals, it is the Company's policy to reduce the operating pressure from the normal operating level to a level of 5 psig or lower. This policy is adhered to for safety reasons. During the course of this reduction gas is vented to the atmosphere which is neither metered nor recorded. During the study period it is estimated that 31 Mcf was attributed to this element.

- Relief Valve Operations

Pressure relief valves are used to prevent pressures within gas facilities from exceeding allowable operating pressure limits. In the event the pressure would increase beyond the allowable operating pressure limit, the relief valves will open and vent the gas to the atmosphere. Again, this gas is unmetered and unreported. Annual maintenance inspections and testing of these facilities may result in additional unmetered and unreported gas usage. The contribution to the UFG level during the study period from this source was determined to be minimal.



# LEAKAGE

## Introduction:

System leakage is a major contributor to unaccounted for gas (UFG). Leakage is defined as unintentional escapes of gas from the inside of a pipe. Leakage in a gas distribution system can occur on a main line, service line, or at a joint or fitting. Leakage can occur as a result of; corrosion, third party damage, outside force (i.e. earth movements such as earthquakes, washouts, land slides, frosts, lightning etc.)

Leakage surveys are regularly conducted on Equitable's distribution system to detect and monitor system leakage. The volume of gas passing through a leak is dependent on the size of the leak and the operating pressure of the system where the leak occurs. The lost gas due to mainline leakage in the Pennsylvania distribution system was calculated to be 510,654 Mcf. The lost gas due to service line leakage was calculated to be 112,730 Mcf. The total leakage equals 623,384 Mcf.

The following factors are known to contribute to leakage in Equitable's Pennsylvania distribution system:

- Idle service lines
- Corrosion
- Joint leakage
- Third-party damage
- Dual mainline facilities
- Line pack
- Age of facilities
- Cracks, breaks
- Outside force
- Material defect
- Construction defect

The following is an ongoing list of programs that Equitable has established to reduce leakage on its entire distribution system. Statistical information relating to these activities are presented below:

1. Reduction of idle service lines

| Year | No. of Idle S/L Cut-offs |
|---|---|
| 1996 | 493 |
| 1995 | 680 |
| 1994 | 577 |
| 1993 | 621 |
| 1992 | 390 |
| 1991 | 872 |
| 1990 | 1,283 |
| 1989 | 1,214 |

2. Renewed service lines (main to curb)

| Year | Number Renewed |
|---|---|
| 1996 | 4,280 |
| 1995 | 4,892 |
| 1994 | 4,991 |
| 1993 | 5,576 |
| 1992 | 5,281 |
| 1991 | 5,078 |
| 1990 | 4,710 |
| 1989 | 4,776 |

3. Renewed main line

| Year | Footage Renewed |
|---|---|
| 1996 | 126,893 |
| 1995 | 186,361 |
| 1994 | 194,569 |
| 1993 | 252,148 |
| 1992 | 208,987 |
| 1991 | 201,928 |
| 1990 | 152,789 |

4. Plastic pipe installed

| Year | Miles of PE Pipe | Miles of Other Pipe (ST,CI,WI,CU) | Total Miles |
|---|---|---|---|
| 1996 | 831 | 2,250 | 3,081 |
| 1995 | 824 | 2,272 | 3,096 |
| 1994 | 811 | 2,292 | 3,103 |
| 1993 | 767 | 2,329 | 3,096 |
| 1992 | 702 | 2,377 | 3,079 |
| 1991 | 644 | 2,364 | 3,008 |
| 1990 | 605 | 2,385 | 2,990 |
| 1989 | 557 | 2,413 | 2,970 |

5. Coated pipe

| Year | Miles of Coated Pipe | Miles of Unprotected Coated Pipe | Miles of Pipe (Protected) |
|---|---|---|---|
| 1996 | 932 | 138 | 794 |
| 1995 | 956 | 130 | 826 |
| 1994 | 809 | 106 | 703 |
| 1993 | 860 | 115 | 745 |
| 1992 | 818 | 133 | 685 |
| 1991 | 793 | 133 | 685 |
| 1990 | 773 | 126 | 647 |
| 1989 | 766 | 126 | 640 |

6. Leaks reported/repaired

| Year | Number Reported | Number Repaired | Repaired | | |
|---|---|---|---|---|---|
| | | | Class 1 | Class 2 | Class 3 |
| 1996 | 6,611 | 3,415 | 589 | 2,672 | 154 |
| 1995 | 7,220 | 4,586 | 736 | 3,597 | 253 |
| 1994 | 8,831 | 5,148 | 865 | 4,007 | 276 |
| 1993 | 9,705 | 6,129 | 839 | 4,974 | 316 |
| 1992 | 9,033 | 5,536 | 640 | 4,688 | 208 |
| 1991 | 8,683 | 4,953 | 694 | 3,941 | 318 |
| 1990 | 7,641 | 4,463 | 579 | 3,712 | 154 |
| 1989 | 7,631 | 4,960 | 548 | 4,211 | 201 |

7. Leaks repaired from reportable/non reportable incidents

Main line:

| Cause | 1996 | 1995 | 1994 | 1993 | 1992 | 1991 | 1990 | 1989 |
|---|---|---|---|---|---|---|---|---|
| Corrosion | 1393 | 1723 | 2104 | 2431 | 2196 | 1945 | 1590 | 2548 |
| Third Party | 93 | 98 | 135 | 142 | 96 | 68 | 84 | 74 |
| Outside Force | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Const. Defect | 8 | 13 | 14 | 8 | 9 | 6 | 10 | 9 |
| Material Defect | 22 | 28 | 23 | 14 | 15 | 7 | 9 | 8 |
| Other | 72 | 97 | 96 | 114 | 193 | 108 | 38 | 86 |

Service line:

| Cause | 1996 | 1995 | 1994 | 1993 | 1992 | 1991 | 1990 | 1989 |
|---|---|---|---|---|---|---|---|---|
| Corrosion | 1461 | 1593 | 1864 | 2492 | 2316 | 2169 | 1813 | 2009 |
| Third Party | 164 | 202 | 291 | 282 | 176 | 180 | 147 | 87 |
| Outside Force | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Const. Defect | 21 | 22 | 21 | 10 | 7 | 7 | 6 | 10 |
| Material Defect | 33 | 26 | 17 | 27 | 29 | 15 | 17 | 23 |
| Other | 160 | 139 | 122 | 97 | 124 | 264 | 98 | 74 |

Outside contractors working near natural gas pipelines will inadvertently damage the pipe causing gas to escape to the atmosphere. The best way to prevent third party damage is through a "one-call" program. Equitable utilizes and actively participates in the Pennsylvania One-Call Program.

8. Main line replacement program

Equitable has an on-going main line replacement program using new plastic or cathodically protected pipes to reduce leakage on its distribution system. Refer to Attachments 4 and 5.

9. Cast iron pipe

Equitable has an on-going program to reduce cast iron pipe in its distribution system.

10. Service lines and house lines

Every service line and house line is tested before gas service is initiated or restored.

11. Leak surveys

Leak surveys are conducted regularly. Business districts are surveyed once every year while all other areas are surveyed once every three years.

12. Internal pipe camera

Equitable utilizes an internal pipeline inspection camera to detect leaks on its distribution system.

Calculation:

The flow rate for low pressure leaks was determined by a test conducted in 1989 by Equitable's Technical Service Group. A capped section of pipe with 33 leaks, operating at 12 inches w.c. was metered and determined to flow 1.2 Mcf/day. The annual flow rate per low pressure leak can then be calculated as follows:

(1.2 Mcf/day / 33 leaks) (365 days/year) = 13.27 Mcf / leak / year

The flow rate for high pressure leaks was derived by utilizing the same section pipe and performing a network analysis using the GASSS computer software from Stoner Associates, Inc. A flow rate of 8.973 Mcf/day is the result at an operating pressure of 15 psig. Similar to the above calculation, high pressure annual flow rate per leak is as follows:

(8.973 Mcf/day / 33 leaks) (365 days/year) = 99.25 Mcf / leak / year

A total of 9513 mainline leaks were identified based on the total number of leaks reported and the total number of leaks repaired during the 1994, 1995, and 1996 leakage survey of the entire system. Using the ratio to classify leaks on low pressure vs. leaks on high pressure, the following can be developed:

(9513 leaks) (0.53) = 5042 low pressure leaks
(9513 leaks) (0.47) = 4471 high pressure leaks

By applying 13.27 Mcf/leak/year and 99.25 Mcf/leak/year to the number of low pressure and high pressure leaks respectively, the following can be derived:

(5042 L.P. leaks) (13.27 Mcf/leak/year) = 66,907 Mcf
(4471 H.P. leaks) (99.25 Mcf/leak/year) = 443,747 Mcf

Therefore, the mainline system leakage can be calculated as 510,654 Mcf.

Approximately 2100 customer owned service lines were replaced for leakage between the period of October 1996 to September 1997. The leakage associated with these service lines is calculated as follows:

(2100 leaks) (0.53) = 1113 low pressure leaks
(2100 leaks) (0.47) = 987 high pressure leaks

By applying 13.27 Mcf/leak/year and 99.25 Mcf/leak/year to the number of low pressure and high pressure leaks respectively, the following can be derived:

(1113 L.P. leaks) (13.27 Mcf/leak/year) = 14,770 Mcf
( 987 H.P. leaks) (99.25 Mcf/leak/year) = 97,960 Mcf

Therefore, the service line leakage can be totaled as 112,730 Mcf.

The cumulative total attributed to leakage in the distribution system is 623,384 Mcf.

## MEASUREMENT RESULTS

The difference that occurs, as a result of the meter registering more or less gas than actually flowed, may contribute substantially to UFG. The meters operational environment has a direct impact on the volume of gas that is actually registered by the meter. Accurate measurement of the gas volume is a function of the meter and the factors used to adjust the meter read. Some of the factors that affect the measurement of the gas include; temperature, pressure, the operation of the meter (fast or slow), elevation, gas quality, etc. These factors are discussed in detail below.

## TEMPERATURE EFFECTS

For billing purposes, Equitable assumes that the fixed temperature of the gas is at a constant 60 degrees Fahrenheit. It should be noted that Equitable's residential and some small commercial meters are not temperature compensated. Since a positive displacement meter (any diaphragm or rotary meter) simply counts the number of times that a fixed volume is filled, any difference between the actual gas temperature and an assumed fixed temperature will cause an error in calculating the measured gas volumes. Furthermore, these classes of customers are generally heat-sensitive, and hence the majority of their consumption occurs during the heating season (November through March) when ambient and natural gas temperatures are at the lowest, and measurement inaccuracies are the highest. In other words, since lower

temperatures are characteristic of the high-load heating season, there is a tendency for meters to register low on an annual basis.

The reason that temperature so significantly affects the readings is that meters are calibrated to accurately register a standard cubic foot of gas at 60 degrees Fahrenheit, which is the base temperature established by American National Standard Z-132.1, issued in 1969. Variations from this 60 degrees Fahrenheit temperature will cause inaccuracies in measurement.

Gas contracts as temperatures decrease, and therefore less volume will be measured at temperatures below 60 degrees Fahrenheit. Conversely, higher volumes will be measured at temperatures above 60 degrees Fahrenheit. Charles' Law is the basic rule of physics that governs this temperature-volume relationship of gas and can be stated as follows:

$$T1 / T2 = V1 / V2$$

where: T1 = Absolute base temperature; T2 = Absolute flowing temperature
V1 = Volume at base conditions; V2 = Volume registered on meter
Note: the temperatures in degrees Fahrenheit must be converted to the Rankine scale by adding the degrees F to 460.

If for example, the meter is designed to measure the gas at 60 degrees F and the metering temperature is actually 40 degrees F and the meter has measured one cubic foot, the following would occur;

$$\frac{60 + 460}{40 + 460} = \frac{V1}{1 \text{ cubic foot}} \quad ; \quad \text{therefore,} \quad \frac{520}{500} = \frac{V1}{1 \text{ cubic foot}} \quad ;$$

so; $V1 = 1.04$ (1 cubic foot) ; $V1 = 1.04$ cubic feet

The result is for every cubic foot registered on the gas meter index, 4 % more or 1.04 cubic feet actually passed through the meter (when converted back to base conditions). In summary, if no correction factor was applied, the end user received 4% more gas than they would be billed for, which would result in a 4% UFG level.

Several studies conducted previously, including Pacific Gas and Electric Company, May 1990 and Southern California Gas Company, 1992, concluded that the gas temperature in residential or small meters tends to follow the ambient temperature. Equitable conducted an empirical study in its West Virginia Distribution System to determine what effect temperature compensation had on UFG. The study was conducted from July 1, 1996 through June 30, 1997. A consecutive twelve months' time period was selected to reflect measurements during a consecutive heating season and a non-heating season and in order to provide an accurate assessment

of both the positive and negative effects of temperature compensation on sales volumes.

Equitable installed a temperature compensated residential meter in series with a non-temperature compensated meter at twenty (20) locations in its service territory. These selected locations were representative of Equitable's customer base. The 20 sample locations encompassed a geographical area representing 72.46% of the customer base.

The 20 sample meters were read on a monthly basis. The temperature compensated meters were of the same general type as the non-temperature compensated meters in series, i.e., meter capacities were the same. Accuracy tests were also performed to ensure similarity between both meters.

After collecting the monthly meter readings from each of the sample locations, Equitable compared the compensated and non-compensated readings for each location. An error calculation was performed based upon the monthly total measurements for each location.

The results of this temperature study revealed that over the past eighteen months the average error has been about -0.20%. In other words, the volume that resulted from the temperature compensated meters was approximately 0.20% higher than what was calculated with Charle's Law.

Applying this methodology to the study period revealed that 667,811 Mcf was attributed to temperature effects.

PRESSURE EFFECTS

Equitable Gas assumes that the metered gas pressure is a constant 8 ounces or 0.5 psig. for those residential and small commercial customers who are served by district regulators on the low-pressure system. For those customer that are on an intermediate-pressure or high-pressure system, service regulators would be required. These service regulators are also set at a normal operating pressure of 0.5 psi. These regulators do not maintain a constant pressure at all flow rates. At times, the regulators are manually adjusted which would cause the pressure to vary accordingly. Any difference that occurs between the actual and the assumed pressure would have a direct impact on the metered gas volume and also would contribute to the UFG volume.

Meters are calibrated to accurately record a standard cubic foot of gas at 14.73 pounds per square inch atmospheric (psia), which is the atmospheric pressure at sea level as recognized by American National Standard Z-132.1. Atmospheric pressure is the pressure of the gaseous envelope that surrounds the earth. It varies depending on altitude and barometric conditions or changes in the weather. The average atmospheric pressure in the Pennsylvania service area is approximately 14.4 psia. Gauge pressure is the line pressure that is opposed by the pressure of the atmosphere. The dial gauge used to measure the pressure in a meter or pipe will indicate the gauge pressure.

Boyle's Law governs the pressure-volume relationship of gas and states that the volume of a given mass of gas is inversely proportional to the absolute pressure of the gas. Mathematically it can be expressed as follows:

$$\frac{V1}{V2} = \frac{P2}{P1}$$

where:
V1 = Volume at base conditions; V2 = Volume registered on meter
P1 = Absolute base pressure ; P2 = Absolute line (meter) pressure

Note: The absolute base pressure is 14.73 psia.
The absolute line (meter) pressure is calculated by adding the gauge pressure to the average atmospheric pressure.

Substituting the absolute base pressure, the average atmospheric pressure and the gauge pressure into the above equation yields the following:

$$\text{Volume multiplier} = \frac{\text{Absolute line pressure}}{\text{Absolute base pressure}};$$

$$\frac{(14.4 \text{ psia} + 0.5 \text{ psig})}{14.73 \text{ psia}} = 1.01154 \ (\text{V1})$$

Therefore, the change in volume under these conditions is 1.154%. Every time a meter registers the consumption of 1 cubic foot, actually 1.01154 cubic feet were delivered.

Using study period data it was determined that approximately 312,052 Mcf was the result of pressure effects.

## METER INACCURACIES

A new meter placed in service is designed to measure dry, clean natural gas accurately. However, the gas flowing through the system is not completely clean. Eventually the flowing gas will affect the meters and cause them to measure inaccurately. For instance, distillate may dry out the bearings of a turbine meter. Orifice plates have a tendency to get nicked from debris in the gas stream. Dirt and grit may collect on the impellers of a rotary meter. Leather, which has traditionally been used in diaphragm meters, would stiffen when it became dry and often develop cracks. These are some of the reasons why meters are either field tested periodically or are part of a meter exchange program. At the end of their scheduled cycle, meters are removed from service, tested for accuracy, scheduled for repair as necessary and again returned to service for another scheduled period of time.

The Pennsylvania Public Utility Commission states in the Chapter 59 Codes that each gas meter shall be in good order and shall be correct at all rates of flow to within ± 2% fast or slow before being installed. Any customer whose meter registers more than 2% fast is entitled to a rebate for that volume of gas consumed that is over the 2% threshold.

Any meter that leaves the Equitable Gas Company Meter Shop is expected to meet or exceed the following out-test requirements:

(1). No meter shall register more than 0.5% slow.
(2). No meter shall register more than 0.5% fast.

Meter accuracy has improved at Equitable Gas Company due to the following programs that have been in place since 1975;

- Eliminate all Class B and Class C tin meters.
  Class A = 0 - 500 cfh
  Class B = 500 - 1500 cfh
  Class C = over 1500 cfh
- Replace 4 ½ and 5 EMCO meters with rotary meters.
- Downsize commercial and industrial meters to make sure the capacity of the meter meets the customers needs.
- Since 1986, all new commercial and industrial meter sets are specified to have rotary meters for installation.

For the year ending December 31, 1996, the accuracy of the meters tested by the Meter Shop can be illustrated as follows:

| | No. Of meters | % OK ± 2% | over 2% slow | over 2% fast |
|---|---|---|---|---|
| Class A | 2,597 | 100% | 0% | 0% |
| Class B | 301 | 84.7% | 14.6% | 0.7% |
| Class C | 249 | 81.1% | 10.1% | 8.8% |

THE EFFECTS OF FAST AND SLOW METERS

To illustrate the effects that fast or slow meters can have, consider the following example. Assume that the actual quantity of gas that is purchased is 10,000 cubic feet, but the purchase meter is 2% fast, i.e., measuring more gas than what actually passes through the meter. The meter read would indicate 10,000 cubic feet was purchased, however, the actual volume that was purchased was only 9,800 cubic feet. Assume this gas was then sold to a customer whose meter was 2% slow, i.e., measuring less gas than what actually passes through the meter.

Again, the meter read would indicate 10,000 cubic feet was sold, however, 10,200 cubic feet actually passed through the meter. The total difference between the gas that was purchased and the gas that was sold would be 400 cubic feet or 4% unaccounted for gas.

The gas lost due to fast and slow meters was determined by utilizing meter in-test statistics supplied by the Meter Shop. These statistics are kept on a monthly cumulative basis beginning with the first of the year. Since this particular study period encompasses two calendar years the exact data necessary to coincide with the study period was not available. The cumulative monthly data for the year 1997 ( as of November 30, 1997 ) was used to approximate the effects of fast and slow meters for this study period.

In-test meter analyses were reviewed for 2,965 meters. The following table illustrates the results of these in-tests.

| OK | 0-0.5% FAST | 0-0.5% SLOW | 0.6-2% FAST | 0.6-2% SLOW | OVER 2% FAST | OVER 2% SLOW | TOTAL |
|---|---|---|---|---|---|---|---|
| 96 | 685 | 627 | 865 | 628 | 15 | 49 | 2,965 |
| 3.24% | 23.10% | 21.15% | 29.17% | 21.18% | 0.51% | 1.65% | 100.00% |

By multiplying these percentages by the applicable "average error" for each category, an estimated error can be applied to the entire system throughput as follows:

| | | | | | |
|---|---|---|---|---|---|
| (23.10%) | (0.25% error) | (47,548,185 Mcf) | = | 27,459 Mcf | FAST |
| (21.15%) | (0.25% error) | (47,548,185 Mcf) | = | 25,141 Mcf | SLOW |
| (29.17%) | (1.3% error) | (47,548,185 Mcf) | = | 180,307 Mcf | FAST |
| (21.18%) | (1.3% error) | (47,548,185 Mcf) | = | 130,919 Mcf | SLOW |
| (0.51%) | (2%+ error) | (47,548,185 Mcf) | = | 4,850 Mcf | FAST |
| (1.65%) | (2%+ error) | (47,548,185 Mcf) | = | 15,690 Mcf | SLOW |

Effects of fast meters = (27,459 + 180,307 + 4,850) = 212,616 Mcf
Effects of slow meters = (25,141 + 130,919 + 15,690) = 171,750 Mcf

The difference between the fast and slow meters results in an increase to the UFG volume of approximately 40,866 Mcf (Fast).

## GAS QUALITY

The quality of the gas that is being delivered can also have an impact on UFG levels. If the gas is not completely dry it may contain hydrocarbons and water. When these components are removed, a slightly lesser volume is available for delivery. Equitable receives the majority of its gas from Equitrans, L.P. This gas is assured to be pipeline quality before it enters the Equitable Gas distribution system. However, a small percentage of gas is delivered from Company wells and third party wells and the quality of this gas is important.. Equitable monitors the quality of this gas to ensure there is no residual effect on UFG levels. (See attachment #6)

## ELEVATION

As we have seen previously, the actual quantity of gas delivered to a meter is obtained by multiplying the metered volume by a number of correction factors. One of these factors, the pressure multiplier (discussed in the pressure effects section above) varies linearly with the atmospheric pressure. As the atmospheric pressure decreases with elevation, so will the pressure multiplier. The actual gas delivered for a given metered volume will decrease with an increase in elevation. For those distribution companies that operate in a geographically diverse area, consisting of significant elevation differences, this elevation effect can have a substantial impact on UFG levels. Since Equitable does not operate in an area with substantial differences in elevation this effect was determined to have a minimal effect on the UFG volume.

## THEFT RESULTS

Theft occurs when someone tampers with a meter or its piping in such a way that the volume registered is less than the actual gas usage, or, when someone illegally restores their service and uses metered gas without company permission. Regardless of the method used to steal gas, theft contributes to the company's unaccounted for gas volume. Common forms of theft include the following:

- Unauthorized restoration of service by removal of seals and locks.
- Meter tampering which involves modifying the meter dial index such that the meter registers less than actual consumption
- The installation of piping which by-passes the meter.

- Unauthorized use of a company by-pass, which is only to be used during maintenance (meter changes) to prevent service interruption to the larger commercial and industrial customers.

- Meter reversal

- Stolen meters

THEFT STATISTICS
October 1, 1996 to September 30, 1997

| | |
|---|---|
| Number of Accounts Investigated | 4,043 |
| Confirmed Theft Situations | 182 |
| Estimated Revenue Loss | $ 122,492.88 |
| Revenue Recovered | $ 99,838.54 |
| Estimated Gas Loss Due to Theft (Mcf) | 12,976 |

Since 1987, Equitable Gas Company has implemented a Theft Reduction Incentive Program (Attachment #7) which monetarily rewards employees of Equitable Gas for discovering and reporting any suspicious conditions that may result in theft of gas. If theft is discovered, it is categorized, and the employee reporting the theft is rewarded using the following guidelines:

1. Unauthorized Meter Turn-On (Metered Theft) Fifty dollars ($50.00) per incident.

2. Bypasses, Stolen Meters, Meter Tampering, Etc. (un-metered Theft) Seventy five dollars ($75.00) per incident, plus ten percent (10%) of the recovered revenue. Stolen gas volume is estimated and the thief is billed. The employee is paid 10% commission in cash for the dollar amount that is actually recovered.

Since the program's inception, the number of reported theft cases have increased, due to the incentive plan and the expertise of the field investigators.

Two recent non-residential theft cases involved the use of a company bypass to divert a major percentage of the gas around the meter. The thefts were reported by Equitable Gas Company Regulator-Meter service personnel, who noticed that the locks were broken off the company by-passes (company by-passes allow the meter to be changed without service interruption) during routine maintenance. The maintenance crew submitted an Employee Report of Suspected Energy Theft Form and subsequently, a field investigation was initiated. It was discovered that holes were drilled in the company by-pass stopcock, allowing a percentage of the flowing gas to be diverted around the meter while it appeared that the stopcock was closed. Once this illegal tampering was discovered, Equitable Gas field personnel estimated the stolen gas volume by recording meter readings at certain time intervals (company bypass in closed position) with all gas appliances operating at their full duty cycle. A heat factor and a base load were calculated, and then the total estimated burn was determined by using the actual degree days for the theft period. From this total estimated consumption, the billed volume was subtracted, and the stolen, or unaccounted for (UAF) volume was reported and used in the court proceedings. The amount of stolen gas for the period October, 1996 through September, 1997 is estimated as follows:

| | |
|---|---|
| Non-Residential Theft: | |
| *Incident #1:* | |
| Degree Days During Period | 4238 * |
| Use per Degree day | .288 |
| Base load/month | 22.5 |
| Total Estimated Usage | 1311 |
| Less Billed Usage | 263 |
| Stolen (UAF) Volume | 1048 Mcf |
| *Incident #2:* | |
| Degree Days During Period | 4238 * |
| Use per Degree Day | .288 |
| Base load/month | 5.4 |
| Total Estimated Usage | 1333 |
| Less Billed Usage | 667 |
| Stolen (UAF) Volume | 666 Mcf |

Both cases combined, accounted for an estimated 1,714 Mcf of the total 12,976 Mcf of stolen gas, which is approximately 13% of the stolen gas during the period.

* Theft was discovered in February, 1997. Period reflects DAF from October, 1996 through February, 1997, inclusive.

Investigations of potential theft activity are initiated by internal audit controls, company employees, law enforcement personnel, and third party hot line tips. Investigations are performed by a dedicated full-time staff of employees, including field investigators, and an Investigation Coordinator. Training sessions are conducted annually with both law enforcement and company employees to reinforce theft detection techniques in the field.

Potential theft of service investigations are initiated by the following sources:

- Hot Line Tips

  Anyone who suspects theft or suspicious activity may call 1-800-431-0801 number to report this activity to Equitable Gas Company. During the period of study, 15 calls were received and investigated, and 7 resulted in gas theft.

- Theft Reduction Incentive Program Tips

  The Theft Reduction Incentive Program encourages employees to report gas theft by rewarding the employee. Currently, any employee who suspects theft may fill-out an Employee Report of Suspected Energy Theft form (Attachment #8) and submit this to the field investigator coordinator. During the study period, 253 forms were received and investigated, and 75 of them resulted in gas theft.

- Idle consumption memos

  When a customer's gas is turned off, and their subsequent meter readings indicate that consumption occurs after the final billing date, this is known as idle consumption. The mainframe detects and generates idle consumption memos (Attachment #9) on a daily basis, coordinated with the meter read cycle. During the study period, 122 idle consumption memos were field investigated.

- Non-pay shut-off memos

  Any customer who has their gas service turned off due to non-payment must be rechecked periodically to see if their gas service has been restored illegally. The mainframe generates a listing (Attachment

#10) of non-paying turned-off customers on a daily basis, coordinated with the meter read cycle. During the study period, 753 idle consumption memos were field investigated.

- Meter Reader reports

  Meter readers are to report any suspicious activity on a daily report (Attachment #11) submitted at the end of each day with their daily paperwork. To facilitate reporting of a suspicious condition in the field, there is a dedicated "theft" button on the hand-held ITRON unit that the reader may depress which marks a meter number as one that needs investigated. Most meter readers submit an Employee Report of Suspected Energy Theft form in addition to the daily reports to reap incentive plan monetary rewards.

- Hi-Lo failure reports

  When a customer's gas consumption increases or decreases beyond the bounds of a standard acceptable threshold, a Hi-Lo failure memo (Attachment #12) is generated by the mainframe computer to initiate an investigation. Currently, the threshold is plus or minus 10 percent. The customer's usage history, use per degree day (heat factor), and historic heating degree days are used in the heat calculations. During the study period, 671 idle Hi-Lo Failure memos, (including low and zero factor review) were field investigated.

- Low Factor and Zero Factor review

  The heat factor is used to estimate a customer's consumption based on their historic consumption and the respective heating degree days for that period. For various reasons (including theft), customers have their bill corrected, and it is reflected in their consumption history with a code. Any time the computer encounters a corrected bill when it is trying to calculate the customer's heat factor, it returns a "low factor" or a "zero factor", indicating that the respective account needs audited and investigated.

- Manifold Vacancy reports

  Whenever a meter is removed and reclaimed, but the service line has not been physically disconnected (cut-off), a phenomenon called Manifold Vacancy condition is created. Since the physical pipe connection from the main line to the customer's meter manifold exists, there is potential for theft. Computer generated listings of

these manifold vacancies are distributed to investigators for periodic field investigation. If this condition exists for eleven (11) months, the service line will be scheduled for abandonment.

- Repeat Offenders file

Any customer with a history of theft is kept in hard copy and reviewed by the Investigation Coordinator at his/her discretion. This file is effective in tracking gas thieves that progressively become more sophisticated with their theft method. One (1) repeat offender was caught during the study period. Violation of probation and payment schedules may prompt another field investigation.

## Theft Prevention

Equitable has an ongoing program to combat theft of service. The following technological developments have been initiated, and may be installed to prevent theft of a repeat offender or a potential theft location:

- Plastic and/or metal swivel guards
- Case-hardened meter index dial screws
- Red snap seal index dial screw
- Seal wire connected to dial screw
- Automated Meter Reading Devices

## OTHER RESULTS NOT QUANTIFIABLE

- Super-compressibility

Super-compressibility is a term used to describe the manner in which natural gas compresses. Natural gas compresses by a greater amount than that computed by Charles' and Boyle's Gas Laws. The term super-compressibility describes the deviation from the basic gas laws' ideal state. The deviation is small at low pressures but becomes significant at high pressures.

The basic gas laws that have been developed by Charles and Boyle apply to perfect gases. However, most gases behave in a manner slightly different than the formulae indicate. This deviation varies according to the composition, specific gravity, pressure and temperature of the gas. When the temperature and pressure increases the super-compressibility of the gas increases and less volume passes through the meter. A super-compressibility factor will convert meter readings at flowing conditions to a standard volume.

The effects of super-compressibility were determined to be minimal on the UFG volume for this study.

- Low flow pilot registration accuracy

Based on a study which was performed by Brooklyn Union Gas, Class A meter errors were determined to be 1.2% slow at pilot flow. What Brooklyn Union had proven in this study was that actual pilot load errors ranged from 1.4% slow for a gas range to 1% slow for space heaters. It is important to note that as more appliances use electronic ignition the effect of pilot error will be reduced. For this reason it was determined this effect had a minimal impact on the UFG volume for this study.

## Results of Study by Area or Zone:

### Introduction

Equitable's Pennsylvania's Distribution System was designed to deliver un-interruptible gas supply to end users under peak and design day weather conditions. As this system expanded and evolved, numerous loops and multiple delivery points were added to preserve system integrity. The nature of this design naturally discouraged the proliferation of closed, or isolated subsystems, which would be beneficial for an unaccounted for gas study.

Ideally, concentrated geographic areas with high active leakage statistics, older piping, intermediate pressure, and a homogeneous representation of all customer classes would comprise an unaccounted for gas investigation zone. Although there are some areas within Equitable's Pennsylvania distribution system that meet this criteria, there currently exists no economical means of measuring the gas which is delivered to these zones. Exorbitant costs would be incurred to isolate zones through the installation of multiple sub-meters or physical separation of the distribution piping to isolate the looped systems. In this study, a zero-cost solution is desirable and therefore, utilized.

## Methodology

An alternative to geographic zones is to seek and investigate naturally isolated pipeline segments inherent to the existing distribution system. In this context, "isolated" means that there exists a receipt point (city gate) with an existing custody meter, and from that point downstream to metered end users. There are twenty-eight (28) segments which meet the physical criteria for a UFG study.

The next step is gathering end-user data. Segments were matched with their end users by comparing the geographic information (street names, zip codes, etc.) noted on the pipeline maps to the Equitable Gas Company customer information system (CICS). Once a listing of the end-users was compiled, a download of the billed consumption for each end-user for a specified period (on a billing cycle basis) was obtained. After adjustments for billed and un-billed calculations, the volumes were then compared to calendar month delivery volumes reported by Equitrans. The difference between the two volumes would be the level of UFG for that segment.

## Limitations

Since 71% of the twenty-eight (28) segments are located in rural areas, an accurate count of end users is difficult to compile because address information is either inaccurate or outdated. Also, a great number of customers are located on large farms, at significant long distances from the distribution main lines. Only a physical count, which is time consuming and very labor intensive, would accurately reflect all of the end users associated with or tied to each segment. Of the twenty-eight (28) segments, eleven (11) have sufficient and reliable end user information to initiate the UFG study without a field count. The total number of end users available in these eleven (11) segments was approximately 2,300 with the majority of them being residential.

## Results and Comments

Comparing the end user metered volumes to the Equitrans deliveries revealed a potential problem with the integrity of the data collected. The level of UFG experienced by comparing these volumes was suspect.

It is highly unlikely that this result is a coincidence. The probable sources of this apparent anomaly in the study result will be examined and explained.

The discrepancy can be attributed to one or all of the following:

1. Inaccurate Customer Account information.
   Geographic information, such as street names, zip codes, and political subdivisions were used to match customer accounts with data stored in the CICS information system. Given that most of the

systems are situated in rural areas, street names and addresses may conflict with the information shown on Company maps. In addition, customers that are located on private property (R/W) may never be accounted for, unless an actual field count is performed.

2. Billing Cycle Synchronicity.
Equitrans reports citygate (segment) deliveries on a calendar month basis. Since each segment has a unique billing cycle associated with its geographical location., there will always be errors associated with the lead/lag of the cycle. Until a method is devised to obtain customer (segment) deliveries on a calendar month basis, measurements will be subject to out of period adjustments including billed or unbilled calculations.

3. Duration of Study.
As a result of the limitations already metioned, Equitable was only able to analyze three months of consumption data. A Ufg Study should include twelve (12) consecutive months of data.

Suggestions for future study

In order to reduce if not totally eliminate errors, the following should be implemented:

1) Field counts should be taken for all 28 segments under study to ensure accurate end user information.
2) Delivery information obtainable from Equitrans for each city gate (POI) should be matched with billing cycles associated with end users on each segment.
3) New business developments connected to these systems should be reflected on current map documentation.
4) New customers served via each of the segments should be automatically updated into source files for UFG study to ensure accurate record keeping.

## RECOMMENDATIONS

### ACCOUNTING

- Reporting of line pack

Line pack refers to the change in inventory of Equitable's distribution system. Gas purchases could be adjusted for line pack. As line pack increases, it causes a corresponding increase in line pressure and also an increase in inventory. UFG may be overstated if some of the supplies are in the line pack. In the future total supplies should be adjusted to reflect the changes in line pack.

- Company Wells

Currently, five (5) of the forty-nine (49) Company owned wells have meters. The volumes from the remaining wells are estimated each month with the Minute Rise method. In the future the Company may want to install meters at those locations where production volumes can be significant. Accurate measurements from these wells will reduce the error associated with UFG.

- Operational Company Gas Usage

Since relatively large volumes of purge gas can be associated with normal distribution operations, consideration should be given to incorporate these volumes into the accounting records for calculating UFG levels.

- Pneumatic Instruments

Equitable continues to evaluate the gas usage of pneumatic instruments. Methods to reduce gas losses associated with these instruments are incorporated into the design of new facilities, and existing facilities are converted when economically feasible or when re-design is necessary.

### LEAKAGE

- Leak detection Program

The UFG study indicates that Equitable's current leak detection program has been successful in reducing the number of leaks and the gas loss associated with these leaks. An earlier study conducted in June

1989 indicated that approximately 969,933 Mcf was attributed to leakage in the distribution system. This current study indicates that 623,384 Mcf is the result of leakage in the distribution system. Applying further-improved leak detection techniques will undoubtedly continue to reduce future leakage rates.

- Pennsylvania One-Call Program

Continue to actively participate in the Pennsylvania one-call program. This program effectively minimizes the number of third party damages to the Company's natural gas pipelines.

MEASUREMENT

- Temperature Effects

Install temperature correcting devices on residential meters at an additional cost of approximately $15.00 per meter. Pennsylvania has approximately 233,000 residential customers. Assuming the meter change cycle is 20 years, the annual costs associated with this recommendation would be $174,750.00

- Pressure Effects

Calculate the barometric pressure for designated elevation areas within the Pennsylvania service territory. This would be similar to what is currently done with the Btu zones. The resulting barometric pressures would then be used to calculate a volume multiplier to determine each months usage.

THEFT

- Monetary Incentive

A monetary incentive for 3rd party hot line tips, with the stipulation that theft must be discovered in order to receive the cash reward. The informants should remain anonymous, as far as any court proceedings are concerned, for their safety.

- Estimating Unreported Theft

Currently, Equitable Gas does not incorporate any methodology for estimating unreported gas theft. Some utility companies use an odds ratio technique, which uses statistics obtained in previous studies from other utilities (including electric) to estimate the probable amount of

unreported/undiscovered stolen gas. These volumes are included in their unaccounted for gas calculations. Regardless of which method is used, the amount of unreported theft should be considered for inclusion in future unaccounted for gas studies.

- Internet Website

Recently, Equitable Gas developed its Internet website. Given the site's increasing popularity, the construction of a "wanted" page, where cash rewards for any information regarding suspicious theft activity would be posted to entice browsers to report theft. In addition, pictures of bypasses, and anti-theft mechanisms (such as stop locks, nut guards), and vacant manifolds should be displayed so the public knows what to look for. An explanation of what gas theft is, and the current criminal penalties associated with it may serve as a deterrent.

## CONCLUSION

Unaccounted for gas is an unavoidable situation that every [illegible] gas utility encounters. Any reduction in the amount of unaccounted for gas from any cause whatsoever, becomes a monetary saving and creates a source of additional revenue for the Company. However, any costs that are to be absorbed by the customer must be taken into consideration before implementing such actions. It has been the purpose of this report to determine the actual UFG level within the Equitable Gas Com[illegible] distribution system and to evaluate the major factors contributing to it. The techniques and methods proposed and used in this report give reasonable results which should be improved upon and refined as more experience is gained. This study will be used to develop an effective program for controlling and reducing the losses associated with UFG.

Schedule JDM-10

# EQUITABLE GAS COMPANY

Adjustment to PGC Rates to Credit VPEM
Storage Management Fee

| Item | Amount |
|---|---|
| VPEM Fee | $2,600,000 |
| less: Capacity Release | (560,000) |
| Net Credit | $2,040,000 |

Schedule JDM-11

# EQUITABLE GAS COMPANY

Summary of Imbalances Carried on Equitrans
(Dth)

| Month | Ending Balance | Monthly Change |
|---|---|---|
| March 2005 | (218,742) | |
| April | 45,487 | 264,229 |
| May | 449,896 | 404,409 |
| June | 536,828 | 86,932 |
| July | 673,038 | 136,210 |
| August | 883,568 | 210,530 |
| September | 799,350 | (84,218) |
| October | 83,134 | (716,216) |
| November | 417,161 | 334,027 |
| December | (343,778) | (760,939) |

ORIGINAL

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

ADMINISTRATIVE LAW JUDGE MICHAEL A. NEMEC

| | |
|---|---|
| Pennsylvania Public Utility Commission<br><br>v.<br><br>Equitable Gas Company | Docket No. R-00061295 |



**PREPARED DIRECT TESTIMONY OF**
**TIMOTHY W. MERRILL, GENERAL MANAGER,**
**NRG ENERGY CENTER PITTSBURGH LLC**
w/ exhibits 1-4



Date Served: May 19, 2006
Date Admitted: June 16, 2006

NRG Pittsburgh
Statement No. 1A

# PREPARED DIRECT TESTIMONY OF TIMOTHY W. MERRILL

Q. Please state your name and business address for the record.

A. My name is Timothy W. Merrill. My business address is NRG Energy Center Pittsburgh LLC ("NRG" or "Company"), 111 South Commons, Pittsburgh, PA 15212.

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

A. I am employed by NRG as its Vice President and General Manager. In this capacity, I am responsible for all aspects of the business of making, distributing, and selling steam, hot water, and chilled water. These responsibilities include procuring the necessary fuels at the lowest price, overseeing the operational management of the facility, maintaining customer relations, and being responsible for all regulatory affairs.

Q. How long have you been NRG's General Manager?

A. I have been General Manager for almost three years.

Q. Do you have previous experience in the energy business?

A. Yes. I have attached a copy of my past work experience as **NRG Exhibit No. 1**.

Q. Do you have experience in the natural gas industry?

A. Yes, for most of my professional life, I have been involved in that industry.

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

A. The purpose of my testimony is to describe NRG's service territory and customer base, its Delivery Service Agreement ("DSA") with the Equitable Gas Company, Inc.("Equitable"), and the reasons why the DSA is in the public interest.

Q. Why has NRG intervened in this proceeding?

A. NRG intervened in this proceeding because, in Equitable's 2005 1307(f) proceeding, issues were raised concerning the fact that (1) Equitable had, in compliance with its tariff, negotiated certain discounts and waivers of charges and contracts with its natural gas transportation customers; (2) Equitable had apparently sought recovery from its purchased gas cost customers ("PGC Customers") of waived charges and discounts it accorded some of its transportation customers; and (3) on a forward-going basis, the Commission put Equitable on notice that it would have to justify recovery of discounted or waived charges from its PGC Customers in a future 1307(f) proceeding. In the Commission's Order at R-00065250, however, the Commission identified categories of delivery service customers where the public interest might justify Equitable's continued recovery of discounted and waived charges from its PGC Customers. As I explain below, NRG believes that its DSA is in the public interest and supports Equitable's position that it should be allowed to collect discounted and waived charges from its PGC Customers in the future.

Q. Are you familiar with the testimony of Equitable's witness John M. Quinn that was prefiled in this proceeding?

A. Yes, I am.

Q. Is NRG identified in Mr. Quinn's testimony?

A. Yes, NRG is identified as "Customer No. 3.

Q. I am showing you a document that has been marked for purposes of identification as **NRG Exhibit No. 2**. Can you identify that document?

A. Yes. It is a copy of NRG's DSA with Equitable.

Q. While acknowledging that the document speaks for itself, would you please highlight what charges have been waived or discounted?

A. Yes, retainage is $.06/Mcf. Balancing and transition charges are waived. And, the transportation rate is discounted from the maximum rate to $0.80/Mcf plus annual escalation. I would note that, in exchange, NRG committed to using natural gas for the production of its steam, and chilled and hot water, as opposed to using its alternative fuel(s).

Q. What is the term of the contract?

A. Ten (10) years.

Q. Does Mr. Quinn support the continuation of the discounts provided to NRG?

A. Yes, he does.

Q. Does Mr. Quinn acknowledge that the DSA with NRG provides positive benefits to Equitable's other customers?

A. Yes, he does.

Q. Mr. Quinn states that NRG faced a probable loss of load without the discounts and that NRG was prepared to provide evidence of that to the Commission. Are you providing such evidence?

A. Yes, I am.

Q. Please describe NRG's customer base.

A. NRG provides steam and hot and chilled water service to commercial customers located on Pittsburgh's North Side. NRG serves 17 customers (in 28 buildings) in Pittsburgh's 22nd Ward and its serves one location -- the Carnegie Science Center ("CSC") -- in Pittsburgh's 21st Ward.

Q. Describe NRG's eighteen (18) customers in more detail.

A. NRG's customer base is composed, in predominant part, of eleemosynary and non-profit or educational institutions. Its biggest customer, comprising almost 50% of its load and revenues, is the Allegheny General Hospital ("AGH"). This

hospital is a quaternary care hospital, a major teaching hospital and its Stage 1 Shock Trauma Center was the first one in the region. I have included, as **NRG Exhibit No. 3**, more information about AGH.

As I stated above, NRG provides service to the Carnegie Science Center, a non-profit institution providing educational learning exhibits and experiences. I have included as **NRG Exhibit No. 4** more information about CSC.

We provide service to the Community College of Allegheny County, the Carnegie's Warhol Museum, Allegheny Center Alliance Church, a Kindred Healthcare hospital, PNC Park, a Pittsburgh School District elementary school, and the local post office. We also provide services to several commercial properties, Allegheny Center and Foster Square Apartments.

Q. What is Allegheny Center?

A. Allegheny Center is an urban redevelopment project that was developed in the early 1960's. Originally, it provided apartment living space, office space, and retail shopping establishments (departments stores, a grocery store, etc.) within a enclosed mall. Unfortunately, for a number of reasons, the project did not take off as the developers planned. The shops and stores moved out and office building vacancy rates have been high for years.

Q. Describe the North Side as a community and economic base.

A. Pittsburgh's North Side was once a separate city, Allegheny City, that was forcibly annexed to Pittsburgh in the early years of the 20th Century. Over the years, it has not flourished economically as has downtown Pittsburgh. While economically depressed may be too harsh a characterization, it has not attracted growth and development. Such development that is only recently occurring as a result of the construction of the new baseball park (PNC Park, a customer) and the new football stadium (Heinz Field, not a customer) has had to be given a new appellation – North Shore – in order to differentiate itself from the North Side's pejorative image in order to attract businesses and the public. The dividing line between the two is an elevated highway and train track. In the end, I have to say

that a common characteristic of NRG's customers is financial uncertainty. NRG's six largest customers account for 92% of its steam and chilled water sales. Of these six, three are non-profit organizations (AGH, CCAC, Carnegie Museums), and three are, while for-profit organizations, either in marginally profitable industries (Kindred Healthcare) or are themselves marginally profitable (Allegheny Center and the Pittsburgh Pirates).

Q. Under what rates does NRG serve AGH and CSC?

A. NRG has recently signed new contracts with both AGH and CSC. NRG has a tariff rate that allows it to negotiate rates that are discounted from its full cost rate, i.e., Rate 3. We have to use Rate 3 in situations where NRG is competing for our customers or prospective customers with other heating and cooling service providers or energy service companies ("ESCOs").

Q. Was NRG competing with ESCOs when it negotiated its contracts with AGH and the CSC?

A. Yes. We were in head-on-head competition with Constellation Energy Services for the hospital's business. It took us about five (5) years to consummate our contract with AGH. AGH, like all healthcare institutions, is under extreme pressure to hold costs down. Therefore, it was duty bound to make sure that it was receiving the most economical heating and cooling services. In the end, NRG was told that the economic comparison was pretty close.

Q. How were you able to close the deal with AGH?

A. A critical element of the price NRG could offer AGH was the transportation contract I was able to negotiate with Equitable. The negotiated transportation costs in that contract dramatically reduced NRG's total fuel costs, and those reductions are passed along directly to AGH and the other customers. Indeed, it was those fuel cost reductions, and other potential fuel cost reductions to be gleaned from certain capital investments that I believe were responsible in allowing our proposal to be successful over that of our competition.

Q. What would have happened to NRG had it not retained the hospital as a customer?

A. I am sure that the loss of the hospital would have so severely affected our revenues that NRG would have started on a death spiral. A good example of recent death spiral in the district energy industry is what recently happened to Community Central Energy Company in Scranton (which is just now – after years of being in the death spiral – terminating its business). With AGH being such a large portion of NRG's load, the necessary increase in charges to remaining customers would have forced them, one by one, to leave the system. The incremental cost to such customers of installing their own heating and cooling equipment, let alone the environmental consequences of many more energy conversion plants, is simply not in the public interest.

Q. How important were the discounts negotiated in the DSA with Equitable to NRG's ability to retain customers.?

A. As I said, I believe those discounts were critical to NRG's survival, especially to our ability to retain AGH. When I arrived, there seemed to be a general consensus among customers that AGH was leaving the NRG system and was about to erect its own boiler house and chiller plant.

Q. Was the DSA essential to stabilizing NRG's existing infrastructure arrangements on the North Side?

A. Yes. Again, if the hospital left us, it would have had a negative ripple effect on all of our customers.

Q. Is the same situation true with respect to the CSC?

A. The same is true. Negotiating a better transportation arrangement with Equitable allowed NRG to reduce fuel costs, thereby directly keeping the CSC's energy costs more manageable for them.

Again, both of these customers are non-profit institutions -- entities that are critical to keeping the North Side a viable community

Q. How does DSA affect NRG's other customers?

A. It effects them in the same way. The DSA produced savings that flow directly to the religious institution, community college, etc. These institutions, and their survival, are the key to keeping the North Side from totally falling apart.

Q. Equitable witness Quinn notes that NRG has the present capability to use alternative fuels. Is this correct?

A. Yes. NRG has burned #2 fuel oil in the past and could do so in the future. Several years ago, while we were trying to negotiate a new transportation arrangement with Equitable, because NRG's air quality permit allows the burning of #2 fuel oil only upon gas emergencies, I sought permission from the Allegheny County Health Department ("ACHD") (the air quality regulator) to be able to burn oil. NRG subsequently obtained from ACHD an amendment to its operating permit if certain equipment were installed. In the DSA, I gave up that pending ability to burn oil on a regular basis. Further, if NRG were to burn #2 oil instead of gas, there certainly would be a negative effect on the rest of Equitable's customers because the revenue attributable to NRG would be lost and would have to be made up by the remaining customers. It, therefore, is not in Equitable's customers' interest for NRG to burn #2 oil. Another alternative fuel is electricity. In the DSA, NRG committed to not installing any more electric driven chiller capacity apart from that being put in place this year.

Q. So, again, do you agree with Equitable Witness Quinn' opinion on p. 10 of his testimony, that NRG's DSA provides positive benefits to Equitable's customers?

A. Yes, I do.

Q. Are there any other reasons why you believe Equitable should be allowed to recover waived and discounted charges associated with NRG's contract from its PGC customers?

A. Yes, there is one more.

Q. What is it?

A. Given my almost thirty-five (35) years of experience in this industry, I am convinced that, not only are Equitable's basic transportation rates excessive, but NRG's transportation rate itself provides a substantial return (far above its average rate of return) to Equitable, and that NRG is, for all intents and purposes, actually subsidizing Equitable's PGC customers when it pays its negotiated rate of $.80/Mcf.

Q. On what do you base that conclusion?

A. As I have said, I have been in this industry for a long time. I began negotiating transportation rates with gas utilities when they first began in the 1970's. In the 1980's and 1990's, as a consultant and a gas marketer, I negotiated transportation rates with utilities from Illinois to Michigan, to West Virginia and Ohio, through Pennsylvania, and up into New York and New England. My long familiarity with industrial users has made me fully acquainted with what large volumes customers pay their utility for transportation. Prior to joining NRG, I once installed a bypass of a LDC to an interstate pipeline because the LDC refused to negotiate transportation rates. While it has been a while since I have seen an LDC cost of service study, I saw enough years ago to know that transportation rates of between $0.15 and $0.30 provided an adequate (at or above system average) rate of return for loads (and load factors) comparable to that of NRG. Hence, when I became aware that Equitable was charging a rate of $0.30 to a neighboring district energy facility, I was not surprised that that facility felt it was paying too much (relative to what it actually cost Equitable to transport its gas). Equitable would say that their rate was that low because that facility had a competitive alternative, an alternative that the facility ultimately utilized when it left the Equitable system.

However, I believe that were a cost of service study to be performed of that facility's impact on the system, the facility would be providing an adequate return to Equitable.

Q. Please summarize the reasons why it is in the public interest for Equitable to be allowed to collect discounts and waived charges associated with NRG's DSA from its PGCs.

A. There are five primary reasons:

1. As Mr. Quinn and I both demonstrate, Equitable's customers are not subsidizing NRG's service, irrespective of the discounts.
2. NRG is an established provider of district heating and cooling services on the North Side of Pittsburgh. The North Side is a community struggling to reemerge as a vibrant economically viable neighborhood. All its fuel costs are passed on to its customer base which is composed primarily of health, educational and other eleemosynary institutions. As I see it, keeping NRG's rates down is an economic development issue.
3. NRG has relied on its negotiated transportation rates with Equitable to negotiate contracts with its large customers.
4. NRG can burn #2 fuel oil. If it does so, all revenue from NRG would be lost to Equitable's remaining customers.
5. Equitable's transportation rate to NRG is significantly higher than industry norms.

Q. Do you believe the public interest reasons just stated adequately justify the continuation of NRG's DSA with Equitable Gas?

A. Yes. I believe, moreover, that there is one more reason why the DSA is in the public interest. Given a twenty (20) year old Commission policy that encouraged utilities to compete with one another to attract and maintain load, NRG and Equitable entered into a commercial transaction. While I understand that times have changed, and that while it may be desirable to preclude such competition

going forward, I don't think the Commission should be oblivious to the commercial consequences of historical transactions that stemmed from its earlier actions. Equitable's attempt to cancel the DSA with NRG is but one example of such a commercial consequence.

Indeed, I believe other commercial consequences of high gas costs should be explored by the Commission along with its changing the permissive gas-on-gas competition (ending the "Gas Wars") strategy. For example, in a high cost gas world, the BTU content of gas can no longer be ignored. For years, the Commission has not enforced a rigorous policy with respect to Equitable's testing and verifying BTU content. Those customers, such as NRG, which buy gas on a dth basis but have it transported on a MCF basis cannot afford to have Equitable verify the heating content of the gas on a less than rigorous verification schedule. Similarly, in a high gas cost world, Equitable should have to verify and manage on an ongoing basis what its retainage factor is. Accepting "Line loss and unaccounted for gas" without a rigorous examination of the actual amounts should not continue. Indeed, Equitable should be given a financial incentive by the Commission to drive this percentage down. Along with the maintenance of a 24X7 delivery system, the minimization of line loss should be a key management objective. My interaction with the industry over the years suggests to me that, in the case of Equitable, there has been little or no attention to this very costly – in a high gas price world – management issue.

Q. Does that complete your testimony?

A. Yes, it does.

# NRG EXHIBIT "1"

**NRG Exhibit No. 1**

Educational and Professional Experience
Of
Timothy W. Merrill

- Graduated from Yale University, BE – Metallurgy
- Graduated from University of Pittsburgh, MBA
- Employed in several steel mills in operations and maintenance capacities
- Corporate energy purchaser (natural gas, electricity, fuel oil, industrial gases) for five (5) steel mills, which led to the submittal of testimony to various state commissions, and the predecessor to the FERC, about natural gas and electricity curtailment plans, and the making of energy policies
- Founded Industrial Energy Services Company, one of the country's first natural gas marketing companies in 1976 which I owned and operated for seventeen (17) years
- Participated in the development of the spot gas market through the submittal of comments and testimonies at various state commissions and FERC
- Created and led as an Executive Director the predecessor to the Pennsylvania Independent Oil and Gas Association
- Consulted with independent producer and industrial end users about energy policies, and gas transportation rates
- Formed Competitive Energy Services Company, a consulting company for gas and power marketing companies which led to participation in the development of competitive energy markets in a number of states
- Joined NRG Energy Center Pittsburgh in 2003, as Vice President and General Manager

# NRG EXHIBIT "2"

## Equitable Gas Company Delivery Service Agreement

THIS AGREEMENT ("Agreement") is made as of the 5th day of May 2005, by and between **EQUITABLE GAS COMPANY**, a division of Equitable Resources, Inc., having its principal offices at 200 Allegheny Center Mall, Pittsburgh, Pennsylvania 15212-5352, (hereinafter called "Equitable") and **NRG ENERGY CENTER PITTSBURGH, LLC**, having its principal offices at 111 South Commons Avenue, Pittsburgh, PA, 15212 (hereinafter called "NRG"). As used in this Agreement, Equitable and NRG are also referred to herein individually as a "Party" and collectively as the "Parties".

NRG and Equitable, intending to be legally bound, and in consideration of the promises contained herein, agree as follows:

1. **Delivery Service**. NRG will furnish natural gas to Equitable, at the Receipt Point(s) set forth on Exhibit A, and Equitable will deliver natural gas to NRG (hereinafter called "Delivery Service"), at the Delivery Point(s) set forth on Exhibit B, attached hereto and incorporated by reference herein. Delivery Service shall be in accordance with the provisions of Equitable's currently effective Schedule of Rates, Rules and Regulations for Gas Service on file with the Pennsylvania Public Utility Commission (hereinafter called "Commission"), as the same may be amended or superseded in accordance with the rules and regulations of the Commission. The maximum daily quantity (hereinafter called "MDQ") of natural gas that Equitable shall be obligated to deliver for NRG, the designation of the Delivery Point(s) at which Equitable shall deliver or cause gas to be delivered to or for NRG, and the Receipt Point(s) at which NRG shall deliver or cause gas to be delivered to Equitable, are set forth in Exhibits A and B, as the same may be amended from time-to-time by written agreement of the parties hereto. NRG will purchase all of its requirements for natural gas delivery service from Equitable.

2. **Nominations**. NRG or its designee shall request that Equitable deliver to NRG, at the Delivery Point(s), specific quantities of natural gas by contacting Equitable and requesting deliveries up to its MDQ. All nominations shall be made in accordance with Equitable's nomination procedures as amended from time-to-time. Nominations must be in writing using the designated form of Equitable or entered on the Equitable's Electronic Bulletin Board.

3. **Delivery Rate**. Equitable will provide Delivery Service to NRG under Equitable's currently effective Rate Schedule GDS on file with the Commission, and/or any new or superseding rate schedule, or like schedule as may be renamed from time-to-time (hereinafter called "Rate Schedule GDS"). NRG will pay Equitable for Delivery Service in accordance with the terms set forth under Part B, Delivery Rate, on Exhibit A.

4. **Term/Right to Match**. The Initial Term of this Agreement shall be set forth in Exhibit A. Unless terminated upon at least forty-five (45) calendar days' written notice by either party prior to the end of the Initial Term, or any extension thereof (the "Current Term"), this Agreement shall renew for successive additional one-year terms. Termination shall be effective as of the last day of the last billing month of the applicable Initial or Current Term. Equitable shall have the right, but not the obligation, to extend this Agreement by matching any written bona fide offer received by NRG from a competing entity to provide natural gas delivery service. NRG must provide this competing offer to Equitable no later than 1/1/2014. Equitable will advise NRG of its decision to match the terms and conditions of the competing offer no later than 2/1/2014. In the event Equitable elects to match the competing offer, NRG agrees to extend this Agreement pursuant to those terms and conditions.

5. **Warranty of Title & Gas Quality**. NRG warrants that it will have good title to all natural gas delivered to Equitable for transportation, and that it will indemnify Equitable and save it harmless from all suits, actions, debts, accounts, damages, costs, losses and expenses arising from or out of adverse claims of any and all persons to said gas.

6. **Gas Quality**. Natural gas delivered for NRG shall conform to the quality standards of Equitable's Engineering Specification 86-1-036, or any subsequent revisions thereof. Equitable shall have the right to refuse to accept any non-conforming gas, including any gas of a total heating value of less than 1,000 Btu per cubic foot. Should any non-conforming gas enter Equitable's facilities and cause damage to metering, regulating or other equipment, or interruption of service, NRG shall reimburse Equitable for the reasonable costs to repair such damage and for any related and reasonable costs which Equitable may incur to restore service or to repair facilities to its customers, including payments made by Equitable to customers in settlement of claims arising out of such occurrence.

7. **Billing and Payment**.

   a. Equitable's bill for service shall be rendered monthly, in electronic format.

   b. NRG will pay Equitable its bill in full no later than two (2) business days after the date on which NRG received the bill electronically.

   c. If Equitable does not receive payment in full of its bill within five (5) business days after the date on which NRG received the bill electronically, a late payment charge of 1.5% per month will be applied to the unpaid portion, pro rated daily, until the bill, including accumulated late payment charges, has been paid in full.

d. If Equitable does not receive payment in full of its bill within thirty (30) calendar days after the date on which NRG received the bill electronically. NRG shall be in default of this Agreement and this Agreement may be terminated at Equitable's option, upon thirty (30) calendar days' prior written notice to NRG.

e. Equitable will read NRG's meters on a monthly basis and will make reasonable efforts to do so on the next to the last business day of each month.

f. If NRG, in good faith, disputes any portion of Equitable's bill, then, notwithstanding the above, NRG shall pay only the undisputed portion in accordance with the terms set forth above and shall notify Equitable in writing of the amount that NRG disputes and the reasons for the dispute. Interest on the disputed portion shall accrue from the sixth ($6^{th}$) business day after the date on which NRG received the disputed bill electronically until the date of payment of the disputed portion of the bill (if payment of the disputed portion is agreed to by the Parties or required by resolution of their dispute) at a monthly rate equal to 1.5%, pro-rated daily. If NRG's dispute cannot be resolved by the Parties within ninety (90) business days following NRG's written notice of the dispute, then either Party may refer the dispute to arbitration pursuant to Section 17.

8. **Financial Responsibility**. If, in Equitable's reasonable opinion, the financial responsibility of NRG has become impaired, then as a condition to Equitable's continued performance, NRG may be required to furnish a satisfactory guaranty, letter of credit, security deposit, prepayment or other security. In the event NRG (a) fails to furnish such satisfactory security, (b) fails to cure a default under the terms of this Agreement within three (3) business days of demand, or (c) becomes bankrupt or insolvent however evidenced, then Equitable shall have the right to suspend or terminate its services hereunder with regard to any and all transactions with NRG. The foregoing right shall be in addition to any other rights or remedies Equitable may have, including recovery of any monetary losses on transportation and recovery of reasonable attorneys' fees. Each Party reserves the right to set off any amounts it owes the other Party under this Agreement against amounts the other Party owes hereunder. Each Party authorizes the other Party to recover all costs associated with the collection of debts from the authorizing Party, including, without limitation, reasonable attorneys' fees and collection agency fees. In order to assess financial responsibility, NRG agrees to provide financial statements and other reasonably requested credit information at a minimum on an annual basis.

9. **Force Majeure**. If by reason of Force Majeure, either Party is prevented, wholly or in part, from carrying out its obligations under this Agreement, such Party shall be excused from performance hereunder during the continuance of any inability so caused. "Force Majeure" shall mean any occurrence or condition that is not reasonably within the control of the Party affected. Notwithstanding the foregoing, changed market conditions or other general economic causes are not Force Majeure events. The affected Party shall notify the other Party of a Force Majeure event as soon as reasonably possible.

10. **Subjugation**. This Agreement and the respective obligations of the Parties hereunder are subject to (a) valid laws, orders, rules and regulations of duly constituted authorities having jurisdiction and (b) Equitable's tariff on file with the Commission, as amended from time-to-time. In the event of any conflict between this Agreement and (a) the Pennsylvania Public Utility Code or other statutory provision; (b) any regulation or order of the Commission; or (c) Equitable's applicable tariff provisions, items "a" through "c" shall govern, in that order of precedence, as to the conflict.

11. **Renegotiation/Early Termination**. If any material term (as defined below) of this Agreement is rendered either illegal or unenforceable by the (a) enactment of a Pennsylvania statutory provision or Commission regulation, (b) issuance of an order by any Pennsylvania or federal court, (c) entry of a Commission order, or (d) change in Equitable's tariff, such that the economic value of this Agreement to either Party is materially and adversely affected, then Equitable and NRG agree to negotiate in good faith an amendment to this Agreement or a new Delivery Service Agreement to address the effect of any such occurrence. If the Parties are unable to agree to an amendment or a new Delivery Service Agreement within thirty (30) calendar days following the occurrence that led to such negotiations, either Party thereafter may terminate this Agreement upon written notice to the other Party. If Equitable elects to terminate, Equitable must give at least 90 days' prior written notice to NRG. Any such termination shall be effective as of the date set forth in the Party's written notice. For purposes of this section, "material term" is defined as each of the terms set forth under Part B, Delivery Rate, on Exhibit A.

12. **Representations**. Each Party represents and warrants to the other Party that, on the date hereof: (a) it is duly organized, validly existing and in good standing under the laws of the state in which it is domiciled; (b) it possesses all power and authority necessary for it to enter into this Agreement and to perform its obligations hereunder; (c) this Agreement constitutes the legal, valid and binding obligation of such Party enforceable against it in accordance with the respective terms hereof; (d) the execution, delivery and performance hereof will not cause such Party to be in violation of any other agreement or law, regulation, order, court process or decision to which it is a Party or by which it or its properties are bound or affected; (e) it is not relying upon any representations (whether written or oral) of the other Party other than the representations expressly set forth in this Agreement; and (f) it has all regulatory authorizations, certificates and documentation as may be necessary and legally required for it to execute and deliver this Agreement and to perform its obligations hereunder.

13. **Assignment**. Neither party may assign this Agreement without the express written consent of the other Party. Notwithstanding the foregoing, either Party may assign this Agreement to a successor in interest to all or substantially all of the business assets of that Party without the other's prior written consent.

14. **Confidentiality.** The terms and conditions of this Agreement and all information exchanged by the Parties or acquired by them in connection with their negotiation and performance under this Agreement shall be kept confidential by the Parties. If any of the terms and conditions of this Agreement or other confidential information are required to be disclosed by law or by order of a court or governmental authority having proper jurisdiction, the Party being required to disclose shall make every effort to request and retain the confidentiality of the terms and conditions of this Agreement or other confidential information and, in particular, the Right to Match set forth in Section 4 and the Delivery Rate set forth in Part B of Exhibit A, to the maximum extent permitted by law. Nothing contained in this Agreement shall preclude either Party from disclosing any of the foregoing to its financial and legal advisors, lenders, or employees who have a need to know, subject to these same conditions of confidentiality.

15. **Notices.** All notices or other written communications required or permitted by this Agreement shall be sent by overnight mail, as follows, and, unless otherwise provided in this Agreement, shall be deemed to have been given upon receipt:

a. If to Equitable: Director, Sales and Marketing
Equitable Gas Company
225 North Shore Drive
Pittsburgh, PA 15212-5861

b. If to NRG: General Manager
NRG Energy Center Pittsburgh, LLC
111 South Commons Avenue
Pittsburgh, PA 15212

16. **Miscellaneous.**

a. No modification of the terms and provisions of this Agreement shall be or become effective except by the execution of written amendment by both Parties.

b. The interpretation and performance of this Agreement shall be in accordance with the laws of the Commonwealth of Pennsylvania.

c. This Agreement may be executed in multiple counterparts (including, without limitation, those transmitted via facsimile), each of which shall constitute an original, and all of which together shall constitute one and the same instrument.

d. This Agreement constitutes the entire Agreement and supersedes any prior agreements or understandings, written or oral, between the Parties with respect to the subject matter hereof, Delivery Service Agreement.

17. **Arbitration.** Any controversy or claim arising out of or relating to this Agreement, or the breach thereof, shall be resolved by binding arbitration in accordance with the commercial arbitration rules of the American Arbitration Association ("AAA"). Judgment upon the award rendered by the arbitrators may be entered in any court having jurisdiction thereof. In any arbitration under this Section, each Party shall appoint one (1) arbitrator and the Parties' appointees then shall appoint a third, neutral arbitrator within thirty (30) days in accordance with the AAA's rules. The third, neutral arbitrator shall be a person who has at least five (5) years of experience in the natural gas industry. All arbitration hearings shall be held in Pittsburgh, Pennsylvania, unless the Parties agree otherwise. The Parties shall maintain the confidentiality of all arbitration proceedings conducted under this Section, including the arbitrators' decision, in accordance with Section 14, except to the extent necessary to enforce the arbitrators' decision before a court or regulatory agency.

**NRG ENERGY CENTER PITTSBURGH, LLC**

Signature: Timothy W. Merrill
Name: Timothy W. Merrill
Title: General Manager
Date: May 5, 2005

**EQUITABLE GAS COMPANY,**
a division of Equitable Resources, Inc.

Signature: Randall Crawford
Name: Randall Crawford
Title: President, Equitable Gas Company
Date:

## Exhibit A to
## *Equitable Gas Company Delivery Service Agreement*

NRG acknowledges and agrees that Equitable will provide the Delivery Service as defined in the Agreement and set forth below:

**A. INITIAL TERM**

The Agreement shall commence on 5/1/2005 and continue in full force and effect through 4/30/2015.

**B. DELIVERY RATE**

Except as provided otherwise below, for each Mcf of gas delivered to the Delivery Point(s) shown on Exhibit B, NRG will pay Equitable a delivery rate set forth in Rate Schedule GDS, subject to the provisions of Section 3 of the Agreement.

For the period extending from 5/1/2005 through 4/30/2010:

- The delivery rate for the first 90,000 Mcf of usage each month shall be $0.80/Mcf, inclusive of shrink equal to $0.06/Mcf.
- The delivery rate for monthly usage in excess of 90,000 Mcf shall be $0.41/Mcf, inclusive of shrink equal to $0.06/Mcf.

For the period extending from 5/1/2010 through 4/30/2015:

- The delivery rates for the first *90,000 Mcf of* usage each month shall be the following, inclusive of shrink equal to $0.06/Mcf:
  - $0.82/Mcf for 5/1/2010 through 4/30/2011
  - $0.84/Mcf for 5/1/2011 through 4/30/2012
  - $0.87/Mcf for 5/1/2012 through 4/30/2013
  - $0.90/Mcf for 5/1/2013 through 4/30/2014
  - $0.93/Mcf for 5/1/2014 through 4/30/2015
- The delivery rate for monthly usage in excess of 90,000 Mcf shall be $0.41/Mcf, inclusive of shrink equal to $0.06/Mcf.

For the entire term extending from 5/1/2005 through 4/30/2015:

- Should NRG install and operate gas-fired power generation equipment such that NRG's monthly gas usage exceeds 90,000 MCF per month for three consecutive months, Equitable and NRG agree to renegotiate a delivery rate below $0.41/Mcf (inclusive of shrink) for the unexpired term of this Agreement.
- *NRG shall not elect Firm Standby service.*
- Balancing shall be waived.
- Transition shall be waived.
- Shrinkage shall be equal to $0.06/Mcf, as included in Equitable's delivery rates to NRG.
- Applicable Btu Conversion shall apply.
- The monthly service charge shall be fixed at $1,743.00 for all meters currently served under this Agreement.
- During the term of this Agreement, NRG agrees not to consume any fuel oil, propane, or geothermal energy for the purpose of producing steam, hot water, or chilled water, except in the event of Force Majeure or other interruption of natural gas deliveries by Equitable. Additionally, NRG agrees not to install any electric-powered equipment that would displace Equitable's natural gas deliveries to NRG during the term of the Agreement, except for the third electric chiller project scheduled to be installed by NRG during 2005. If NRG engages in any of the foregoing activities, other than the exceptions noted, Equitable's deliveries to NRG will be billed at the maximum delivery rates specified in Rate Schedule GDS until such time as NRG ceases the impermissible activity. Additionally, NRG will be subject to damages equal to the mathematical product of the volumes of Equitable's delivery service that were displaced by the impermissible activity and the difference between the maximum GDS delivery rate and the applicable delivery rates set forth in this Agreement.

**C. NRG'S CURRENT ESTIMATE OF DELIVERIES (In Mcf)**
(For information only)

| Month | Volume | Month | Volume | Month | Volume | Month | Volume |
|---|---|---|---|---|---|---|---|
| Jan | 78,500 | Apr | 51,100 | Jul | 75,600 | Oct | 47,500 |
| Feb | 66,800 | May | 55,600 | Aug | 81,000 | Nov | 48,600 |
| Mar | 61,500 | Jun | 73,900 | Sep | 63,500 | Dec | 72,400 |

D. **MAXIMUM DAILY QUANTITY (MDQ)**

*NRG's MDQ is 5000 Mcf.*

E. **POINT (S) OF RECEIPT AND DELIVERY**

The Point(s) of Receipt for all gas to be received from NRG for transportation by Equitable hereunder shall be at either Tepe Measuring Station, Jefferson Borough, Allegheny County, or at Peterman's Corner Regulating Station, Penn Hills Township, Allegheny County, or at various district regulators along Equitrans, LP H-152 line. All gas shall be delivered to NRG at the delivery point(s) shown on Exhibit B.

**NRG ENERGY PITTSBURGH, LLC**

Signature: [signature]

Name: Timothy W. Merrill

Title: General Manager

Date: May 5, 2005

**EQUITABLE GAS COMPANY,**
a division of Equitable Resources, Inc.

Signature: [signature]

Name: Randall Crawford

Title: President, Equitable Gas Company

Date:

**Exhibit B to**
**Equitable Gas Company Delivery Service Agreement**

**Delivery Points for NRG Energy Center Pittsburgh, LLC**
**Customer 1000153**

| Location Number | Meter Number | Facility Address |
|---|---|---|
| 217274 | 5228166147 | 111 S. Commons Avenue<br>Pittsburgh, PA 15212 |
| | 7091790165 | 111 S. Commons Avenue<br>Pittsburgh, PA 15212 |
| | 7091800166 | 111 S. Commons Avenue<br>Pittsburgh, PA 15212 |
| | 7529895982 | 111 S. Commons Avenue<br>Pittsburgh, PA 15212 |
| | 7564860716 | 111 S. Commons Avenue<br>Pittsburgh, PA 15212 |
| | 7858214487 | 111 S. Commons Avenue<br>Pittsburgh, PA 15212 |
| 309732 | 5385770255 | 1117 Reedsdale Street<br>Pittsburgh, PA 15233 |

**NRG ENERGY PITTSBURGH, LLC**

Signature: Timothy W. Merrill

Name: Timothy W. Merrill

Title: General Manager

Date: May 5, 2005

**EQUITABLE GAS COMPANY,**
a division of Equitable Resources, Inc.

Signature: Randall L. Crawford

Name: Randall Crawford

Title: President, Equitable Gas Company

Date:

# NRG EXHIBIT "3"

**NRG Exhibit No. 3**

Allegheny General Hospital Facts*

Founded in 1885 on Pittsburgh's historic North Side, Allegheny General Hospital has earned an international reputation for excellence and innovation in the care of patients, medical education and research. Serving Pittsburgh and the surrounding five-state area, the 829-bed academic health center offers a wide array of medical and surgical services.

Over the past eight years, Allegheny General has been recognized by U.S. News & World Report magazine as one of "America's Best Hospitals" for a number of clinical specialties, including cancer treatment, orthopaedic surgery, digestive diseases, neurology, neurosurgery, hormonal disorders, urology, rheumatology and geriatric medicine. The hospital has also been lauded as one of America's top 25 medical centers by the AARP's Modern Maturity magazine, which also identified Allegheny General as the nation's top hospital for the treatment of renal diseases and the second-leading center for the treatment of heart disease.

Solucient Inc., one of the health-care industry's leading quality research organizations, recognizes Allegheny General as a Top 100 hospital in the country for both orthopaedic surgery and the treatment of stroke.

Allegheny General was the first hospital in the region to receive designation as a Level I Shock Trauma Center, which is the highest designation available, and our LifeFlight aeromedical service was the first to fly in the northeastern United States.

As one of the largest tertiary facilities in the region, Allegheny General - and its Suburban Campus in nearby Bellevue - offers the most advanced care available in other specialty areas as well, including colorectal surgery, diagnostic and interventional radiology, emergency medicine, endocrinology, gastroenterology, general surgery, allergy/immunology, anesthesiology/pain medicine, internal medicine, bariatric/weight loss surgery, minimally invasive surgery, neonatology, nephrology, obstetrics/gynecology, cardiology, cardiothoracic surgery, ophthalmology, otorhinolaryngology, pediatrics, physical medicine and rehabilitation, plastic and reconstructive surgery, psychiatry, critical care medicine, infectious disease, oncology, pathology and laboratory medicine, reproductive medicine and infertility, vascular surgery, urogynecology, maternal and fetal medicine, pulmonary medicine, radiation oncology, rheumatology, transplant surgery, oral and maxillofacial surgery, dental medicine and nutrition.

Allegheny General's highly regarded sports medicine program serves as the official medical provider for the Pittsburgh Pirates professional baseball club and the Washington Wild Things minor league baseball team. The hospital also supports and directs numerous scholastic sports medicine programs.

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* Extracted from Allegheny General Hospital's website (www.wpahs.org).

The hospital has a number of other nationally recognized, disease-specific comprehensive centers, including those for lung and thoracic disease, digestive health, minimally invasive surgery, diabetes, hearing and balance disorders, vascular diseases, orthopaedics, spasticity and movement disorders, multiple sclerosis, neuro-oncology, neuromuscular diseases, epilepsy, cranial nerve disorders, skull base and endoscopic neurosurgery, spinal disorders, child and adolescent psychiatry, wound care and genetic disease.

Our Cancer Center is one of the nation's most advanced facilities, offering patients access to state-of-the-art programs for the complete spectrum of malignant disease, including centers for lung, esophageal, prostate, breast, colon and rectal, liver, brain, pancreatic, gynecologic, head and neck, and blood-borne cancers. Allegheny General is the gateway to some of the most prominent research into breast and colorectal cancer treatment and prevention through studies conducted by the National Surgical Adjuvant Breast and Bowel Project. This cancer research initiative, supported by the National Cancer Institute, is based on the Allegheny General campus and coordinates the efforts of more than 6,000 medical professionals in the study of breast and bowel cancer.

Allegheny General Hospital-Suburban Campus offers a complete array of surgical, medical, rehabilitative or emergency care. The facility houses the Institute for Advanced Pain Medicine, the Sleep Disorders Center and a magnetic resonance imaging facility.

The Rehabilitation Center at AGH-Suburban Campus is a 40-bed facility that offers comprehensive nursing and therapy services for patients recovering from orthopaedic and neurological injuries and diseases. The facility's comprehensive Brain Injury Program includes an eight-bed unit for patients who have suffered a brain injury or those who have experienced other types of neurological impairments. A state-of-the-art bone densitometry unit offers preventative measures for those at risk of developing osteoporosis, and stereotactic-guided aspirations are now being performed to provide patients with a less invasive procedure for the early detection and treatment of breast cancer. AGH - Suburban Campus' Emergency Department maintains benchmark standards of efficiency and patient satisfaction, and strives to treat every patient within 30 minutes of arrival.

A long-standing commitment to education and research remains a cornerstone of Allegheny General Hospital's philosophy, as evidenced by its affiliation with Philadelphia-based Drexel University College of Medicine and ongoing, innovative research studies in the neurosciences, medical oncology, human genetics, cardiovascular and pulmonary diseases, orthopaedics and trauma.

A member of the West Penn Allegheny Health System, Allegheny General Hospital admits nearly 32,000 patients and logs about 56,000 emergency visits and 28,000 surgical procedures each year. Approximately 1,250 physicians and 4,600 employees share the hospital's commitment to excellence in patient care, medical education and research.

# NRG EXHIBIT "4"

**NRG Exhibit No. 4**

Carnegie Science Center Facts*

Recipient of the 2003 National Award for Museum Service, Carnegie Science Center inspires and entertains by connecting science and technology with everyday life. In addition to providing valuable scientific experiences, Carnegie Science Center engages in outreach programs that serve Pittsburgh's diverse community. The Science Center is located on Pittsburgh's North Shore along the banks of the Ohio River and is accessible to persons with disabilities

Carnegie Science Center opened on October 5, 1991. Its is not unlike the story of the river that flows past its doorstep. Just as the Allegheny and the Monongahela converge to create the great Ohio, two very unique local institutions joined to create this exciting museum.

## Carnegie Museums of Pittsburgh

Pittsburgh industrialist and steel magnate Andrew Carnegie envisioned a cultural complex where Pittsburghers of every age, occupation and income could enjoy what he called the "noble quartet: art, science, music and literature." The Carnegie Institute, which originally included the Museum of Natural History, Museum of Art, Library and Music Hall, opened November 25, 1895, in Pittsburgh's Oakland neighborhood. From its inception, the Carnegie strove to bring contemporary developments in the "four nobles to the public". In a time before mass media, the only way for common Pittsburghers to see what artists and researchers from the US and around the world were doing was to bring samples of their work to Pittsburgh by *ship and by train* - aircraft and tractor-trailers were yet to be invented! This mission led to the creation of the Carnegie International art exhibition in 1896 and powered the Institute's efforts in collecting the fossil dinosaur bones for which it is still known today. When Carnegie died in 1919, he had given away the great majority of his fabulous wealth. The Museums and Library stand today as a distinctive reminder of the fortune he made in the steel industry and remain as a testament to Carnegie's vision and generosity.

## The Buhl Planetarium and Institute of Popular Science

On October 24, 1939, Pittsburgh became home to the fifth major planetarium in the United States, the Buhl Planetarium and Institute of Popular Science. The Buhl was a gift to the people of Pittsburgh from the $11 million Buhl Foundation in memory of its founder, Henry Buhl, Jr. (1856-1927). Mr. Buhl made his fortune as co-owner of the successful Boggs and Buhl Department Store on the Northside, and specifically suggested that part of his foundation funds be used to support initiatives in his beloved neighborhood. To this end, the foundation endowed the Buhl, with a planetarium in honor of Henry's wife Louise.

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* Extracted from the Carnegie Science Center website (www. carnegiesciencecenter.org).

The Buhl became a gateway to scientific knowledge and careers in scientific pursuits for generations of Pittsburghers. Its centerpiece was the "Theater of the Stars, a planetarium featuring a Model II Zeiss Star Projector that could accurately display 9,000 of the brightest stars in the sky. The Buhl housed a Foucault Pendulum, a device that demonstrates the earth's rotation on its axis. On the rooftop, a siderostat telescope automatically followed a star or planet across the sky. The Buhl also had some of the world's first interactive exhibits, which featured push buttons that set off alarms in a control room, where a staff person would play the appropriate record to provide an audio explanation of the exhibit - the height of innovation at the time!

Always devoted to public education, the Buhl encouraged young people to explore the world of science and became the meeting place for dozens of groups interested in scientific and technological pursuits. The Buhl was a model for supporting the scientific education of the people of Pittsburgh, initiating the prestigious science fair that still engages young scientists today. During World War II, it trained the military in celestial navigation. In 1954, the Miniature Railroad & Village opened at the Buhl, combining model trains with western Pennsylvania history. In 1958, the Buhl began the Junior Space Academy as a local response to the launch of Sputnik and the dawn of the Space Age.

## Carnegie Science Center: Merging the Buhl and Carnegie Institute

By the 1980s, the original Buhl building was aging and options for expansion and growth were considered. When expansion of the existing building was ruled out, the site where Carnegie Science Center now stands was chosen for the Buhl's relocation. As options for expansion of the newly renamed Buhl Science Center were explored, it became apparent that a whole new institution was evolving, requiring increased staffing in development, building services, science education and public relations.

At this point, the Carnegie Institute indicated an interest in merging with the Buhl. The merger was completed with the approval of each institution's Board in 1987, and in 1989, the new building planned for the banks of the Ohio River was renamed Carnegie Science Center. Ground was broken on October 5, 1989, and Carnegie Science Center opened two years later. The Henry Buhl, Jr. Planetarium and Observatory was reinvented in the new facility, becoming a mainstay of the CSC experience.

Today, people from around the globe recognize the name and reputation of Carnegie Science Center and its traveling exhibits and planetarium shows. From Atlantic to Pacific, Europe to Australia, programs and exhibits developed by Carnegie Science Center enlighten, inspire and entertain scores of museum and planetarium visitors. CSC is a national example for integration into its community, and in 2003 was recognized for its exceptional level of community service with the National Award for Museum Service, the highest honor of its kind, at a White House ceremony with First Lady Laura Bush. Closer to home, former visitors to the Buhl and CSC tell of the experiences that inspired them to become scientists, educators, entrepreneurs even astronauts and Olympic athletes!