ORIGINAL  *R. 0007211D*

Volume 2

## Philadelphia Gas Works

DOCUMENT
FOLDER

## Before The

## Pennsylvania Public Utility Commission

Computation of Annual Purchased Gas Costs
For Twelve Months Ending August 31, 2008

DOCKETED

FEB 0 8 2007

## 66 Pa.C.S. § 1307(f)

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Information Submitted Pursuant To:

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

66 Pa.C.S. §§ 1307(f), 1317, 1318 and
52 Pa. Code § 53.61, et seq.

February 1, 2007

# Philadelphia Gas Works 1307f - 2006 Prefiling

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**Philadelphia Gas Works**

Pennsylvania Public Utility Commission

52 Pa. Code §53.61. et seq.

**Item 53.64(c)**   Thirty days prior to the filing of a tariff reflecting an increase or decrease in natural gas costs. each Section 1307(f) gas utility seeking recovery of purchased gas costs under that section shall provide notice to the public. under § 53.68 (relating to notice requirements). and shall file the following supporting information with the Commission. with a copy to the Consumer Advocate. Small Business Advocate and to intervenors upon request:

   (5) A listing and updating. if necessary. of projections of gas supply and demand provided to the Commission for any purpose—see § 59.67 (relating to formats). In addition. provide an accounting of the difference between reported gas supply available and gas supply deliverable—including storage—from the utility to its customers under various circumstances and time periods.

**Response:**

   Please see the attached document. PGW's next Annual Resource Planning Report (Forms 1 and 2) is due for submission to the Commission on March 1. 2007 and an updated Annual Resource Planning Report is not available at this time.

# ANNUAL RESOURCE PLANNING REPORT

## Philadelphia Gas Works

## Philadelphia, Pennsylvania

March 2006

Forms 1 & 2

# BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, Pennsylvania 19122

## ANNUAL RESOURCE PLANNING REPORT
## MARCH 2006

### Forms 1 & 2

Information Submitted in Compliance with and Pursuant to Title 52
Pennsylvania Code Section 59.81

# PHILADELPHIA GAS WORKS

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## Section 59.81: **General**

Pursuant to Section 59.81 (a). each major jurisdictional gas utility must file an annual resource planning report (ARPR) on or before June 1, 1996 and June 1 of each succeeding year. except Form 1A/2A which filing date is March 1. One (1) original and seven (7) copies of the report must be submitted to:

Secretary
Pennsylvania Public Utility Commission
P.O. Box 3265
Harrisburg. PA 17105-3265

One copy should be submitted <u>unbound</u> for ease of duplication.

One courtesy copy should also be submitted to:

Pennsylvania Public Utility Commission
Conservation. Economics and Energy Planning
P.O. Box 3265
Harrisburg. PA 17105-3265
Attn. Calvin Birge

Also submit one (1) copy to the following:

Office of Consumer Advocate
555 Walnut Street
Forum Place. 5th Floor
Harrisburg. PA 17101-1921

Office of Small Business Advocate
Suite 1102. Commerce Building
300 N. Second Street
Harrisburg. PA 17101

Be sure to indicate the name and telephone number of at least one individual at the company who is familiar with the filing and will be available to answer any questions the Commission staff may have. You may also wish to list those individuals who are directly involved in the preparation of the various document components.

Information contained in annual resource planning reports must be utility-specific. The report should follow an outline similar to that which is contained herein. with narrative accompanying the required data. Forms may be modified to accommodate wide columns of numbers and enhance readability. but the general format should be used to maintain consistency.

This information is not generally considered confidential. Utilities are obligated to provide complete information. However, we will treat as confidential those portions of the report designated by the utility as proprietary. If a utility's proprietary claim is challenged. the Commission will direct the utility to file a petition for protective order pursuant to 52 PA Code 5.423.

All questions concerning the reporting requirements for Forms IRP Gas 1A through 9 should be addressed to Pennsylvania Public Utility Commission Bureau of Conservation. Economics and Energy Planning.

| | |
|---|---|
| Response: | An original. seven (7) copies. and one unbound copy of Forms 1A, 1B. 2A. 2b. and 2C along with a general discussion of the methodologies. data sources. and assumptions are being submitted to meet the requirements of the March 1 filing. |

All questions concerning the ARPR should be directed to Mr. Kenneth Dybalski. Manager - Gas Planning at (215) 684-6317. The following individual is available to answer questions concerning Forms 1 and 2: Ms. Maria Hogan. Administrator – Gas Planning at (215) 684-6618.

## Section 59.81   <u>Forms IRP-Gas 1A, and 1B – Annual and Peak Day Demand</u>

The load growth projections shall reflect the effects of price elasticity, market induced conservation, building and appliance efficiency standards, and the effects of the utility's existing and planned conservation and load management activities.

Response:        Please see the attached documentation and forms.

Section 59.81

**Forms IRP-Gas 2A, 2B and 2C - Annual and Peak Day Energy
Resources, Transmission and Storage Contracts**

The forecast of energy sources shall indicate sources of all presently
available and new supplies which the utility estimates will become
available, displayed by component parts.

Response:     Please see the attached documentation and forms.

# BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

### PHILADELPHIA GAS WORKS
### 800 WEST MONTGOMERY AVENUE
### PHILADELPHIA, PENNSYLVANIA

## Annual Resource Planning Summary Report

Filed: March 2006

**Information Submitted in Compliance with and Pursuant to Title 52
Pennsylvania Code Sections 59.81-59.84**

# PHILADELPHIA GAS WORKS

# 2006 Annual Resource Planning Summary Report

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## Introduction

By Order entered January 11, 1996, the Pennsylvania Public Utility Commission (PUC) adopted final regulations (52 PA Code §§ 59.81 - 59.84) which set forth revised requirements for filing an Annual Resource Planning Report (the Plan). The Plan submitted represents Philadelphia Gas Works' (PGW or the Company) belief that integrated resource planning (IRP) is a workable approach to utility planning.

This plan summary contains historical data and projections for annual, winter and peak day supply to meet projected customer requirements in a least cost manner, while ensuring adequate and reliable service. It is organized into the following 5 sections:

I.      PGW's Overall Approach to Integrated Resource Planning

II.     Supply Forecasting Methodology and Assumptions

III.    Demand Forecasting Methodology and Assumptions

IV      Design Day Forecasting Methodology and Assumptions

V.      PGW Corporate Modeling System

# I.    PGW's Overall Approach to Integrated Resource Planning

## PGW Optimization Standard for Purchasing and Utilizing Gas Supplies

As reasonably anticipated PGW intends on meeting its contractual obligations to supply all of its current firm customers in its service territory on the coldest day, throughout the heating season and throughout the year.  Projected customer requirements for design day and design winter conditions form the basis for capacity commitments for pipeline supply, storage, and transportation contracting.

Natural gas supplies are purchased under a portfolio approach with PGW intending to secure the lowest overall price consistent with the corporate goals of reliability and security of supply.  In addition, consideration is given to maintaining a diversity of sources and types of supply, coupled with contractual and operational flexibility on both a daily and seasonal basis.  Short term purchases from spot market sources are utilized to the maximum degree that they are more economical, available, and transportable.

Natural gas supplies are utilized so as to minimize gas costs subject to reliability constraints. Supply contract obligations are honored and prudent Gas Control operational requirements are assumed.  Storage gas is drawn down so as to always maintain an inventory level sufficient for the remaining winter in the event that design temperature conditions should occur in the remaining segment of the winter season.  Within the above parameters, priority is given to utilizing the most economical sources of supply first within the context of preserving the capability of meeting seasonal and annual demands rather than the momentary daily requirements.  All facilities and sources of supply - flowing, storage and LNG are available to achieve the intended end, namely, minimizing gas costs subject to reliability constraints.

## II. Supply Forecasting Methodology and Assumptions
### Basic Assumptions


The PGW Gas Supply Policy Committee comprised of senior corporate management as well as Gas Planning. Gas Control. Gas Supply, and Regulatory departmental management. approved the aforementioned Optimization Standard for Purchasing and Utilizing Gas Supplies (Section I). All natural gas purchases continue to be made in accordance with this standard. Projected sales. revenues and natural gas expenses in this report result from this agreement. particularly in the areas of inventory valuation. priorities of gas selection and interruptible supply availability.


Incorporated into our projections are additional implementation steps involved with developing a cohesive gas supply/demand strategy for the near term and the longer range. These include developing a cost relationship comparison for current resources and a review of current contract terms and alternatives for continuing. extending. modifying or eliminating contracts.
In order to achieve this while maintaining a balance between economics and security of supply. the company uses a portfolio strategy approach. This approach incorporates a menu driven selection of services which allows the company to choose only those specific services necessary to meet its requirements. This is achieved by first securing transportation capacity rights and then sources of supply are contracted to cover the firm transport rights taking into consideration differing seasonal obligations.


Operating flexibility is sustained by variations in contract stipulations to permit the system to swing on the most economical gas supplies available while maintaining the ability to supply rapidly fluctuating temperature requirements. Storage facilities are substituted wherever opportunity affords to reduce annual expense for flowing 365 day pipeline service without reducing design day and design winter season delivery capability. Direct control of all storage is paramount to permit PGW to minimize winter costs by injecting lower priced summer purchases and to cycle storage to balance daily take fluctuations to avoid overrun/balancing charges.

## II.  Supply Forecasting Methodology and Assumptions
## Basic Assumptions (Continued)

PGW's supply strategy incorporates maintaining full current winter day deliverabilty with regard to transportation capacity but to convert. where possible. to storage rather than winter flowing contracts to enhance financial and operational flexibility. A variety of longer term supply contracts are necessary to support pipeline transportation capacity because reliance upon best effort spot suppliers to fill wintertime supply requirements to meet firm customers' demands has proven to be an unreliable alternative. As a result longer-term contracts are utilized to support firm transportation capacity. To accomplish this end. the Company purchases winter supply contracts with daily deliverabilty equal to approximately 64% of the contractual daily transportation entitlements on its two interstate pipelines with direct connections to PGW's service territory. Additionally. these supply contracts match the contractual entitlements of the two pipelines by sourcing supply in a manner consistent with the pipeline's upstream contractual requirements. In this way. PGW not only helps ensure the security of supply by sourcing the gas from geographically diverse supply regions but this diversity also allows PGW to take advantage of the pricing basis differential inherent in these supply locations.

These contracts all contain the ability to fix the price for upcoming months as well as to allow the pricing to default to an agreed upon market index when there is no market advantage in fixing a price before the month begins. PGW uses this fixed price option in conjunction with its Gas Cost Rate (GCR) filing (GCR filing includes pricing based upon the NYMEX and Global Insight) by always attempting to buy under the GCR forecasted prices. Through the matching of the duration supply contracts to a seasonal demand. such as the winter operating season. the firm ratepayers benefit from not paying demand charges year-round.

A second component of PGW's supply portfolio or a volume equal to 32% of pipeline capacity. is purchased gas based on a first-of-the-month index pricing methodology with contracts that allow for daily change in volumetric take. This allows the Company to effectively shut-off higher priced supply replacing such supply with daily cheaper spot priced gases. Under assumed normal winter conditions. PGW utilizes certain storage fields (Eminence and Washington) in a manner similar to third party supply. Specifically. these storage contracts do not contain

## II.    Supply Forecasting Methodology and Assumptions
### Basic Assumptions (Continued)

transportation to the PGW city gate. Therefore, these storages must flow within PGW's contractual upstream capacity rights on TETCO and TGPL. Typical daily delivery from these fields utilizes approximately 4% of the daily TETCO and TGPL capacity rights to the Philadelphia city gates. These storage fields also act as a physical fixed price to counter winter price conditions since the WACOG usually reflects a winter/summer pricing differential. PGW's summer purchasing strategy also incorporates a portfolio approach to the purchase of system supply and storage refill. The GCR filing is again used as a yardstick in purchasing supply for both system supply and storage refill. PGW attempts to always purchase a portion of its supply needs below the projected GCR cost estimate with a portion of the portfolio purchased at default, first-of-the-month pricing. These first of the month pricing option contracts. in most instances. allow PGW to evaluate daily spot prices and provide for a turn-off of first-of-the-month index priced supply in favor of the purchase of more advantageous daily spot purchases.

Operating conditions permitting. the Company enters into the FERC approved capacity release market to offset demand charges it pays for its firm transportation and/or the incremental off-systems sales market when it is economically advantageous for the firm ratepayer. In both. instances. these opportunities are sought only when firm customer needs are satisfied. Additionally. PGW's bundled storages and LNG can be utilized as a substitute for higher price gas supply based on market pricing conditions and the results of PGW's status report. Effectively. the Gas Supply Group is at all times studying the market for any economic advantage it can bring to the firm ratepayer.

## III. Demand Forecasting Methodology and Assumptions
### Basic Assumptions

PGW uses a combination of four basic methods to develop demand projections. They are:

1) Historical Data -- data showing long-term demand trends, conservation and utilization patterns by the various classes of customers -- Residential, Commercial, Industrial and Interruptible.

2) Customer Survey -- Information as gathered by PGW's Marketing Department and used for annual projections by month and year.

3) Relative End Use -- Projections via Marketing methods of customer load sizing by appliance type, maximum input, maximum summer and winter full load hour (FLH) calculations which are used to develop yearly and monthly demand requirements.

4) Judgment -- Experienced opinion as applied to the evaluation of the combination of all data to develop the basic demand requirements.


### Customer Demand

The total system-wide demand is a function of the projected gas demand per customer and the anticipated number of customers in each class. In determining customer demand, consideration is given to projecting current customer usage, augmented by significant gains or losses in each of 43 homogeneous groups for the period being projected. The Gas Planning Department attempts to determine for each customer class, the level of demand relating to experienced temperatures and the component of demand that is apparently not affected by changes in temperature. Within each class the most recent summer and winter usage patterns are established from historical records. Summer data provides an insight into each class of customers non-temperature sensitive load requirements or baseload which can be expressed in terms of thousands of cubic feet (Mcf) per day, per customer. Similarly, winter data after removal of the daily baseload level provides the temperature sensitive load requirements for each class of customer.

This usage primarily reflects space heating but also includes such other temperature sensitive needs as water heating attributable to colder ground water inlet temperatures and similar process variations. This overall heating requirement can be expressed in terms of the cubic feet of gas

## III. Demand Forecasting Methodology and Assumptions
## Basic Assumptions (Continued)

utilized per degree of temperature change on a per customer basis for each separate customer classification.

In addition, consideration must be given to the variation of customer utilization patterns for space heating over the year, recognizing the transitional fall start-up of heaters, the deep winter period needs and the tapering off and shut-down which occurs in the spring. These usage patterns taken in conjunction with anticipated customer counts and appropriate temperature patterns form the basis of determining class and total system demands. Due to the inconsistencies of weather and weather forecasting techniques, no attempt is made to predict the specific daily temperatures of the projection period. Instead PGW has developed a normal monthly temperature pattern by analyzing statistical records of actual temperature patterns over a 30-year period. This pattern reflects 4555 degree-days annually distributed in a stylized pattern preserving the monthly range of colder to warmer daily temperatures experienced in the January to May period and warmer to colder daily temperatures in the September to December period.

The term "degree days" quantifies the number of degrees of temperature below a base level of 65 degrees Fahrenheit and is used as a tool to measure space heating requirements, i.e. on a day experiencing an average temperature of 40 degrees F. there would be 25 degree days. The annual 4555 degree days which is composed of the PGW normal monthly temperature patterns, form the basis of the calculation of the temperature sensitive component of demand. The application of the above described baseload, space heating factors and customer counts, when applied to a calendar based daily temperature pattern, produce a daily calculation of total customer requirements identified as sendout. It should be noted that there is a difference between sendout volume and sales volume. Sendout represents those volumes metered at the city gate to supply customers' requirements while sales are those volumes registered on customer meters. The variation between sendout and sales, after adjustments, is that portion which is lost and unaccounted for in the PGW distribution system.

## III. Demand Forecasting Methodology and Assumptions
### Basic Assumptions (Continued)

Sales and sendout differ on a monthly basis in the degree day distribution pattern. For efficiency, meter reading and billing efforts are distributed uniformly over the available number of working days in a month and the majority of PGW customers are divided into 20 individual groups or cycles containing residential, commercial and industrial accounts within a specific geographic area. When these cycle customers are billed each month they reflect meter reading usage not for the calendar month being billed, but for the number of days and temperature pattern of degree-days experienced during their specific interval between meter readings. For example, assume the month of January contained 900 calendar degree-days. The customers in cycle 10 being billed for the month of January might have had meter readings taken on December 15 and again on January 17. Sales billed and reported in the company records for these customers would reflect the number of days and degree days between these reading dates rather than the 900 degree days of the month. Similarly, cycle 1 customers that might have had meter readings taken on December 1 and January 2 would reflect principally the month of December temperature experience, whereas, cycle 20 customers with meter readings taken possibly December 28 and January 29 would reflect principally the month of January temperature experience.

An average of the 20 cycles (Average Cycle Degree-Days) is used as the temperature pattern upon which to project the volume of sales in the forecast period. Both projections of sales and sendouts represent the full demand for that period from both firm and interruptible customers.

### Methodology Used to Develop Monthly Estimates

A trial domestic factor is developed by classes of customers from sales reported for the summer months in the previous year. This average factor is then utilized in the sendout formula with the customer counts for the months of July, August and September. A comparison between what the formula calculates and the actual experienced for those three months is ascertained and the trial

## III. Demand Forecasting Methodology and Assumptions
### Basic Assumptions (Continued)

domestic (baseload) factors are finalized to replicate the total sendout experienced. The finalized domestic factors (DOMs) are then utilized in conjunction with the actual sales and customer counts for the months of December, January and February to determine the average Mcf per degree day for each of the individual months for the remaining temperature sensitive load. The results are weighted by degree-days to give an average value which is utilized as a trial value for the heating factor.

The finalized domestic factor and the trial heating factor developed, as such, are then applied in the sendout calculations together with customer counts for the months of December, January and February (the peak winter heating period) to project an estimated sendout for each of these months. The projected sendout is then compared with the actual sendout experienced. Any variation between the projected and actual is adjusted to force the replication of the actual sendout experience thus resulting in the determination of a finalized heating factor.

To project the number of customers for each individual rate class, each rate class of customers are reviewed and accumulated individually. Current customers are ascertained from the number of billings data available from sales and revenue actually experienced immediately prior to the commencement of a model run. Declines are projected for anticipated losses to electric and other fuels, demolitions and transfers to other rates. Direct transfers from a non-heating to a heating account, as a result of a current customer's conversion to gas heat, moves the domestic load to the new category. Projected additional customers are developed by the Marketing Department where staff dealing with individual classes of customers and having the most direct knowledge of conditions within their sphere, project annual load additions which are translated into customer counts based upon typical customer usage for that individual customer class. The approximate month of turn-on is also developed to permit reflection of the effective portion of the load addition within the fiscal period under study. Interruptible class customers as well as other large special accounts are detailed individually incorporating expected gains and losses as direct contact and experience has indicated.

**III.     Demand Forecasting Methodology and Assumptions**
     **Basic Assumptions (Continued)**


The base revenue projections for both firm and interruptible customer groups are derived as the product of the projected sales volumes and the present tariff rate for each individual customer class within each group.  The GCR revenue projections are derived as the product of the GCR factor and the projected sales volumes to the firm customers.

# IV.    Design Day and Design Hour Forecasting Methodology and Assumptions

Each year a six year estimate of Design Day and Design Hour requirements anticipated under design day and design hour operating conditions is prepared to ensure that adequate resources are under contract and to further ensure that PGW can fulfill its supply obligation for its firm customer requirements on a design day and design hour.

The projected demands for design day are developed utilizing previous winter periods data for all weekdays where the temperature average for the day is 32 degrees Fahrenheit or below. The total sendout for these days as recorded under actual conditions and is reduced to firm sendout by removal of the interruptible load. A computer generated linear regression procedure is utilized to develop a sendout model from actual daily sendouts and degree days. and the process is repeated in a quadratic regression and a cubic regression procedure. From the predicted sendouts in the regression. which are within a reasonable percent of error to the actual sendout. factors are derived to replicate the actual sendouts. The factors derived from this are used to determine the current load requirements for a 0 degrees F day and from this data. the load for a -5 degrees F hour is calculated. PGW's Marketing Department's load projections for present and future years are then applied to these requirements to develop design day and design hour present and future load requirements. This is achieved by the addition of the projected marketing load growth on an annual basis (by day) to the derived base-year design day requirements.

## V.    PGW Corporate Modeling System

## General Description

The corporate modeling system is a tool used by PGW management to project sales. revenues and expenses, as well as to examine key planning strategies and evaluate their effects on company operations. The system provides the ability to determine the results of alternate plans and scenarios. while at the same time allowing for responses to "what if" type situations quantifying revenue and expenses. The system is totally interactive in that it combines the power of the computer with the experience of management to develop both short and long range projections based upon experienced historical data for sales and sendout volumes. raw material expenses and sale revenues. The corporate model system is composed of five separate models. Each model operates independently but requires substantial external data inputs as well as data output results from one or more of the other models in the system.

## Gas Demand Model

The gas demand model is used to forecast total requirements for gas based upon current customer usage experience with adjustments for projected gains and losses. Input data includes domestic and space heating usage factors. customer counts by rate classifications. temperature patterns and results in projections of sales and sendout volumes. Detail and summary reports include average usage per customer and demands by rate classification. This data is transferred to the supply model.

## Gas Supply Model

The supply model is used to dispatch the various supply sources in accordance with contract availability limitations. It develops the necessary balance between supply and demand which reflects plant fuel and storage injection requirements as well as customer demands by identifying the availability of interruptible load balancing sales. Detail and summary reports include daily and monthly load requirements. the volumes taken from each source by pipeline contract. storage balances. LNG requirements. etc. Data is transferred to both the cost model and the revenue model downstream.

## V.     PGW Corporate Modeling System (Continued)

### Gas Cost Model

The gas cost model is used to determine natural gas and other raw material costs dispatched. The model tracks the various cost components of each contract - the demand, capacity, commodity, injection and withdrawal charges - providing monthly and annual details and summary information including inventory valuations and expenses for supplemental LNG supplies. It transfers these expenses to the Gas Cost Rate Model.

### Gas Cost Rate Model

The gas cost rate model is used to develop the net natural gas expenses, net applicable GCR expenses and the GCR. It ascribes responsibility for the raw material costs to firm and interruptible classes in accordance with PGW's tariff requirements, assigning cost on an as-used basis to customer classes applicable to such charges, and compensates for natural gas refunds and previous over or under billing of fuel expenses. Detail summary reports include specifics of raw material adjustment, statements of reconciliation, and determination of applicable sales and expenses. It transfers the results to the revenue model.

### Revenue Model

The revenue model is used to project billed revenue by rate classification in accordance with PGW's rate tariffs. It prepares the net billed revenue, GCR revenues, senior citizen discounts, and cycle billing information all detailed by rate classification. The detail and summary reports provided by this model are directed to the accounting and financial departments for inclusion in various financial reviews.

### Summary

The corporate modeling system allows PGW management to effectively address supply/demand balancing, supply facilities planning, projected sales, cost, revenues, and sendout volumes in a timely manner. Results assist in the development of PGW's annual Operating Budget, setting of the GCR and planning of supply resources.

## V.    PGW Corporate Modeling System (Continued)

The model also provides a Status Report for the evaluation of remaining winter period requirements on both normal and design temperature patterns and the extrapolation of the current year based upon the experience to date and an assumption of temperatures anticipated for the remaining period of the year. this latter acting as a guide for both financial cash flow planning and winter operations.

# FORM-IRP-GAS-1A: ANNUAL GAS REQUIREMENTS
## REPORTING UTILITY: PHILADELPHIA GAS WORKS
### (VOLUMES IN MMcf)

| | Historical Data | | Current Year | Three Year Forecast | | |
|---|---|---|---|---|---|---|
| Index Year | -2 | -1 | 0 | 1 | 2 | 3 |
| Actual Year | 2003-2004 | 2004-2005 | 2005-2006 | 2006-2007 | 2007-2008 | 2008-2009 |
| Firm Requirements: | | | | | | |
| | | | | | | |
| Retail Residential | 42,433 | 41,467 | 38,733 | 43,869 | 43,828 | 43,641 |
| Retail Commercial | 12,166 | 11,919 | 11,580 | 12,890 | 13,027 | 13,150 |
| Retail Industrial | 1,119 | 1,050 | 1,023 | 1,517 | 1,674 | 1,830 |
| Electric Power Generation | - | - | - | - | - | - |
| Exchanges with Other Utilities | - | - | - | - | - | - |
| Unaccounted For Gas | 2,540 | 1,902 | 1,625 | 2,432 | 2,443 | 2,447 |
| Company Use | 99 | 95 | 98 | 104 | 104 | 104 |
| Other - Prior Period Adjustment | - | (463) | - | - | - | - |
| Subtotal Firm | 58,356 | 55,970 | 53,060 | 60,811 | 61,077 | 61,171 |
| | | | | | | |
| Interruptible Requirements: | | | | | | |
| Retail | 4,006 | 4,464 | 2,783 | 3,134 | 3,124 | 3,149 |
| Electric Power Generation | 98 | 47 | 20 | 7 | 10 | 13 |
| Company's Own Plant | 61 | 65 | 67 | 71 | 71 | 70.65 |
| Unaccounted For Gas | 183 | 185 | 98 | 126 | 125 | 127 |
| Subtotal Interruptible | 4,347 | 4,760 | 2,968 | 3,338 | 3,330 | 3,360 |
| SUBTOTAL FIRM AND INTERRUPTIBLE | | | | | | |
| | 62,703 | 60,730 | 56,028 | 64,150 | 64,406 | 64,532 |
| Transportation: | | | | | | |
| Firm Residential | - | - | - | - | - | - |
| Firm Commercial | - | - | - | - | - | - |
| Firm Industrial | - | - | - | - | - | - |
| Interruptible Residential | - | - | - | - | - | - |
| Interruptible Commercial | 302 | 1,508 | 1,952 | 2,851 | 2,821 | 2,931 |
| Interruptible Industrial | 918 | 1,912 | 2,226 | 3,021 | 3,068 | 3,086 |
| Other - Non-Utility Power Producers | 7,762 | 8,307 | 7,442 | 8,340 | 8,340 | 8,340 |
| Subtotal Transportation | 8,981 | 11,727 | 11,620 | 14,212 | 14,229 | 14,356 |
| | | | | | | |
| TOTAL GAS REQUIREMENTS | 71,684 | 72,457 | 67,649 | 78,362 | 78,636 | 78,888 |
| | | | | | | |
| Increase (Decrease) | na | 772 | (4,808) | 10,713 | 274 | 252 |
| Percent Change (%) | na | 1.08% | -6.64% | 15.84% | 0.35% | 0.32% |

## FORM-IRP-GAS-1B:PEAK DAY REQUIREMENTS
## REPORTING UTILITY: PHILADELPHIA GAS WORKS
### (VOLUMES IN MMcf)

| | Historical Data | | Current Year [2] | Three Year Forecast [1] | | |
|---|---|---|---|---|---|---|
| Index Year | -2 | -1 | 0 | 1 | 2 | 3 |
| Actual Year | 2003-2004 | 2004-2005 | 2005-2006 | 2006-2007 | 2007-2008 | 2008-2009 |
| **Firm Requirements:** | | | | | | |
| Retail Residential | 438 | 405 | 489 | 538 | 536 | 535 |
| Retail Commercial | 125 | 116 | 128 | 141 | 142 | 144 |
| Retail Industrial | 12 | 10 | 11 | 16 | 17 | 19 |
| Electric Power Generation | 0 | 0 | 0 | 0 | 0 | 0 |
| Exchanges with Other Utilities | 0 | 0 | 0 | 0 | 0 | 0 |
| Unaccounted For Gas | 26 | 19 | 0 | 0 | 0 | 0 |
| Company Use | 1 | 1 | 1 | 1 | 1 | 1 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 |
| Subtotal Firm | 602 | 552 | 630 | 695 | 697 | 698.4 |
| **Interruptible Requirements:** | | | | | | |
| Retail | 18.1 | 28.2 | 26.5 | 25.1 | 25.3 | 25.7 |
| Electric Power Generation | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Company's Own Plant | 0.4 | 0.6 | 0.6 | 0.0 | 0.0 | 0.0 |
| Unaccounted For Gas | 0.0 | 0.0 | 0.0 | 1.0 | 1.0 | 1.0 |
| Subtotal Interruptible | 18.5 | 28.9 | 27.1 | 26.1 | 26.2 | 26.7 |
| **SUBTOTAL FIRM AND INTERRUPTIBLE** | 620 | 580 | 657 | 721 | 723 | 725 |
| **Transportation:** | | | | | | |
| Firm Residential | 0 | 0 | 0 | 0 | 0 | 0 |
| Firm Commercial | 0 | 0 | 0 | 0 | 0 | 0 |
| Firm Industrial | 0 | 0 | 0 | 0 | 0 | 0 |
| Interruptible Residential | 0 | 0 | 0 | 0 | 0 | 0 |
| Interruptible Commercial | 0 | 6 | 0 | 0 | 0 | 0 |
| Interruptible Industrial | 2 | 5 | 0 | 0 | 0 | 0 |
| Other - Non-Utility Power Producers | 2 | 35 | 0 | 0 | 0 | 0 |
| Subtotal Transportation | 4 | 46 | 0 | 0 | 0 | 0 |
| **TOTAL GAS REQUIREMENTS** | 624 | 627 | 657 | 721 | 723 | 725 |
| Increase (Decrease) | na | 3 | 30 | 64 | 2 | 2 |
| Percent Change (%) | na | 0.49% | 4.82% | 9.78% | 0.24% | 0.27% |

[1] Peak Day is forecasted at a 2 degree temperature.

[2] Current Year Peak Day is forecasted at a 5 degree temperature.

# FORM-IRP-GAS-2A: ANNUAL/PEAK SUPPLY
## TABLE 1: ANNUAL/PEAK SUPPLY
### REPORTING UTILITY: PHILADELPHIA GAS WORKS
(Volumes in MMcf)

| | Historical Data | | | | Current Year [2] | | Three Year Forecast [1] | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Index Year | -2 | | -1 | | 0 | | 1 | | 2 | | 3 | |
| Actual Year | 2003-2004 | | 2004-2005 | | 2005-2006 | | 2006-2007 | | 2007-2008 | | 2008-2009 | |
| | Annual | Peak | Annual | Peak | Annual | Peak | Annual | Peak | Annual | Peak | Annual | Peak |
| Gas Supply for Sales Service | | | | | | | | | | | | |
| TETCO | - | - | - | - | - | - | - | - | - | - | - | - |
| TRANSCO | 9,841 | 53 | 4,557 | 53 | - | - | - | - | - | - | - | - |
| Spot Purchases | 57,160 | 295 | 59,837 | 235 | 58,813 | 249 | 65,826 | 259 | 67,082 | 255 | 64,684 | 253 |
| Storage Withdrawals | 14,082 | 86 | 11,116 | 160 | 16,071 | 167 | 16,970 | 167 | 14,188 | 205 | 14,490 | 206 |
| LNG Withdrawal | 2,609 | 188 | 1,817 | 135 | 1,541 | 245 | 2,067 | 301 | 1,822 | 270 | 1,656 | 272 |
| Company Production | - | - | - | - | - | - | - | - | - | - | - | - |
| LNG Purchases | - | - | 382 | - | - | - | - | - | - | - | - | - |
| Exchanges with other LDCs | - | - | - | - | - | - | - | - | - | - | - | - |
| Other | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Gas Supply | 83,692 | 622 | 77,709 | 583.1 | 76,426 | 661 | 84,863 | 727 | 83,092 | 730 | 80,830 | 732 |
| Total Transportation Services | 8,981 | 4 | 11,727 | 46 | 11,620 | - | 14,212 | - | 14,229 | - | 14,356 | - |
| | | | | | | | | | | | | |
| TOTAL GAS SUPPLY AND TRANSPORTATION SERVICE | 92,673 | 625 | 89,436 | 630 | 88,046 | 661 | 99,075 | 727 | 97,321 | 730 | 95,186 | 732 |
| | | | | | | | | | | | | |
| Deductions | | | | | | | | | | | | |
| Underground Storage Injections & Fuels | 18,290 | - | 13,939 | - | 18,076 | 4 | 17,765 | 4 | 16,818 | 4 | 14,579 | 4 |
| LNG Liquefactions & Fuels | 2,699 | 1 | 2,571 | 3 | 2,321 | 0 | 2,949 | 2 | 1,867 | 2 | 1,719 | 2 |
| Sales to other LDC's | - | - | 470 | - | - | - | - | - | - | - | - | - |
| Total Deductions | 20,989 | 1 | 16,979 | 3 | 20,397 | 4 | 20,713 | 6 | 18,685 | 6 | 16,298 | 7 |
| | | | | | | | | | | | | |
| NET GAS SUPPLY | 71,684 | 624 | 72,457 | 627 | 67,649 | 657 | 78,362 | 721 | 78,636 | 723 | 78,888 | 725 |
| BTU | 1.038 | | | | | | | | | | | |

[1] Peak Day is forecasted at a 2 degree temperature.

[2] Current Year Peak Day is forecasted at a 5 degree temperature.

# FORM-IRP-GAS-2B: NATURAL GAS TRANSPORTATION
## REPORTING UTILITY: PHILADELPHIA GAS WORKS
### (volumes in MMcf)

| | Historical Data | | | | Current Year | | Three Year Forecast | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Index Year | -2 | | -1 | | 0 | | 1 | | 2 | | 3 | |
| Actual year | 2003-2004 | | 2004-2005 | | 2005-2006 | | 2006-2007 | | 2007-2008 | | 2008-2009 | |
| **City Gate Transportation Contracts:** | Annual | Peak | Annual | Peak | Annual | Peak | Annual | Peak | Annual | Peak | Annual | Peak |
| Transcontinental Transmission Corp. | 3,723 | 60 | 3,723 | 60 | 3,723 | 60 | 3,723 | 60 | 3,723 | 60 | 3,723 | 60 |
| Texas Eastern Transmission Corp. | 2,570 | 43 | 2,570 | 43 | 2,570 | 43 | 2,570 | 43 | 2,570 | 43 | 2,570 | 43 |
| *Texas Eastern Transmission Corp.* | 2,390 | 20 | 2,390 | 20 | 2,390 | 20 | 2,390 | 20 | 2,390 | 20 | 2,390 | 20 |
| Transcontinental Transmission Corp. | 453 | 5 | 453 | 5 | 453 | 5 | 453 | 5 | 453 | 5 | 453 | 5 |
| Total | 9,137 | 128 | 9,137 | 128 | 9,137 | 128 | 9,137 | 128 | 9,137 | 128 | 9,137 | 128 |
| **Upstream Transportation Contracts:** | | | | | | | | | | | | |
| Transcontinental Transmission Corp. | 58,546 | 160 | 58,546 | 160 | 58,546 | 160 | 58,546 | 160 | 58,546 | 160 | 58,546 | 160 |
| Texas Eastern Transmission Corp. | 26,578 | 73 | 26,578 | 73 | 26,578 | 73 | 26,578 | 73 | 26,578 | 73 | 26,578 | 73 |
| Texas Eastern Transmission Corp. | 8,442 | 23 | 8,442 | 23 | 8,442 | 23 | 8,442 | 23 | 8,442 | 23 | 8,442 | 23 |
| Texas Eastern Transmission Corp. | 2,359 | 17 | 2,359 | 17 | 2,359 | 17 | 2,359 | 17 | 2,359 | 17 | 2,359 | 17 |
| Texas Eastern Transmission Corp. | 2,359 | 17 | 2,359 | 17 | 2,359 | 17 | 2,359 | 17 | 2,359 | 17 | 2,359 | 17 |
| Transcontinental Transmission Corp. | 172 | 2 | 172 | 2 | 172 | 2 | 172 | 2 | 172 | 2 | 172 | 2 |
| Total | 98,456 | 293 | 98,456 | 293 | 98,456 | 293 | 98,456 | 293 | 98,456 | 293 | 98,456 | 293 |
| **Storage-Related Transportation Contracts:** | | | | | | | | | | | | |
| Dominion Transmission Inc. | 9,110 | 25 | 9,110 | 25 | 9,110 | 25 | 9,110 | 25 | 9,110 | 25 | 9,110 | 25 |
| Dominion Transmission Inc. | 2,760 | 8 | 2,760 | 8 | 2,760 | 8 | 2,760 | 8 | 2,760 | 8 | 2,760 | 8 |
| Equitrans | 1,911 | 5 | 1,911 | 5 | 1,911 | 5 | 1,911 | 5 | 1,911 | 5 | 1,911 | 5 |
| Total | 13,782 | 38 | 13,782 | 38 | 13,782 | 38 | 13,782 | 38 | 13,782 | 38 | 13,782 | 38 |

# FORM-IRP-GAS-2C: NATURAL GAS STORAGE [1]
## REPORTING UTILITY: PHILADELPHIA GAS WORKS
### (volumes in MMcf)

| | Historical Data | | | | Current Year | | Three Year Forecast | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Index Year | -2 | | -1 | | 0 | | 1 | | 2 | | 3 | |
| Actual year | 2004 | | 2005 | | 2006 | | 2007 | | 2008 | | 2009 | |
| | Annual | Peak | Annual | Peak | Annual | Peak | Annual | Peak | Annual | Peak | Annual | Peak |
| Transcontinental Transmission Corp. | 3,723 | 60 | 3,723 | 60 | 3,723 | 60 | 3,723 | 60 | 3,723 | 60 | 3,723 | 60 |
| Dominion Transmission Inc. | 3,481 | 32 | 3,481 | 32 | 3,481 | 32 | 3,481 | 32 | 3,481 | 32 | 3,481 | 32 |
| Transcontinental Transmission Corp. | 3,086 | 36 | 3,086 | 36 | 3,086 | 36 | 3,086 | 36 | 3,086 | 36 | 3,086 | 36 |
| Texas Eastern Transmission Corp. | 2,467 | 43 | 2,467 | 43 | 2,467 | 43 | 2,467 | 43 | 2,467 | 43 | 2,467 | 43 |
| Texas Eastern Transmission Corp. | 2,219 | 20 | 2,219 | 20 | 2,219 | 20 | 2,219 | 20 | 2,219 | 20 | 2,219 | 20 |
| Transcontinental Transmission Corp. [3] | 802 | 80 | 802 | 80 | 1,106 | 110 | 1,106 | 110 | 1,106 | 110 | 1,106 | 110 |
| Equitrans | 507 | 5 | 507 | 5 | 507 | 5 | 507 | 5 | 507 | 5 | 507 | 5 |
| Transcontinental Transmission Corp. | 453 | 5 | 453 | 5 | 453 | 5 | 453 | 5 | 453 | 5 | 453 | 5 |
| Total | 16,738 | 281 | 16,738 | 281 | 17,042 | 311 | 17,042 | 311 | 17,042 | 311 | 17,042 | 311 |

[1] Rank contracts in order of magnitude for the current year, noting the transportation provided and termination date for each contract reported
Reporting should proceed along rank ordering until 75% of total is accounted for, or until ten contracts have been listed, whichever occurs first.

Conversions at 1030 Btu

| | Contract Expiration Date [2] |
|---|---|
| Transcontinental Transmission Corp. | 03/31/2013 |
| Dominion Transmission Inc. | 03/31/2006 |
| Transcontinental Transmission Corp. | Evergreen |
| Texas Eastern Transmission Corp. | 04/30/2012 |
| Texas Eastern Transmission Corp. | 04/30/2012 |
| Transcontinental Transmission Corp. | 10/31/2013 |
| Equitrans | 03/31/2006 |
| Transcontinental Transmission Corp. | 04/15/2006 |

[2] For purposes of this report, all contracts due to expire are assumed renewed for the forecast years.

[3] Storage withdrawal increase in 2006 is due to the termination of the Firm Service (FS) Contract.

March 2006

**Philadelphia Gas Works**

Pennsylvania Public Utility Commission

52 Pa. Code §53.61. et seq.

**Item 53.64(c)**      Thirty days prior to the filing. of a tariff reflecting an increase or decrease in natural gas costs. each Section 1307(f) as utility seeking recovery of purchased as costs under that section shall provide notice to the public. under § 53.68 (relating to notice requirements). and shall file the following supporting information with the Commission. with a copy to the Consumer Advocate. Small Business Advocate and to intervenors upon request:

**53.64(c)(6)**      Each Section 1307 (f) utility shall file with the Commission a statement of its current fuel procurement practices. detailed information concerning. the staffing and expertise of its fuel procurement personnel. a discussion of its methodology for obtaining a least cost and reliable source of as supply. including a discussion of any methodologies. assumptions. models or rules of thumb employed in selecting its gas supply. transportation and storage mix. its loss prevention strategy in the event of fraud. nonperformance or interruption of performance. its participation in capacity release and reallocation programs. the impact. if any. upon least cost fuel procurement by constraints imposed by local transportation end users. interruptible service. balancing. storage and dispatching. options. and its strategy for improving its fuel procurement practices in the future and timetable for implementing these changes.

**Response:**

**1. Current Strategy**

PGW's current strategy for meeting the system's supply requirements is to use a portfolio approach in both contract structures and pricing. The Company's supply portfolio is split into three distinct categories. First. the Company enters into winter-only supply contracts. These winter-only supply arrangements provide gas supply that fills approximately sixty-two percent (62%) of PGW's daily firm transportation entitlements on both Duke Energy Gas Transmission and Williams Gas Pipeline.

The Duke Energy and Williams pipelines represent the only interstate pipeline facilities with physical connections to the PGW service territory. These supply contracts also recognize pipeline receipt and delivery rights. By sourcing supply in this manner, PGW not only ensures security of supply from the pipelines, but also can take advantage of varying basis differentiated pricing in the market. These contracts all contain the ability to set the price for upcoming months, or to have the pricing, default to an agreed upon market index. Second, an additional twenty-eight percent (28 %) of PGW's gas supply portfolio is purchased on "first of the month index" priced contracts that allow for daily changes in volume. The operational flexibility of these contracts allows the company to increase or decrease gas supply to meet variations in sendout requirements at a known price. Third the company utilizes three (3) pipeline storage services, as an additional source of supply. These storage services do not contain bundled transportation and therefore are moved to the city gates within PGW's firm interstate pipeline capacity. These services represent 10 percent (10 %) of supply at a fixed price. The variation in the percentages this year is due to two one-year capacity releases totally forty-three thousand dekatherms, which the company was able to release due to a loss in load. These capacity releases are with twenty-four hour recall rights in there terms and conditions. They are split between the two interstate pipelines which service PGW. If the need would arise to recall this capacity PGW would do so and use its unbundled storage to fill the TGPL portion (twenty thousand dekatherms) and depend on market based prices to fill the TETCO portion (twenty three thousand dekatherms).

Additionally, PGW utilizes bundled storage and LNG to meet operational requirements and to accomplish other cost saving initiatives. Specifically, once design winter sendout requirements are ensured of being met, the company may utilize bundled storage and LNG inventories to displace higher priced supply based on then current market conditions. PGW's also uses a portfolio approach to address system supply and storage refill in the traditional non-peak season. The Gas Supply area uses the GCR filing as a template in an attempt to purchase gas volumes for both system supply and storage refill below the projected cost, when possible. However, some proportion of the supply will always be subject to spot market pricing either daily or monthly due to the constant need to purchase gas to meet sendout variations that are inherent in a residential firm heating load. PGW seeks to recoup demand charges for its firm transportation through the FERC approved capacity release mechanisms.

The Company also enters into the incremental off systems sales market to generate additional revenue when it is economically advantageous to do so. At all times the Company is studying, the market for any, economic advantage that can be derived in support of the firm ratepayer.

## II. Overview of Gas Supply Section

The Gas Supply Section of Gas Management is comprised of four departments: Gas Supply. Gas Transportation. Gas Accounting and Gas Control. The Gas Supply Section is responsible for ensuring that there is an adequate supply of natural gas available at all times to meet the requirements of PGW's over 470.000 firm customers. The Gas Supply Section accomplishes this through continuos interaction with various departments within PGW.

The staff of the Gas Supply Section is expected to maintain an in-depth working knowledge of all facets of the natural gas supply markets. The staff members of the four departments are required to maintain a working knowledge of PGW's natural gas contracts and facilities for the purpose of ensuring the safe and efficient operation of the distribution system. in accordance with company procedures. and in compliance with federal. state. and local regulations.

## III. Organization and Staffing

Director of Gas Transportation and Gas Control: This person has a fifteen-year history in the supply area and a four-year history in gas control. This individual has a BA as well as having a background in natural gas accounting. allocation and confirmation experience under the first stages of FERC Order 636. and its effect on supply portfolio management.

This individual and the staffs of the departments that report to him interacts continuously and provides 24/7 coverage in all situations pertaining to the gas supply portfolio and operation of the natural gas facilities. This is done in conjunction with the Gas Supply Committee as well as everyday meetings with the VP of Gas Management and the other direct reports of the VP of Gas Management. The following departments report directly to this individual Gas Supply. Gas Control. Gas Accounting. and Gas Transportation.

Manager. Gas Supply this person has over ten years experience in the gas supply area. This individual has a MBA and BS in addition to having an extensive background in the area of gas accounting and gas purchasing. Reporting to this individual is the gas accountants. and gas coordinators.

Manager. Gas Control: This person has over ten years in the supply area. is responsible for the day-today management of the city distribution grid as well as daily confirmation of each day's gas volumes. He supervises the gas control department on a 24/7 basis. The manager has a BS degree and extends duty in the Distribution Department's network analysis area.

## Philadelphia Gas Works

Pennsylvania Public Utility.Commission
52 Pa. Code §53.61, et seq.

**Item 53.64(c)**  Thirty days prior to the filing of a tariff reflecting an increase or decrease in natural gas costs. each Section 1307(f) gas utility seeking recovery of purchased gas costs under that section shall provide notice to the public. under § 53.68 (relating to notice requirements). and shall file the following supporting information with the Commission. with a copy to the Consumer Advocate. Small Business Advocate and to intervenors upon request:

(7)  A list of off-system sales. including transportation. storage. or capacity releases by the utility at less than the weighted average price of gas. or at less than the original contract cost of transportation. storage. or capacity supplied to the utility for its own customers.

**Response:**  The attached schedules list off system sales and capacity release for the period of January 1. 2006 to December 31. 2006.

Schedule 1 – reflects all off system sales margins for the period January 1. 2006 to December 31. 2006.

Schedule 2 – would reflect any off system sales transactions. which were done at less than the weighted average cost of gas.  The schedule is blank because none of the deals match the criteria.

Schedule 3 – illustrates all capacity release deals.

Schedule 4 - would reflect any individual capacity release transactions. which were done at less than the weighted average cost of capacity.

Philadelphia Gas Works
Pennsylvania Public Utilities Commission
52 Pa. Code §53.61, et seq.

| | Off-System Sales | | |
|---|---|---|---|
| MONTH | Total Revenue | Ratepayer Margin | Total Credit To GCR |
| Jan-06 | $0 | $0 | $0 |
| Feb-06 | $0 | $0 | $0 |
| Mar-06 | $0 | $0 | $0 |
| Apr-06 | $0 | $0 | $0 |
| May-06 | $0 | $0 | $0 |
| Jun-06 | $0 | $0 | $0 |
| Jul-06 | $0 | $0 | $0 |
| Aug-06 | $297,750 | $68,809 | $297,750 |
| Sep-06 | $0 | $0 | $0 |
| Oct-06 | $147,964 | $38,642 | $147,964 |
| Nov-06 | $0 | $0 | $0 |
| Dec-06 | $0 | $0 | $0 |
| Total | $445,714 | $107,451 | $445,714 |

Off System Sale Profits Per WACOG Worksheet

No deals were enacted under the weighted average cost of gas.

Philadelphia Gas Works
Pennsylvania Public Utilities Commission
52 Pa. Code §53.61, et seq.

| MONTH | Capacity Release | | |
| --- | --- | --- | --- |
| | Total | Total | Total |
| | TGPL | TETCO | GCR |
| | Credits | Credits | Credits |
| Jan-06 | $278,297 | $354,438 | $ 632,735 |
| Feb-06 | $247,378 | $320,138 | $ 567,516 |
| Mar-06 | $265,511 | $354,438 | $ 619,949 |
| Apr-06 | $259,950 | $367,305 | $ 627,255 |
| May-06 | $345,365 | $675,202 | $1,020,567 |
| Jun-06 | $397,106 | $648,921 | $1,046,027 |
| Jul-06 | $510,540 | $589,351 | $1,099,891 |
| Aug-06 | $568,465 | $410,035 | $ 978,500 |
| Sep-06 | $580,371 | $602,533 | $1,182,904 |
| Oct-06 | $285,228 | $674,320 | $ 959,548 |
| Nov-06 | $531,927 | $381,843 | $ 913,770 |
| Dec-06 | $746,080 | $402,346 | $1,148,426 |
| Total | $5,016,218 | $5,780,870 | $10,797,089 |

Philadelphia Gas Works
Pennsylvania Public Utilities Commission
52 Pa. Code §53.61, et seq.

| M / YR | PIPELINE | PATH | RECALL STATUS | MONTHLY VOLUME DTH | | TOTAL MONTHLY CREDIT | | CREDIT DTH | | TOTAL GCR CREDIT | REPLACEMENT SHIPPER |
|--------|----------|------|---------------|--------------------|---|----------------------|---|-----------|---|------------------|---------------------|
| January-06 | TETCO | STX - MJ | N | 738,482 | $ | 354,438.00 | $ | 0.4800 | $ | 354,438.00 | BG LNG |
| | TRANSCO | 3-6 | N | 310,000 | $ | 101,215.00 | $ | 0.3265 | $ | 101,215.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 310,000 | $ | 130,200.00 | $ | 0.4200 | $ | 130,200.00 | BG LNG |
| | TRANSCO | 3-6 | N | 30,000 | $ | 12,786.00 | $ | 0.4262 | $ | 12,786.00 | Williams |
| | TRANSCO | 3-6 | N | 20,000 | $ | 8,524.00 | $ | 0.4262 | $ | 8,524.00 | Williams |
| | TRANSCO | 3-6 | N | 60,000 | $ | 25,572.00 | $ | 0.4262 | $ | 25,572.00 | Williams |
| February-06 | TETCO | STX - MJ | N | 667,016 | | $320,137.93 | $ | 0.4800 | $ | 320,137.93 | BG LNG |
| | TRANSCO | 3-6 | N | 280,000 | | $91,420.00 | $ | 0.3265 | $ | 91,420.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 280,000 | | $117,600.00 | $ | 0.4200 | $ | 117,600.00 | BG LNG |
| | TRANSCO | 3-6 | N | 90,000 | | $38,358.00 | $ | 0.4262 | $ | 38,358.00 | Williams |
| March-06 | TETCO | STX - MJ | N | 738,482 | $ | 354,438.00 | $ | 0.4800 | $ | 354,438.00 | BG LNG |
| | TRANSCO | 3-6 | N | 310,000 | $ | 101,215.00 | $ | 0.3265 | $ | 101,215.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 310,000 | $ | 130,200.00 | $ | 0.4200 | $ | 130,200.00 | BG LNG |
| | TRANSCO | 3-6 | N | 70,000 | $ | 29,834.00 | $ | 0.4262 | $ | 29,834.00 | Williams |
| | TRANSCO | 3-6 | N | 10,000 | $ | 4,262.00 | $ | 0.4262 | $ | 4,262.00 | Constellation |

| M / YR | PIPELINE | PATH | RECALL STATUS | MONTHLY VOLUME DTH | TOTAL MONTHLY CREDIT | CREDIT DTH | TOTAL GCR CREDIT | REPLACEMENT SHIPPER |
|---|---|---|---|---|---|---|---|---|
| April-06 | TETCO | SIX - M3 | N | 540,000 | $ 13,500.00 | $ 0.0250 | $ 13,500.00 | Colonial Energy |
| | TETCO | SIX - M3 | N | 540,000 | $ 10,800.00 | $ 0.0200 | $ 10,800.00 | MacQuarie-Cook |
| | TETCO | SIX - M3 | N | 714,660 | $ 343,004.91 | $ 0.4800 | $ 343,004.91 | BG LNG |
| | TRANSCO | 3-6 | N | 300,000 | $97,950.00 | $ 0.3265 | $ 97,950.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 300,000 | $126,000.00 | $ 0.4200 | $ 126,000.00 | BG LNG |
| | TRANSCO | 3-6 | N | 300,000 | $36,000.00 | $ 0.1200 | $ 36,000.00 | VA Power |
| May-06 | TETCO | WLA - M-3 | N | 558,000 | $308,363.48 | $ 0.5526 | $ 308,363.48 | Grays Ferry |
| | TETCO | WLA - M-3 | N | 558,000 | | $ - | $ - | Grays Ferry |
| | TETCO | SIX - M3 | N | 155,000 | $7,750.00 | $ 0.0500 | $ 7,750.00 | Constellation |
| | TETCO | SIX - M3 | N | 155,000 | $4,650.00 | $ 0.0300 | $ 4,650.00 | MacQuarie-Cook |
| | TETCO | SIX - M3 | N | 738,482 | $354,438.40 | $ 0.4800 | $ 354,438.40 | BG LNG |
| | TRANSCO | 3-6 | N | 25,000 | $4,000.00 | $ 0.1600 | $ 4,000.00 | Williams |
| | TRANSCO | 3-6 | N | 25,000 | $2,000.00 | $ 0.0800 | $ 2,000.00 | Williams |
| | TRANSCO | 3-6 | N | 25,000 | $2,500.00 | $ 0.1000 | $ 2,500.00 | VA Power |
| | TRANSCO | 3-6 | N | 310,000 | $101,215.00 | $ 0.3265 | $ 101,215.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 310,000 | $130,200.00 | $ 0.4200 | $ 130,200.00 | BN LNG |
| | TRANSCO | 3-6 | N | 310,000 | $37,200.00 | $ 0.1200 | $ 37,200.00 | VA Power |
| | TRANSCO | 3-6 | N | 35,000 | $5,950.00 | $ 0.1700 | $ 5,950.00 | Merrill Lynch |
| | TRANSCO | 3-6 | N | 35,000 | $3,150.00 | $ 0.0900 | $ 3,150.00 | Williams |
| | TRANSCO | 3-6 | N | 35,000 | $5,250.00 | $ 0.1500 | $ 5,250.00 | Williams |
| | TRANSCO | 3-6 | N | 35,000 | $2,800.00 | $ 0.0800 | $ 2,800.00 | Williams |
| | TRANSCO | 3-6 | N | 35,000 | $2,800.00 | $ 0.0800 | $ 2,800.00 | Merrill Lynch |
| | TRANSCO | 3-6 | N | 105,000 | $5,250.00 | $ 0.0500 | $ 5,250.00 | Merrill Lynch |
| | TRANSCO | 3-6 | N | 35,000 | $3,850.00 | $ 0.1100 | $ 3,850.00 | Williams |
| | TRANSCO | 3-6 | N | 70,000 | $5,600.00 | $ 0.0800 | $ 5,600.00 | Merrill Lynch |
| | TRANSCO | 3-6 | N | 70,000 | $2,100.00 | $ 0.0300 | $ 2,100.00 | MacQuarie-Cook |
| | TRANSCO | 3-6 | N | 25,000 | $2,500.00 | $ 0.1000 | $ 2,500.00 | Williams |
| | TRANSCO | 3-6 | N | 50,000 | $4,000.00 | $ 0.0800 | $ 4,000.00 | Merrill Lynch |
| | TRANSCO | 3-6 | N | 50,000 | $25,000.00 | $ 0.5000 | $ 25,000.00 | Sequent |

| M / YR | PIPELINE | PATH | RECALL STATUS | MONTHLY VOLUME DTH | TOTAL MONTHLY CREDIT | | CREDIT DTH | | TOTAL GCR CREDIT | REPLACEMENT SHIPPER |
|--------|----------|------|---------------|---------------------|----------------------|--|-----------|--|-------------------|---------------------|
| June-06 | TETCO | WLA - M-3 | N | 540,000 | $ 298,416 00 | $ | 0 5526 | $ | 298,416.00 | Grays Ferry |
| | TETCO | WLA - M-3 | N | 540,000 | | $ | . | $ | - | Grays Ferry |
| | TETCO | SIX - M3 | N | 150 000 | $7 500 00 | $ | 0 0500 | $ | 7,500.00 | Constellation |
| | TETCO | SIX - M3 | N | 714 660 | $343,005 00 | $ | 0 4800 | $ | 343,005.00 | BG LNG |
| | TRANSCO | L-6 | N | 20,000 | $ 1,000 00 | $ | 0 0500 | $ | 1,000.00 | Sequent |
| | TRANSCO | L-6 | N | 70,000 | $ 4,900 00 | $ | 0 0700 | $ | 4,900 00 | Sequent |
| | TRANSCO | L-6 | N | 70 000 | $ 4,900 00 | $ | 0 0700 | $ | 4,900 00 | Sequent |
| | TRANSCO | L-6 | N | 40,000 | $ 800 00 | $ | 0 0200 | $ | 800 00 | Sequent |
| | TRANSCO | 3-6 | N | 140,000 | $ 9,800 00 | $ | 0 0700 | $ | 9,800.00 | Sequent |
| | TRANSCO | L-6 | N | 300,000 | $ 60,000 00 | $ | 0 2000 | $ | 60,000 00 | Sequent |
| | TRANSCO | L-6 | N | 140 000 | $ 2,800 00 | $ | 0 0200 | $ | 2,800.00 | Sequent |
| | TRANSCO | L-6 | N | 10,000 | $ 1,000 00 | $ | 0.1000 | $ | 1,000 00 | Williams |
| | TRANSCO | 3-6 | N | 35 000 | $ 4,550 00 | $ | 0 1300 | $ | 4,550 00 | Williams |
| | TRANSCO | L-6 | N | 35 000 | $ 3,850 00 | $ | 0 1100 | $ | 3,850 00 | Williams |
| | TRANSCO | L-6 | N | 20 000 | $ 1,600 00 | $ | 0 0800 | $ | 1,600 00 | Merrill Lynch |
| | TRANSCO | L-6 | N | 70 000 | $ 7,056 00 | $ | 0 1008 | $ | 7,056 00 | Merrill Lynch |
| | TRANSCO | L-6 | N | 70,000 | $ 7,000 00 | $ | 0 1000 | $ | 7,000 00 | Merrill Lynch |
| | TRANSCO | L-6 | N | 70 000 | $ 9,450 00 | $ | 0 1350 | $ | 9,450 00 | Merrill Lynch |
| | TRANSCO | L-6 | N | 140,000 | $ 14,000 00 | $ | 0 1000 | $ | 14,000.00 | Merrill Lynch |
| | TRANSCO | L-6 | N | 300,000 | $ 97,950 00 | $ | 0 3265 | $ | 97,950 00 | Stat Oil |
| | TRANSCO | L-6 | N | 300,000 | $ 52,500 00 | $ | 0 1750 | $ | 52,500 00 | Stat Oil |
| | TRANSCO | 3-6 | N | 300,000 | $ 126,000 00 | $ | 0 4200 | $ | 126,000 00 | BG LNG |
| | TRANSCO | 3-6 | N | 300,000 | $ 36,000 00 | $ | 0 1200 | $ | 36,000.00 | VA Power |
| | TRANSCO | L-6 | N | 75,000 | $ 5,250 00 | $ | 0 0700 | $ | 5,250.00 | United Energy |
| | TRANSCO | L-6 | N | 35,000 | $ 700 00 | $ | 0 0200 | $ | 700 00 | Rainbow Energy |

| M / YR | PIPELINE | PATH | RECALL STATUS | MONTHLY VOLUME DTH | TOTAL MONTHLY CREDIT | | CREDIT DTH | | TOTAL GCR CREDIT | | REPLACEMENT SHIPPER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| July-06 | TETCO | WLA - M-3 | N | 558,000 | $ | 221,580.38 | $ | 0.3971 | $ | 221,580.38 | Grays Ferry |
| | TETCO | WLA - M-3 | N | 558,000 | $ | - | $ | - | $ | - | Grays Ferry |
| | TETCO | SIX - M3 | N | 155,000 | $ | 7,750.00 | $ | 0.0500 | $ | 7,750.00 | Constellation |
| | TETCO | SIX - M3 | N | 155,000 | $ | 7,750.00 | $ | 0.0500 | $ | 5,550.00 | Constellation |
| | TETCO | SIX - M3 | N | 738,482 | $ | 354,471.00 | $ | 0.4800 | $ | 354,471.00 | BG LNG |
| | | | | | | | | | | | |
| | TRANSCO | 3-6 | N | 50,000 | $ | 5,500.00 | $ | 0.1100 | $ | 5,500.00 | Merrill Lynch |
| | TRANSCO | 3-6 | N | 80,000 | $ | 8,800.00 | $ | 0.1100 | $ | 8,800.00 | Merrill Lynch |
| | TRANSCO | 3-6 | N | 35,000 | $ | 6,300.00 | $ | 0.1800 | $ | 6,300.00 | MacQuaire Cook |
| | TRANSCO | 3-6 | N | 70,000 | $ | 7,700.00 | $ | 0.1100 | $ | 7,700.00 | MacQuaire Cook |
| | TRANSCO | 3-6 | N | 35,000 | $ | 7,000.00 | $ | 0.2000 | $ | 7,000.00 | MacQuaire Cook |
| | TRANSCO | 3-6 | N | 70,000 | $ | 8,050.00 | $ | 0.1150 | $ | 8,050.00 | MacQuaire Cook |
| | TRANSCO | 3-6 | N | 170,000 | $ | 19,550.00 | $ | 0.1150 | $ | 19,550.00 | MacQuaire Cook |
| | TRANSCO | 3-6 | N | 310,000 | $ | 24,800.00 | $ | 0.0800 | $ | 24,800.00 | Conoco Phillip |
| | TRANSCO | 3-6 | N | 77,500 | $ | 3,875.00 | $ | 0.0500 | $ | 3,875.00 | Rainbow Energy |
| | TRANSCO | 3-6 | N | 310,000 | $ | 101,215.00 | $ | 0.3265 | $ | 101,215.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 310,000 | $ | 54,250.00 | $ | 0.1750 | $ | 54,250.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 310,000 | $ | 40,300.00 | $ | 0.1300 | $ | 40,300.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 310,000 | $ | 130,200.00 | $ | 0.4200 | $ | 130,200.00 | BG LNG |
| | TRANSCO | 3-6 | N | 310,000 | $ | 37,200.00 | $ | 0.1200 | $ | 37,200.00 | VA Power |
| | TRANSCO | 3-6 | N | 310,000 | $ | 24,800.00 | $ | 0.0800 | $ | 24,800.00 | Sequent |
| | TRANSCO | 3-6 | N | 310,000 | $ | 31,000.00 | $ | 0.1000 | $ | 31,000.00 | Sequent |

| M / YR | PIPELINE | PATH | RECALL STATUS | MONTHLY VOLUME DTH | TOTAL MONTHLY CREDIT | | CREDIT DTH | TOTAL GCR CREDIT | REPLACEMENT SHIPPER |
|---|---|---|---|---|---|---|---|---|---|
| August-06 | TETCO | WLA - M-3 | N | 472,967 | $14,508.00 | $ | 0.0307 | $ 14,508.00 | Grays Ferry |
| | TETCO | WLA - M-3 | N | 472,967 | $11,606.00 | $ | 0.0245 | $ 11,606.00 | Grays Ferry |
| | TETCO | SIX - M3 | N | 155,000 | $7,750.00 | $ | 0.0500 | $ 7,750.00 | Constellation |
| | TETCO | SIX - M3 | N | 310,000 | $21,700.00 | $ | 0.0700 | $ 21,700.00 | Constellation |
| | TETCO | SIX - M3 | N | 738,482 | $354,471.00 | $ | 0.4800 | $ 354,471.00 | BG LNG |
| | | | | | | | | | |
| | TRANSCO | 3-6 | N | 310,000 | $ 65,100.00 | $ | 0.2100 | $ 65,100.00 | Conco Phillips |
| | TRANSCO | 3-6 | N | 310,000 | $ 12,400.00 | $ | 0.0400 | $ 12,400.00 | Conco Phillips |
| | TRANSCO | 3-6 | N | 310,000 | $ 24,800.00 | $ | 0.0800 | $ 24,800.00 | Sequent |
| | TRANSCO | 3-6 | N | 310,000 | $ 31,000.00 | $ | 0.1000 | $ 31,000.00 | Sequent |
| | TRANSCO | 3-6 | N | 310,000 | $ 101,215.00 | $ | 0.3265 | $ 101,215.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 310,000 | $ 54,250.00 | $ | 0.1750 | $ 54,250.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 310,000 | $ 40,300.00 | $ | 0.1300 | $ 40,300.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 310,000 | $ 130,200.00 | $ | 0.4200 | $ 130,200.00 | BG LNG |
| | TRANSCO | 3-6 | N | 310,000 | $ 37,200.00 | $ | 0.1200 | $ 37,200.00 | VA Power |
| | TRANSCO | 3-6 | N | 80,000 | $ 24,000.00 | $ | 0.3000 | $ 24,000.00 | Williams |
| | TRANSCO | 3-6 | N | 160,000 | $ 48,000.00 | $ | 0.3000 | $ 48,000.00 | Williams |
| | | | | | | | | | |
| September-06 | TETCO | SIX - M3 | N | 30 | $ 4.68 | $ | 0.1560 | $ 4.68 | UGI |
| | TETCO | SIX - M3 | N | 178,116 | $ 10,688.76 | $ | 0.0600 | $ 10,688.76 | BG LNG System |
| | TETCO | WLA - M-3 | N | 457,710 | $ 106,514.32 | $ | 0.2327 | $ 106,514.32 | Grays Ferry |
| | TETCO | WLA - M-3 | N | 457,710 | $ 106,514.32 | $ | 0.2327 | $ 106,514.32 | Grays Ferry |
| | TETCO | SIX - M3 | N | 714,660 | $ 378,811.19 | $ | 0.5301 | $ 378,811.19 | BG LNG System |
| | | | | | | | | | |
| | TRANSCO | 3-6 | N | 150,000 | $ 53,265.00 | $ | 0.3551 | $ 53,265.00 | Constel Comm |
| | TRANSCO | 3-6 | N | 600,000 | $ 180,000.00 | $ | 0.3000 | $ 180,000.00 | Merrill Lynch |
| | TRANSCO | 3-6 | N | 300,000 | $ 30,000.00 | $ | 0.1000 | $ 30,000.00 | Squent. |
| | TRANSCO | 3-6 | N | 300,000 | $ 36,000.00 | $ | 0.1200 | $ 36,000.00 | Conoco |
| | TRANSCO | 3-6 | N | 30 | $ 13.00 | $ | 0.4333 | $ 13.00 | Gas Mark UGI |
| | TRANSCO | 3-6 | N | 30 | $ 13.00 | $ | 0.4333 | $ 13.00 | Gas Mark UGI |
| | TRANSCO | 3-6 | N | 60 | $ 26.00 | $ | 0.4333 | $ 26.00 | Gas Mark UGI |
| | TRANSCO | 3-6 | N | 300,000 | $ 127,770.00 | $ | 0.4259 | $ 127,770.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 300,000 | $ 127,770.00 | $ | 0.4259 | $ 127,770.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 600,000 | $ 21,000.00 | $ | 0.0350 | $ 21,000.00 | Utility Resources |
| | TRANSCO | 3-6 | N | 24,000 | $ 3,360.00 | $ | 0.1400 | $ 3,360.00 | Williams Power |
| | TRANSCO | 3-6 | N | 6,000 | $ 210.00 | $ | 0.0350 | $ 210.00 | Rainbow Energy |
| | TRANSCO | 3-6 | N | 27,000 | $ 945.00 | $ | 0.0350 | $ 945.00 | Rainbow Energy |

| M / YR | PIPELINE | PATH | RECALL STATUS | MONTHLY VOLUME DTH | TOTAL MONTHLY CREDIT | CREDIT DTH | TOTAL GCR CREDIT | REPLACEMENT SHIPPER |
|---|---|---|---|---|---|---|---|---|
| October-06 | TETCO | SIX - M3 | N | 868 | $ 372.00 | $ 0.4286 | $ 372.00 | UGI Energy |
| | TETCO | SIX - M3 | N | 312,000 | $ 16,380.00 | $ 0.0525 | $ 16,380.00 | Tot Gas & Power |
| | TETCO | SIX - M3 | N | 738,482 | $ 391,438.00 | $ 0.5301 | $ 391,438.00 | BG LNG |
| | TETCO | WIA - M-3 | N | 292,330 | $ 22,990.00 | $ 0.0786 | $ 22,990.00 | MacQuaire Cook |
| | TETCO | WIA - M-3 | N | 292,330 | $ 22,990.00 | $ 0.0786 | $ 22,990.00 | Total N Amer |
| | TETCO | WIA - M-3 | N | 265,670 | $ 110,075.00 | $ 0.4143 | $ 110,075.00 | Grays Ferry |
| | TETCO | WIA - M-3 | N | 265,670 | $ 110,075.00 | $ 0.4143 | $ 110,075.00 | Grays Ferry |
| | TRANSCO | 3-6 | N | 70,000 | $ 7,000.00 | $ 0.1000 | $ 7,000.00 | Tot Gas & Power |
| | TRANSCO | 3-6 | N | 140,000 | $ 8,400.00 | $ 0.0600 | $ 8,400.00 | Tot Gas & Power |
| | TRANSCO | 3-6 | N | 140,000 | $ 1,400.00 | $ 0.0100 | $ 1,400.00 | Occidental Energy Mark |
| | TRANSCO | 3-6 | N | 210,000 | $ 2,100.00 | $ 0.0100 | $ 2,100.00 | National Energy & Trade |
| | TRANSCO | 3-6 | N | 868 | $ 370.00 | $ 0.4263 | $ 370.00 | UGI Energy Services |
| | TRANSCO | 3-6 | N | 10,000 | $ 100.00 | $ 0.0100 | $ 100.00 | National Energy & Trade |
| | TRANSCO | 3-6 | N | 180,000 | $ 1,800.00 | $ 0.0100 | $ 1,800.00 | National Energy & Trade |
| | TRANSCO | 3-6 | N | 310,000 | $ 132,029.00 | $ 0.4259 | $ 132,029.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 310,000 | $ 132,029.00 | $ 0.4259 | $ 132,029.00 | Stat Oil |
| November-06 | TETCO | SIX - M3 | N | 390 | $ 167.00 | $ 0.4282 | $ 167.00 | Hess |
| | TETCO | SIX - M3 | N | 6,690 | $ 2,865.00 | $ 0.4283 | $ 2,865.00 | UGI |
| | TETCO | SIX - M3 | N | 714,660 | $ 378,811.00 | $ 0.5301 | $ 378,811.00 | BG LNG |
| | TRANSCO | 3-6 | N | 3,000 | $ 1,277.00 | $ 0.4257 | $ 1,277.00 | Coral Energy |
| | TRANSCO | 3-6 | N | 180,000 | $ 27,000.00 | $ 0.1500 | $ 27,000.00 | Total Gas & Power |
| | TRANSCO | 3-6 | N | 450,000 | $ 13,500.00 | $ 0.0300 | $ 13,500.00 | VA Power |
| | TRANSCO | 3-6 | N | 150,000 | $ 15,000.00 | $ 0.1000 | $ 15,000.00 | VA Power |
| | TRANSCO | 3-6 | N | 300,000 | $ 127,770.00 | $ 0.4259 | $ 127,770.00 | Total Gas & Power |
| | TRANSCO | 3-6 | N | 150,000 | $ 15,000.00 | $ 0.1000 | $ 15,000.00 | VA-Power |
| | TRANSCO | 3-6 | N | 450,000 | $ 9,000.00 | $ 0.0200 | $ 9,000.00 | Total Gas & Power |
| | TRANSCO | 3-6 | N | 6,720 | $ 2,862.05 | $ 0.4259 | $ 2,862.05 | UGI |
| | TRANSCO | 3-6 | N | 420 | $ 178.88 | $ 0.4259 | $ 178.88 | Hess |
| | TRANSCO | 3-6 | N | 580,000 | $ 11,600.00 | $ 0.0200 | $ 11,600.00 | National Energy & Trade LP |
| | TRANSCO | 3-6 | N | 280,000 | $ 53,200.00 | $ 0.1900 | $ 53,200.00 | National Energy & Trade LP |
| | TRANSCO | 3-6 | N | 300,000 | $ 127,770.00 | $ 0.4259 | $ 127,770.00 | Stat Oil |
| | TRANSCO | 3-6 | N | 300,000 | $ 127,770.00 | $ 0.4259 | $ 127,770.00 | Stat Oil |

| M / YR | PIPELINE | PATH | RECALL STATUS | MONTHLY VOLUME DTH | | TOTAL MONTHLY CREDIT | | CREDIT DTH | | TOTAL GCR CREDIT | REPLACEMENT SHIPPER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| December-06 | TETCO | SIX - M3 | N | 8,463 | $ | 3,623.86 | $ | 0.4282 | $ | 3,623.86 | UGI |
| | TETCO | SIX - M3 | N | 3,162 | $ | 1,353.97 | $ | 0.4282 | $ | 1,353.97 | Hess |
| | TETCO | SIX - M3 | N | 35,000 | $ | 5,930.00 | $ | 0.1694 | $ | 5,930.00 | PPG INDUSTRIES |
| | TETCO | SIX - M3 | N | 738,482 | $ | 391,438.21 | $ | 0.5301 | $ | 391,438.21 | BG Energy |
| | TRANSCO | 3-6 | N | 310,000 | $ | 132,029.00 | $ | 0.4259 | $ | 132,029.00 | Total Gas & Power |
| | TRANSCO | 3-6 | N | 196,000 | $ | 211,246.40 | $ | 0.4259 | $ | 211,246.40 | Total Gas & Power |
| | TRANSCO | 3-6 | N | 155,000 | $ | 23,500.00 | $ | 0.1516 | $ | 23,500.00 | Fortis |
| | TRANSCO | 3-6 | N | 155,000 | $ | 17,050.00 | $ | 0.1100 | $ | 17,050.00 | Tenaska |
| | TRANSCO | 3-6 | N | 310,000 | $ | 34,100.00 | $ | 0.1100 | $ | 34,100.00 | Conoco Phillips |
| | TRANSCO | 3-6 | N | 3,162 | $ | 1,346.64 | $ | 0.4259 | $ | 1,346.64 | Hess |
| | TRANSCO | 3-6 | N | 8,432 | $ | 3,591.35 | $ | 0.4259 | $ | 3,591.35 | UGI |
| | TRANSCO | 3-6 | N | 310,000 | $ | 132,029.00 | $ | 0.4259 | $ | 132,029.00 | Statoil |
| | TRANSCO | 3-6 | N | 310,000 | $ | 132,029.00 | $ | 0.4259 | $ | 132,029.00 | Statoil |
| | TRANSCO | 3-6 | N | 310,000 | $ | 6,200.00 | $ | 0.0200 | $ | 6,200.00 | Oxy |
| | TRANSCO | 3-6 | N | 465,000 | $ | 9,300.00 | $ | 0.0200 | $ | 9,300.00 | VA Power |
| | TRANSCO | 3-6 | N | 25,600 | $ | 10,903.04 | $ | 0.4259 | $ | 10,903.04 | Total Gas & Power |
| | TRANSCO | 3-6 | N | 70,000 | $ | 8,400.00 | $ | 0.1200 | $ | 8,400.00 | Total Gas & Power |
| | TRANSCO | 3-6 | N | 19,740 | $ | 8,407.20 | $ | 0.4259 | $ | 8,407.20 | Total Gas & Power |
| | TRANSCO | 3-6 | N | 29,100 | $ | 12,393.90 | $ | 0.4259 | $ | 12,393.90 | Total Gas & Power |
| | TRANSCO | 3-6 | N | 22,110 | $ | 2,874.60 | $ | 0.1300 | $ | 2,874.60 | Total Gas & Power |
| | TRANSCO | 3-6 | N | 45,330 | $ | 680.10 | $ | 0.0150 | $ | 680.10 | Total Gas & Power |

**Philadelphia Gas Works**

Pennsylvania Public Utility Commission
52 Pa. Code §53.61. et seq.

**Item 53.64(c)**     Thirty days prior to the filing of a tariff reflecting an increase or
decrease in natural gas costs. each Section 1307(f) gas utility seeking
recovery of purchased gas costs under that section shall provide notice to
the public. under § 53.68 (relating to notice requirements). and shall file
the following supporting information with the Commission. with a copy
to the Consumer Advocate. Small Business Advocate and to intervenors
upon request:

(8)   A list of agreements to transport gas by the utility through its
system. for other utilities. pipelines or jurisdictional customers
including the quantity and price of the transportation.

**Response:**

Please see the attached list of gas transportation agreements for PGW's
jurisdictional customers. PGW has no transportation agreements with
other utilities or pipeline customers.

# TRANSPORTATION CONTRACTS

| ID# | Dth/D | ID# | Dth/D | ID# | Dth/D | ID# | Dth/D | ID# | Dth/D | ID# | Dth/D | ID# | Dth/D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 60000 | 34 | 50 | 74 | 240 | 104 | 120 | 133 | 95 | 163 | 432 | 193 | 384 |
| 2 | 250 | 35 | 1250 | 75 | 750 | 104 | 120 | 134 | 1461 | 164 | 958 | 194 | 389 |
| 3 | 12000 | 36 | 58 | 76 | 496 | 105 | 354 | 135 | 0 | 165 | 698 | 195 | 312 |
| 4 | 0 | 37 | 58 | 77 | 907 | 106 | 281 | 136 | 1500 | 166 | 925 | 196 | 403 |
| 5 | 50000 | 38 | 58 | 78 | 241 | 107 | 204 | 137 | 264 | 167 | 280 | 197 | 340 |
| 6 | 360 | 39 | 58 | 79 | 1252 | 108 | 312 | 138 | 2041 | 168 | 599 | 198 | 240 |
| 7 | 346 | 40 | 1300 | 80 | 782 | 109 | 141 | 139 | 60 | 169 | 0 | 199 | 260 |
| 8 | 750 | 41 | 250 | 81 | 782 | 110 | 336 | 140 | 183 | 170 | 429 | 200 | 383 |
| 9 | 60 | 42 | 250 | 82 | 782 | 111 | 1080 | 141 | 432 | 171 | 454 | 201 | 180 |
| 10 | 300 | 43 | 291 | 83 | 782 | 112 | 114 | 142 | 80 | 172 | 302 | 202 | 295 |
| 11 | 141 | 44 | 178 | 84 | 400 | 113 | 576 | 143 | 209 | 173 | 907 | 203 | 139 |
| 12 | 185 | 45 | 100 | 85 | 8479 | 114 | 1833 | 144 | 703 | 174 | 934 | 204 | 424 |
| 13 | 120 | 46 | 63 | 86 | 267 | 115 | 223 | 145 | 402 | 175 | 554 | 205 | 0 |
| 16 | 624 | 47 | 437 | 87 | 420 | 116 | 300 | 146 | 0 | 176 | 201 | 206 | 149 |
| 17 | 622 | 48 | 316 | 88 | 75 | 117 | 106 | 147 | 4740 | 177 | 302 | 207 | 277 |
| 18 | 1355 | 49 | 407 | 89 | 235 | 118 | 257 | 148 | 1222 | 178 | 285 | 208 | 115 |
| 19 | 123 | 50 | 46 | 90 | 626 | 119 | 522 | 149 | 5500 | 179 | 1008 | 209 | 1225 |
| 20 | 432 | 51 | 64 | 91 | 251 | 120 | 272 | 150 | 0 | 180 | 192 | 210 | 1362 |
| 21 | 42 | 52 | 55 | 92 | 170 | 121 | 272 | 151 | 278 | 181 | 1512 | 211 | 400 |
| 22 | 408 | 53 | 30 | 93 | 513 | 122 | 403 | 152 | 1046 | 182 | 348 | 212 | 566 |
| 23 | 550 | 54 | 43 | 94 | 707 | 123 | 296 | 153 | 576 | 183 | 244 | 213 | 1465 |
| 24 | 240 | 55 | 274 | 95 | 171 | 124 | 130 | 154 | 392 | 184 | 644 | 214 | 419 |
| 25 | 463 | 56 | 100 | 96 | 490 | 125 | 235 | 155 | 320 | 185 | 149 | 215 | 626 |
| 26 | 500 | 57 | 2000 | 97 | 237 | 126 | 89 | 156 | 417 | 186 | 1032 | 216 | 120 |
| 27 | 100 | 58 | 339 | 98 | 262 | 127 | 75 | 157 | 676 | 187 | 311 | 216 | 100 |
| 28 | 100 | 59 | 159 | 99 | 628 | 128 | 648 | 158 | 173 | 188 | 269 | 218 | 200 |
| 29 | 900 | 70 | 938 | 100 | 373 | 129 | 302 | 159 | 313 | 189 | 340 | 219 | 320 |
| 30 | 103 | 71 | 0 | 101 | 291 | 130 | 1046 | 160 | 418 | 190 | 1206 | 220 | 84 |
| 31 | 240 | 72 | 264 | 102 | 222 | 131 | 3432 | 161 | 168 | 191 | 168 | 221 | 140 |
| 32 | 240 | 73 | 240 | 103 | 44 | 132 | 1400 | 162 | 1222 | 192 | 228 | 222 | 1380 |
| 33 | 50 | | | | | | | | | | | | |

## Philadelphia Gas Works

Pennsylvania Public Utility Commission
52 Pa. Code §53.61. et seq.

**Item 53.64(c)**   Thirty days prior to the filing of a tariff reflecting an increase or decrease in natural gas costs. each Section 1307(f) gas utility seeking recovery of purchased gas costs under that section shall provide notice to the public. under § 53.68 (relating to notice requirements). and shall file the following supporting information with the Commission. with a copy to the Consumer Advocate. Small Business Advocate and to intervenors upon request:

(9)   A schedule depicting historic monthly end-user transportation through-put by customer. Each customer or account shall be identified solely by a unique alphanumeric code. the key to which may be provided subject to § 5.423 (relating to orders to limit availability of proprietary information).

**Response:**

Please see the attached schedule depicting the monthly end-user transportation through-put by customer.

## The Philadelphia Gas Works
### Jan-2006 - Dec-2006 (Dth)

| ID # | Jan-06 | Feb-06 | Mar-06 | Apr-06 | May-06 | Jun-06 | Jul-06 | Aug-06 | Sep-06 | Oct-06 | Nov-06 | Dec-06 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 1383 | 118806 | 207542 | 193676 | 190943 | 202995 | 192522 | 185187 | 189986 | 190030 | 66325 | 1739395 |
| 2 | 12678 | 11578 | 11928 | 12113 | 10380 | 11223 | 11978 | 12516 | 12209 | 12606 | 10315 | 10787 | 140311 |
| 3 | 0 | 0 | 0 | 0 | 93611 | 78320 | 78742 | 79655 | 84239 | 83759 | 95954 | 0 | 594280 |
| 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 645458 | 613427 | 657217 | 526143 | 259520 | 369525 | 513245 | 442459 | 220384 | 449932 | 450479 | 482434 | 5630223 |
| 6 | 1896.4 | 1027.4 | 1407.6 | 1373.2 | 1100.2 | 1126.2 | 1274.5 | 1227 | 2210.8 | 3300.8 | 1292.1 | 1729.8 | 18966 |
| 7 | 7481.5 | 7088.2 | 6800 | 6219.9 | 5916.9 | 6069.6 | 6111.1 | 6472.3 | 5789.5 | 6641.4 | 7874.3 | 8325.4 | 80790.1 |
| 8 | 0 | 0 | 1213.6 | 9044.6 | 11457.3 | 16144.7 | 14081.9 | 21630.8 | 12828.9 | 15552.7 | 10681.6 | 5408.3 | 118044.4 |
| 9 | 1006.1 | 1106.1 | 905.1 | 138.3 | 122.2 | 102.4 | 72.2 | 26.8 | 164.4 | 474 | 695.9 | 1207.2 | 6020.7 |
| 10 | 3037.9 | 3433.8 | 2210.1 | 554.8 | 0 | 0 | 0 | 0 | 0 | 696.3 | 1629.4 | 3274.8 | 14837.1 |
| 11 | 3103 | 2634.1 | 3541.6 | 2870.1 | 2696.2 | 2993.6 | 2778.7 | 3316.8 | 3112.6 | 3511.3 | 3012.7 | 2541.4 | 36112.1 |
| 12 | 3986.2 | 3982.4 | 3020.3 | 718.4 | 0 | 0 | 0 | 42.5 | 37.3 | 656.3 | 2049.1 | 3381.9 | 17874.4 |
| 13 | 1763.4 | 1678.3 | 1548.3 | 1504.1 | 1435.2 | 1365.5 | 920.1 | 1470.4 | 1539.2 | 1688.2 | 1762.7 | 1315.4 | 17990.8 |
| 16 | 4881.8 | 4750 | 1369 | 1772.8 | 1160.1 | 549.4 | 300.5 | 283.2 | 1387.1 | 401 | 2328.3 | 2596.5 | 21779.7 |
| 17 | 1319.8 | 1486.4 | 3399 7 | 862.1 | 462.5 | 727.9 | 870.4 | 859.1 | 6.2 | 2158.7 | 820.7 | 1866.6 | 14840.1 |
| 18 | 10346.4 | 0 | 5276 9 | 2774.1 | 7116.5 | 9029.5 | 7440.7 | 1582.4 | 0 | 1188 | 0 | 8513 | 53267.5 |
| 19 | 4323.9 | 4412.2 | 4439 | 3456 | 2995.8 | 2568.4 | 2251.9 | 2205.1 | 2263.4 | 2860.1 | 3091.6 | 3714.5 | 38581.9 |
| 20 | 5110.2 | 4918.2 | 4971.1 | 4016 | 3356.9 | 2764.8 | 2599 | 2593.8 | 2922.2 | 4082.1 | 3998 | 5013 | 46345.3 |
| 21 | 2270.9 | 2250.2 | 2299.4 | 1902 | 1741.8 | 1557.1 | 1572.1 | 1619 | 1609.9 | 1740.7 | 1937.9 | 2180.4 | 22681.4 |
| 22 | 0 | 2652.2 | 5026.9 | 4085.8 | 3697.9 | 3112.7 | 2845.6 | 2966 | 3245.7 | 4095 | 4218.1 | 5166.3 | 41112.2 |
| 23 | 7674.5 | 6960.1 | 6676.8 | 5772.7 | 5779.2 | · 5786 | 6552.1 | 6182 | 4650.1 | 6374.4 | 6469.2 | 7551.1 | 76428.2 |
| 24 | 1212.6 | 2206.2 | 4121.3 | 3900.5 | 4132.9 | 3955.8 | 3946.2 | 3947.7 | 3979 | 4170.3 | 3890.5 | 3905.8 | 43368.8 |
| 25 | 450.4 | 0.6 | 2980.6 | 3012.9 | 2880.9 | 2829.3 | 3677.9 | 2906.9 | 2803.5 | 2898 | 3135.8 | 3054.9 | 24426.3 |
| 26 | 119.2 | 43.1 | 3242.7 | 3374.2 | 3012.5 | 2832.7 | 2777.3 | 2380.7 | 2643.2 | 3663.9 | 4141.6 | 5136.4 | 33367.5 |
| 27 | 2267.9 | 2196.3 | 2211.9 | 1886.1 | 1761.7 | 1575.3 | 1574.4 | 1801.3 | 1672.5 | 2141.2 | 2147.4 | 2351.6 | 23587.6 |
| 28 | 5087 | 5224.3 | 4611.6 | 3281.2 | 2842.9 | 2349.6 | 1876.8 | 2504.9 | 2787.9 | 3479.3 | 3888 | 4181.8 | 42115.3 |
| 29 | 879.6 | 15954.1 | 16076.5 | 11584.8 | 10127.3 | 9306.2 | 6730.1 | 6098.1 | 8817.3 | 11756.7 | 11218.2 | 11966.9 | 120515.8 |
| 30 | 958.3 | 1020.1 | 987.4 | 174.6 | 887.6 | 1230 | 1457.2 | 1603.9 | 1198.8 | 645.7 | 582.4 | 791.2 | 11537.2 |
| 31 | 7887.9 | 2193.7 | 6093.1 | 3974 | 5079.1 | 4164.3 | 4081.7 | 3993.2 | 4424.3 | 5398.1 | 6058.1 | 6750.2 | 60097.7 |
| 32 | 0.1 | 0 | 0 | 0 | 0 | 0 | 0.1 | 0 | 0 | 0.1 | 0 | 0.1 | 0.4 |
| 33 | 503.5 | 558.5 | 513.9 | 312.3 | 321.1 | 282.1 | 154.6 | 274.6 | 11.3 | 0 | 0 | 0 | 2931.9 |
| 34 | 1413.7 | 1570.5 | 1431.5 | 857.6 | 894.8 | 777.4 | 405.7 | 832 | 634.7 | 1013.2 | 1008 | 1473.8 | 12312.9 |

| ID # | Jan-06 | Feb-06 | Mar-06 | Apr-06 | May-06 | Jun-06 | Jul-06 | Aug-06 | Sep-06 | Oct-06 | Nov-06 | Dec-06 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35 | 1458.8 | 1546 | 1152.9 | 413.9 | 232.2 | 177.8 | 151.5 | 146.1 | 228.1 | 559.1 | 777.1 | 1241 | 8084.5 |
| 36 | 1979.6 | 2020.1 | 1766 | 1121.6 | 926.8 | 733.6 | 659.7 | 639.6 | 716.6 | 1076.2 | 1274.4 | 1696.5 | 14610.7 |
| 37 | 663.6 | 684.1 | 546.6 | 285.3 | 144 | 64.6 | 57.1 | 54.5 | 123 | 289.3 | 319.7 | 588.1 | 3819.9 |
| 38 | 675.2 | 701.3 | 561.7 | 295.4 | 173.3 | 67.4 | 54.9 | 53.8 | 62 | 308.4 | 409.5 | 584 | 3946.9 |
| 39 | 558.4 | 628.4 | 495.5 | 251.9 | 118 | 52.5 | 48.5 | 42.7 | 51.8 | 264.2 | 356.8 | 541.9 | 3410.6 |
| 40 | 27726.7 | 29442.8 | 21868.6 | 16672.4 | 19414.2 | 14788.8 | 11432.1 | 14971.1 | 17895.7 | 21986.7 | 21468.1 | 31090.4 | 248757.6 |
| 41 | 2310.9 | 4906.4 | 5284.5 | 1601.5 | 676.1 | 533.2 | 591 | 3326.5 | 1986.3 | 2069.5 | 2858.1 | 3155.4 | 29299.4 |
| 42 | 1960.1 | 4351.4 | 4313.3 | 1454.3 | 795.8 | 523.6 | 602.4 | 3091.1 | 1884.9 | 1955.9 | 2517.3 | 2883.1 | 26333.2 |
| 43 | 4906.2 | 1144.1 | 618.6 | 1946.9 | 2716.4 | 2733.7 | 2512 | 2705.3 | 2473.9 | 2459.4 | 2571.2 | 3048.5 | 29836.2 |
| 44 | 2416.9 | 2203.9 | 2819.6 | 2120.1 | 2152.9 | 1939.7 | 1926.3 | 2125.2 | 2509.6 | 3411.4 | 3255.7 | 3036.8 | 29918.1 |
| 45 | 1712.5 | 1635.7 | 1397.6 | 840.4 | 482.3 | 441.9 | 417.9 | 376.3 | 457.1 | 588.4 | 791.2 | 1145 | 10286.3 |
| 46 | 784 | 839 | 965.7 | 786.4 | 1151 | 1033.3 | 688.4 | 860.3 | 801 | 830.1 | 772.4 | 829.3 | 10340.9 |
| 47 | 6966.7 | 6760.5 | 8087.2 | 6686.2 | 7050.1 | 6667.1 | 6144.1 | 6051.5 | 6459.8 | 7280.8 | 7116 | 6689.9 | 54159.5 |
| 48 | 4242.3 | 4756.2 | 2854.4 | 417.3 | 0 | 0 | 0 | 0 | 0 | 374 | 1356.3 | 2891.8 | 16892.3 |
| 49 | 6871.8 | 6969.7 | 7258.4 | 5430.1 | 5979.3 | 5534.8 | 4728.2 | 5777 | 5120.5 | 6286.6 | 6160.4 | 5334.9 | 71451.7 |
| 50 | 934.7 | 1023.8 | 738.6 | 181.4 | 12.7 | 0.6 | 0.4 | 0.4 | 0.2 | 245.1 | 520.2 | 858.3 | 4516.4 |
| 51 | 1206.3 | 1300.5 | 923.4 | 212 7 | 28.6 | 40.5 | 0 | 0 | 0 | 189.5 | 409.1 | 823.3 | 5133.9 |
| 52 | 3565.7 | 1351.8 | 935.3 | 182.1 | 1.1 | 0 | 0 | 0 | 0 | 287.3 | 532.8 | 1030 | 7886.1 |
| 53 | 664.5 | 617.8 | 667 6 | 556.2 | 579.8 | 430.9 | 425.2 | 483.8 | 463.3 | 577.7 | 574.4 | 574.3 | 6615.5 |
| 54 | 13.9 | 4779.2 | 4538.2 | 2652.1 | 1431.7 | 1979.7 | 2295.4 | 541.5 | 2629.5 | 3489.3 | 4152.4 | 4948 | 33450.9 |
| 55 | 740.9 | 1405.1 | 1003.1 | 101.2 | 0 | 0 | 0 | 0 | 0 | 200.2 | 357.3 | 879.4 | 4687.2 |
| 56 | 2802.7 | 2634.7 | 2388 | 667.5 | 0 | 0 | 0 | 0 | 0 | 1375.1 | 1616.5 | 374.9 | 11859.4 |
| 57 | 1723.1 | 3632.3 | 6343.7 | 5172 | 4911.9 | 3913.8 | 3944.6 | 2852.6 | 3952.7 | 4496.6 | 4465.3 | 4350.7 | 49759.3 |
| 58 | 1146 | 1272.7 | 1259.9 | 595.5 | 334.3 | 132.8 | 0.7 | 0 | 100.8 | 688.7 | 1043.3 | 1609.1 | 8183.8 |
| 59 | 0 | 0 | 0 | 3 | 516.2 | 1641.8 | 2186.4 | 1952.2 | 574.2 | 514.7 | 0 | 0.2 | 7388.7 |
| 70 | 3488 | 3817.6 | 1419.3 | 602.5 | 360.2 | 289 | 313.4 | 419.9 | 343.9 | 446.2 | 613.4 | 1201.3 | 13314.7 |
| 71 | 0 | 208.4 | 1558.4 | 457.7 | 191.3 | 5.4 | 0 | 0 | 0 | 279.9 | 418.5 | 1318 | 4437.6 |
| 72 | 9.3 | 1983.2 | 2216 | 1731.6 | 1828.3 | 1758.6 | 1737.3 | 1860.9 | 1764.1 | 2171.9 | 2313.8 | 2341.3 | 21716.3 |
| 73 | 2681.7 | 2808.4 | 2359.6 | 1211.4 | 669 | 0 | 0 | 0 | 0 | 969.1 | 1561.3 | 2244.7 | 14505.2 |
| 74 | 0 | 0 | 2871.3 | 2755.3 | 2339.1 | 1888.5 | 1509.5 | 694.6 | 1753.7 | 2576 | 2685.3 | 3801.7 | 22875 |
| 75 | 0 | 0 | 0 | 20.7 | 83.1 | 676.5 | 20.8 | 72.7 | 0 | 0 | 4486.5 | 114.2 | 5474.5 |
| 76 | 2205.5 | 1034.6 | 1828.3 | 1022.8 | 374.2 | 269.8 | 254.5 | 230.9 | 265 | 1297.2 | 1398.3 | 1267.3 | 11448.4 |
| 77 | 0 | 0 | 0 | 4305.7 | 5068.6 | 4539 | 4310.1 | 4190 | 4372.9 | 5263.5 | 5468.7 | 6283.9 | 43802.4 |
| 78 | 1039 | 1000.2 | 844.5 | 323.7 | 0 | 0 | 0 | 0 | 0 | 254.7 | 506.4 | 786.7 | 4755.2 |
| 79 | 0 | 0 | 0 | 0 | 690.1 | 1329.7 | 867 | 1500.6 | 187.5 | 13.4 | 12.4 | 0 | 4600.7 |
| 80 | 3174.6 | 2960.5 | 2314.4 | 1062.4 | 562.9 | 499.2 | 484.7 | 446.6 | 514.4 | 1407.4 | 1698.7 | 2724.9 | 17850.7 |

| ID # | Jan-06 | Feb-06 | Mar-06 | Apr-06 | May-06 | Jun-06 | Jul-06 | Aug-06 | Sep-06 | Oct-06 | Nov-06 | Dec-06 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 81 | 2605.5 | 2745.1 | 2261.6 | 862.3 | 466.2 | 363.5 | 336.5 | 343.9 | 421.5 | 1062.9 | 1519.1 | 2271.7 | 15259.8 |
| 82 | 3539.8 | 3147.6 | 2152.8 | 1136.1 | 678.9 | 490.5 | 449.2 | 431 | 580.7 | 1104.4 | 1744.2 | 2333.7 | 17788.9 |
| 83 | 4192.7 | 3980.1 | 3114.9 | 1475.7 | 837.9 | 734.8 | 708.9 | 683.5 | 766.6 | 1565.3 | 2182.2 | 3082.6 | 23325.2 |
| 84 | 5436.6 | 5763.6 | 5545.2 | 4112.7 | 2991.2 | 2167.6 | 1576.8 | 1528.6 | 2165.4 | 4028.7 | 4797.7 | 6187.5 | 46301.6 |
| 85 | 204.1 | 1994.1 | 9193.7 | 13270.7 | 13485.2 | 14539.8 | 15304 | 13864.2 | 12927.2 | 14443.5 | 15324.4 | 16972.2 | 141523.1 |
| 86 | 25 | 5023.6 | 5551.8 | 6806.5 | 9266.4 | 12413.5 | 14777.3 | 13137.5 | 10557.9 | 6474.5 | 5021.2 | 4709.8 | 93765 |
| 87 | 0 | 0 | 0 | 0 | 0 | 0 | 0.2 | 0 | 0 | 0 | 0 | 0 | 0.2 |
| 88 | 1681.8 | 1720.8 | 1493.4 | 752.7 | 339.1 | 270.7 | 290.6 | 258.5 | 250.4 | 644.4 | 929.4 | 1300.1 | 9931.9 |
| 89 | 1443.8 | 1257.6 | 1342.5 | 1162.6 | 1450.9 | 1346 | 1327.6 | 1121.3 | 1268.9 | 1464.1 | 1266.1 | 1075.6 | 15527 |
| 90 | 1991.3 | 1809 | 1595.7 | 412.8 | 0 | 0 | 0 | 0 | 2.1 | 603.8 | 1102.4 | 1810.5 | 9327.6 |
| 91 | 2531.6 | 3027.8 | 2036.1 | 819.4 | 528.8 | 442 | 444.1 | 512.9 | 562.3 | 815.2 | 1021.8 | 1619.5 | 14361.5 |
| 92 | 690.2 | 705.7 | 592.5 | 197.7 | 122.7 | 128.4 | 115.1 | 243.1 | 237.5 | 319.6 | 424.9 | 686.6 | 4464 |
| 93 | 244.1 | 219.4 | 229 | 194.7 | 206.4 | 174.3 | 130.7 | 183.3 | 184.9 | 248.3 | 188.9 | 147.9 | 2351.9 |
| 94 | 5716.2 | 5396.8 | 5558.8 | 4738.6 | 4866.5 | 4575.9 | 5595.9 | 5210.1 | 4292.6 | 3415.2 | 4651.4 | 4688.5 | 58706.5 |
| 95 | 2206 | 2011.4 | 2593 | 2637.7 | 3113.5 | 3046.2 | 2865.9 | 2826.4 | 2807.8 | 2821.8 | 2614.7 | 1936.1 | 31480.5 |
| 96 | 4345.1 | 5042.1 | 3675.2 | 856.6 | 205.7 | 155.8 | 138.5 | 134.6 | 154.2 | 925.8 | 1626 | 3717.1 | 20976.7 |
| 97 | 998.4 | 1061.8 | 710.8 | 145.9 | 37.6 | 25.6 | 23.1 | 24.9 | 29.2 | 148.6 | 368.2 | 1025 | 4599.1 |
| 98 | 2021.7 | 1939 | 1612.7 | 776.7 | 409.4 | 347 | 323.2 | 313.1 | 311.1 | 766.9 | 1108.3 | 1533.6 | 11462.7 |
| 99 | 2208.5 | 2621.3 | 2259.7 | 3395.8 | 3727.5 | 4881.8 | 5731 | 5595.3 | 4771.2 | 4208.8 | 3233.4 | 2713.7 | 45348 |
| 100 | 2304.5 | 2312.3 | 1823.5 | 745.3 | 522.5 | 1019.2 | 1349 | 1356.5 | 846.8 | 965.4 | 707.4 | 172.9 | 14125.3 |
| 101 | 612.8 | 286 | 1900 2 | 886.1 | 263 | 231.1 | 219.2 | 205.9 | 232.7 | 935.5 | 687.3 | 833.6 | 7293.4 |
| 102 | 730.5 | 771.8 | 395 2 | 60.2 | 4 | 0 | 0 | 0 | 0 | 105.6 | 269.3 | 584.3 | 2920.9 |
| 103 | 1575.2 | 999.6 | 756 5 | 162.2 | 0 | 0 | 0 | 0 | | | | | 3493.5 |
| 104 | 473.3 | 501.1 | 389.6 | 112.7 | 19.5 | 0 | 0 | 0 | 0 | 140.3 | 233.7 | 426.7 | 2296.9 |
| 105 | 2117.3 | 2578.2 | 2457.4 | 912 | 0 | 0 | 0 | 0 | 0 | 925.7 | 1327.1 | 2252.3 | 12570 |
| 106 | 1263.8 | 1307.2 | 1279 7 | 936.9 | 912.5 | 834.6 | 685.7 | 800.9 | 727.3 | 865.3 | 862.4 | 978.7 | 11455 |
| 107 | 47 8 | 901.6 | 746 | 329.3 | 498 | 161.3 | 112.9 | 114.3 | 165.6 | 350.3 | 718.5 | 939.4 | 5085 |
| 108 | 1179.1 | 3090 1 | 4882.4 | 3480.5 | 4115 | 3775.6 | 3485.8 | 3901.2 | 3371 | 4447.8 | 4034.4 | 4440.5 | 44203.4 |
| 109 | 1019.1 | 923.7 | 1041.8 | 947.8 | 926.5 | 902.6 | 750.7 | 793.1 | 643.5 | 840.3 | 854.2 | 604.8 | 10248.1 |
| 110 | 363.2 | 465.5 | 356 | 256.3 | 130.5 | 85.7 | 108.3 | 116.2 | 206.8 | 245.2 | 256.3 | 277 | 2867 |
| 111 | 4765.4 | 5421.6 | 4369.4 | 2838.4 | 2734.6 | 1970 | 1589.2 | 1765.2 | 2442.8 | 3292.1 | 3714 | 5321.1 | 40223.8 |
| 112 | 23.8 | 89.3 | 510 | 326.5 | 358.5 | 320.6 | 311.1 | 320.4 | 270.7 | 339.5 | 329.7 | 607.9 | 3808 |
| 113 | 6189.5 | 6519.3 | 6295.5 | 4347.8 | 3312.9 | 2388.8 | 2121.3 | 2159.5 | 2728.9 | 4317 | 4667.2 | 5929.5 | 50977.2 |
| 114 | 6721 | 7058.9 | 6133.2 | 2817.6 | 1739.8 | 1373.2 | 1079.2 | 1073.7 | 1098.1 | 2778.7 | 3604.4 | 5564.7 | 41042.5 |
| 115 | 486.2 | 582.7 | 346.4 | 82.5 | 3.8 | 0 | 0 | 0 | 0 | 97.4 | 197.9 | 366.3 | 2163.2 |
| 116 | 1684.8 | 1823.3 | 1520.7 | 759.3 | 690.9 | 529.8 | 492.2 | 376.7 | 485.7 | 919.7 | 1311.7 | 1540.1 | 12134.9 |

| ID # | Jan-06 | Feb-06 | Mar-06 | Apr-06 | May-06 | Jun-06 | Jul-06 | Aug-06 | Sep-06 | Oct-06 | Nov-06 | Dec-06 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 117 | 0.3 | 431.7 | 316.3 | 0 | 0.2 | 0 | 0.5 | 0.2 | 0 | 5.1 | 60.3 | 105.6 | 748.5 |
| 118 | | 657.1 | 1002 | 292.5 | 406.7 | 234.9 | 81.8 | 30.4 | 461.4 | 474.8 | 569.3 | 1005.6 | 5216.5 |
| 119 | 5033.9 | 5476.1 | 4379 | 1702.1 | 857.7 | 695.5 | 627 | 559.3 | 607.5 | 2358.2 | 3491.6 | 5475 | 31262.9 |
| 120 | | 1457.5 | 1138 | 463.3 | 1 | 0 | 0 | 0 | 23.8 | 512 | 908.5 | 1498.9 | 6003 |
| 121 | | 1447.1 | 1383.1 | 1322.5 | 0.7 | 0 | 0 | 0.3 | 0 | 333.3 | 605.5 | 1051.9 | 6144.4 |
| 122 | | 1275.4 | 1850 | 827.1 | 585.7 | 474.8 | 436.3 | 424.2 | 536.3 | 1088.9 | 1735.5 | 2612.7 | 11846.9 |
| 123 | | 1538.2 | 1160 | 728.7 | 877.3 | 1663.8 | 2287.4 | 2121 | 1940.8 | 694.1 | 912.2 | 1197.8 | 15121.3 |
| 124 | 165.3 | 500 | 503.7 | 253.4 | 142.3 | 130.1 | 60.9 | 110.4 | 124.2 | 208.4 | 394.9 | 484.8 | 3078.4 |
| 125 | | 655.4 | 1115.3 | 62.1 | 0 | 0 | 0.1 | 0 | 0 | 108.3 | 313.7 | 1049.4 | 3304.3 |
| 126 | | | 994.8 | 303.3 | 0 | 0 | 0 | 0 | 0 | 438.7 | 606 | 1018.3 | 3361.1 |
| 127 | | | 551.2 | 97.8 | 0 | 0.2 | 0 | 0 | 0 | 322.3 | 320 | 549.1 | 1840.6 |
| 128 | | | 4501.7 | 1773.4 | 757.6 | 580.3 | 555.2 | 508.9 | 628.7 | 1479.3 | 2517.6 | 3701 | 17003.7 |
| 129 | | | 1036.1 | 165.8 | 10.4 | 0 | 0 | 0 | 10.4 | 238.1 | 475.2 | 1210.7 | 3146.7 |
| 130 | | | 7129.9 | 3701.7 | 4726.5 | 4393.3 | 3322.6 | 3940.2 | 4651.8 | 6514.5 | 7794.6 | 8995.8 | 55170.9 |
| 131 | 188.2 | | 53460 | 24509.4 | 49490.9 | 51695.8 | 35918.6 | 48992.4 | 43441.5 | 49168.9 | 24253.8 | 41.2 | 381160.7 |
| 132 | | | | 3815.8 | 1849.2 | 1196.5 | 2515.3 | 2252.6 | 1592.1 | 3640.3 | 5644.1 | 7102.3 | 29608.2 |
| 133 | | | | 794.5 | 811.9 | 711.4 | 692.8 | 774.2 | 865 | 1018.5 | 1117.1 | 1103.9 | 7889.3 |
| 134 | | | | | 5286.5 | 4466.4 | 3947.2 | 4076.1 | 4341.9 | 5573.7 | 6057.8 | 7888.7 | 41638.3 |
| 135 | | | | | 6294.2 | 5257.8 | 4590.9 | 4761.2 | 5106.5 | 6534.9 | 7039.9 | 9193.2 | 48778.6 |
| 136 | | | | | | 27086.4 | 20492 | 24756.3 | 25061.1 | 28518.5 | 28829.5 | 1564.2 | 156308 |
| 137 | | | | | | | 480.2 | 502.5 | 499.7 | 995.2 | 1245.6 | 2032.3 | 5755.5 |
| 138 | | | | | | | 8194.6 | 8308.2 | 8713.1 | 10919.9 | 11775.8 | 12495.4 | 60407 |
| 139 | | | | | | | 0 | 0 | 0 | 0 | 115.2 | 171.1 | 286.3 |
| 140 | | | | | | | 131.6 | 220.5 | 124.2 | 360.2 | 317.1 | 527.1 | 1680.7 |
| 141 | | | | | | | 0 | 0 | 0 | 22.8 | 2911.7 | 4479.6 | 7414.1 |
| 142 | 0 | 0 | 52.6 | 33.3 | 0 | 0 | 0.5 | 0 | 1014.3 | 1048.1 | 1808.3 | 3086.7 | 7043.8 |
| 143 | | | | | | | | | 0 | 115.4 | 250.6 | 554.8 | 920.8 |
| 144 | | | | | | | | | 359.4 | 1150.8 | 1425.5 | 1963.3 | 4899 |
| 145 | | | | | | | | | 101 | 172.2 | 370.8 | 450.8 | 1094.8 |
| 146 | | | | | | | | | 141.8 | 248.2 | 501.7 | 588.7 | 1480.4 |
| 147 | | | | | | | | | | 41235.9 | 815.4 | 156.1 | 42207.4 |
| 148 | | | | | | | | | | 2884.8 | 3649.4 | 0 | 6534.2 |
| 149 | | | | | | | | | | 19750.7 | 154.5 | 516.2 | 20421.4 |
| 150 | | | | | | | | | | 18313.5 | 144.2 | 464.6 | 18922.3 |
| 151 | | | | | | | | | 12.2 | 970.5 | 856.8 | 1275.1 | 3114.6 |
| 152 | | | | | | | | | 7.2 | 1693.1 | 2532.6 | 3585.9 | 7818.8 |

| ID # | Jan-06 | Feb-06 | Mar-06 | Apr-06 | May-06 | Jun-06 | Jul-06 | Aug-06 | Sep-06 | Oct-06 | Nov-06 | Dec-06 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 153 | | | | | | | | | 0 | 608.1 | 1180.5 | 1512.3 | 3300.9 |
| 154 | | | | | | | | | | 1384.9 | 2020.3 | 3078.3 | 6483.5 |
| 155 | 2942.1 | 3030.8 | 2239.5 | 736.8 | 339.5 | 307.1 | 299.1 | 292.5 | 300.3 | 1304.5 | 1603.9 | 2556.5 | 15952.6 |
| 156 | 0 | 3011.1 | 2783.9 | 1537.3 | 733.4 | 702.6 | 626 | 571.4 | 705 | 1930.3 | 2651.2 | 3828 | 19080.2 |
| 157 | 115 | 1790.8 | 2083 | 1289.8 | 660.8 | 569.3 | 444.8 | 433.7 | 491 | 1183.4 | 1737.8 | 2557.8 | 13357.2 |
| 158 | 1197.9 | 4499.7 | 4159.5 | 2074.9 | 735.7 | 552.5 | 501.8 | 432.3 | 544.8 | 2319.5 | 3642.5 | 5951.1 | 26612.2 |
| 159 | | | | | | | | | | . | 1842.4 | 2437.6 | 4280 |
| 160 | | | | | | | | | | | 2970 | 3177.3 | 6147.3 |
| 161 | | | | | | | | | | | 721.1 | 834 | 1555.1 |
| 162 | | | | | | | | | | | 1260.9 | 2006.2 | 3267.1 |
| 163 | | | | | | | | | | | 0 | 0 | 0 |
| 164 | | | | | | | | | | | 1281.4 | 1746.1 | 3027.5 |
| 165 | | | | | | | | | | | 2366.7 | 2999.9 | 5366.6 |
| 166 | | | | | | | | | | | 1280.7 | 3227.1 | 4507.8 |
| 167 | | | | | | | | | | | 0 | 0 | 0 |
| 168 | | | | | | | | | | | 339 | 665.9 | 1004.9 |
| 169 | | | | | | | | | | 4.3 | 315.4 | 640.9 | 960.6 |
| 170 | | | | | | | | | | | 709.6 | 1574.7 | 2284.3 |
| 171 | | | | | | | | | | | 455.1 | 825.8 | 1280.9 |
| 172 | | | | | | | | | | | 291.5 | 605.5 | 897 |
| 173 | | | | | | | | | | | 675.9 | 97.9 | 773.8 |
| 174 | | | | | | | | | | | 1258.5 | 1643.1 | 2901.6 |
| 175 | | | | | | | | | | | 543.4 | 954.7 | 1498.1 |
| 176 | | | | | | | | | | | 598.8 | 1058.7 | 1657.5 |
| 177 | | | | | | | | | | | 144.6 | 236.9 | 381.5 |
| 178 | | | | | | | | | | | 251.7 | 510.2 | 761.9 |
| 179 | | | | | | | | | | | 3291.1 | 6812.6 | 10103.7 |
| 180 | | | | | | | | | | | 1501.7 | 3028.2 | 4529.9 |
| 181 | | | | | | | | | | | 2921.6 | 2966.3 | 5887.9 |
| 182 | | | | | | | | | | | 337 | 579.5 | 916.5 |
| 183 | | | | | | . | | | | | 731.5 | 1706.4 | 2437.9 |
| 184 | | | | | | | | | | | 0 | 0 | 0 |
| 185 | | | | | | | | | | | 324.3 | 776 | 1100.3 |
| 186 | | | | | | | | | | | 692.8 | 1769 | 2461.8 |
| 187 | | | | | | | | | | | 237.7 | 546.2 | 783.9 |
| 188 | | | | | | | | | | | 150.1 | 211.2 | 361.3 |

| ID # | Jan-06 | Feb-06 | Mar-06 | Apr-06 | May-06 | Jun-06 | Jul-06 | Aug-06 | Sep-06 | Oct-06 | Nov-06 | Dec-06 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 189 | | | | | | | | | | | 80.7 | 0 | 80.7 |
| 190 | | | | | | | | | | | 146.6 | 221.7 | 368.3 |
| 191 | | | | | | | | | | | 117 | 226.3 | 343.3 |
| 192 | | | | | | | | | | | 399.9 | 492.4 | 892.3 |
| 193 | | | | | | | | | | | 521.9 | 866 | 1387.9 |
| 194 | | | | | | | | | | | 181.8 | 719.4 | 901.2 |
| 195 | | | | | | | | | | . | 249.9 | 470.8 | 720.7 |
| 196 | | | | | | | | | | | 27.9 | 49.5 | 77.4 |
| 197 | | | | | | | | | | | 173.2 | 786.7 | 959.9 |
| 198 | | | | | | | | | | | 247.1 | 452.2 | 699.3 |
| 199 | | | | | | | | | | | 270.6 | 480.4 | 751 |
| 200 | | | | | | | | | | | 234.5 | 614.7 | 849.2 |
| 201 | | | | | | | | | | | 259.7 | 496.7 | 756.4 |
| 202 | | | | | | | | | | | 179.2 | 365.7 | 544.9 |
| 203 | | | | | | | | | | | 97.8 | 80.7 | 178.5 |
| 204 | | | | | | | | | | | 1690.2 | 3058.3 | 4748.5 |
| 205 | | | | | | | | | | | 2101 | 4021.3 | 6122.3 |
| 206 | | | | | | | | | | | 59.5 | 246.8 | 306.3 |
| 207 | | | | | | | | | | | 182 | 396.4 | 578.4 |
| 208 | | | | | | | | | | | 290.7 | 560.5 | 851.2 |
| 209 | 135.7 | 31.2 | 18003 | 3033.4 | 0 | 0 | 0 | 0 | 0 | 82.6 | 13190.7 | 17268.2 | 51744.8 |
| 210 | 3437 | 3470.3 | 3275.9 | 2847.3 | 3379.2 | 3359.6 | 2837 | 3041.1 | 2504.2 | 2714.3 | 2906.8 | 2744 | 36516.7 |
| 211 | 458.7 | 0 | 0 | 2635.8 | 3209.6 | 2217.7 | 1589.2 | 2219.9 | 2956.2 | 4705.5 | 6223 | 8209 | 34424.6 |
| 212 | | | | | | | | | | | | 2158.4 | 2158.4 |
| 213 | | | | | | | | | | | | 3546.2 | 3546.2 |
| 214 | | | | | | | | | | | | 1362.5 | 1362.5 |
| 215 | 1928.1 | 2207.3 | 1576.9 | 371.7 | 0 | 0 | 0 | 0 | 0 | 100.1 | 498 | 1513.4 | 8195.5 |
| 216 | 139.2 | 75 | 1978.4 | 656.8 | 5 | 1 | 1 | 0 | 0 | 533.1 | 1113 | 1883.5 | 6386 |
| 216 | 116.8 | 0.2 | 1207.1 | 444.9 | 64.9 | 0 | 0 | 0 | 0 | 343.2 | 646 | 1398.3 | 4221.4 |
| 218 | 221.9 | 2 | 3461.4 | 1820.1 | 1645.2 | 5574 | 6375.2 | 6390.2 | 3233.5 | 1362.3 | 2309.3 | 3128.1 | 35523.2 |
| 219 | | | | | | | | | | | | 1308.3 | 1308.3 |
| 220 | 0 | 64.6 | 7241.3 | 4176.8 | 3803.7 | 3452.1 | 3219 | 3024.3 | 3439.8 | 3691.4 | 4895.5 | 6589.6 | 43598.1 |
| 221 | | | | | | | | | | | | 826.5 | 826.5 |
| 222 | 13282.4 | 13239.7 | 9773.9 | 7490.2 | 9614 | 9149.3 | 7137.5 | 12385.4 | 14420.2 | 14224.2 | 14310.4 | 10333.8 | 135361 |

## Philadelphia Gas Works

Pennsylvania Public Utility Commission
52 Pa. Code §53.61. et seq.

**Item 53.64(c)**     Thirty days prior to the filing of a tariff reflecting an increase or decrease in natural gas costs. each Section 1307(f) gas utility seeking recovery of purchased gas costs under that section shall provide notice to the public. under § 53.68 (relating to notice requirements). and shall file the following supporting information with the Commission. with a copy to the Consumer Advocate. Small Business Advocate and to intervenors upon request:

(10) A schematic system map. locating and identifying by name. the pressure and capacity of all interstate or intrastate transmission pipeline connections. compressor stations. utility transmission or distribution mains 6 inches or larger in size. storage facilities. including maximum daily injection and withdrawal rates. production fields. and each individual supply or transportation customer which represents 5% or more of total system throughput in a month. Each customer or account shall be identified solely by a unique alphanumeric code. the key to which may be provided subject to § 5.423.

**Response:**

Following the lead of the industry. as well as federal policy guidelines regarding the security of information relating to energy transmission sites. PGW will no longer provide this data to the general public. However. upon request PGW will provide this information to the Commission and will also provide this information. upon written request. to parties to this proceeding that have legitimate business reasons to view this information.

## Philadelphia Gas Works

Pennsylvania Public Utility Commission
52 Pa. Code §53.61, et seq.

**Item 53.64(c)**    Thirty days prior to the filing of a tariff reflecting an increase or decrease in natural gas costs, each Section 1307(f) gas utility seeking recovery of purchased gas costs under that section shall provide notice to the public, under § 53.68 (relating to notice requirements), and shall file the following supporting information with the Commission, with a copy to the Consumer Advocate, Small Business Advocate and to intervenors upon request:

(11) If any rate structure or rate allocation changes are to be proposed, a detailed explanation of each proposal, reasons therefore, number of customers affected, net effect on each customer class, and how the change relates to or is justified by changes in gas costs proposed in the Section 1307(f) tariff filing. Explain how gas supply, transportation and storage capacity costs are allocated to customers which are primarily nonheating, interruptible or transportation customers.

**Response:**

PGW is not proposing any rate structure or rate allocation changes in the instant proceeding, therefore, no testimony or schedules have been provided in this pre-filing to support such changes.

PGW will provide testimony regarding gas procurement policies, strategies and the GCR calculation in its 1307f March 1 filing.

**Philadelphia Gas Works**

Pennsylvania Public Utility Commission
52 Pa. Code §53.61. et seq.

**Item 53.64(c)** . Thirty days prior to the filing of a tariff reflecting an increase or decrease in natural gas costs. each Section 1307(f) gas utility seeking recovery of purchased gas costs under that section shall provide notice to the public. under § 53.68 (relating to notice requirements). and shall file the following supporting information with the Commission. with a copy to the Consumer Advocate. Small Business Advocate and to intervenors upon request:

(12) A schedule depicting the most recent 5-year consecutive 3-day peak data by customer class (or other historic peak day data used for system planning). daily volumetric throughput by customer class (including end-user transportation throughput). gas interruptions and high. low and average temperature during each day.

**Response:**

Schedule 1 – Three-day peak for FY 01-02 through FY 05-06.

Schedule 2 – Identifies a listing of gas interruptions for FY 01-02 through FY 05-06. their duration and the high. low and average temperatures for each day that the interruption was in effect.

## GAS INTERRUPTIONS - SEPTEMBER 1, 2001 THROUGH AUGUST 31, 2006

| | TEMPERATURE | | | GAS INTERRUPTIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DATE | HIGH | LOW | AVERAGE | BPS-S | BPS-H | BPS-L | LBS-S | LBS-L | LBS-XL | COGEN |
| 01/17/2003 | 33 | 10 | 21 | | | | X | X | X | |
| 01/18/2003 | 26 | 14 | 20 | | | | X | X | X | |
| 01/19/2003 | 37 | 26 | 29 | | | | X | X | X | |
| 01/20/2003 | 38 | 20 | 27 | | | | X | X | X | |
| 01/21/2003 | 32 | 16 | 23 | | | | X | X | X | |
| 01/22/2003 | 27 | 13 | 19 | | | | X | X | X | |
| 01/23/2003 | 22 | 11 | 16 | | | | X | X | X | |
| 01/24/2003 | 31 | 19 | 25 | | | | X | X | X | |
| 01/25/2003 | 35 | 25 | 30 | | | | X | X | X | |
| 01/26/2003 | 38 | 13 | 29 | | | | X | X | X | |
| 01/27/2003 | 21 | 13 | 16 | | | | X | X | X | |
| 01/28/2003 | 31 | 19 | 27 | | | | X | X | X | |
| 01/29/2003 | 34 | 26 | 31 | | | | X | X | X | |
| 01/30/2003 | 37 | 30 | 33 | | | | X | X | X | |
| 01/31/2003 | 39 | 36 | 37 | | | | X | X | X | |
| 02/01/2003 | 44 | 36 | 39 | | | | X | X | X | |
| 02/02/2003 | 46 | 36 | 40 | | | | X | X | X | |
| 02/03/2003 | 53 | 38 | 44 | | | | X | X | X | |
| 02/04/2003 | 49 | 31 | 41 | | | | X | X | X | |
| 02/05/2003 | 36 | 25 | 30 | X | X | X | X | X | X | |
| 02/06/2003 | 35 | 28 | 31 | X | X | X | X | X | X | |
| 02/07/2003 | 38 | 22 | 30 | X | X | X | X | X | X | |
| 02/08/2003 | 34 | 23 | 27 | X | X | X | X | X | X | |
| 02/09/2003 | 42 | 33 | 36 | X | X | X | X | X | X | |
| 02/10/2003 | 37 | 21 | 33 | X | X | X | X | X | X | |
| 02/11/2003 | 36 | 24 | 30 | X | X | X | X | X | X | |
| 02/12/2003 | 32 | 20 | 25 | X | X | X | X | X | X | |
| 02/13/2003 | 33 | 20 | 25 | X | X | X | X | X | X | |
| 02/14/2003 | 37 | 25 | 32 | X | X | X | X | X | X | |
| 02/15/2003 | 29 | 12 | 23 | X | X | X | X | X | X | |
| 02/16/2003 | 25 | 12 | 16 | X | X | X | X | X | X | |
| 02/17/2003 | 30 | 24 | 27 | X | X | X | X | X | X | |
| 02/18/2003 | 37 | 28 | 32 | X | X | X | X | X | X | |
| 02/19/2003 | 45 | 36 | 38 | X | X | X | X | X | X | |
| 02/20/2003 | 54 | 30 | 40 | X | X | X | X | X | X | |
| 02/21/2003 | 52 | 37 | 41 | X | X | X | X | X | X | |
| 02/22/2003 | 44 | 38 | 40 | X | X | X | X | X | X | |
| 02/23/2003 | 48 | 27 | 35 | X | X | X | X | X | X | |
| 02/24/2003 | 44 | 29 | 36 | X | X | X | X | X | X | |
| 02/25/2003 | 38 | 21 | 27 | X | X | X | X | X | X | |
| 02/26/2003 | 29 | 24 | 26 | X | X | X | X | X | X | |
| 02/27/2003 | 34 | 28 | 31 | X | X | X | X | X | X | |
| 02/28/2003 | 42 | 32 | 36 | X | X | X | X | X | X | |
| 03/01/2003 | 42 | 36 | 39 | X | X | X | X | X | X | |
| 03/02/2003 | 48 | 17 | 38 | X | X | X | X | X | X | |
| 03/03/2003 | 32 | 17 | 22 | X | X | X | X | X | X | |
| 03/04/2003 | 44 | 31 | 39 | X | X | X | X | X | X | |
| 03/05/2003 | 56 | 34 | 47 | X | X | X | X | X | X | |
| 03/06/2003 | 35 | 20 | 28 | X | X | X | X | X | X | |
| 03/07/2003 | 41 | 26 | 32 | X | X | X | X | X | X | |
| 03/08/2003 | 56 | 41 | 47 | X | X | X | X | X | X | |
| 03/09/2003 | 56 | 24 | 37 | X | X | X | X | X | X | |
| 03/10/2003 | 36 | 24 | 29 | X | X | X | X | X | X | |
| 03/11/2003 | 41 | 33 | 36 | X | X | X | X | X | X | |
| 03/12/2003 | 56 | 37 | 46 | X | X | X | X | X | X | |
| 03/13/2003 | 58 | 27 | 41 | X | X | X | X | X | X | |
| 03/14/2003 | 46 | 32 | 37 | X | X | X | X | X | X | |

| | TEMPERATURE | | | GAS INTERRUPTIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DATE | HIGH | LOW | AVERAGE | BPS-S | BPS-H | BPS-L | LBS-S | LBS-L | LBS-XL | COGEN |
| 12/05/2003 | 35 | 26 | 30 | | | | X | X | X | X |
| 12/06/2003 | 30 | 25 | 28 | | | | X | X | X | X |
| 12/07/2003 | 33 | 26 | 29 | | | | X | X | X | X |
| 12/08/2003 | 37 | 30 | 34 | | | | X | X | X | X |
| 12/09/2003 | 40 | 34 | 36 | | | | X | X | X | X |
| 12/10/2003 | 60 | 39 | 52 | | | | X | X | X | X |
| 12/11/2003 | 58 | 37 | 45 | | | | X | X | X | X |
| 12/12/2003 | 44 | 30 | 36 | | | | X | X | X | X |
| 12/13/2003 | 37 | 30 | 34 | | | | X | X | X | X |
| 12/14/2003 | 45 | 31 | 37 | | | | X | X | X | X |
| 12/15/2003 | 43 | 33 | 37 | | | | X | X | X | X |
| 12/16/2003 | 51 | 40 | 47 | | | | X | X | X | X |
| 12/17/2003 | 52 | 32 | 38 | | | | X | X | X | X |
| 12/18/2003 | 39 | 31 | 34 | | | | X | X | X | X |
| 12/19/2003 | 38 | 31 | 34 | | | | X | X | X | X |
| 12/20/2003 | 40 | 29 | 34 | | | | X | X | X | X |
| 12/21/2003 | 45 | 34 | 38 | | | | X | X | X | X |
| 12/22/2003 | 54 | 45 | 48 | | | | X | X | X | X |
| 12/23/2003 | 62 | 51 | 56 | | | | X | X | X | X |
| 12/24/2003 | 60 | 35 | 46 | | | | X | X | X | X |
| 12/25/2003 | 44 | 31 | 37 | | | | X | X | X | X |
| 12/26/2003 | 43 | 36 | 39 | | | | X | X | X | X |
| 12/27/2003 | 52 | 33 | 42 | | | | X | X | X | X |
| 12/28/2003 | 56 | 33 | 42 | | | | X | X | X | X |
| 12/29/2003 | 56 | 42 | 49 | | | | X | X | X | X |
| 12/30/2003 | 55 | 36 | 43 | | | | X | X | X | X |
| 12/31/2003 | 49 | 40 | 43 | | | | X | X | X | X |
| 01/01/2004 | 52 | 38 | 44 | | | | X | X | X | X |
| 01/02/2004 | 50 | 44 | 47 | | | | X | X | X | X |
| 01/03/2004 | 56 | 48 | 52 | | | | X | X | X | X |
| 01/04/2004 | 55 | 39 | 45 | | | | X | X | X | X |
| 01/05/2004 | 44 | 35 | 41 | | | | X | X | X | X |
| 01/06/2004 | 42 | 20 | 29 | | | | X | X | X | X |
| 01/07/2004 | 31 | 23 | 25 | | | | X | X | X | X |
| 01/08/2004 | 34 | 24 | 32 | | | | X | X | X | X |
| 01/09/2004 | 27 | 5 | 15 | | | | X | X | X | X |
| 01/10/2004 | 21 | 8 | 13 | | | | X | X | X | X |
| 01/11/2004 | 36 | 20 | 29 | | | | X | X | X | X |
| 01/12/2004 | 47 | 36 | 41 | | | | X | X | X | X |
| 01/13/2004 | 48 | 17 | 32 | | | | X | X | X | X |
| 01/14/2004 | 24 | 12 | 20 | | | | X | X | X | X |
| 01/15/2004 | 24 | 6 | 14 | X | X | X | X | X | X | X |
| 01/16/2004 | 28 | 17 | 23 | X | X | X | X | X | X | X |
| 01/17/2004 | 35 | 25 | 32 | X | X | X | X | X | X | X |
| 01/18/2004 | 37 | 25 | 32 | X | X | X | X | X | X | X |
| 01/19/2004 | 31 | 24 | 27 | X | X | X | X | X | X | X |
| 01/20/2004 | 31 | 20 | 25 | X | X | X | X | X | X | X |
| 01/21/2004 | 33 | 23 | 27 | X | X | X | X | X | X | X |
| 01/22/2004 | 44 | 15 | 28 | X | X | X | X | X | X | X |
| 01/23/2004 | 20 | 16 | 17 | X | X | X | X | X | X | X |
| 01/24/2004 | 26 | 11 | 18 | X | X | X | X | X | X | X |
| 01/25/2004 | 21 | 14 | 18 | X | X | X | X | X | X | X |
| 01/26/2004 | 24 | 20 | 22 | X | X | X | X | X | X | X |
| 01/27/2004 | 29 | 22 | 25 | X | X | X | X | X | X | X |
| 01/28/2004 | 30 | 23 | 26 | X | X | X | X | X | X | X |
| 01/29/2004 | 31 | 19 | 25 | X | X | X | X | X | X | X |
| 01/30/2004 | 28 | 15 | 20 | X | X | X | X | X | X | X |
| 01/31/2004 | 27 | 19 | 22 | X | X | X | X | X | X | X |
| 02/01/2004 | 38 | 24 | 30 | X | X | X | X | X | X | X |
| 02/02/2004 | 43 | 30 | 34 | X | X | X | X | X | X | X |
| 02/03/2004 | 47 | 37 | 41 | | | | X | X | X | X |
| 02/04/2004 | 44 | 29 | 37 | | | | X | X | X | X |
| 02/05/2004 | 37 | 31 | 34 | | | | X | X | X | X |
| 02/06/2004 | 46 | 37 | 39 | | | | X | X | X | X |
| 02/07/2004 | 45 | 23 | 35 | | | | X | X | X | X |

| | TEMPERATURE | | | GAS INTERRUPTIONS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DATE | HIGH | LOW | AVERAGE | BPS-S | BPS-H | BPS-L | LBS-S | LBS-L | LBS-XL | COGEN |
| 02/08/2004 | 36 | 25 | 30 | | | | X | X | X | X |
| 02/09/2004 | 47 | 36 | 41 | | | | X | X | X | X |
| 02/10/2004 | 53 | 35 | 44 | | | | X | X | X | X |
| 02/11/2004 | 42 | 31 | 36 | | | | X | X | X | X |
| 02/12/2004 | 42 | 34 | 37 | | | | X | X | X | X |
| 02/13/2004 | 45 | 37 | 40 | | | | X | X | X | X |
| 02/14/2004 | 49 | 28 | 40 | | | | X | X | X | X |
| 02/15/2004 | 33 | 16 | 24 | | | | X | X | X | X |
| 02/16/2004 | 36 | 22 | 29 | | | | X | X | X | X |
| 02/17/2004 | 44 | 30 | 35 | | | | X | X | X | X |
| 02/18/2004 | 47 | 35 | 39 | | | | X | X | X | X |
| 02/19/2004 | 52 | 35 | 43 | | | | X | X | X | X |
| 02/20/2004 | 52 | 39 | 43 | | | | X | X | X | X |
| 02/21/2004 | 56 | 37 | 44 | | | | X | X | X | X |
| 02/22/2004 | 49 | 33 | 40 | | | | X | X | X | X |
| 02/23/2004 | 52 | 39 | 44 | | | | X | X | X | X |
| 02/24/2004 | 42 | 26 | 34 | | | | X | X | X | X |
| 02/25/2004 | 45 | 30 | 36 | | | | X | X | X | X |
| 02/26/2004 | 47 | 32 | 40 | | | | X | X | X | X |

Note    X-Denotes that service to this rate schedule was interrupted on the specified date.
No interruptions occurred between February 26, 2004 and August 31, 2006

## Philadelphia Gas Works

Pennsylvania Public Utility Commission
52 Pa. Code §53.61. et seq.


**Item 53.64(c)**  · Thirty days prior to the filing of a tariff reflecting an increase or
· decrease in natural gas costs. each Section 1307(f) gas utility seeking
·recovery of purchased gas costs under that section shall provide notice to
the public. under § 53.68 (relating to notice requirements). and shall file
the following supporting information with the Commission. with a copy
to the Consumer Advocate. Small Business Advocate and to intervenors
upon request:

(13) Identification and support for any peak day methodology used to
project future gas demands and studies supporting the validity of
the methodology.


**Response:**

Please see the attached Peak Day analysis and discussion. Additionally.
ICF International prepared a *Natural Gas Supply Study* on PGW's
behalf. The final report is attached as PGW's response to Item
53.64(c)(14).

# Peak Day Analysis

PGW performs a peak day analysis on an annual basis to determine its projected sendout requirements during peak conditions. Essentially this process is completed by collecting sendout and average temperature data for all days where the temperature is at or below 32 degrees Fahrenheit, excluding holidays and weekends. All transportation and interruptible volumes are removed from total sendout to arrive at firm sendout on a daily basis.

Common statistical practices warrant that no less than thirty (30) data points be utilized in the analysis to ensure its integrity. For this analysis, PGW has utilized data from the period winter of FY 03-04 through FY 05-06 which would reflect the most current consumption behaviors of its customers. This period yielded 50 data points where the average temperature was at or below 32 degrees Fahrenheit.

Degree days are calculated by subtracting the average daily temperature from sixty-five (65).

A standard linear regression was performed on the data using the calculated degree-days and the actual firm daily sendout information. Additionally, in order to confirm the accuracy of the analysis, and to smooth the charting of the data, a quadratic and a cubic regression analysis were also completed.

A resulting $R^2$ (Correlation Coefficient) indicates an 85.50 % correlation between firm sendout and degree-days. The multiple regression correlation coefficient, $R^2$, is a measure of the proportion of variability explained by, or due to the regression (linear relationship) in a sample of paired data. It is a number between zero and one and a value close to zero suggests a poor model.

To verify the level of confidence we can ascribe to the model, we developed the attached Linear Regression Confidence Level Table. Essentially, this table compares the actual versus projected sendout to determine the level of variance expressed as a standard deviation. A standard deviation represents the positive square root of the variance where the variance simply represents the dispersion about the mean. In this analysis the sample standard deviation is 24.374 MCF.

To determine the level where the relationship between consumption and degree-days is "significant" it is necessary to incorporate Degrees of Freedom and the Student's T Statistic. Degrees of freedom refer to how many cases in the sample are free to vary.

The sample looses one degree of freedom for each estimated parameter. Thus, with a sample of 100 paired values and two estimated parameters (one for the constant and one for the coefficient of "degree days"), there are 100-2=98 degrees of freedom. In this analysis we had 50 data points and there were 48 Degrees of Freedom.

The critical value is the value the Student's T statistic must equal or exceed to conclude that there is a 97.5% chance that the relationship between consumption and degree days is not 0. A Student'' T statistic of 2.04 is required for a sample with 48 Degrees of Freedom.

The Student's T statistic is the distribution of the (mean/standard deviation) of a sample of normal distributed values with unknown variance. In this case, it is a measure of the likelihood that the estimated coefficient for "degree days" is actually zero. The farther the statistic is from 0. the greater the likelihood that the sample pairs are related. The Student-T distribution varies with the number of independent values (Degrees of Freedom) from which the variance is calculated. For this example. the T-statistic is calculated as SQRT (R2* (degrees of freedom)/ (1-R2)) =17.920630. The calculated Student's T statistic of 17.92063 exceeds the critical value of 2.04. Thus. we can conclude that the relationship between consumption and degree-days is "significant" at the 97.5% level.

Finally. based upon the models developed. it can be determined that the company's projected peak day sendout should be set at 723.479 MCF per day at 0 degrees Fahrenheit. This calculation is performed using the X Coefficient (i.e. slope) multiplied by the number of degree days and adding the Constant (Y Intercept). In this case the calculation was performed at a temperature of 0 degrees Fahrenheit and at 15 degrees Fahrenheit.

# Winter 04-06 Data for Daily Temperatures <= 32 Degrees Fahrenheit
## W O Holidays, Weekends

| Day | Date | Daily Temp | Degree Days X | X^2 | X^3 | Actual Firm Sendout (Mcf) | Firm Sendout Per DD (Mcf) | Linear Projected Firm Sendout (Mcf) | Quadratic Projected Firm Sendout (Mcf) | Cubic Projected Firm Sendout (Mcf) |
|---|---|---|---|---|---|---|---|---|---|---|
| Monday | 02 27 06 | 30 | 35 | 1,225 | 42,875 | 393,560 | 11,245 | 397,972 | 397,046 | 396,403 |
| Thursday | 01 26 06 | 30 | 35 | 1,225 | 42,875 | 373,522 | 10,672 | 397,972 | 397,046 | 396,403 |
| Tuesday | 12 20 05 | 31 | 34 | 1,156 | 39,304 | 392,139 | 11,533 | 387,122 | 382,151 | 382,146 |
| Monday | 12 19 05 | 29 | 36 | 1,296 | 46,656 | 378,061 | 10,502 | 408,822 | 411,317 | 410,327 |
| Wednesday | 12 14 05 | 21 | 44 | 1,936 | 85,184 | 470,994 | 10,704 | 495,624 | 503,062 | 504,363 |
| Tuesday | 12 13 05 | 22 | 43 | 1,849 | 79,507 | 442,637 | 10,294 | 484,774 | 493,774 | 494,710 |
| Monday | 12 12 05 | 30 | 35 | 1,225 | 42,875 | 373,832 | 10,681 | 397,972 | 397,046 | 396,403 |
| Friday | 12 09 05 | 32 | 33 | 1,089 | 35,937 | 359,566 | 10,896 | 376,272 | 366,633 | 367,599 |
| Thursday | 12 08 05 | 31 | 34 | 1,156 | 39,304 | 365,963 | 10,764 | 387,122 | 382,151 | 382,146 |
| Wednesday | 12 07 05 | 29 | 36 | 1,296 | 46,656 | 390,349 | 10,843 | 408,822 | 411,317 | 410,327 |
| Tuesday | 12 06 05 | 32 | 33 | 1,089 | 35,937 | 351,082 | 10,639 | 376,272 | 366,633 | 367,599 |
| Friday | 11 25 05 | 32 | 33 | 1,089 | 35,937 | 334,901 | 10,149 | 376,272 | 366,633 | 367,599 |
| Wednesday | 03 09 05 | 28 | 37 | 1,369 | 50,653 | 422,369 | 11,415 | 419,673 | 424,966 | 423,872 |
| Tuesday | 03 08 05 | 25 | 40 | 1,600 | 64,000 | 424,014 | 10,600 | 452,223 | 462,174 | 461,792 |
| Thursday | 03 03 05 | 30 | 35 | 1,225 | 42,875 | 403,084 | 11,517 | 397,972 | 397,046 | 396,403 |
| Wednesday | 03 02 05 | 30 | 35 | 1,225 | 42,875 | 402,148 | 11,490 | 397,972 | 397,046 | 396,403 |
| Monday | 02 28 05 | 31 | 34 | 1,156 | 39,304 | 371,763 | 10,934 | 387,122 | 382,151 | 382,146 |
| Friday | 02 25 05 | 31 | 34 | 1,156 | 39,304 | 375,106 | 11,033 | 387,122 | 382,151 | 382,146 |
| Thursday | 02 24 05 | 26 | 39 | 1,521 | 59,319 | 412,696 | 10,582 | 441,373 | 450,394 | 449,649 |
| Monday | 01 31 05 | 31 | 34 | 1,156 | 39,304 | 386,287 | 11,361 | 387,122 | 382,151 | 382,146 |
| Friday | 01 28 05 | 22 | 43 | 1,849 | 79,507 | 507,618 | 11,805 | 484,774 | 493,774 | 494,710 |
| Thursday | 01 27 05 | 15 | 50 | 2,500 | 125,000 | 541,487 | 10,830 | 560,725 | 545,701 | 545,334 |
| Wednesday | 01 26 05 | 29 | 36 | 1,296 | 46,656 | 417,993 | 11,611 | 408,822 | 411,317 | 410,327 |
| Monday | 01 24 05 | 22 | 43 | 1,849 | 79,507 | 506,677 | 11,783 | 484,774 | 493,774 | 494,710 |
| Friday | 01 21 05 | 14 | 51 | 2,601 | 132,651 | 539,136 | 10,571 | 571,576 | 550,627 | 548,924 |
| Thursday | 01 20 05 | 25 | 40 | 1,600 | 64,000 | 457,855 | 11,446 | 452,223 | 462,174 | 461,792 |
| Wednesday | 01 19 05 | 25 | 40 | 1,600 | 64,000 | 486,786 | 12,170 | 452,223 | 462,174 | 461,792 |
| Tuesday | 01 18 05 | 15 | 50 | 2,500 | 125,000 | 551,528 | 11,031 | 560,725 | 545,701 | 545,334 |
| Tuesday | 12 28 04 | 32 | 33 | 1,089 | 35,937 | 405,227 | 12,280 | 376,272 | 366,633 | 367,599 |
| Monday | 12 27 04 | 23 | 42 | 1,764 | 74,088 | 470,830 | 11,210 | 473,924 | 483,864 | 484,367 |
| Monday | 12 20 04 | 17 | 48 | 2,304 | 110,592 | 521,017 | 10,855 | 539,025 | 533,980 | 535,202 |

| Day | Date | Daily Temp | Degree Days X | X^2 | X^3 | Actual Firm Sendout (Mcf) | Firm Sendout Per DD (Mcf) | Linear Projected Firm Sendout (Mcf) | Quadratic Projected Firm Sendout (Mcf) | Cubic Projected Firm Sendout (Mcf) |
|---|---|---|---|---|---|---|---|---|---|---|
| Wednesday | 12-15-04 | 32 | 33 | 1,089 | 35,937 | 372,106 | 11,276 | 376,272 | 366,633 | 367,599 |
| Tuesday | 12-14-04 | 32 | 33 | 1,089 | 35,937 | 359,005 | 10,879 | 376,272 | 366,633 | 367,599 |
| Friday | 01-30-04 | 20 | 45 | 2,025 | 91,125 | 514,527 | 11,434 | 506,474 | 511,726 | 513,284 |
| Thursday | 01-29-04 | 25 | 40 | 1,600 | 64,000 | 471,297 | 11,782 | 452,223 | 462,174 | 461,792 |
| Wednesday | 01-28-04 | 26 | 39 | 1,521 | 59,319 | 473,254 | 12,135 | 441,373 | 450,394 | 449,649 |
| Tuesday | 01-27-04 | 25 | 40 | 1,600 | 64,000 | 478,530 | 11,963 | 452,223 | 462,174 | 461,792 |
| Monday | 01-26-04 | 22 | 43 | 1,849 | 79,507 | 522,827 | 12,159 | 484,774 | 493,774 | 494,710 |
| Friday | 01-23-04 | 17 | 48 | 2,304 | 110,592 | 531,550 | 11,074 | 539,025 | 533,980 | 535,202 |
| Thursday | 01-22-04 | 28 | 37 | 1,369 | 50,653 | 454,790 | 12,292 | 419,673 | 424,966 | 423,872 |
| Wednesday | 01-21-04 | 27 | 38 | 1,444 | 54,872 | 449,611 | 11,832 | 430,523 | 437,992 | 436,994 |
| Tuesday | 01-20-04 | 25 | 40 | 1,600 | 64,000 | 476,106 | 11,903 | 452,223 | 462,174 | 461,792 |
| Friday | 01-16-04 | 21 | 42 | 1,764 | 74,088 | 531,367 | 12,652 | 473,924 | 483,864 | 484,367 |
| Thursday | 01-15-04 | 14 | 51 | 2,601 | 132,651 | 570,415 | 11,185 | 571,576 | 550,627 | 548,924 |
| Wednesday | 01-14-04 | 20 | 45 | 2,025 | 91,125 | 501,684 | 11,149 | 506,474 | 511,726 | 513,284 |
| Tuesday | 01-13-04 | 32 | 33 | 1,089 | 35,937 | 398,918 | 12,089 | 376,272 | 366,633 | 367,599 |
| Thursday | 01-08-04 | 32 | 33 | 1,089 | 35,937 | 415,332 | 12,586 | 376,272 | 366,633 | 367,599 |
| Wednesday | 01-07-04 | 25 | 40 | 1,600 | 64,000 | 492,500 | 12,313 | 452,223 | 462,174 | 461,792 |
| Tuesday | 01-06-04 | 29 | 36 | 1,296 | 46,656 | 401,879 | 11,163 | 408,822 | 411,317 | 410,327 |
| Friday | 12-05-03 | 30 | 35 | 1,225 | 42,875 | 379,292 | 10,837 | 397,972 | 397,046 | 396,403 |

Count                 50

Firm Sendout Projection Based Data From 02-03 Through 05-06
Data for Daily Temperatures <= 32 Degrees Fahrenheit

| | R Squared | Change | Student's T | | Degrees of Freedom | Critical Value | @ 97.5% Significant |
|---|---|---|---|---|---|---|---|
| | 0.855291 | 0.855291 | 16.843435 | | 48 | 2.04 | Yes |
| | 0.874964 | 0.019672 | 2.719325 | | 47 | 2.04 | Yes |
| | 0.875162 | 0.000198 | 0.270056 | | 46 | 2.04 | No |

| | | | | |
|---|---|---|---|---|
| Degrees of Freedom | | 48 | 47 | 46 |
| 97.5% Significance Level | | 2.04 | 2.04 | 2.04 |
| 95.0% Significance Level | | 1.65 | 1.65 | 1.65 |

Linear Projection at Zero Degrees Fahrenheit        723,479  Mcf
Linear Projection at 15 Degrees Fahrenheit          560,725  Mcf


Student's T = Square Root[(R.Sqrd. * (Degrees of Freedom)] / [1 - R.Squared])

Linear SO = Constant + (X * X Coefficient)

Quadratic SO = Constant + (X * X Coeff) + (X^2 * X^2 Coeff)

Cubic SO = Constant + (X * X Coeff) + (X^2 * X^2 Coeff) + (X^3 * X^3 Coeff)

# Linear Regression Confidence Level Table

| Count | Degree Days X | Firm Sendout (Mcf) Y | Projected Linear Firm Sendout (Mcf) Y'dc | Difference Actual Versus Projected Y - Yc | Actual Versus Projected Squared (Y - Yc)² | (Degree Days - Xm) X - Xm | (Degree Days - Xm) Squared (X - Xm)² | s'dyc | t's'dyc | Lower Acc Lower | Upper Acc dc [ + t's'dyc] | "-1 SD" Lower | "+1 SD" [dc ] + s][dyc] | "-2 SD" Lower | "+2 SD" [dc]] + 2s][dyc][dc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 33 | 359,566 | 376,272 | (16,706) | 279,091,232 | (4) | 14 | 4,598 | 9,366 | 366,905 | 385,638 | 352,390 | 400,153 | 328,508 | 424,035 |
| 2 | 33 | 351,082 | 376,272 | (25,190) | 633,522,421 | (4) | 14 | 4,598 | 9,366 | 366,905 | 385,638 | 352,390 | 400,153 | 328,508 | 424,035 |
| 3 | 33 | 334,901 | 376,272 | (41,371) | 1,711,556,285 | (4) | 14 | 4,598 | 9,366 | 366,905 | 385,638 | 352,390 | 400,153 | 328,508 | 424,035 |
| 4 | 33 | 405,227 | 376,272 | 28,955 | 838,112,143 | (4) | 14 | 4,598 | 9,366 | 366,905 | 385,638 | 352,390 | 400,153 | 328,508 | 424,035 |
| 5 | 33 | 372,106 | 376,272 | (4,166) | 17,351,411 | (4) | 14 | 4,598 | 9,366 | 366,905 | 385,638 | 352,390 | 400,153 | 328,508 | 424,035 |
| 6 | 33 | 359,005 | 376,272 | (17,266) | 298,124,734 | (4) | 14 | 4,598 | 9,366 | 366,905 | 385,638 | 352,390 | 400,153 | 328,508 | 424,035 |
| 7 | 33 | 398,948 | 376,272 | 22,677 | 514,237,065 | (4) | 14 | 4,598 | 9,366 | 366,905 | 385,638 | 352,390 | 400,153 | 328,508 | 424,035 |
| 8 | 33 | 415,332 | 376,272 | 39,061 | 1,525,723,205 | (4) | 14 | 4,598 | 9,366 | 366,905 | 385,638 | 352,390 | 400,153 | 328,508 | 424,035 |
| 9 | 34 | 392,139 | 387,122 | 5,017 | 25,167,395 | (3) | 7 | 4,080 | 8,311 | 378,811 | 395,433 | 363,240 | 411,004 | 339,358 | 434,885 |
| 10 | 34 | 365,963 | 387,122 | (21,159) | 447,688,578 | (3) | 7 | 4,080 | 8,311 | 378,811 | 395,433 | 363,240 | 411,004 | 339,358 | 434,885 |
| 11 | 34 | 371,763 | 387,122 | (15,359) | 235,896,210 | (3) | 7 | 4,080 | 8,311 | 378,811 | 395,433 | 363,240 | 411,004 | 339,358 | 434,885 |
| 12 | 34 | 375,106 | 387,122 | (12,016) | 144,382,190 | (3) | 7 | 4,080 | 8,311 | 378,811 | 395,433 | 363,240 | 411,004 | 339,358 | 434,885 |
| 13 | 34 | 386,287 | 387,122 | (835) | 697,318 | (3) | 7 | 4,080 | 8,311 | 378,811 | 395,433 | 363,240 | 411,004 | 339,358 | 434,885 |
| 14 | 35 | 393,560 | 397,972 | (4,412) | 19,469,802 | (2) | 3 | 3,602 | 7,338 | 390,634 | 405,310 | 374,090 | 421,854 | 350,209 | 445,736 |
| 15 | 35 | 373,522 | 397,972 | (24,450) | 597,796,676 | (2) | 3 | 3,602 | 7,338 | 390,634 | 405,310 | 374,090 | 421,854 | 350,209 | 445,736 |
| 16 | 35 | 373,832 | 397,972 | (24,140) | 582,752,094 | (2) | 3 | 3,602 | 7,338 | 390,634 | 405,310 | 374,090 | 421,854 | 350,209 | 445,736 |
| 17 | 35 | 403,084 | 397,972 | 5,112 | 26,131,247 | (2) | 3 | 3,602 | 7,338 | 390,634 | 405,310 | 374,090 | 421,854 | 350,209 | 445,736 |
| 18 | 35 | 402,118 | 397,972 | 4,176 | 17,437,916 | (2) | 3 | 3,602 | 7,338 | 390,634 | 405,310 | 374,090 | 421,854 | 350,209 | 445,736 |
| 19 | 35 | 379,292 | 397,972 | (18,680) | 348,917,891 | (2) | 3 | 3,602 | 7,338 | 390,634 | 405,310 | 374,090 | 421,854 | 350,209 | 445,736 |
| 20 | 36 | 378,061 | 408,822 | (30,761) | 946,271,538 | (1) | 1 | 3,181 | 6,486 | 402,336 | 415,308 | 381,941 | 432,704 | 361,059 | 456,586 |
| 21 | 36 | 390,339 | 408,822 | (18,173) | 331,264,579 | (1) | 1 | 3,181 | 6,486 | 402,336 | 415,308 | 381,941 | 432,704 | 361,059 | 456,586 |
| 22 | 36 | 417,993 | 408,822 | 9,171 | 84,108,055 | (1) | 1 | 3,181 | 6,486 | 402,336 | 415,308 | 381,941 | 432,704 | 361,059 | 456,586 |
| 23 | 36 | 401,879 | 408,822 | (6,943) | 48,209,649 | (1) | 1 | 3,181 | 6,486 | 402,336 | 415,308 | 381,941 | 432,704 | 361,059 | 456,586 |
| 24 | 37 | 422,369 | 419,673 | 2,696 | 7,270,828 | 0 | 0 | 2,851 | 5,808 | 413,864 | 425,481 | 395,791 | 443,554 | 371,909 | 467,436 |
| 25 | 37 | 454,790 | 419,673 | 35,118 | 1,233,253,380 | 0 | 0 | 2,851 | 5,808 | 413,864 | 425,481 | 395,791 | 443,554 | 371,909 | 467,436 |
| 26 | 38 | 419,611 | 430,523 | 19,088 | 361,342,382 | 1 | 2 | 2,637 | 5,371 | 425,152 | 435,894 | 406,641 | 454,405 | 382,759 | 478,286 |
| 27 | 39 | 412,696 | 441,373 | (28,677) | 822,369,090 | 2 | 5 | 2,570 | 5,234 | 436,139 | 446,607 | 417,491 | 465,255 | 393,609 | 489,136 |
| 28 | 39 | 473,254 | 441,373 | 31,884 | 1,016,399,870 | 2 | 5 | 2,570 | 5,234 | 436,139 | 446,607 | 417,491 | 465,255 | 393,609 | 489,136 |
| 29 | 40 | 424,041 | 452,223 | (28,091) | 795,758,173 | 3 | 11 | 2,662 | 5,422 | 446,801 | 457,645 | 428,341 | 476,105 | 404,460 | 499,987 |
| 30 | 40 | 457,855 | 452,223 | 5,633 | 31,737,371 | 3 | 11 | 2,662 | 5,422 | 446,801 | 457,645 | 428,341 | 476,105 | 404,460 | 499,987 |
| 31 | 40 | 486,786 | 452,223 | 34,563 | 1,191,602,239 | 3 | 11 | 2,662 | 5,422 | 446,801 | 457,645 | 428,341 | 476,105 | 404,460 | 499,987 |
| 32 | 40 | 471,297 | 452,223 | 19,074 | 363,823,495 | 3 | 11 | 2,662 | 5,422 | 446,801 | 457,645 | 428,341 | 476,105 | 404,460 | 499,987 |
| 33 | 40 | 478,530 | 452,223 | 26,307 | 692,019,931 | 3 | 11 | 2,662 | 5,422 | 446,801 | 457,645 | 428,341 | 476,105 | 404,460 | 499,987 |
| 34 | 40 | 476,106 | 452,223 | 23,883 | 570,389,596 | 3 | 11 | 2,662 | 5,422 | 446,801 | 457,645 | 428,341 | 476,105 | 404,460 | 499,987 |
| 35 | 40 | 492,500 | 452,223 | 40,277 | 1,622,240,851 | 3 | 11 | 2,662 | 5,422 | 446,801 | 457,645 | 428,341 | 476,105 | 404,460 | 499,987 |
| 36 | 42 | 470,830 | 473,921 | (3,091) | 9,572,722 | 5 | 28 | 3,246 | 6,612 | 467,311 | 480,536 | 450,042 | 497,805 | 426,160 | 521,687 |

| Count | Degree Days X | Firm Sendout (Mcf) Y | Projected Linear Firm Sendout (Mcf) Y de | Difference Actual Versus Projected Y - Yc | Actual Versus Projected Squared (Y - Yc)² | (Degree Days - Xm) X - Xm | (Degree Days - Xm) Squared (X - Xm)² | s dyc | t*s dyc | Lower Acc Lower | Upper Acc dc + t*s²dy | "- 1 SD" Lower | "+ 1 SD" dc1 + s²dy | "- 2 SD" Lower | "+ 2 SD" dc1 + 2sUdyUdc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 37 | 12 | 531,367 | 473,924 | 57,443 | 3,299,711,529 | 5 | 28 | 3,246 | 6,612 | 467,311 | 480,536 | 450,012 | 497,805 | 426,160 | 521,687 |
| 38 | 13 | 442,637 | 484,774 | (42,137) | 1,775,543,306 | 6 | 39 | 3,675 | 7,487 | 477,287 | 492,260 | 460,892 | 508,656 | 437,010 | 532,537 |
| 39 | 13 | 507,618 | 484,774 | 22,844 | 521,857,716 | 6 | 39 | 3,675 | 7,487 | 477,287 | 492,260 | 460,892 | 508,656 | 437,010 | 532,537 |
| 40 | 13 | 506,677 | 484,774 | 21,903 | 479,727,687 | 6 | 39 | 3,675 | 7,487 | 477,287 | 492,260 | 460,892 | 508,656 | 437,010 | 532,537 |
| 41 | 13 | 522,827 | 484,774 | 38,053 | 1,448,038,448 | 6 | 39 | 3,675 | 7,487 | 477,287 | 492,260 | 460,892 | 508,656 | 437,010 | 532,537 |
| 42 | 14 | 470,994 | 495,624 | (24,630) | 606,612,346 | 7 | 53 | 4,161 | 8,475 | 487,149 | 504,099 | 471,742 | 519,506 | 447,861 | 543,388 |
| 43 | 15 | 514,527 | 506,474 | 8,053 | 64,851,567 | 8 | 69 | 4,684 | 9,541 | 496,933 | 516,015 | 482,593 | 530,356 | 458,711 | 554,238 |
| 44 | 15 | 504,684 | 506,474 | (1,790) | 22,912,283 | 8 | 69 | 4,684 | 9,541 | 496,933 | 516,015 | 482,593 | 530,356 | 458,711 | 554,238 |
| 45 | 18 | 521,017 | 539,025 | (18,008) | 324,288,110 | 11 | 127 | 6,389 | 13,013 | 526,012 | 552,038 | 515,143 | 562,907 | 491,261 | 586,788 |
| 46 | 18 | 531,550 | 539,025 | (7,475) | 55,878,681 | 11 | 127 | 6,389 | 13,013 | 526,012 | 552,038 | 515,143 | 562,907 | 491,261 | 586,788 |
| 47 | 50 | 541,487 | 560,725 | (19,238) | 370,101,490 | 13 | 176 | 7,586 | 15,452 | 545,273 | 576,177 | 536,844 | 584,607 | 512,962 | 608,489 |
| 48 | 50 | 551,528 | 560,725 | (9,197) | 84,582,356 | 13 | 176 | 7,586 | 15,452 | 545,273 | 576,177 | 536,844 | 584,607 | 512,962 | 608,489 |
| 49 | 51 | 539,436 | 571,576 | (32,140) | 1,052,330,177 | 14 | 204 | 8,195 | 16,692 | 554,883 | 588,268 | 547,694 | 595,457 | 523,812 | 619,339 |
| 50 | 51 | 570,415 | 571,576 | (1,160) | 1,346,728 | 14 | 204 | 8,195 | 16,692 | 554,883 | 588,268 | 547,694 | 595,457 | 523,812 | 619,339 |
| | | | 22,025,248 | | | | | | | | | | | | |
| Tot/Avg 37 | | 407,875 | 393,308 | | 28,516,901,962 | | 1,674 | | | | | | | | |

t 2.04

Xm = 37
Population Standard Deviation of Regression Squared =        570,338,097

| | | Upper Range | Lower Range |
|---|---|---|---|
Population Standard Deviation of Regression        =        23,882    1s    431,757    383,993
                                                                    2s    455,638    360,111

Standard error of sendout projection        24,374
T-factor        2.04
(T factor) * (Std error of projection)        49,649

# Regression Results

**Based On Data for Daily Temperatures <= 32 Degrees Fahrenheit**

| Regression Output: | | | Quadratic | | | Cubic | | | |
|---|---|---|---|---|---|---|---|---|---|
| Regression Output | | | Regression Output | | | Regression Output | | | |
| Constant | | 18.215 | Constant | | (494,995) | Constant | | 15,309 | |
| Std Err of Y Est | | 24.374 | Std Err of Y Est | | 22,897 | Std Err of Y Est | | 23,126 | |
| R Squared | | 0.855 | R Squared | | 0.875 | R Squared | | 0.875 | |
| No. of Observations | | 50 | No. of Observations | | 50 | No. of Observations | | 50 | |
| Degrees of Freedom | | 48 | Degrees of Freedom | | 47 | Degrees of Freedom | | 46 | |
| | | | | | | | | 0 | |
| X Coefficient(s) | 10,850 | | X Coefficient(s) | 36,390 | (312) | X Coefficient(s) | (1,377) | 609 | -7 |
| Std Err of Coef | 644 | | Std Err of Coef | 9,412 | 115 | Std Err of Coef | 140,173 | 3,411 | 27 |

# Regression Chart Analysis
## Based Upon Data For Temperatures Of <=32 Degrees F.
## Winter 04-06

### Linear Regression - Sendout
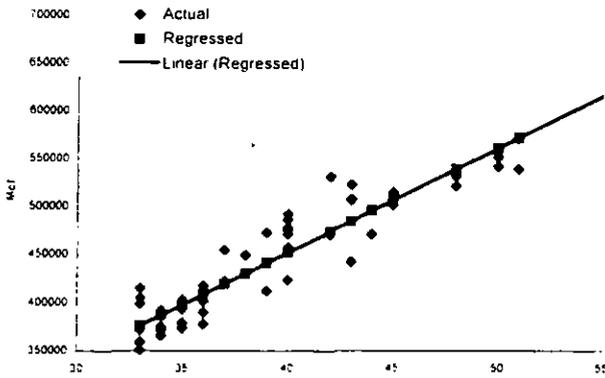


### Linear Regression Output

| | | |
|---|---|---|
| Constant | | 18.215 |
| Std. Error of Y Estimate | | 24.374 |
| R Squared | | 0.855 |
| Number of Observations | | 50 |
| Degrees of Freedom | | 48 |
| | X | |
| X Coefficient | 10.850 | |
| Std. Err. Of Coefficeint | 644 | |

### Quadradic Regression - Sendout
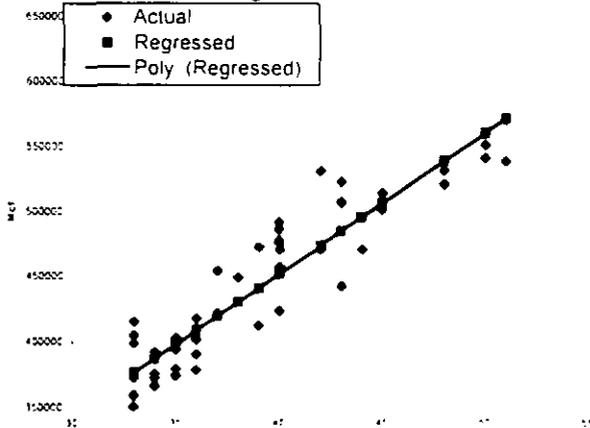


### Quadratic Regression Output

| | | |
|---|---|---|
| Constant | | (494.995) |
| Std. Error of Y Estimate | | 22.897 |
| R Squared | | 0.875 |
| Number of Observations | | 50 |
| Degrees of Freedom | | 47 |
| | X | X ^ 2 |
| X Coefficient | 36.390 | -312 |
| Std. Err. Of Coefficeint | 9.412 | 115 |

### Cubic Regression - Sendout
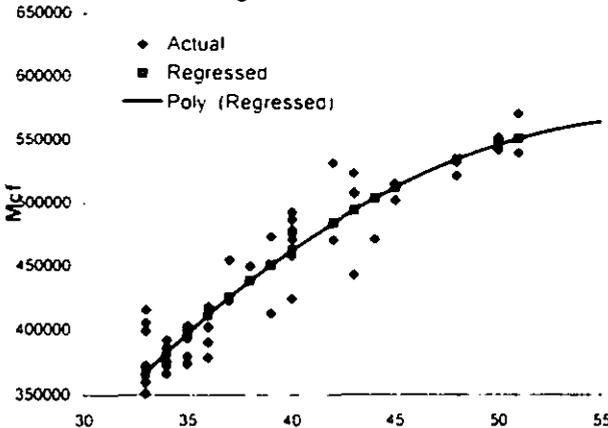


### Cubic Regression Output

| | | | |
|---|---|---|---|
| Constant | | 15.309 | |
| Std. Error of Y Estimate | | 23.126 | |
| R Squared | | 0.875 | |
| Number of Observations | | 50 | |
| Degrees of Freedom | | 46 | |
| | X | X ^ 2 | X ^ 3 |
| X Coefficient | (1.377) | 609 | -7 |
| Std. Err. Of Coefficeint | 140.173 | 3.411 | 27 |

# Regression Chart Analysis
## Based Upon Data For Temperatures Of <=32 Degrees F.
## Winter 04-06

**Acceptance Range - 1 Std Dev**
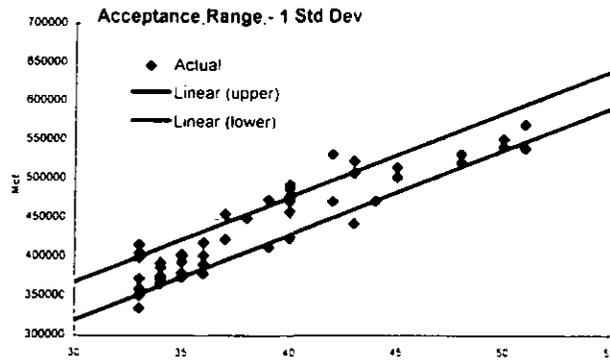


**Acceptance Range @ 1 Standard Deviation**

| | |
|---|---|
| Regression Squared | 570.338.097 |
| Regression | 23.882 |
| Upper Range 1sd | 464.387 |
| Lower Range 1sd | 416.623 |

**Acceptance Range 2- Std Dev**
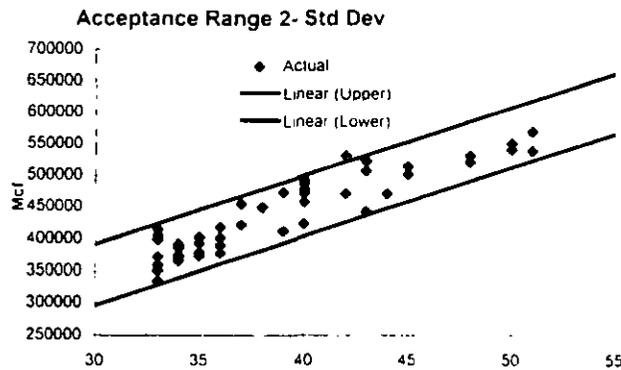


**Acceptance Range @ 2 Standard Deviation**

| | |
|---|---|
| Regression Squared | 570.338.097 |
| Regression | 23.882 |
| Upper Range 2sd | 488.268 |
| Lower Range 2sd | 392.741 |

**Confidence Interval - 97.5**
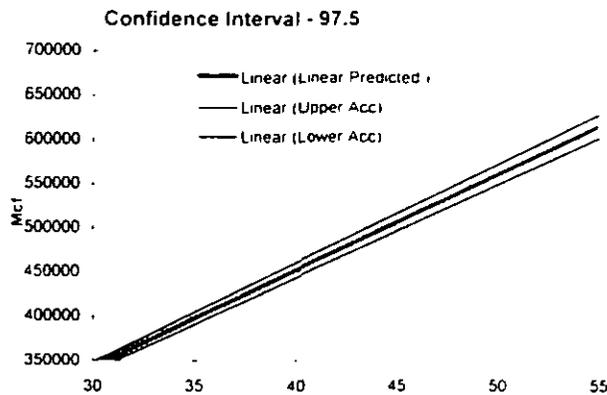


**Confidence Interval: 97.5%**

| | |
|---|---|
| Regression Squared | 570.338.097 |
| Standard error of sendout projection | 24.374 |
| X Mean | 39 |
| T Distribution | 2.04 |

## Philadelphia Gas Works

Pennsylvania Public Utility Commission
52 Pa. Code §53.61. et seq.

**Item 53.64(c)·** Thirty days prior to the filing of a tariff reflecting an increase or
·decrease in natural gas costs. each Section 1307(f) gas utility seeking
recovery of purchased gas costs under that section shall provide notice to
the public. under § 53.68 (relating to notice requirements). and shall file
the following supporting information with the Commission. with a copy
to the Consumer Advocate. Small Business Advocate and to intervenors
upon request:

(14) Analysis and data demonstrating. on an historic and projected future
basis. the minimum gas entitlements needed to provide reliable and
uninterrupted service to priority one customers during peak periods.

**Response:**

In 2006. PGW contracted with ICF International for a Natural Gas
Supply Study. A copy of the August. 2006 report is attached.

# ICF
INTERNATIONAL

# PGW Natural Gas Supply Study

**Prepared for**
**Philadelphia Gas Works**

**PGW**

**August 2006**

Passion. Expertise. **Results.**

*icfi.com*

# Executive Summary

## A. Overview of this Report

This report presents ICF International's (ICF) independent analysis of the Philadelphia Gas Works (PGW) gas supply asset portfolio. The objective of the study was to determine whether the current gas supply assets are appropriate for the level and type of gas demand in PGW's service territory. Gas assets consist of interstate pipeline capacity, natural gas storage, and liquefied natural gas (LNG) capability. These assets represent a significant portion of PGW's overall gas supply costs.

In 1997, ICF (then ICF Kaiser) undertook a similar study of PGW's gas supply strategy that covered many of the same issues addressed in this report. This report updates the earlier study by taking into consideration new developments in natural gas markets as well as PGW's customer mix.

## B. Market Conditions and Changes since 1997.

Gas markets have changed significantly since the previous report prepared by ICF. In the 1997 study, gas prices were around $2.20/MMBtu, today they are over $7.00/MMBtu. Today's market is dominated by extreme volatility, with prices rising in some winter months to over $15.00/MMBtu. Basis spreads – the difference in prices between two pricing points – have widened and also shown extreme volatility. Since the collapse of Enron and other major traders, gas supply has become more difficult to manage, and requires higher levels of sophistication.

The most dominant aspect of today's gas market is its volatility of prices. This has become a permanent fixture of the market. The import of this for local distribution company capacity planning is the role of storage in the gas asset portfolio. Where previously, the standard of measure for gas assets was whether they were sufficient (or were excess) for meeting peak season demands; the new standard must also include the optionality around storage. Storage can be a hedge against high gas prices and provide a cushion for managing volatility of prices. Thus managers can buy gas when prices are low, store it and either resell it later as off system sales or use it to meet system sendout.

Another benefit of storage is the ability to hedge against potential supply shortfalls. Until the hurricanes in the Gulf last year, this had not been recognized since the curtailments of the 1970s. This analysis incorporates volatility in gas prices and the implications for storage.

## C. Analytical Approach

The analysis uses PGW's estimates of gas demand for both an average and a design year for 2006-2007 in its Purchased Gas Cost filing. ICF determines whether the gas supply assets are appropriate for these levels of demand. ICF used its Energy Asset Decision Support System (EADSS) as the principal tool for undertaking the analysis. The analytic approach has consisted of the following steps

1. Develop an estimate of daily gas demand. As noted above, we used PGW's forecasts. These were correlated with gas prices and randomized consistent with heating requirements to present a more robust picture of the volatility in gas consumption.

Our analysis focused on a single year, consistent with the previous analysis. Multiple years would have added more complexity without additional insight. PGW's forecast of gas demand growth is essentially flat.

2. Describe the mix of assets and the asset network. Assets consist of pipeline capacity, storage, and LNG.

> Pipeline capacity is described in terms of contracted maximum daily quantity (MDQ). Costs are presented as capacity reservation costs (dollars per MMBtu of MDQ per month), usage charges (cost per MMBtu of gas shipped), and fuel use (a percent of flowing gas). In addition, we represent the receipt (where gas is put into the pipe) and delivery points (including both the PGW city gate and the storage facilities that can receive gas.).

> Storage capacity is characterized by total cavern storage volume reserved by PGW (MMBtu), withdrawal MDQ, and injection MDQ. Costs for each component of the storage services are represented: cost of reserving storage capacity ($/MMBtu), cost of reserving withdrawal capacity ($/MMBtu of withdrawal capacity per month), injection costs ($/MMBtu), and fuel costs, usually represented as a percent of withdrawal volume or injection volume or both. Most storage services have restrictions on when gas can be injected and when it can be withdrawn. These time periods are accounted for. Also, most storage services have volumetric "ratchets" that restrict the rate at which gas can be injected and withdrawn. These ratchets also are represented in the model. Finally, we note which pipelines feed the various storage services and which pipelines carry gas from the storage to the city gate.

> LNG is represented much like storage. There is a maximum storage inventory capability and a minimum inventory (one cannot draw down LNG to zero – a certain amount must stay in the tank). There is a cost of liquefaction and a cost of vaporization, represented largely as fuel percentages, but also out-of-pocket expenses. Fixed costs for the LNG system are considered sunk, and we do not include them in the analysis.

> Gas supply is represented as feeding the pipelines at various receipt point nodes. All of PGW's receipt points are gas pricing hubs or pricing points. Gas prices are represented for each of the receipt points as daily spot prices. PGW buys gas through a mix of first-of-the-month pricing contracts, some other forward price contacts, and spot purchases.

3. Implement the model to identify the least cost mix of gas supply assets. EADSS uses linear programming to identify the mix of assets that can meet the gas supply needs. The model is run under alternative sets of assumptions to identify the least cost mix of pipeline capacity, storage and LNG. As a linear program, the "objective function" is system-wide cost minimization. That is, EADSS finds the mix of assets that meet demand projections at the lowest cost to PGW and its customers. The latter point is important – when assessing least cost we also look at the costs borne by interruptible customers when they are interrupted and use fuel oil. (This in the current environment is more expensive than natural gas.)

### D. Demand Estimation Review

ICF reviewed PGW's approach to estimating design day and design winter demand. PGW's asset mix is intended to meet system design conditions. PGW uses a range of inputs for estimating demand: historical demand trends by customer class, customer surveys.

statistical studies of weather responsiveness, end use studies and system operator experience. Domestic load is estimated from latest year customer load and thus reflects trends in energy efficiency. Normalized heating degree days are used for establishing base or average year conditions for the weather sensitive portion of the load. Design winter and design day estimates are then based on historic coldest winter weather and day type conditions.

We have found that PGW's approach is consistent with generally accepted approaches and remains the same as was analyzed in the previous study. PGW uses the coldest winter in the last 30 years to set its design winter conditions. ICF compared PGW's design winter to publicly available data on regional winter and find PGW's approach consistent. We do note that there appears to be a gradual warming trend such that the coldest winter was about 26 years ago. Using a 30 year time period is prudent however. Future design winter and design day estimations may be lower than the current estimate; but this is highly uncertain.

### E. Supply Asset Analysis

Case Descriptions. ICF ran the EADSS model in a variety of cases and sensitivities to test how an optimized system would use the assets available to PGW. The following cases were run:

> Reference Case. This is the design winter, with design peak day, and assumes full availability of all current pipeline, storage, and LNG.

> Average Year Case. This uses average year demand/sendout to examine how the system would operate. This is the only case that runs on average year as opposed to design year sendout.

> LNG Sensitivity Cases: We ran three of these to examine whether PGW should invest in new LNG liquefaction facilities.
> > LNG-1. This case limits liquefaction to the capabilities of the current expander system.
> > LNG-2. This case uses both the expander system and a new nitrogen based system to make LNG. It adds more storage capability
> > LNG 1 Bcf. This case assumes both LNG-1&2, but reserves 1 Bcf of storage for off-system sales.

> Seasonal Price Variation Case. In this case we increased the cost of gas in the winter by $0.75/MMBtu to test whether increased volatility would change the patterns of storage use.

> Storage Sensitivity Cases. Our early runs identified those storage services that appeared to be marginal. We tested how the system would respond, and how costs would change if these storage services were eliminated. We tested them against the LNG 1 Bcf case. The two most relevant cases are
> > No Transco WSS. This storage service is eliminated
> > No Equitrans. This storage service is eliminated.

Pipeline Capacity. ICF compared pipeline utilization rates under both the Reference Case and the Average Year Case. In the reference case, Transo FT has the highest utilization of the year-round services at a 89% capacity factor. Tetco CDS has a 56% capacity factor; Tetco FT has a 53% capacity factor. All of the pipelines are fully utilized in January and

February, such that having transportation capacity available is important to the system. Average year utilization rates are somewhat less. Still all of the pipelines are fully utilized in at least one winter month. One of the key observations is the role of the Tetco FT released capacity – the PAID capacity which PGW can call on in winter months. The modeling found this to be a very useful and economic additional source of supply to meet winter demand. The analysis suggests that on average there is considerable opportunity to reduce costs through capacity release or off system sales using the excess capacity on these pipelines.

Storage Capacity. The storage analysis first looked at the storage service utilization under the Reference Case and the Average Year Case. In the Reference Case, the large storage services – Dominion, Tetco SS1, Transco GSS) are fully utilized. Most of the smaller storage services are also heavily used. The exception is WSS, which is only about 2/3 used. In an Average Year, storage utilization at Dominion and Tetco SS1 are reduced (as is Equitrans), but most of the storage services are still fully utilized. WSS storage is used at the same level under both cases.

When we ran our Seasonal Price Variation Case, to test the impact of greater volatility, all of the storage services were used at higher levels. In this case, WSS utilization approached current storage capacity levels.

Our further analysis focused on WSS and Equitrans. We inferred from the patterns of use that WSS has benefits related to trading and gas volatility. When we removed WSS from the available storage services, fixed storage costs declined (as WSS reservation costs were eliminated) but purchased gas costs increased. On net, removing WSS increased system costs, by about $1.5 million. The same analysis was done for Equitrans. With the removal of Equitrans from available storage services, reservations costs fell, purchased gas costs increased, but on net, the system saved about $400,000. This finding is less robust than the WSS finding, and would be sensitive to gas prices and volatility.

LNG. Our analysis of LNG focused on two issues. Whether expanding liquefaction benefited the system and whether reserving some of the LNG storage capacity for off system sales would impose additional costs. ICF reviewed alternatives to additional liquefaction: barging and trucking. Both would be expensive and would impose some delivery risks. Trucking would require more than 1,800 truck deliveries from distant locations. When looking at the liquefaction expansion, we treated the expander system as a sunk cost, but included the cost of a new system in the decision criteria. We found that adding more liquefaction would benefit the system by reducing interruption and creating savings in gas supply acquisition. Without expansion, PGW would have to curtail deliveries to LBS customers all winter in the design year. We also found that reserving 1 Bcf of LNG for off system sales would bring in revenues that offset costs and would benefit the system. When this was tested with eliminating some storage services at the same time, some increases in interruption occurred, but overall they appeared minor.

F. Conclusions and Recommendations

In assessing whether PGW has an adequate, or excessive, level of assets to meet its customer demand, ICF's approach considered both the design day/design winter levels of demand as well as the impact of volatility on asset deployment. Basing an analysis solely on design day deliverability presents an incomplete picture. In general we found that PGW's approach to estimating design day and design winter sendout is reasonable for capacity planning purposes.

PGW fully uses its pipeline capacity during winter seasons. There are opportunities to engage in capacity release and off system sales to generate revenues to offset costs which we would encourage. ICF does not recommend any turn back or permanent release of pipeline capacity.

Storage capacity is adequate to meet peak day and winter demand. Equitrans storage (and its related pipeline capacity) should be examined more closely as it appears that it could be eliminated and generate savings. The savings under the conditions we analyzed are not that large, hence we recommend further study of this option. Transco WSS storage, however, generates substantial benefits for the system based on price volatility and supply security. WSS allows PGW to optimize gas purchases and store gas in the event of supply shortfalls. Combined with the pipeline capacity, WSS creates strong trading opportunities.

We strongly recommend that PGW should expand its liquefaction capabilities once the cascade system is phased out. More LNG storage enhances the value of PGW's other assets by creating optionality. There are solid opportunities for using LNG to create off system sales opportunities that can benefit the system and its customers.

# Outline

**ICF**

- Introduction

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- Design Winter and Day Analysis

- Supply Analysis and Issues

- Conclusions and Recommendations

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1

# Purpose of the Study

**ICF**

- Update ICF's 1997 supply analysis

- Review design and peak day estimation methodologies

  - Evaluate whether the current methodology is reasonable and yields reasonable results.

- Analyze the use of pipeline and storage capacity

  - Apply an analytic framework that can address whether PGW has the appropriate levels of gas pipeline capacity, storage, and LNG

- Evaluate the effect of expanding LNG liquefaction capabilities

  - Address the question whether expanding liquefaction capabilities with lower cost technology creates benefits for the system

- Develop recommendations for optimal allocation of gas supply assets

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# Analytic Approach

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- Focus has been on the use of pipeline capacity, storage and LNG facilities, not on gas purchasing activities

- Reviewed both average year and design year demand characteristics

- Design year and design day estimations were examined for reasonableness

- Modeled asset usage with Energy Asset Decision Support System

  - Stochastic optimization

  - Useful for asset decision making under conditions of uncertainty

    Gas and oil prices

    Demand patterns

- Optimal solution identifies the least cost mix of assets

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# Key Questions Addressed

**ICF**

- Is PGW's approach to estimating Design Day and Design Winter demand reasonable?

- Does PGW have the correct amount of gas pipeline capacity?

- Does PGW have the correct mix and amount of gas storage capacity?

- Would expanding the liquefaction capabilities at the Richmond plant have a benefit to PGW?

- Does the asset mix allow PGW to benefit from releasing capacity and making off system sales?

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# Planning in Today's Market Context

**ICF**

- The market context for PGW today is very different from the 1997 study.

  - Gas prices have tripled: our average price in 1997 was about $2.20/MMBtu, today it has averaged over $6.00/MMBtu

  - Volatility of gas prices has increased

  - Basis spreads have widened and shown substantial volatility

  - Sophistication in gas market risk management has grown

    - Capacity release
    - Off system sales
    - Financial hedges

  - Growing interest in imported LNG

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# Tight U.S. Supply has Created Volatility
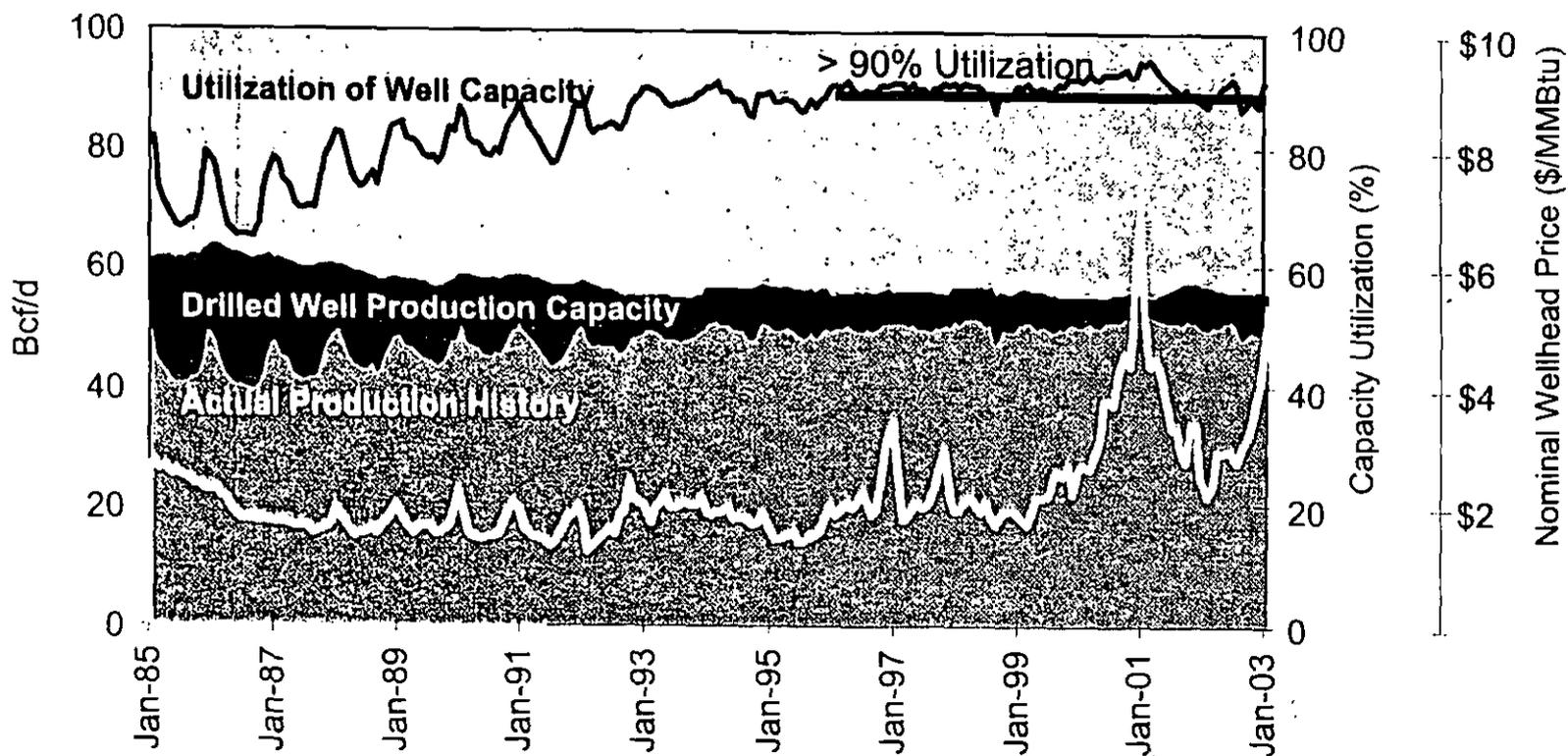
Source: Energy Information Administration

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# Volatility is Permanent and is a Major Factor in Capacity Decision-Making

**ICF**

- By 1985, seven years after the Natural Gas Policy Act of 1978, the supply incentives had created a surplus of production capacity: 60 Bcf/d with demand running about 45 Bcf/d.

- Wellhead production met much of seasonal demand, hence gas prices stayed low in the late 80s and 90s. Well utilization rates were in the 70% range.

- As the surplus was worked off (aided by FERC Orders 436, 500 and finally 636), utilization rates crept to over the 90% level. As this happened, gas prices began exhibiting volatiltiy.

- The outlook is that volatility is a permanent fixture of our gas system. Tight natural gas supplies relative to demand leads to swings in prices needed to adjust supply to swings in demand.

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# LNG Grows to 21% of U.S. Supply
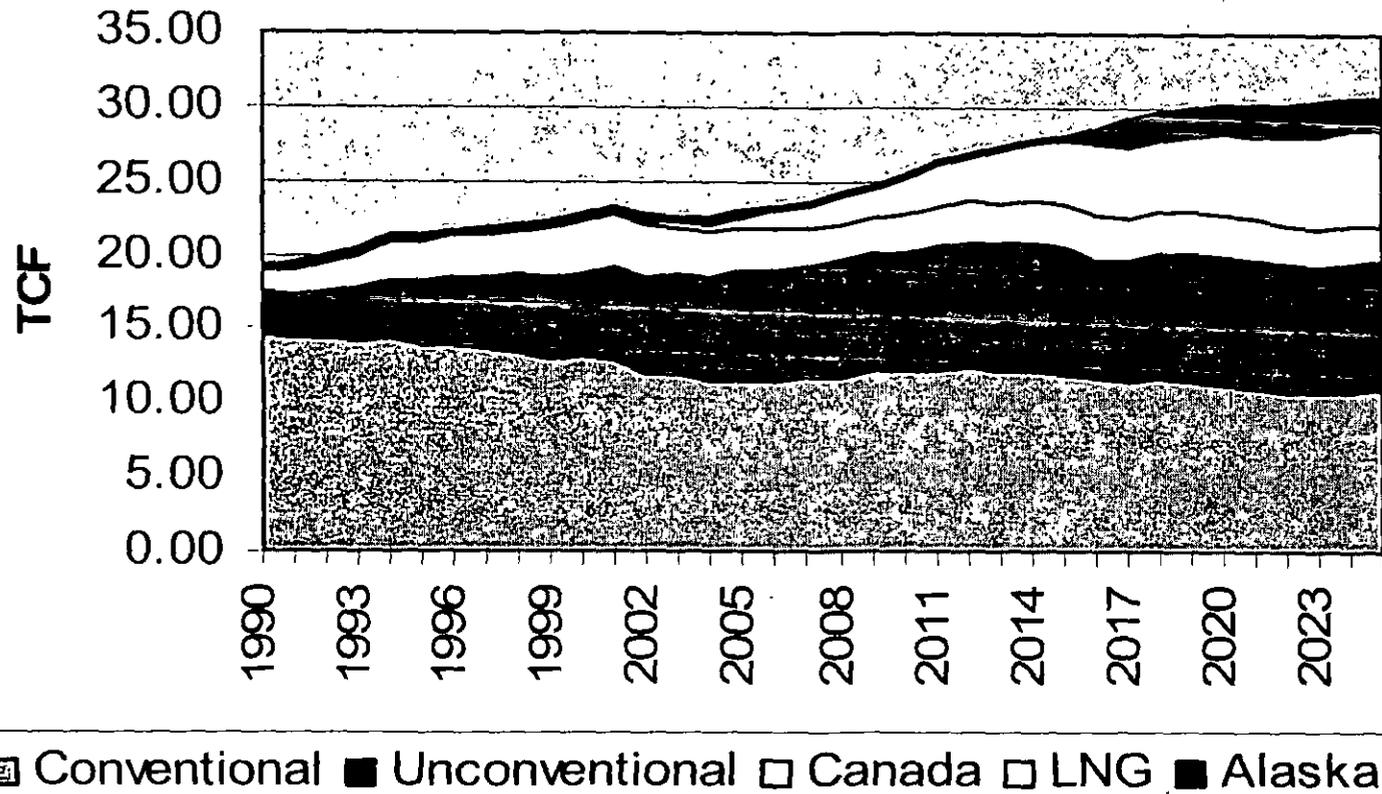
Source: Energy Information Administration, Annual Energy Outlook, 2005

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# Conventional Gas Production is being Offset by Imports and Unconventional Sources

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- Conventional production is in a long term decline

- Canadian imports have grown since 1990 but are beginning to level off.

- Major new sources are unconventional and LNG

- Alaska gas is expected in the post 2015 time frame

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# Gas Prices Have Declined from the Hurricane Hump – but Remain High Historically

Spot and Futures Prices for Natural Gas

Legend: Henry Hub (thick line) — NYMEX Natural Gas Contract 1

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11
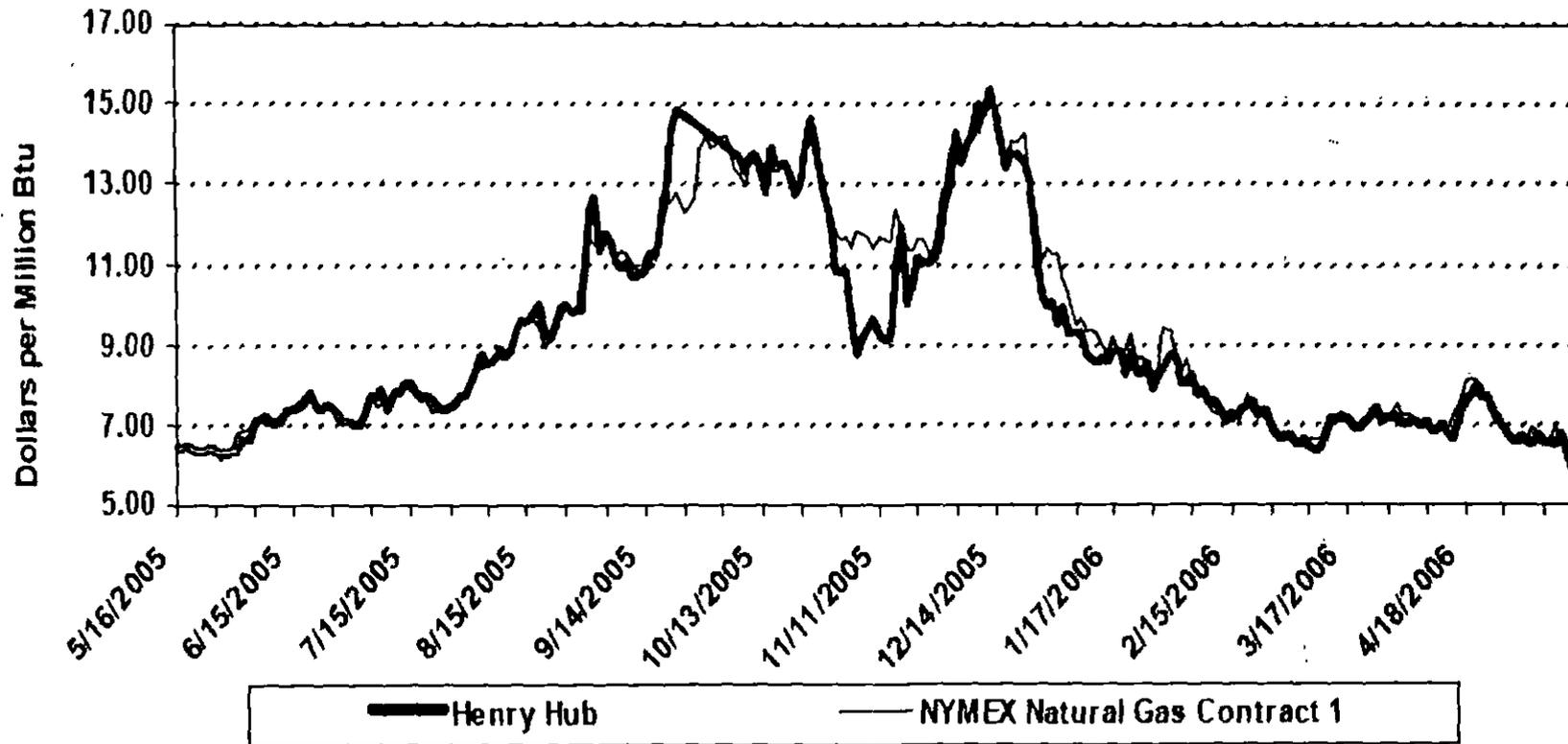
# Hurricane Impact on Gas Prices Reflects Market Sensitivity to Supply Disruption

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- The hurricanes in the Gulf in 2005 reduced domestic production of gas by 40%. Gas prices responded.

- Unlike the oil industry where the oil price spike was short-lived, the Hurricane hump lasted much of the winter.

  - Oil markets responded globally: more oil was diverted to U.S. markets in response to prices alleviating the price impact

  - The U.S. is still not integrated into world gas markets so no such relief was available – we were on our own.

- As LNG becomes a larger share of the market, such events' effects may be more manageable.

- Nevertheless, volatility will remain a characteristic of the market.

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# ICF Reference Case Gas Price Forecast does not Anticipate Continued High Prices

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Henry Hub (2003$/MMBtu)



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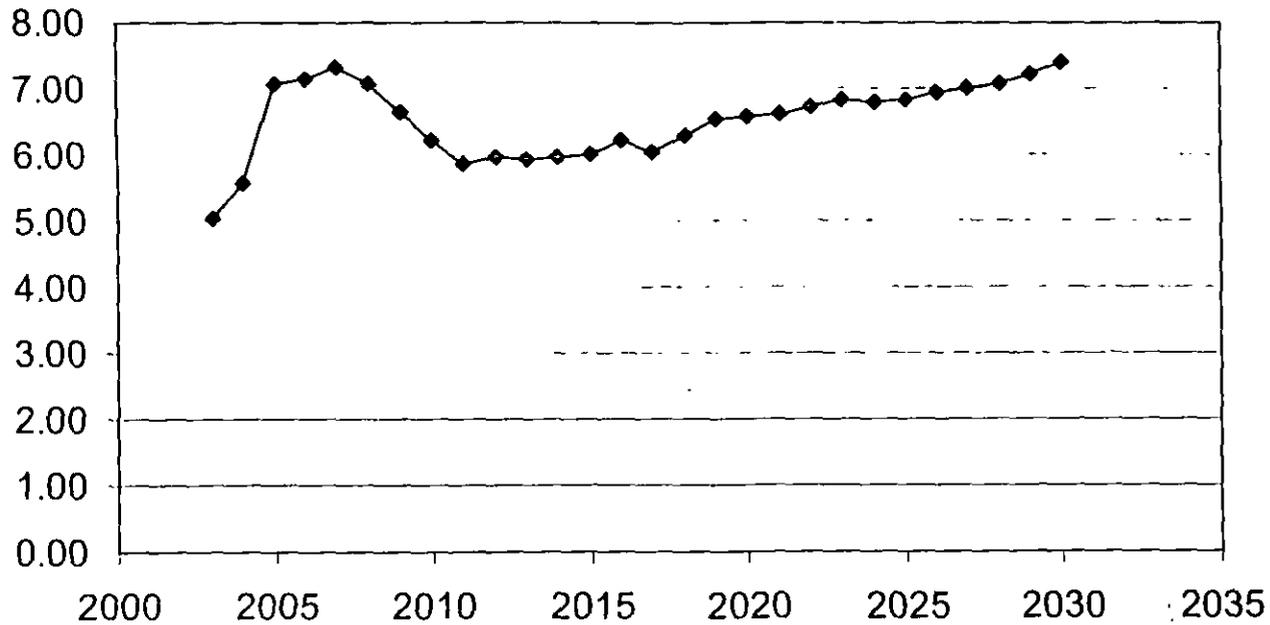
# Long Term, Gas Prices will Decline from Recent Levels but will Recover

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- Supply and demand responses to high gas prices will cause prices to fall through about 2010, on an annual basis.
  - Seasonal swings in prices and volatility will nevertheless *dominate* short term pricing monthly.
- Conventional gas (that is gas developed by conventional gas wells) will continue to decline.
- This will be offset by more gas production from unconventional settings and LNG.
  - Unconventional gas – coal bed methane, deep offshore, deep tight sands, shale – is more costly to produce
  - LNG will become a major supply source, approximately 14 Bcf/d by 2025, but will not be enough to set the price – which will be determined by unconventional resources
  - Most LNG will come through Gulf terminals to use existing pipeline capacity
- Major influencers of future gas prices are power demand growth and the availability of LNG

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# Significance of Volatility and Supply Uncertainty

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- Volatility makes the ability to store gas more critical and causes the value of storage to increase

  - Managing the swings in gas prices is possible only if one can store gas when the price is low

  - Volatility creates "optionality" value for storage and increases the ability to trade around storage assets

- Supply uncertainty also enhances the value of storage

  - Hurricanes in the Gulf will disrupt production and LNG deliveries

- Storage provides a hedge for price and delivery uncertainty in addition to peak day and seasonal deliverability

- Participation in secondary markets through capacity release and off system sales is enhanced by holding assets in volatile markets

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# Purpose of Demand Estimation Review

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- Design day and winter parameters drive investment decisions and asset allocations

    - Pipeline capacity

    - Storage capacity and utilization

    - LNG storage and vaporization

- Design parameters in turn impact system costs

    - Capacity payments

    - Inventory holding costs

- ICF used design day and design winter estimates to determine the appropriate gas asset mix

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# PGW's Approach to Estimating Demand

- PGW uses a combination of inputs into demand estimation

  - Historical demand trends for each customer class

  - Customer surveys

  - End use studies – appliance characteristics

  - Judgment of system operators

- Demand is related to temperature through heating degree days (HDD)

- Capacity planning focuses on the "Design Winter" and "Design Day"

  - These are concepts of peak demand that define the largest amount of gas that PGW must be able to deliver to meet system requirements and maintain system integrity

  - These represent statistically derived historical system peak limits

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# PGW Demand Estimation Methodology Overview

Monthly Customer Demand $=$ Average Customer Monthly Consumption $*$ Average Number of Customers

Domestic Load

Heating Load

Unaccounted for Gas

Domestic Load Adjustment Factor#

Domestic Load less Interruptible

Heating Load Adjustment Factor#

Heating Load per Heating Degree Day (Dec, Jan, and Feb)
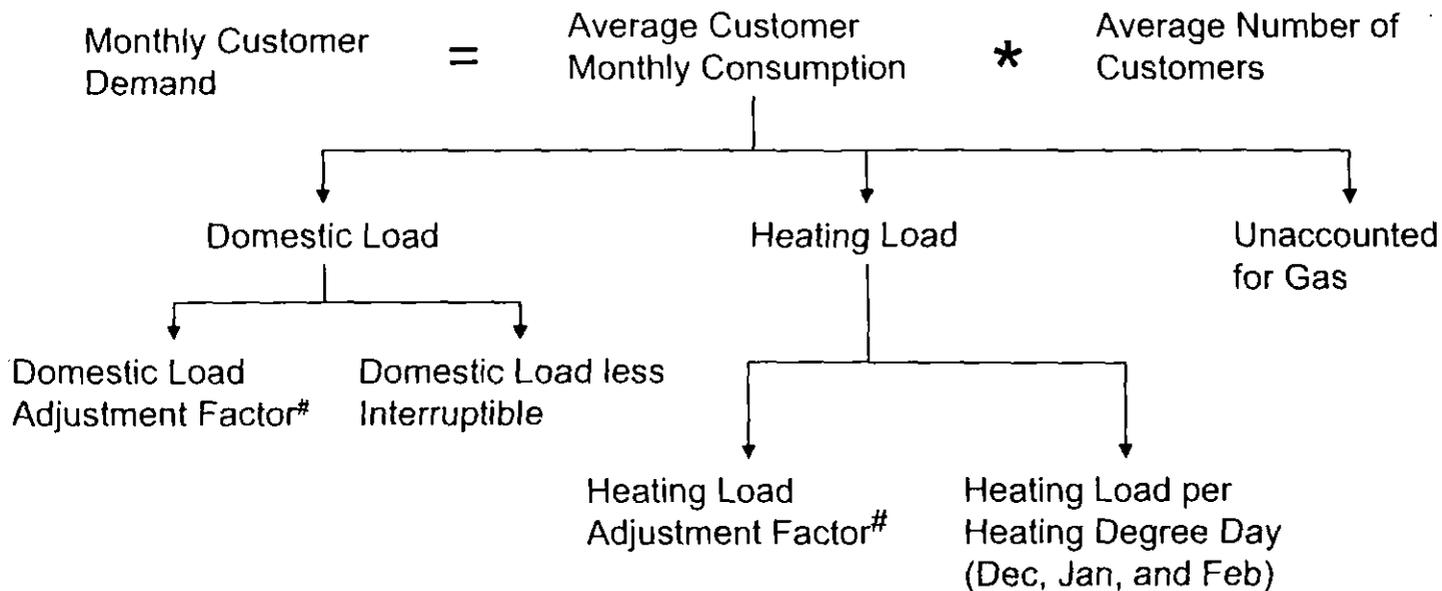
#Adjustment Factors account for error in estimation of demand in previous year

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# PGW Demand Estimation Methodology Evaluation

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- Domestic Load is estimated by using latest year customer load thus accounting for improvements in energy efficiency of customer appliances

- Heating Load Adjustment Factor is estimated using normalized Heating Degree Days thus representing only error in estimation methodology

- Design Day demand estimated using firm load thus making the forecasting regression methodology robust

- Design Day demand estimated using four year peak day heating degree days allowing for a good fit

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# Philadelphia Winter Heating Degree Days

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| Data Set (1976-2005) | Nov | Dec | Jan | Feb | Mar | Winter Season |
|---|---|---|---|---|---|---|
| Historical Mean Degree Days | 533 | 862 | 1,028 | 844 | 671 | 3,938[b] |
| Historical Peak Degree Days | 762 | 1,219 | 1,400 | 1,183 | 911 | 4,535[b] |
| No. of Sample Observations | 30 | 30 | 30 | 30 | 30 | 30 |
| Sample Standard Deviation | 95 | 144 | 162 | 129 | 99 | 213 |
| Data Relative to Mean[a] (%) | 18 | 17 | 16 | 15 | 15 | 5[b] |
| PGW's Design Degree Days | 608 | 1,005 | 1,191 | 973 | 778 | 4,555 |

Notes:

[a] It is coefficient of variation, calculated as (sample standard deviation/sample mean)*100.

[b] Individual months do not add up to this total, because it has been calculated independently using the historical winter season data or the standard deviation for the season total.

**PGW Design Degree Days are higher than NOAA estimate because of the location and frequency of measurements. PGW measures several times per day at the Richmond Plant. NOAA uses a simple average of the high and low temperatures.**

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# PGW Design Winter Heating Degree Days

**Philadelphia Winter Heating Degree Days**



Legend: —— Yearly Winter   - - - 1970-2005 Peak Winter   PGW Design Winter

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22
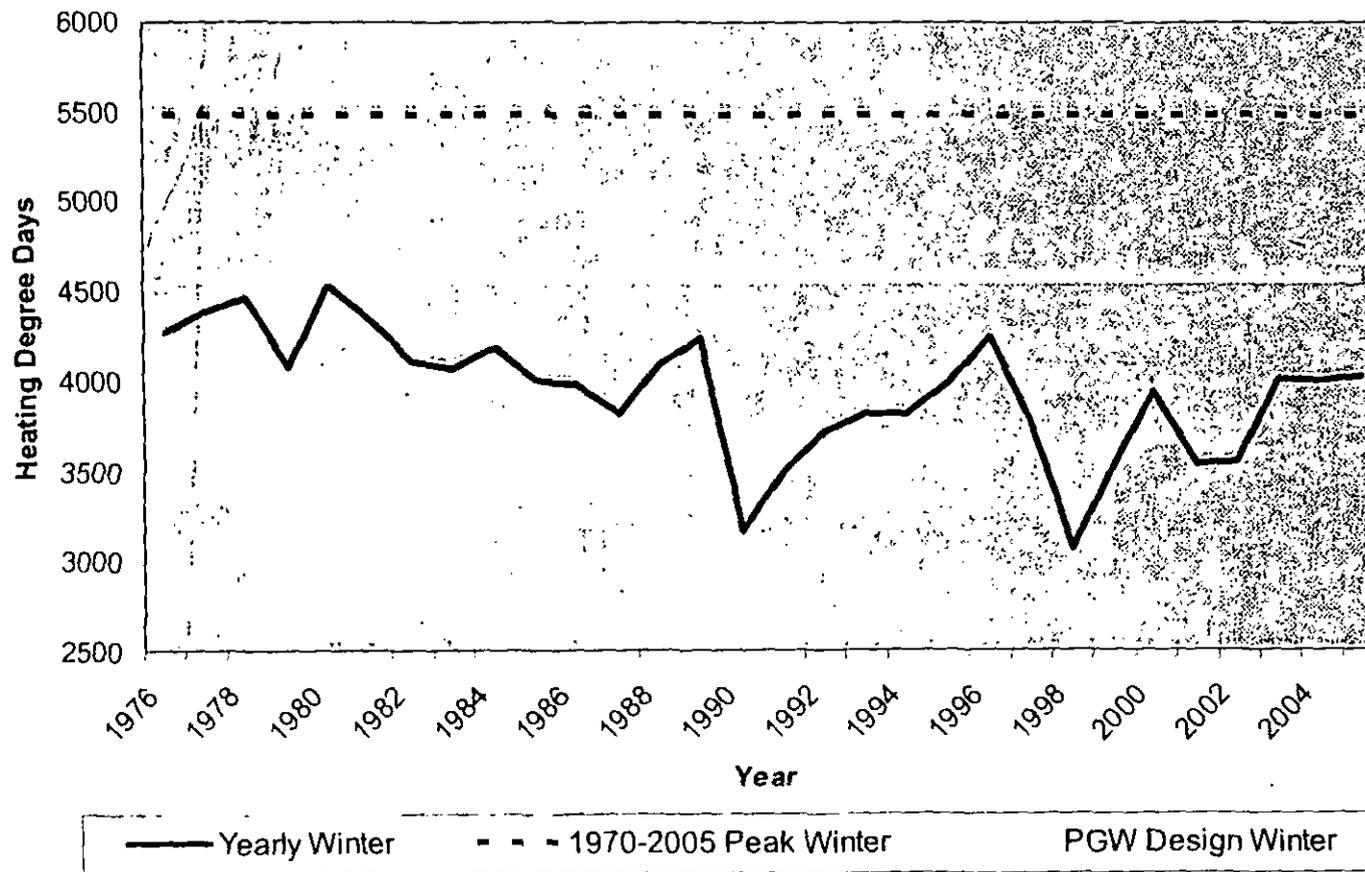
# PGW's Design Year Estimates

- The previous slide compares the design winter based on coldest winter in 30 years with historical winter weather and the theoretically coldest winter, measured in heating degree days (HDDs).

- Recent winters have been warmer than in the 1980s, and the trend suggests warming.

- PGW's design winter is still substantially below the theoretical coldest winter

  - Theoretical coldest winter includes the coldest winter months picked from the last 30 years and assumes each month is the thirty year cold month

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# Findings on Peak and Winter Demand

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- PGW's approach remains essentially the same as was reviewed in the previous study.

- PGW's approach yields a forecast of design day and design winter that are reasonable estimations.

  - The design conditions are below "theoretical" worst case (which could yield higher than necessary investments)

  - The probability of meeting design winter conditions remains approximately once in every 16 years.

- PGW's approach incorporates recent trends in local markets towards more efficient equipment and demand response to prices.

- Potential for demand growth is modest (given local and national trends).

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# ICF's Approach to Estimating Design Winter Sendout

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- First step is to use design winter parameters for 2006-2007 provided by PGW for its PGC filings with the Philadelphia Gas Commission.

  - These data are from September through August and in the form of load duration curves for each month.

- Data were converted to April through March and randomized to reflect typical random weather and gas pricing patterns.

  - Converting data for April through March makes modeling storage easier

  - Gas sendout and prices are correlated

- Design and average years were differentiated.

  - All the analysis is based on daily, sequential sendout

  - Average and design years differ only in winter sendout

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# Design Year Sendout for Planning – Sept. 1 to August 31

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**Design Year Sendout**
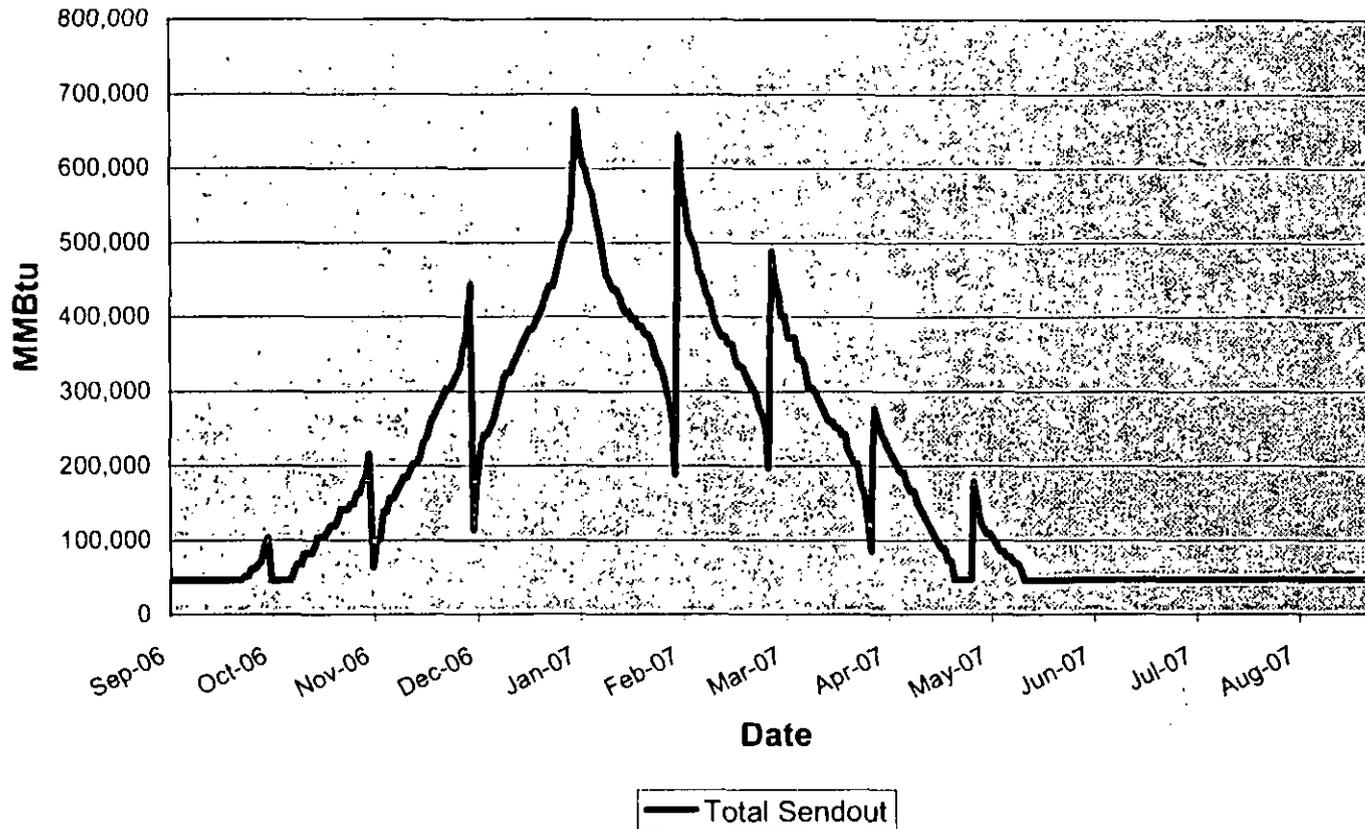


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# Sendout Reordered and Randomized – April 1 to March 31

**PGW Reference Case Sendout**



Legend: ☒ BPS Load   ■ Firm Load   ☐ LBS Load
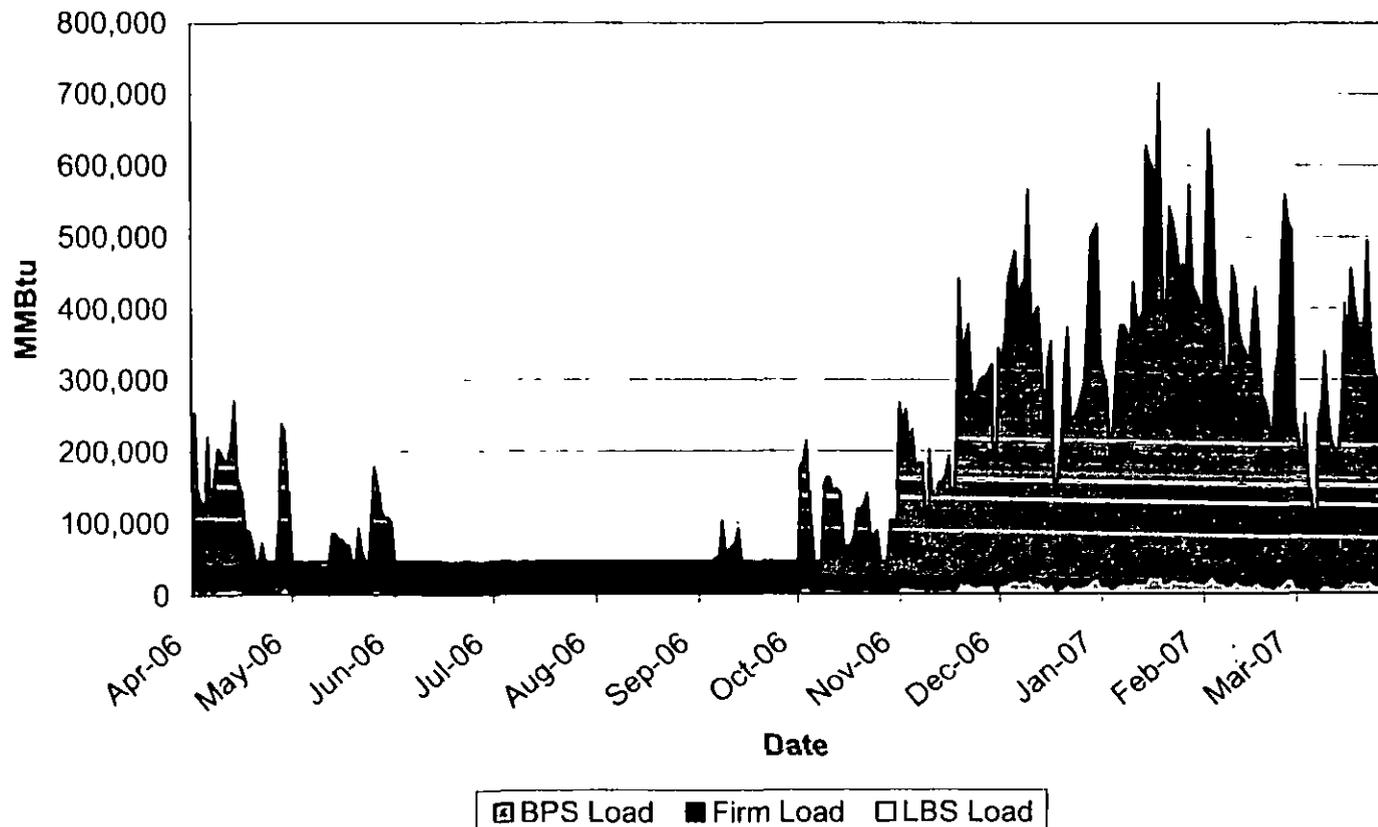
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# Demand Patterns Modeled Consistent with Gas Prices

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### Design and Average Year Total Demand
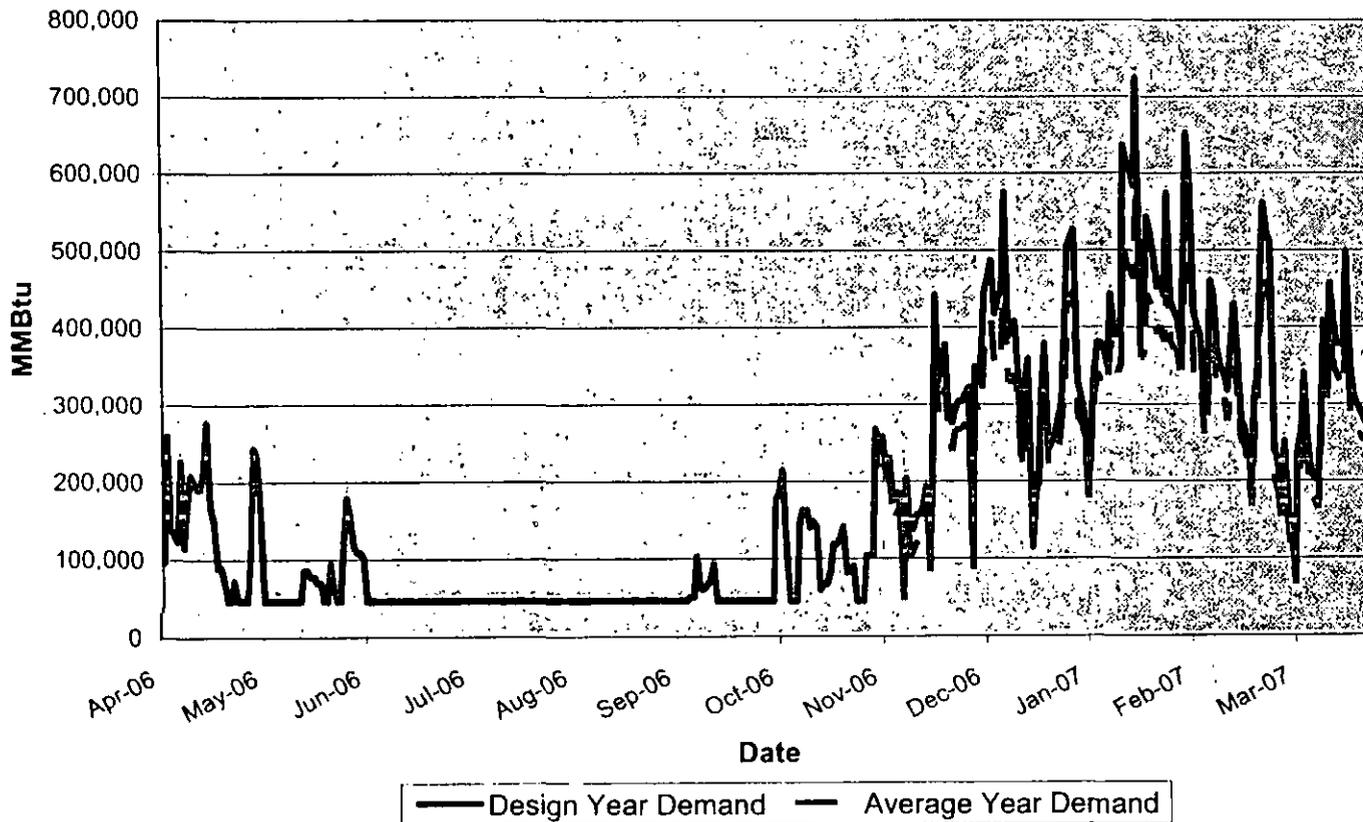


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# Design and Average Winter Demand -- Simplified

**Design and Average Year Total Demand**
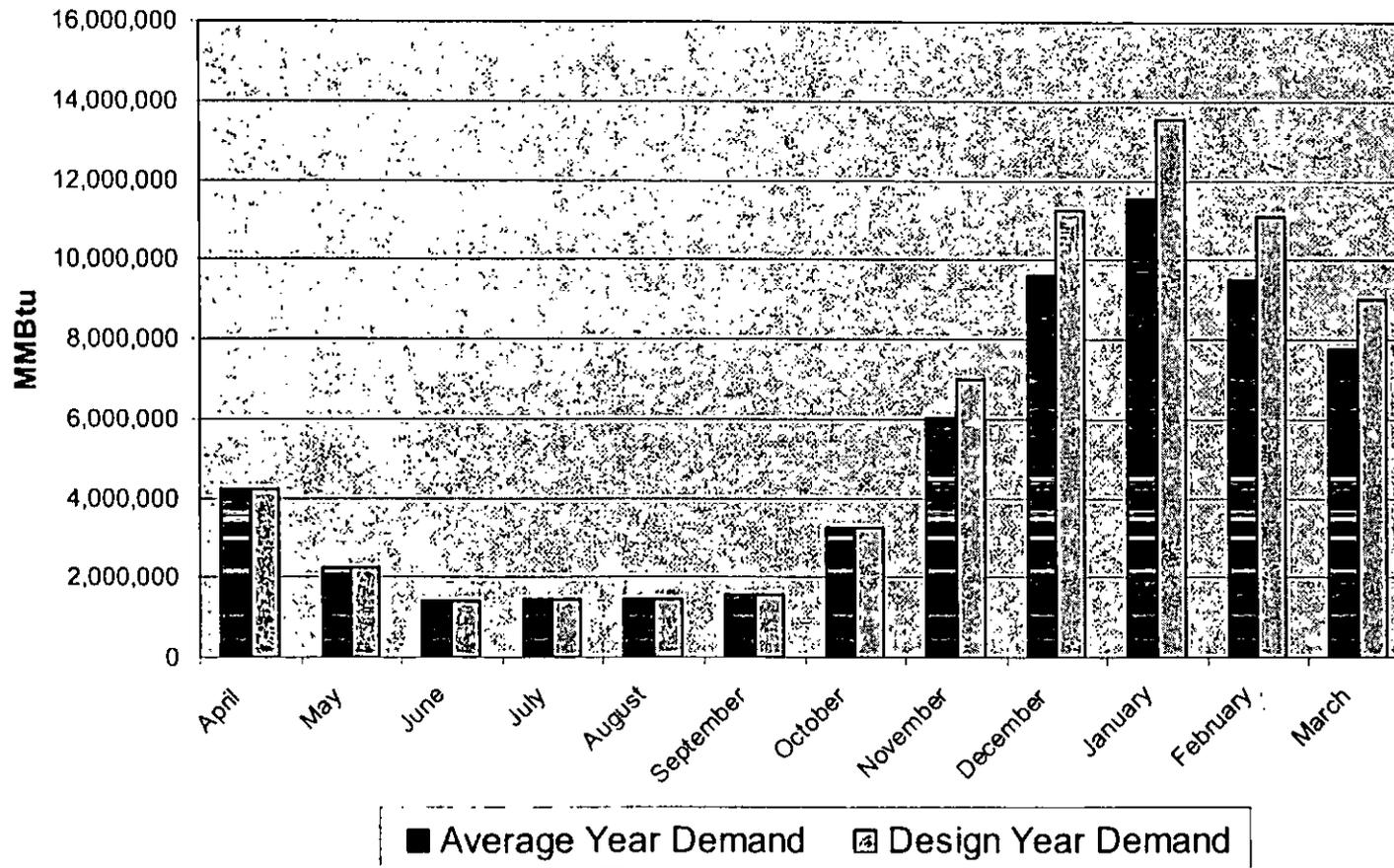


Legend: ■ Average Year Demand  ▨ Design Year Demand

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# Analytic Approach

- Use sequential optimization to identify the least cost mix of assets when there is volatility in gas demand, prices, and storage operations

  - Traditional approaches (and what was used in 1997) employ load duration curve that are useful for optimizing pipeline capacity and gas contracts.

  - Representing demand sequentially rather than as a load duration curve captures the inter-temporal aspects of gas storage optimization and effects of price volatility

- Key inputs include

  - Sendout and sendout variability – load represented on daily basis

  - Supply system topology and options

  - Gas and oil prices and price volatility

- Once these are implemented, we model the system under different conditions

  - Design year v. average year

  - With different supply options available or not

  - With different gas price patterns

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# Analytic Approach (contd.)

**ICF**

- Demand inputs

  - ICF used PGW's own forecasts of gas demand for average and design year from the 2006 PGC filing (June 2006)

  - Used a single year rather than multiple years or future year forecasts to simplify the analysis

- Supply topology inputs

  - Gas pipelines – capacity (MDQ), receipt/delivery points, costs, fuel, storage interconnections

  - Gas storage – capacity, injection/withdrawal MDQs, withdrawal ratchets, costs, fuel, pipeline interconnections

  - LNG – liquefaction capacity and rates of liquefaction, storage capacity, vaporization capability, liquefaction expansion potential, costs.

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# Analytic Approach (contd.)

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- Gas pricing inputs

  - Used recent history gas prices and volatility

  - Deployed assumptions about first of month purchasing and spot purchasing practices – PGW sets up 64% of winter supply in firm, first of the month contracts, with spot supply meeting swing demand

  - Prices are represented for supply at each of the pipeline receipt points based on historic basis differentials

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# Analytic Approach -- Sensitivities

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- Sensitivity analyses were undertaken to identify the least cost mix of assets and their utilization.

  - Sensitivities were examined under the design year reference case

  - An average year case was run to examine the potential for capacity release and off-system sales

- Major sensitivities tested various supply asset options

  - Availability of more LNG by expanding LNG liquefaction capacity

  - Reduction in storage capacity by alternately eliminating various storage services

    Eminence

    Equitrans

    WSS

    Transco S2

  - Demand for storage with larger summer/winter gas price swings

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# Supply Pipelines and Storage
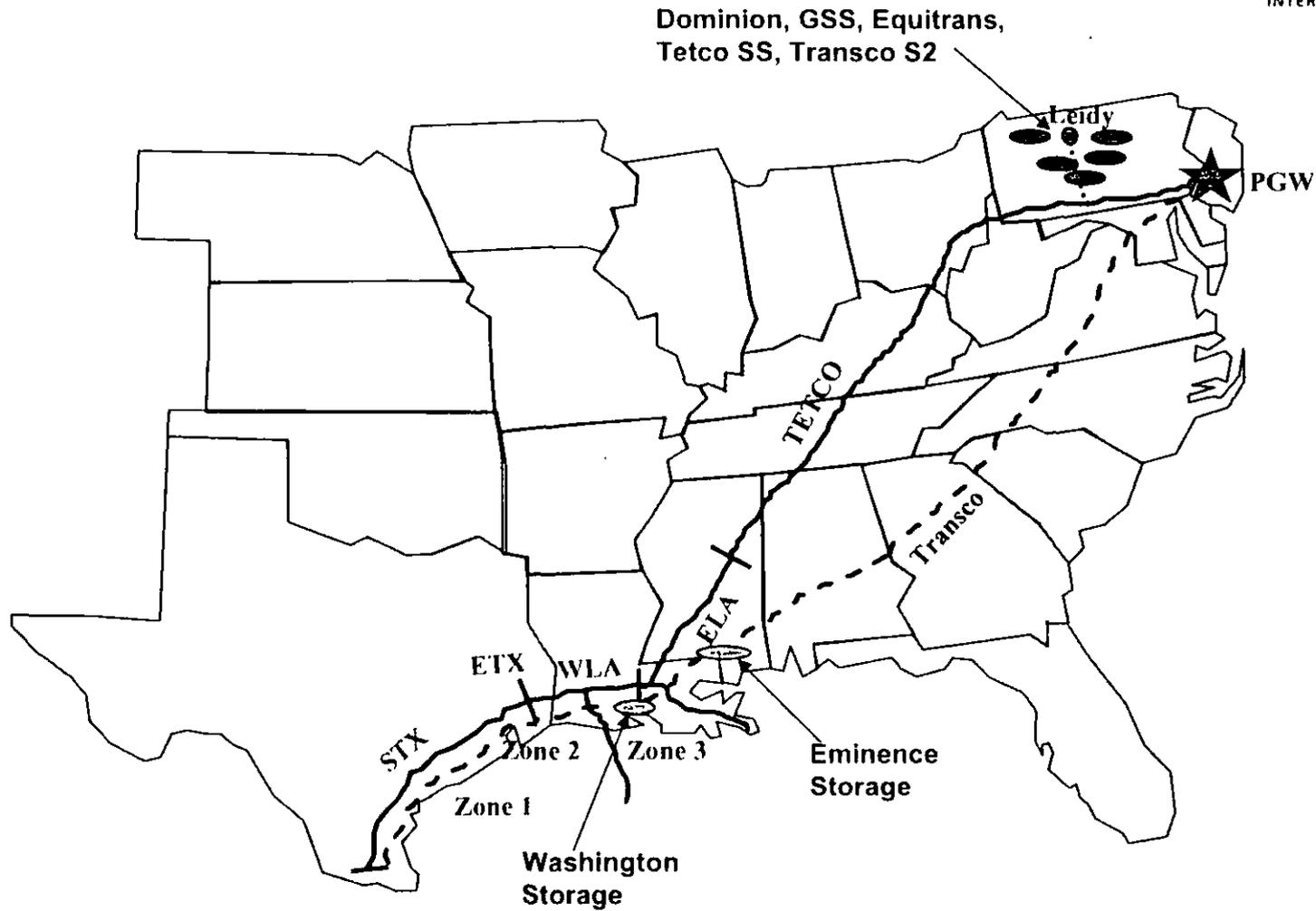
Dominion, GSS, Equitrans,
Tetco SS, Transco S2

Leidy

PGW

TETCO

Transco

ETX   WLA

FLA

STX   Zone 2   Zone 3

Eminence
Storage

Zone 1

Washington
Storage

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# Supply Topology

**Tetco CDS / FT-1**
75,000 + 23,822 Dt/d
36,000 Dt/d PAID

ETX

STX        WLA        ELA

M3

**Equitrans SSE**

Tetco FT-2

Equitrans STS-1

Leidy

Dominion GSSTE

**PGW**

**Tetco** FT-7 & -8

**LNG**

**Transco FT**
165,212 Dt/d

| Zone 1 | Station 30 | Zone 2 | Station 45 | **ESS 1&2** Zone 3 | Station 65 | **GSS & S2** |

**WSS**

**Transco PS-FT**
1,732 Dt/d

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# Case Descriptions

**ICF**
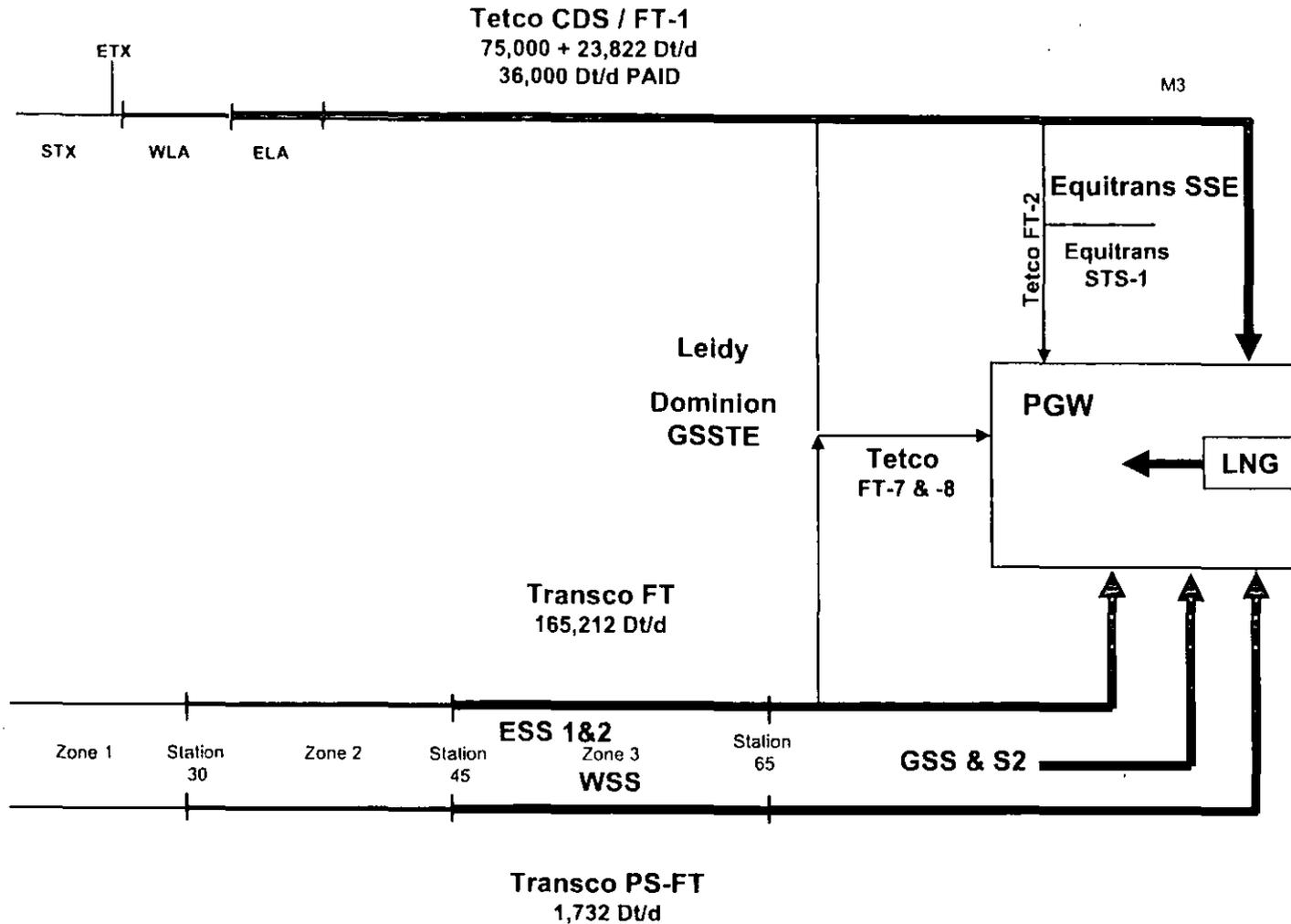
- Reference case: Design winter, design peak day, assumes full LNG liquefaction capability is available (LNG 1 and LNG2)

    - LNG-1 case limits liquefaction capability to the current expander system

    - LNG-2 case allows a new system to be built (replacing the current cascade system, which is highly maintenance intensive and has reached the end of its useful life at 37 years)

- Average case: Average year sendout, also with full liquefaction capability

- LNG-1 case: Design winter, no expansion of LNG liquefaction

- LNG 1 Bcf case: Design winter, LNG expansion occurs, but 1 Bcf of storage is reserved for off system sales and is not available to PGW

- Storage sensitivity cases: LNG 1 Bcf case, with alternative storage services not available

    - Focused on storage services that appear in earlier cases to be on the margin

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- Both long haul pipelines are necessary to meet full requirements in winter

- Transco appears to be the lowest cost and most valuable pipeline asset

  - Under design conditions, the pipeline should operate at a 89% load factor

  - This drops to about 84% during an average year

- Tetco operates at lower load factors

  - Design year: 56%

  - Average year: 46%

  - Nevetheless Tetco reaches its full capacity on some days for six months of the year even in average winter conditions

- PAID call released capacity is critical in winter

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# Pipeline Utilization Highlights Key Segments

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Pipeline Dispatch
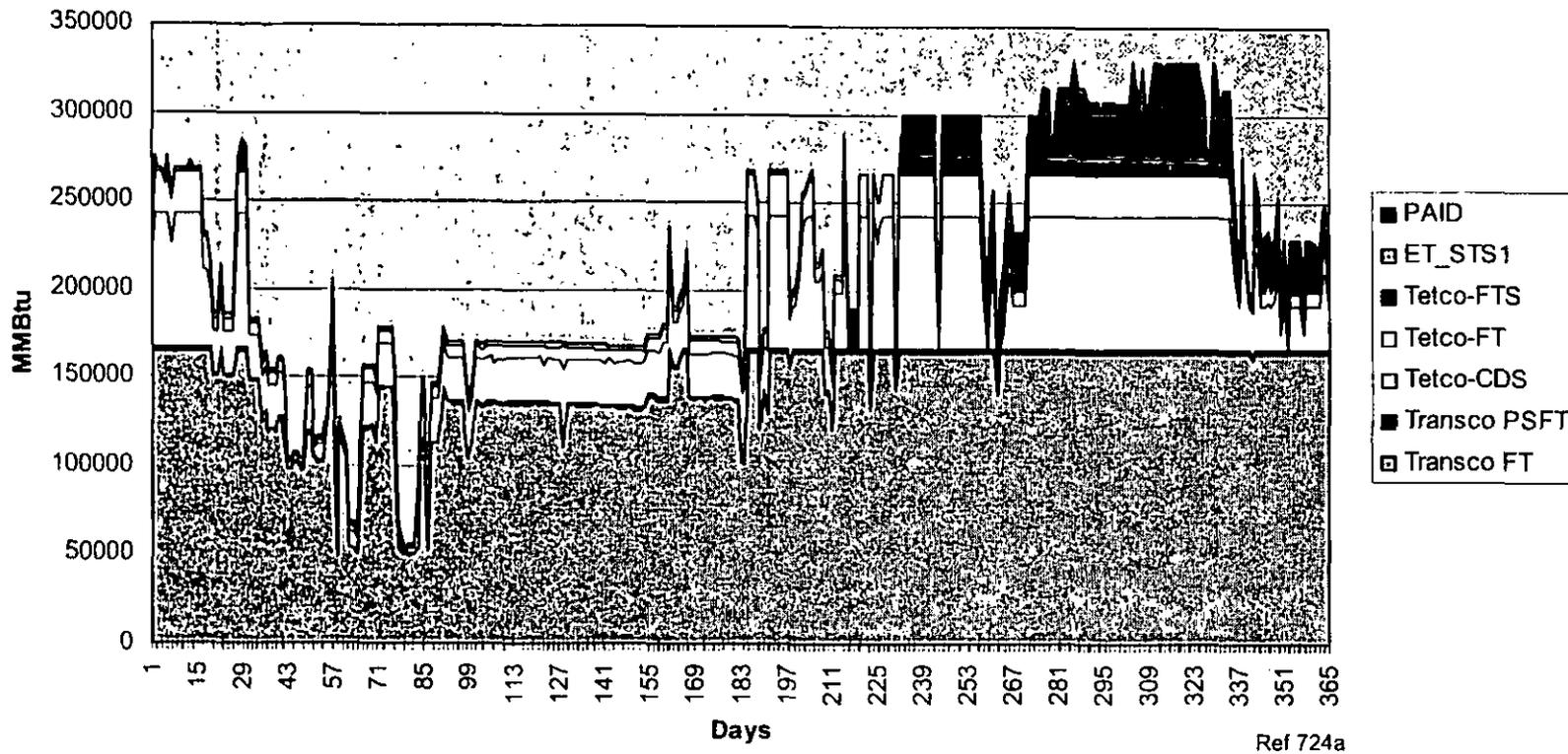
*Passion.* *Expertise.* **Results.**

# Transco FT Reference Case Utilization is 89%



TRANSCO FT PIPELINE CAPACITY UTILIZATION

Legend:
□ Transco FT Design Year Max
■ Transco FT Design Year Avg
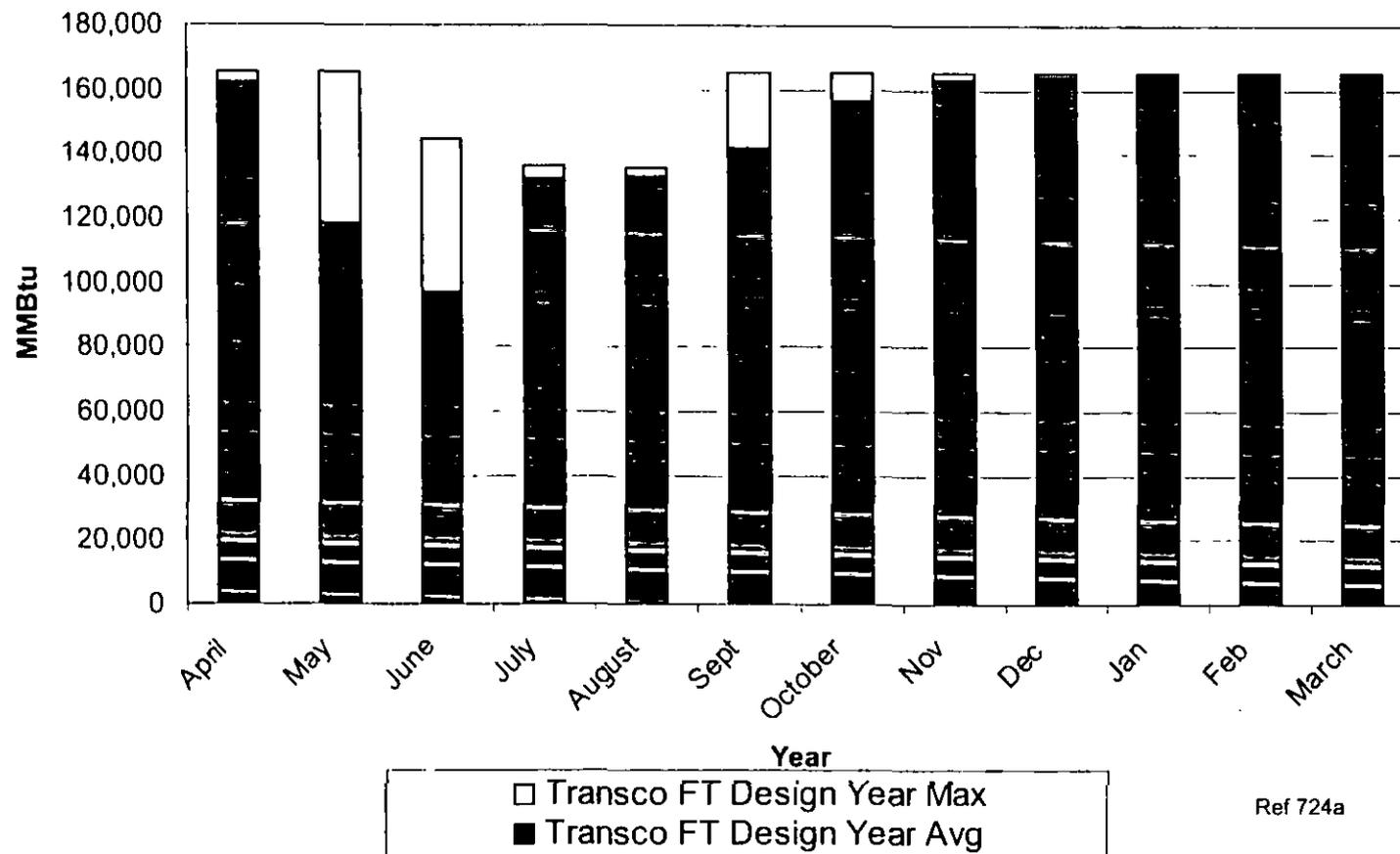
Ref 724a

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# Transco PSFT Reference Case Utilization is 100% in Winter

**ICF** INTERNATIONAL

### TRANSCO PS-FT PIPELINE CAPACITY UTILIZATION



Legend:
- □ Transco PSFT Design Year Max
- ■ Transco PSFT Design Year Avg

Ref 724a

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# Tetco CDS Reference Case Utilization is 56%

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### TETCO CDS PIPELINE CAPACITY UTILIZATION



Legend:
- □ Tetco-CDS Design Year Max
- ■ Tetco-CDS Design Year Avg

Ref 724a

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42
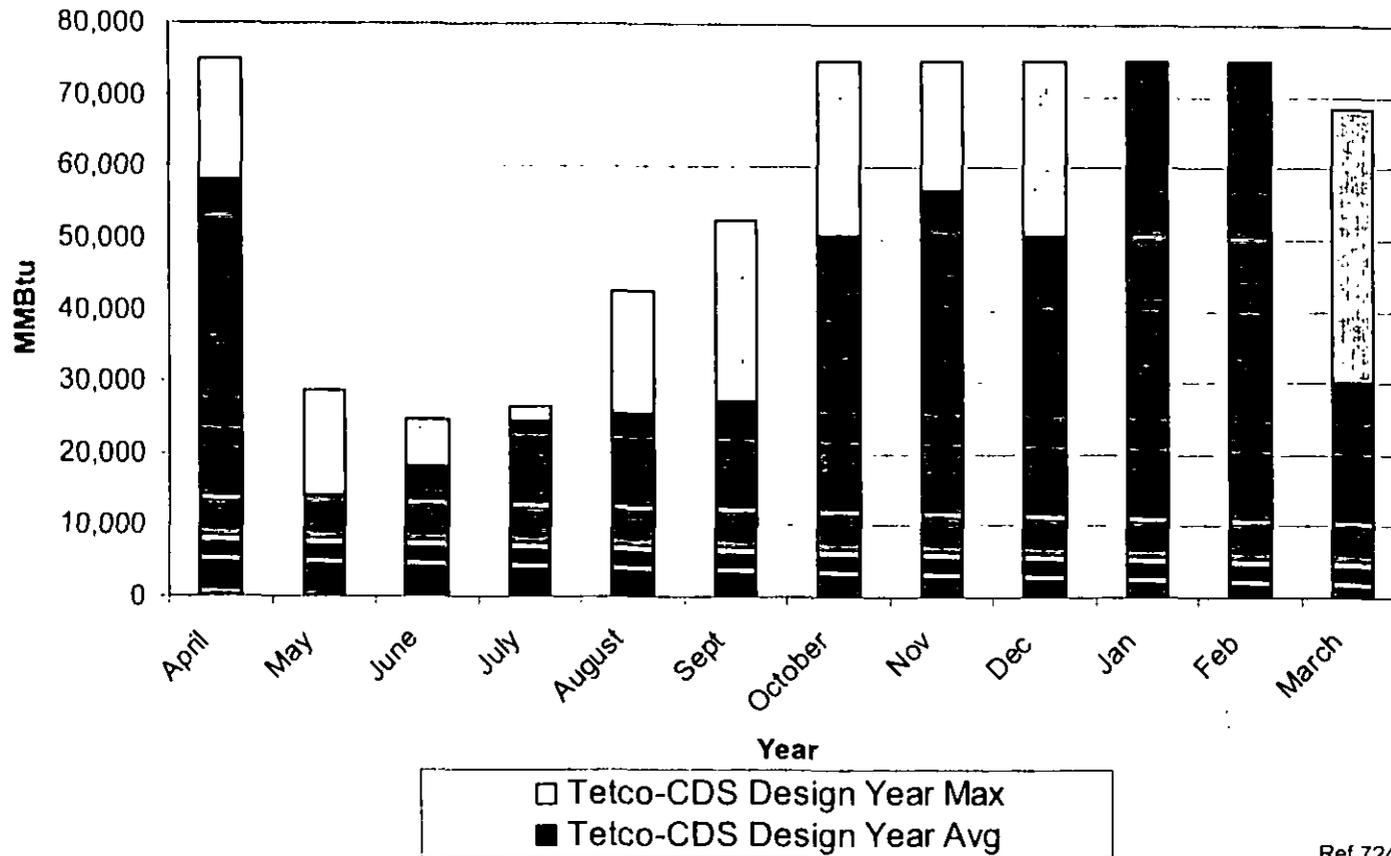
# Tetco FT Reference Case Utilization is 53%

TETCO FT PIPELINE CAPACITY UTILIZATION

Legend:
□ Tetco-FT Design Year Max
■ Tetco-FT Design Year Avg

Ref 724a

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43
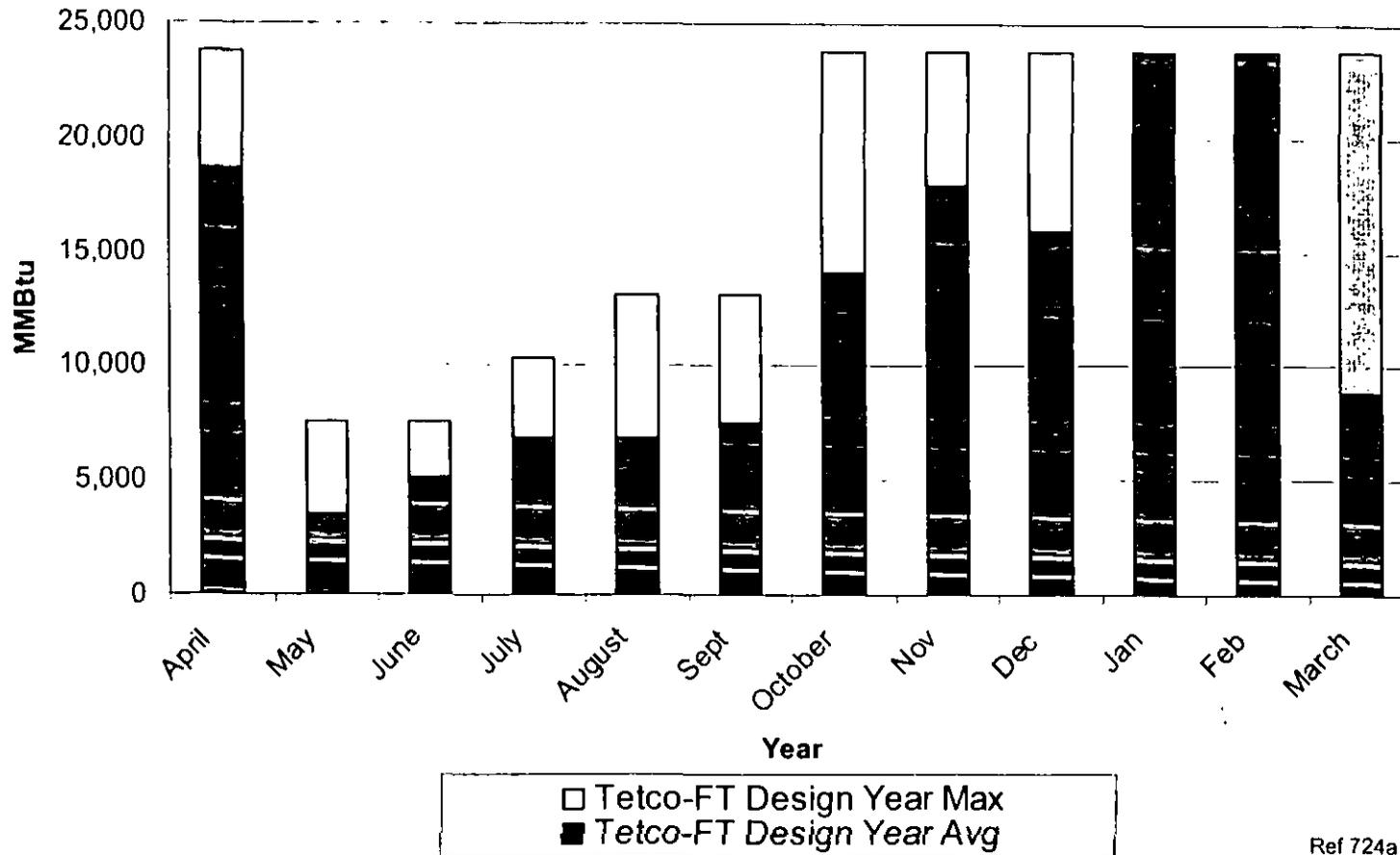
# PAID Capacity not Used in Average Year

**Pipeline Dispatch Av. Year**



Legend:
- PAID
- ET_STS1
- Tetco-FTS
- Tetco-FT
- Tetco-CDS
- Transco PSFT
- Transco FT

X-axis: Days
Y-axis: MMBtu
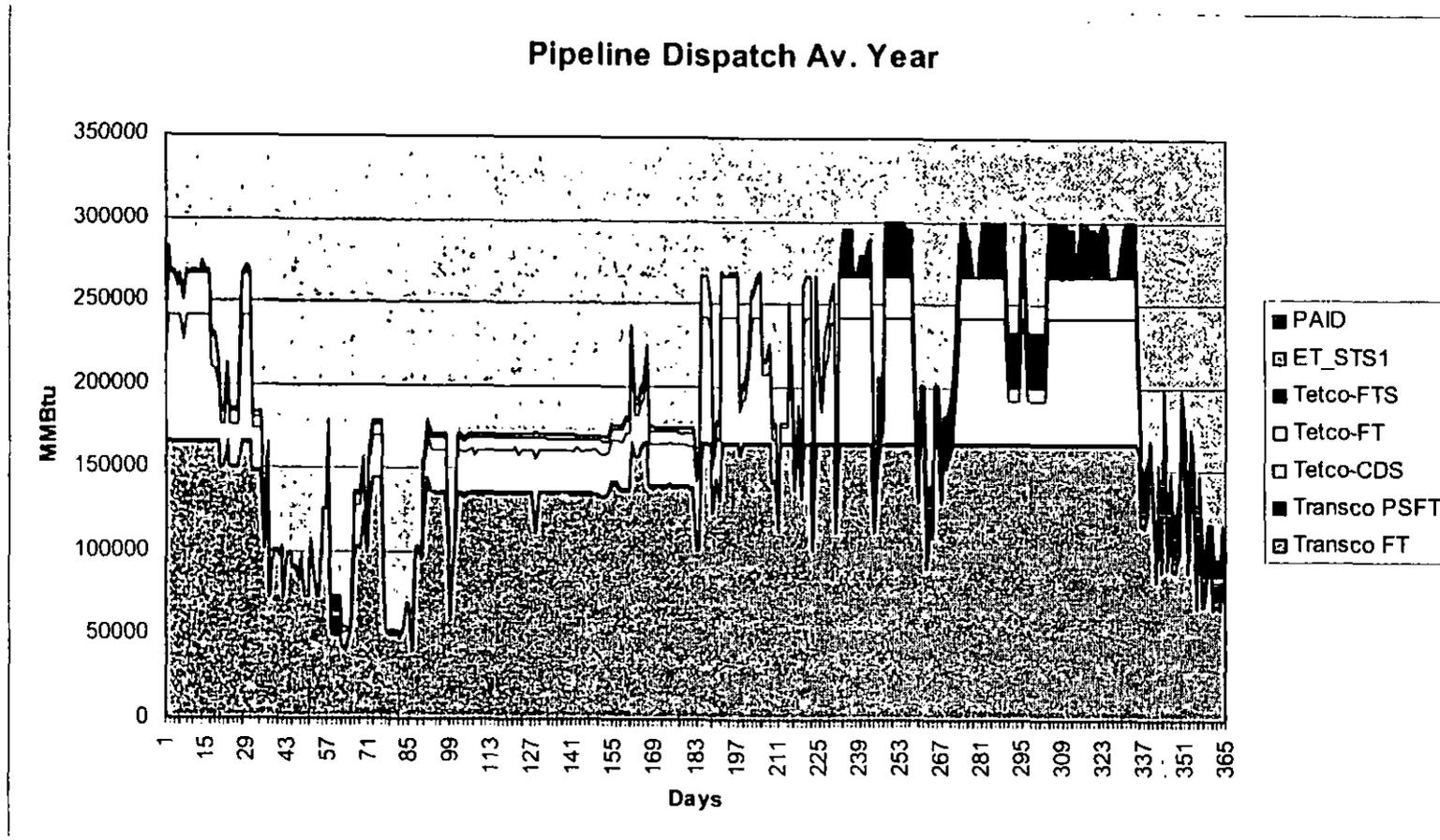
Altdmd 724a

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# Transco FT Average Case Utilization is 84%

## TRANSCO FT PIPELINE CAPACITY UTILIZATION



Legend:
- □ Transco FT Average Year Max
- ■ Transco FT Average Year Avg
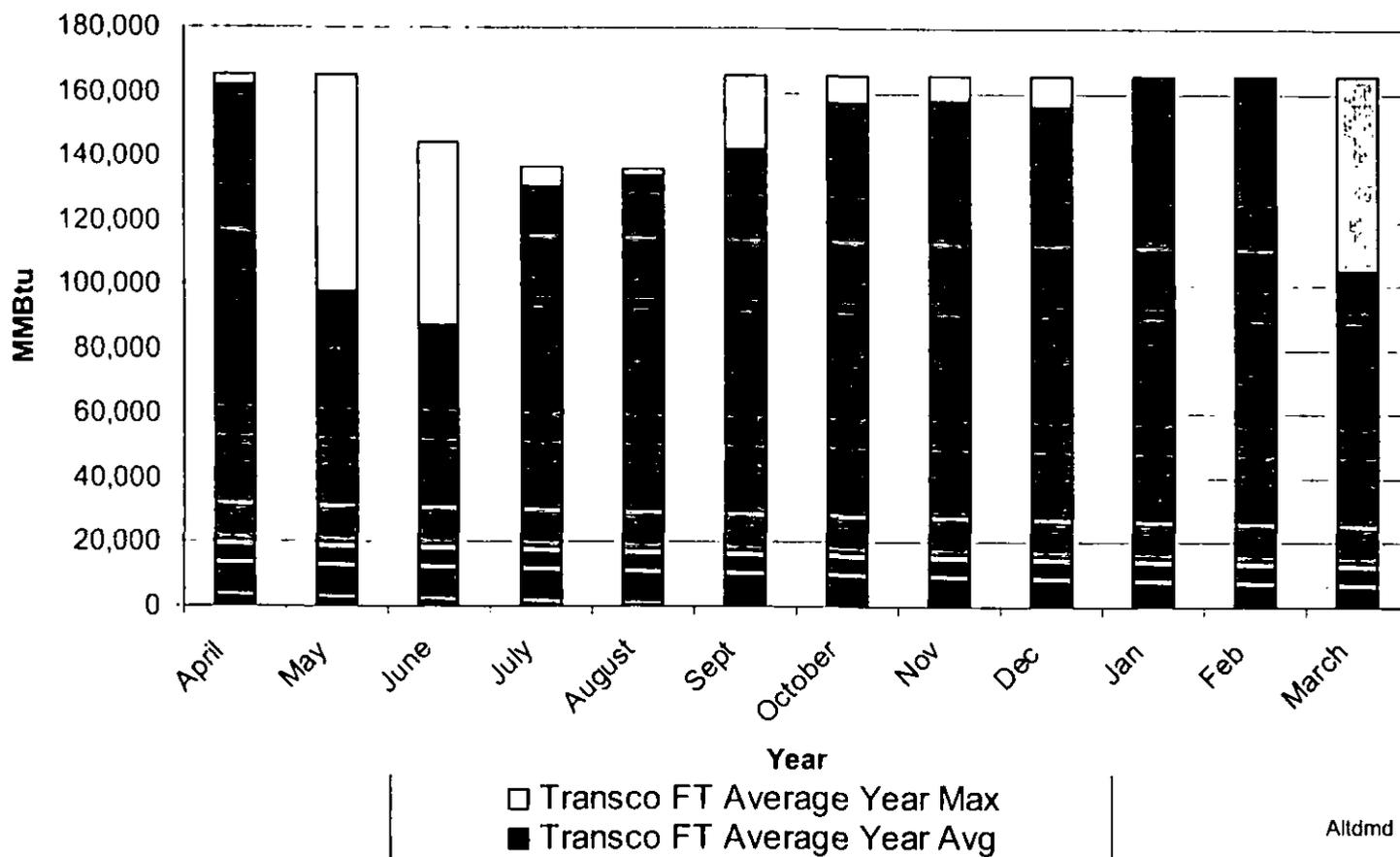
Altdmd 724a

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# Transco PS-FT Average Case Utilization is over **ICF**
# 90% in Winter

**TRANSCO PS-FT PIPELINE CAPACITY UTILIZATION**



☐ Transco PSFT Average Year Max
■ Transco PSFT Average Year Avg
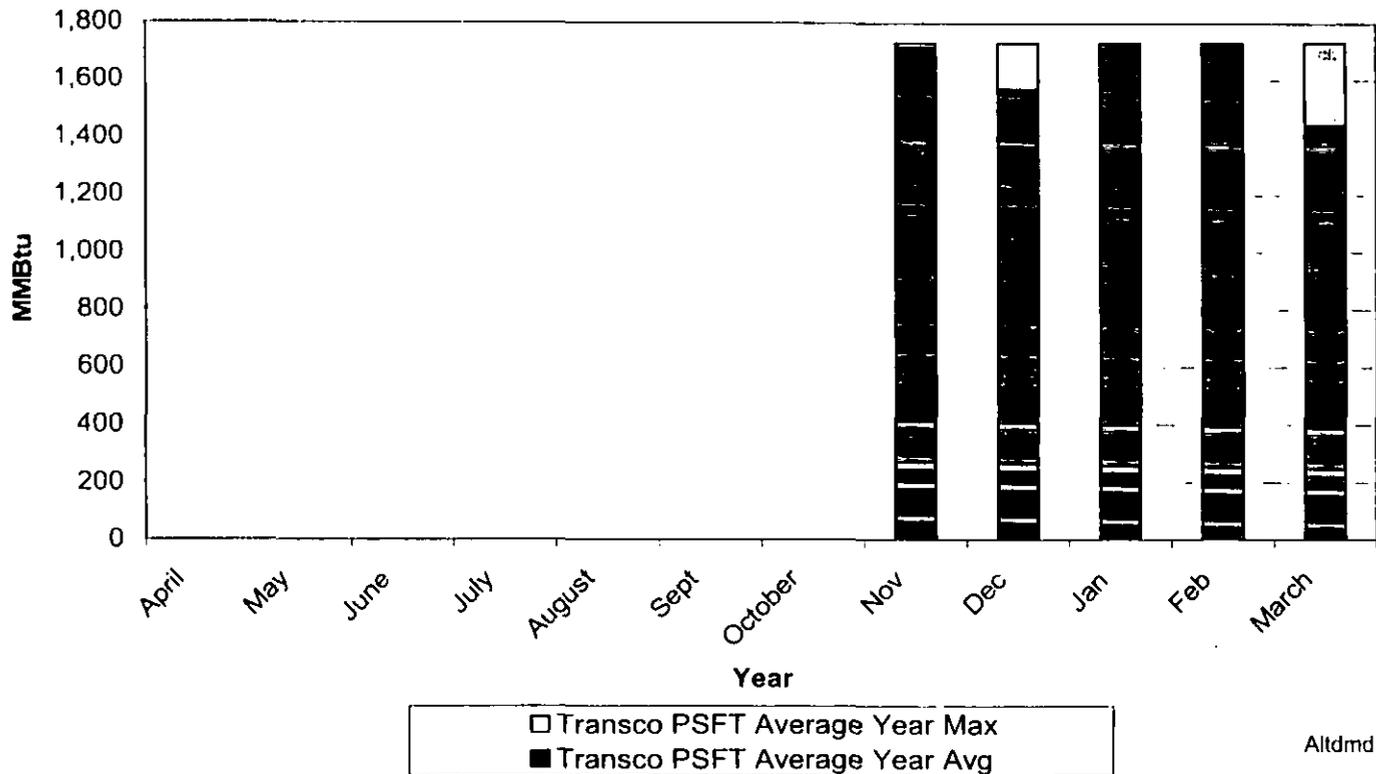
Altdmd 724a

**Passion. Expertise. Results.**

# Tetco CDS Average Case Utilization is 46%

**ICF**
INTERNATIONAL

## TETCO CDS PIPELINE CAPACITY UTILIZATION



Legend:
- ☐ Tetco-CDS Average Year Max
- ■ Tetco-CDS Average Year Avg

X-axis (Year): April, May, June, July, August, Sept, October, Nov, Dec, Jan, Feb, March

Y-axis (MMBtu): 0, 10,000, 20,000, 30,000, 40,000, 50,000, 60,000, 70,000, 80,000
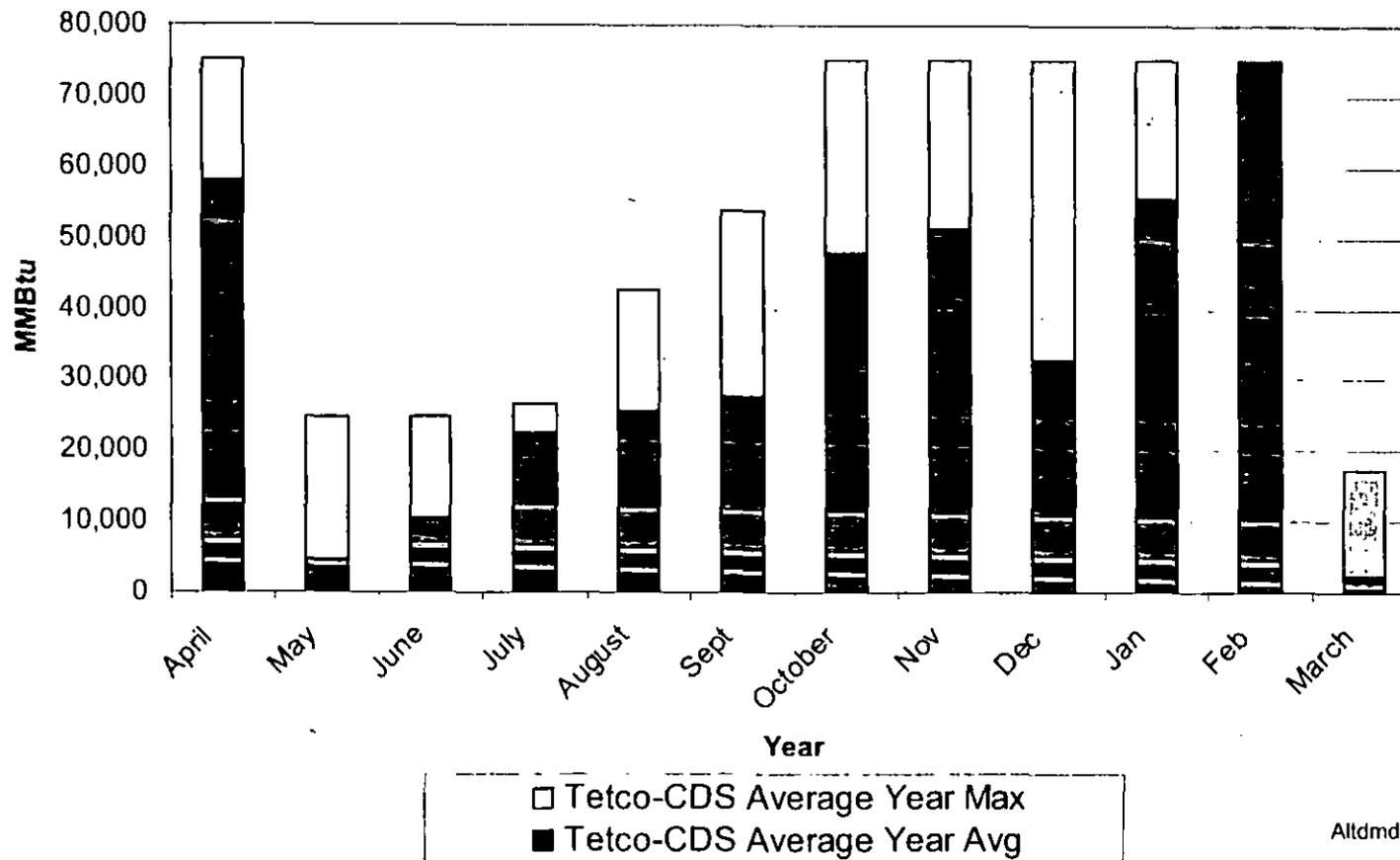
Altdmd 724a

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# Tetco FT Average Case Utilization is 44%

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## TETCO FT PIPELINE CAPACITY UTILIZATION



Legend:
□ Tetco-FT Average Year Max
■ Tetco-FT Average Year Avg

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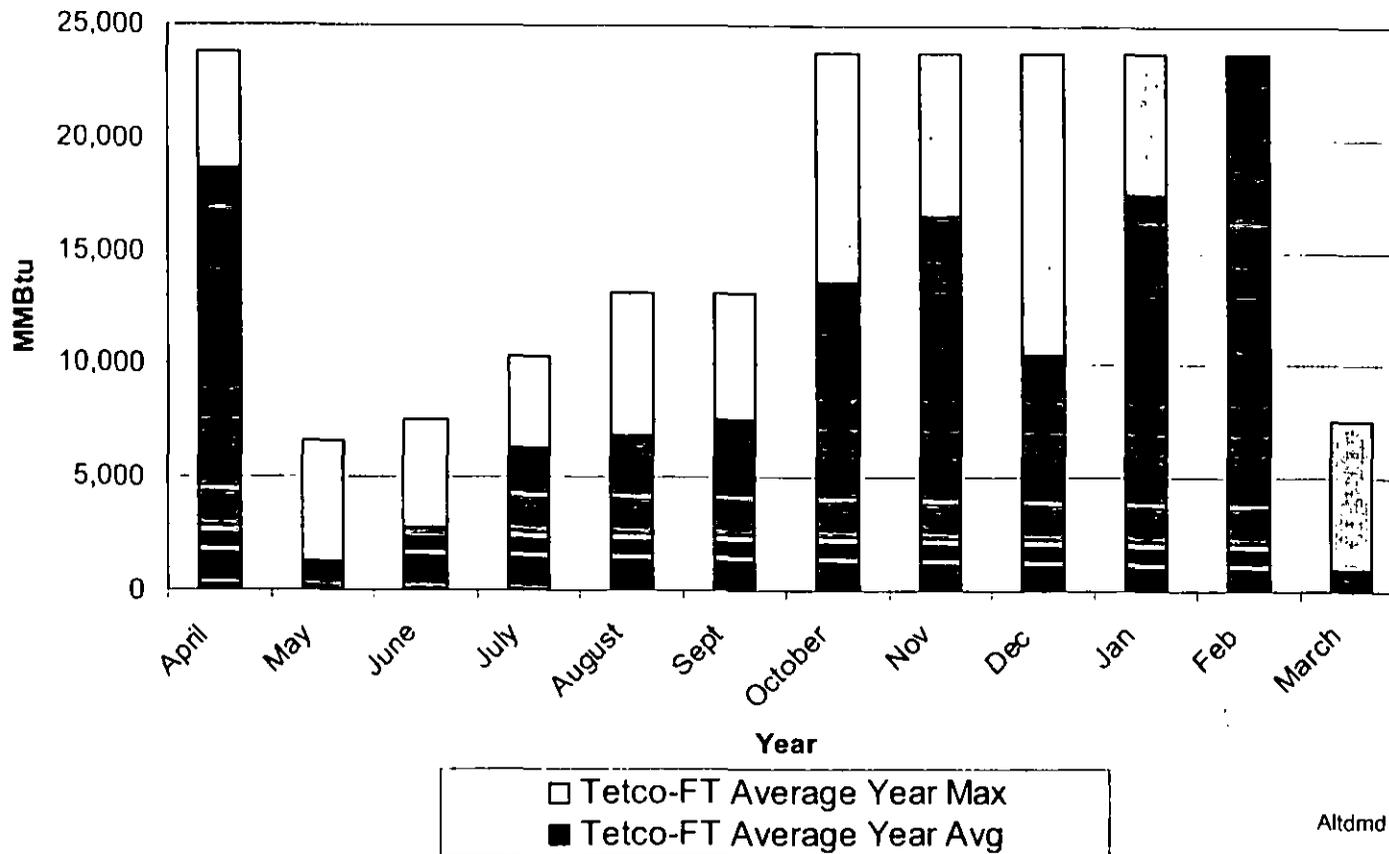
# Opportunities for Pipeline Capacity Release and Off – System Sales

**ICF**

- Based on design year system utilization, PGW can offer firm released capacity on both systems in summer and shoulder periods.

- ICF has estimated the intrinsic value of the spare capacity.

  - For Transco FT and PSFT between $1.2 MM and $2.5 MM.

  - For Tetco FT and CDS, up to $6.2 MM

  - (Calculated as basis-sum of fuel and commodity rate x unused capacity)

- The PAID capacity is potentially very valuable in average years where it could be called and resold during peak periods.

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# Findings – Storage

- The optimization of the system suggests that PGW makes effective use of all of its storage services.

  - Capacity factors for the storage services are very high, even during average years.

  - Where storage services share mainline capacity, they are less valuable on peak days, but are used the rest of the season. Eminence, for example, is not used on peak days, but is fully used the rest of the year.

- Transco WSS despite its lower than contracted usage, is neverthelss a valuable storage for optimizing gas purchases and supply security.

- Equitrans storage should be examined in greater detail – it also provides benefits in supply purchasing, but these do not offset the higher fixed costs in the pricing scenarios analyzed.

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# Reference Case Storage Patterns

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### Reference Storage Inventory
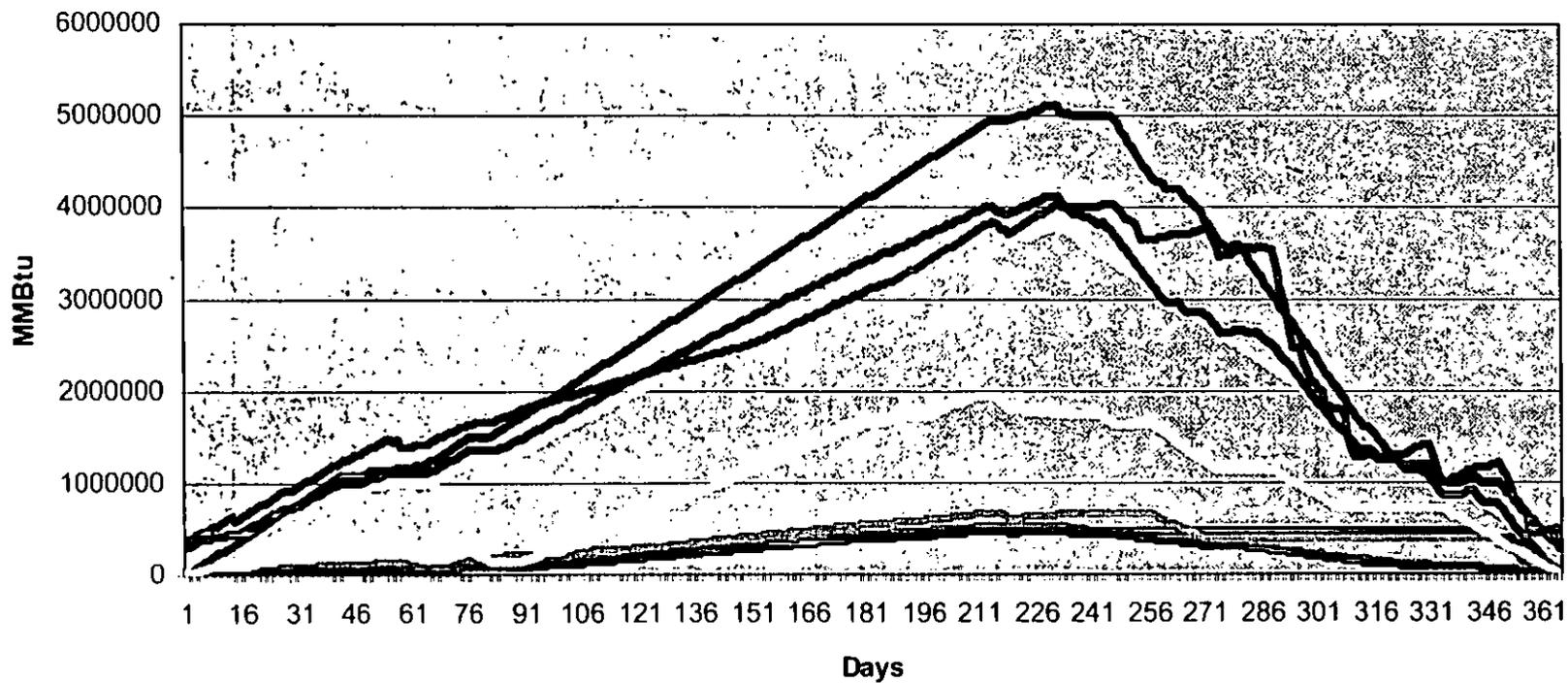


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# Reference Case Storage

- The graphic shows the pattern of storage injection and withdrawal and the peak quantities put into storage for each storage service.

- The large storage services (Dominion, Tetco SS1 and Transco GSS) are almost fully utilized in the design year optimization.

- LNG is also filled to near capacity.

- The smaller storage services are also filled.

- WSS appears to be on the margin, not reaching its full contracted capacity.

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# Average Year Storage Patterns

**Average Yr. Storage Inventory**



Legend: Dominion — Equitrans — Tetco SS1 — Eminence 1 — Eminence 2 — Transco GSS — Transco S2 — Transco WSS — LNG 1&2

X-axis: Days
Y-axis: MMBtu

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# Average Year Storage Utilization

- As expected the model does not fill contracted storage services at the same level as would be expected in a design year

  - (The model has perfect foresight, however, which gas planners do not have.)

  - Gas planners must anticipate design conditions for storage injection.

- The interesting pattern is that the model still fills most of the storage services even when planning for an average winter.

# Storage Capacity Utilization is Similar for Design and Average Year Sendout

**ICF**
INTERNATIONAL



Maximum Storage by Storage Location

Legend: ■ Average Year Max Storage   ▦ Design Year Max Storage
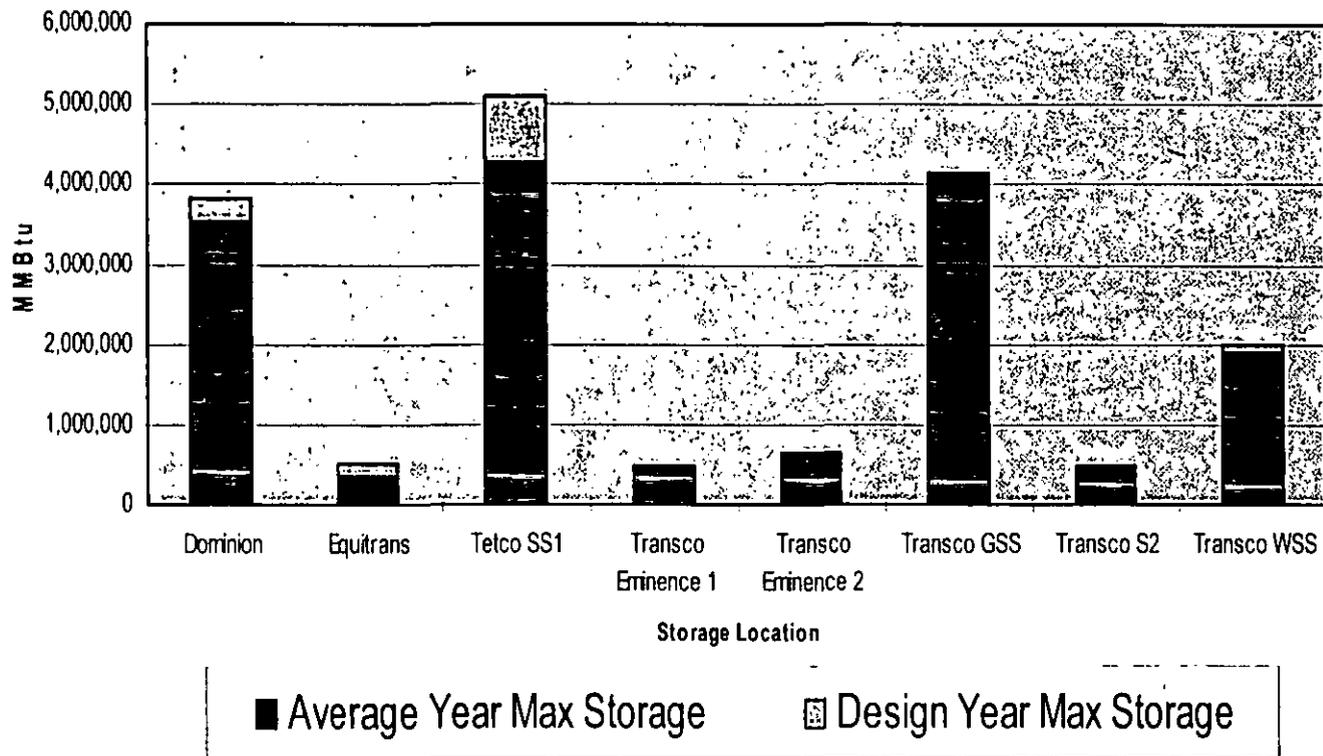
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# Transco WSS has the Lowest Capacity Factor

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| | Storage Cap | Design Year | Cap Factor | Average Year | Cap Factor |
|---|---|---|---|---|---|
| Dominion | 3,918,971 | 3,822,823 | 0.98 | 3,526,063 | 0.90 |
| Equitrans | 522,500 | 521,814 | 1.00 | 367,475 | 0.70 |
| Tetco SS1 | 5,109,200 | 5,109,200 | 1.00 | 4,272,260 | 0.84 |
| Eminence 1 | 482,792 | 482,792 | 1.00 | 482,792 | 1.00 |
| Eminence 2 | 656,013 | 656,013 | 1.00 | 656,013 | 1.00 |
| Transco GSS | 4,123,733 | 4,123,733 | 1.00 | 4,114,258 | 1.00 |
| Transco S2 | 466,548 | 466,548 | 1.00 | 466,548 | 1.00 |
| Transco WSS | 3,335,909 | 1,981,522 | 0.59 | 1,906,339 | 0.57 |

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# Storage Value also Depends on Price Volatility ICF

- We tested a case where volatility and the price difference between summer and winter grew – our high volatility case.

  - We gradually increased winter gas prices to $0.75/MMBtu by Dec. 1, declining back to base levels by April 1

- Results show higher utilization of storage consistent with current levels of storage capacity

- WSS still does not reach current storage capacity levels.

| | Storage Cap | Design Year | Hi Volatility |
|---|---|---|---|
| **Dominion** | 3,918,971 | 3,822,823 | 3,902,284 |
| **Equitrans** | 522,500 | 521,814 | 521,814 |
| **Tetco SS1** | 5,109,200 | 5,109,200 | 5,109,200 |
| **Eminence 1** | 482,792 | 482,792 | 482,792 |
| **Eminence 2** | 656,013 | 656,013 | 656,013 |
| **Transco GSS** | 4,123,733 | 4,123,733 | 4,123,733 |
| **Transco S2** | 466,548 | 466,548 | 466,548 |
| **Transco WSS** | 3,335,909 | 1,981,522 | 2,987,263 |

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# What Happens when WSS is Reduced?

- Because WSS uses long haul transportation, it's role appears to be maximized when there is price volatility.

- When WSS storage is eliminated, total system costs increase by about $1.5 million, mostly in purchased gas costs

- The value of WSS is related to its ability to take advantage of the volatility in gas prices.

  - When gas prices drop in the Gulf, PGW can store gas in WSS

  - When prices spike PGW does not have to buy

  - WSS value is therefore tied to its optionality

- WSS also provides supply security, as during the recent hurricane events, where it allowed PGW to bank supplies against winter shortfalls on Transco supply from the Gulf.

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# What Happens when Equitrans Storage is Reduced?

- ICF also tested the question of whether reducing Equitrans would affect overall costs.

- When Equitrans is reduced, savings occur in lower storage costs (eliminating Equitrans fixed costs) and lower pipeline transportation costs (Equitrans and Tetco FTS)

- The results are similar to WSS elimination

  - Fixed costs decline

  - Purchased gas costs increase

- However with Equitrans, the higher gas costs do not offset the savings in reservation and operating costs. The savings are modest – about $0.4 million

  - These results are dependent on gas price volatility and seasonal patterns.

  - When the high volatility case is considered, Equitrans becomes more valuable.

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# Background on LNG Issues

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- Current System

  - Total storage capacity is just over 4 Bcf

  - Liquefaction is a combination of the old Cascade system and the new expander system

    Expander liquefaction is limited in summer due to low system throughput and can be expected to produce 2 Bcf

    Expander can operate in winter, unlike the cascade system

    Cascade system is old and requires overhaul each year but can fill the remainder of the tank

- Analysis thus far indicates that LNG storage and sendout are strategic elements of the supply portfolio because of flexibility and low cost relative to other options.

- Key question is whether to replace the cascade system?

  - Costs

  - Other LNG options

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# Alternative Sources of LNG -- Barging

Scale favors barging:  typical barges hold 5,000 to 10,000 cubic
meters of LNG (112,000 to 225,000 MMBtu)

- To top off the tank with 2.5 Bcf would take about 12 to 23 deliveries

- Most barge systems anticipate barging from import terminals, not lightering directly from ships

- Barge costs average about $45 to $50 million

- LNG terminal operators (e.g., Dominion) have looked into barging for longer term market planning but nothing is available in near term

- There currently are no plans for barging services from Cove Point or Distrigas

- It is possible that a Crown Landing project, if developed, could provide barges of LNG for PGW

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# Alternative Sources of LNG -- Trucking

**ICF**

- Trucks hold typically 10,000 gallons, about 750-1,000 MMBtu
  - To top off the tank with 2.5 Bcf, would take about 3,000 truck loads when only about 1800 trucks (1.5Bcf) can be physically unloaded between March and November
  - Nearest large sources of LNG would be Distrigas (outside Boston) and Transco's facility outside New York
- Distrigas LNG costs are based on delivered gas prices in New England, plus liquefaction charges plus redelivery costs by truck.
  - 2006 average costs have been $7.54/Dt off Algonquin, plus liquefaction charges of between $1.50 and $2.50/Dt
  - Transport costs estimated by PGW in 2004 at $2.74/Dt
- Transco LNG-S service requires buyers supply the gas, pay $0.64/Dt fee and 14.6% fuel retention.  Trucking costs are additional.
- Trucking presents logistical challenges in the large number of trucks that would be required

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# Regional LNG Liquefaction

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- Regional liquefaction supports local peaking needs, where facilities have contracts for servicing satellite storage and peaking.

- Nearest large facilities are are Distrigas (Everett) and Transco Station 240 (Carlstadt, N.J.)



Consuming East

Everett

Cove Point

⊙ Marine Terminal - Export
● Marine Terminal - Import
○ Storage (with liquefaction)
△ Storage (without liquefaction)
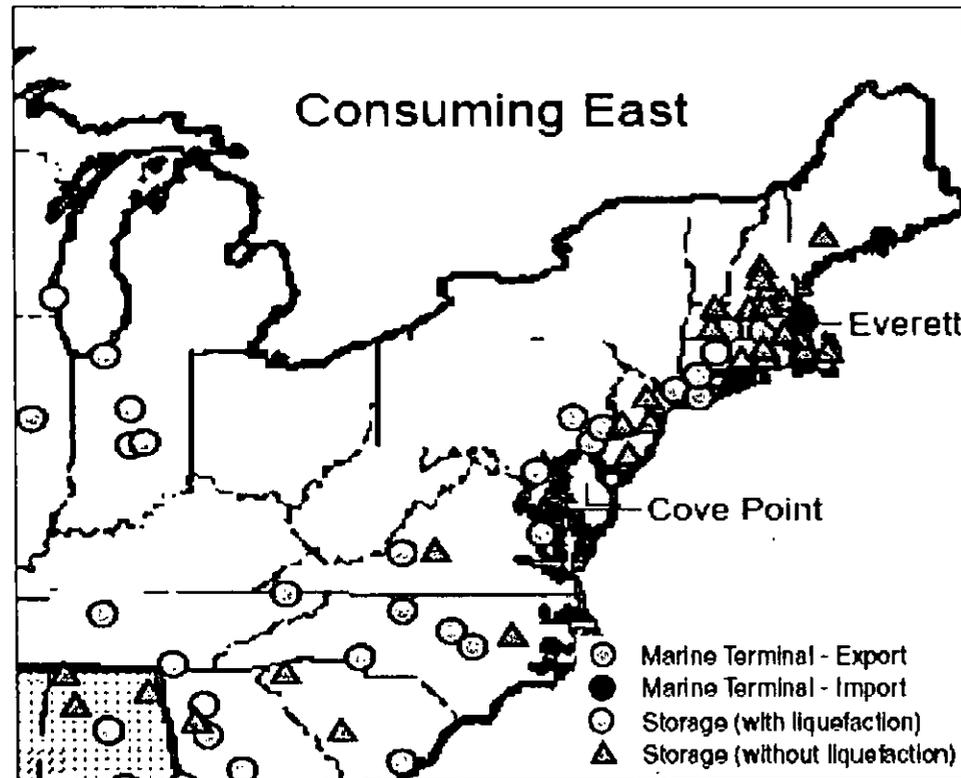
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# Expanding the LNG Liquefaction Capability

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- A new nitrogen based system would cost about $22 million

  - Capacity would be 14,000 Mcf per day between April and November

  - For our analysis, we estimated a fixed charge payment of $0.68/Dt

  - Major operating cost would be fuel – it consumes about 14.6% of gas (compared to about 0.75% for the expander system)

  - (This estimate is comparable to Transco LNG-S service, less the costs of trucking.)

- PGW is considering an option where 1 Bcf of LNG storage and sendout capability in the winter could be made available to off system customers.

  - This would help reduce the costs to PGW of the new system.

  - All of our storage sensitivities assumed this option.

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# Modeling LNG

- ICF's approach was to model the existing expander system and a proposed new system.

    - Current expander system has limitations on liquefaction due to low summer system send out. At most the expander system can deliver about 2.5 Bcf, before boil-off of 2,000 Mcf per day.

    - The current cascade system can fill the balance of the tank, but due to age and high operating costs is scheduled for retirement.

    - New system is estimated to cost $22 million, and would be able to work in tandem with the expander system to fill the tank.

- We modeled the expander (LNG1) and the new system (LNG2)

    - Capital costs of the expander were considered sunk; the capital costs of the new system were included in the cost of operations.

    - Operating costs were included for both.

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# Modeling LNG (contd.)

**ICF**

- LNG expansion was looked at in three ways

  - Full availability of the new unit (LNG 1&2 -- Reference Case)

  - No LNG liquefaction expansion (No LNG 2 Case)

  - Reserving 1 Bcf of storage for off system sales (LNG 1Bcf Case)

- All cases assumed no cascade system

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# Findings – LNG Liquefaction

**ICF**

- Under all conditions, the least cost solution will maximize LNG storage and use

  - LNG reduces overall system costs

- PGW must have additional liquefaction capacity beyond the expander system to meet native load

  - Cases without expansion led to extensive winter-long interruption of smaller interruptible customers, pushing them into fuel oil markets.

  - The decision to complete the replacement of the Cascade with a newer lower operating and maintenance cost system is essentially an engineering benefit/cost analysis

- A deal where 1 Bcf of LNG storage is dedicated to a third party does not harm your ability to meet domestic load even in a design year.

  - Such a deal should be very advantageous to a third party gas marketer and hence valuable to PGW.

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# No LNG 2 Case (no Liquefaction Expansion): Small Effect on Traditional Storage

**Maximum Storage by Storage Location**



Legend: ■ Design Year Max Storage    ▣ No LNG2 Case Max Storage
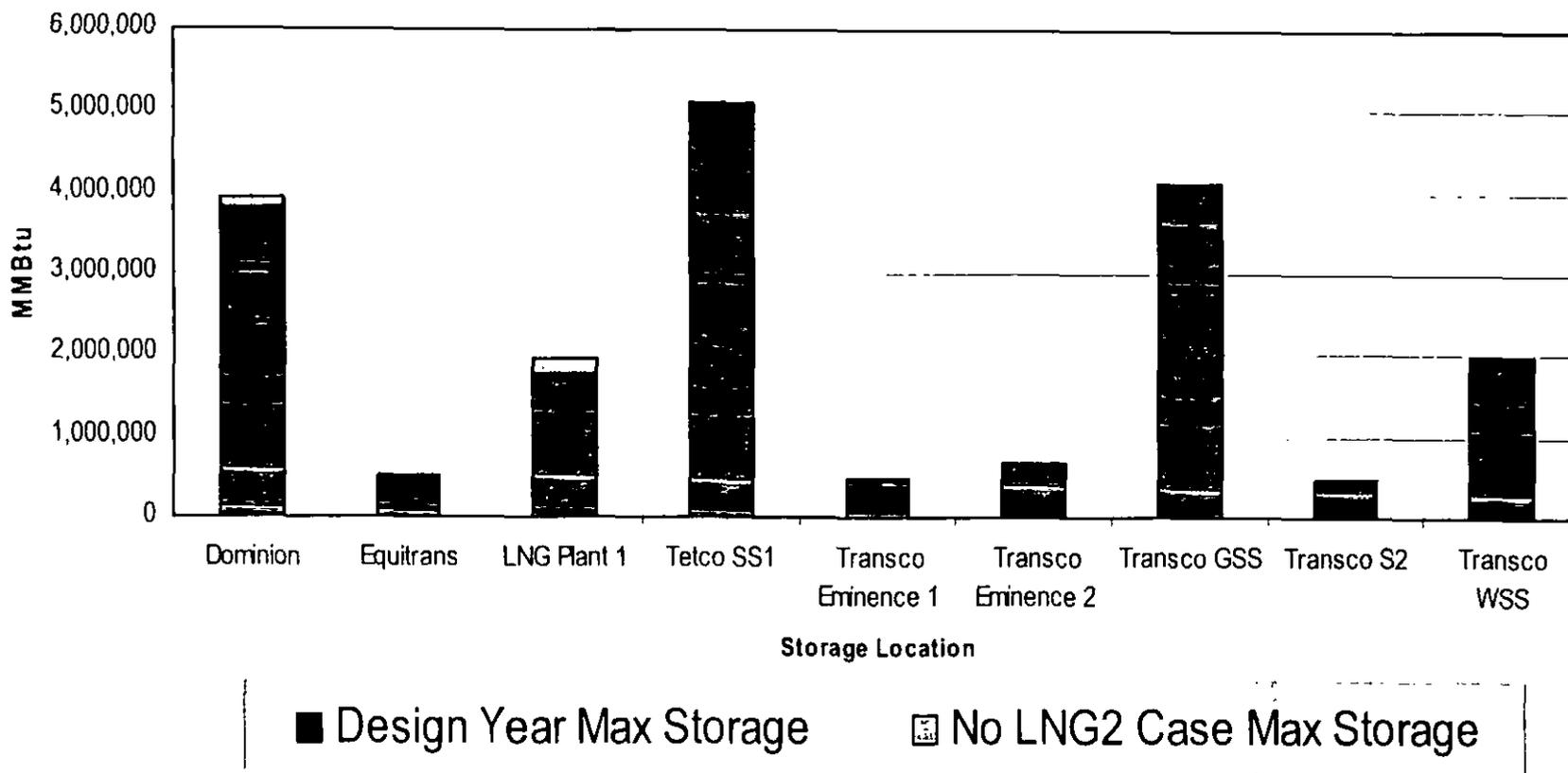
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# No LNG 2 Case: Modest Effect on Pipeline Utilization

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- Drives Tetco CDS to 60% load factor (relative to Reference case LF of 56%)

    - CDS will fill up in December and climb to 75% of capacity in March

- Tetco FT also increases overall load factor to 58% with increases in December (98%) and March (76%)

- Transco summer utilization declines as less gas is needed to meet liquefaction requirements.

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# No LNG 2 Case: Large Effect on Interruption and Shadow Price of Gas

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- No LNG 2, leaves winter deliverability unable to meet interruptible load.

- Interruptible (LBS, BPS) customers switch to distillate fuel oil, driving the shadow price of gas to fuel oil prices.

- The system is left with little cushion.

- The case where there is no expansion of liquefaction costs $19.6 million more than the reference case.

**Shadow Price of Gas**
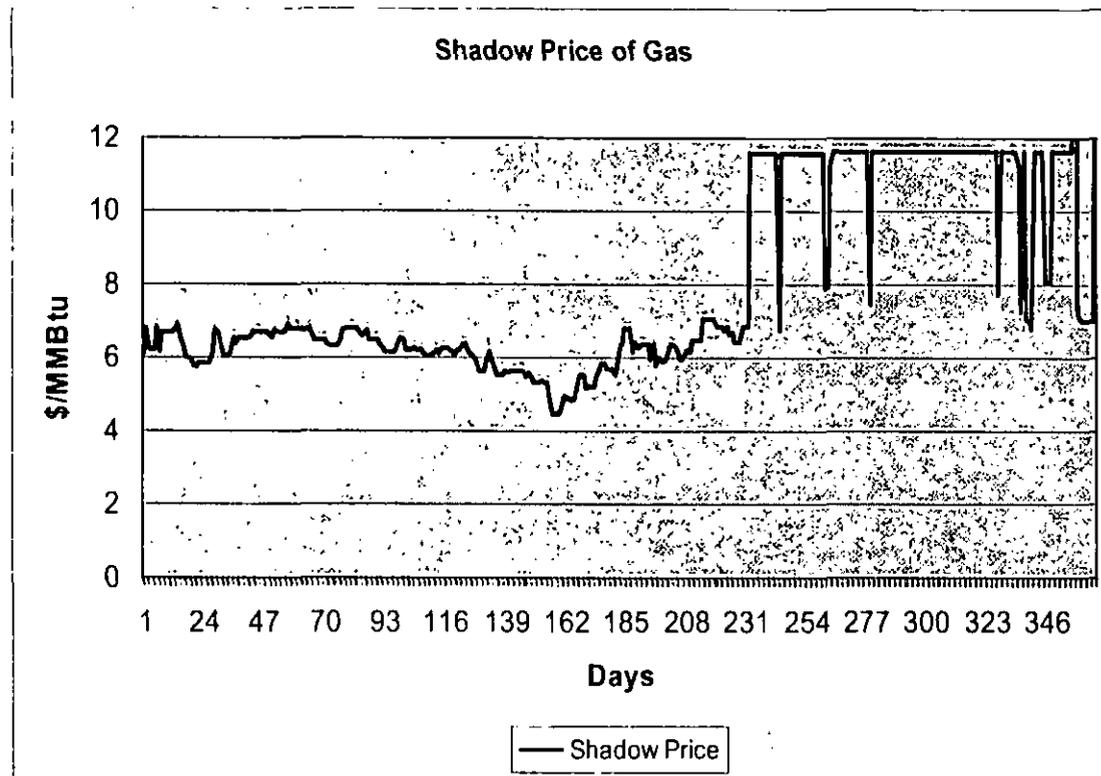


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# LNG 1 Bcf Case Tests

- ICF ran several sensitivities to test whether the allocation to a third party of 1 Bcf of LNG storage inventory combined with a reduction of LNG sendout capability by 25% affects your ability to meet sendout requirements.

- Cases tested were

  - Reference Case (Design Winter)

  - Elimination alternatively of Eminence, Equitrans, Transco S2, Transco WSS

- In all cases there is adequate supply capability to meet sendout requirements, without interruptions.

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# LNG 1 Bcf Case does not Affect Sendout

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- Reducing LNG storage by 1 Bcf does not lead to interruption

- This assumes that PAID capacity is available.

- When PAID capacity *is not* available, increased interruption occurs in March as inventory is depleted and sendout LNG sendout is compromised.

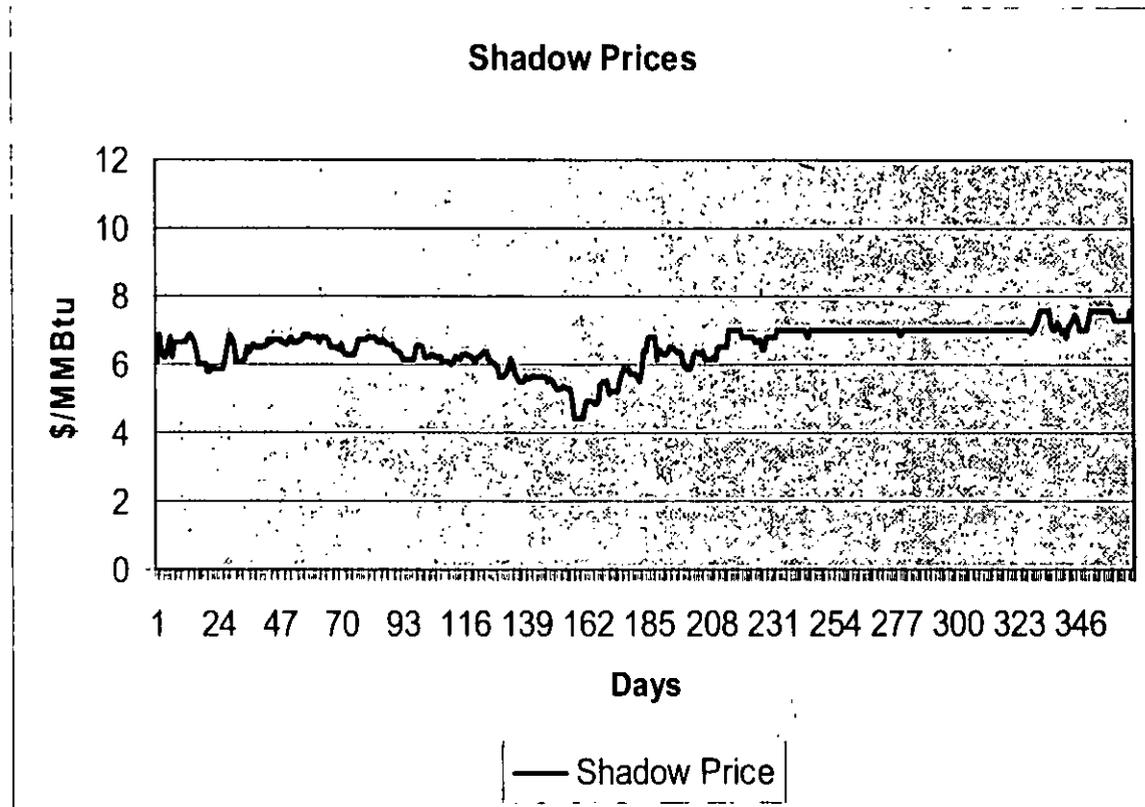- The LNG 1 Bcf case creates savings through the off-system sales.



**Shadow Prices**
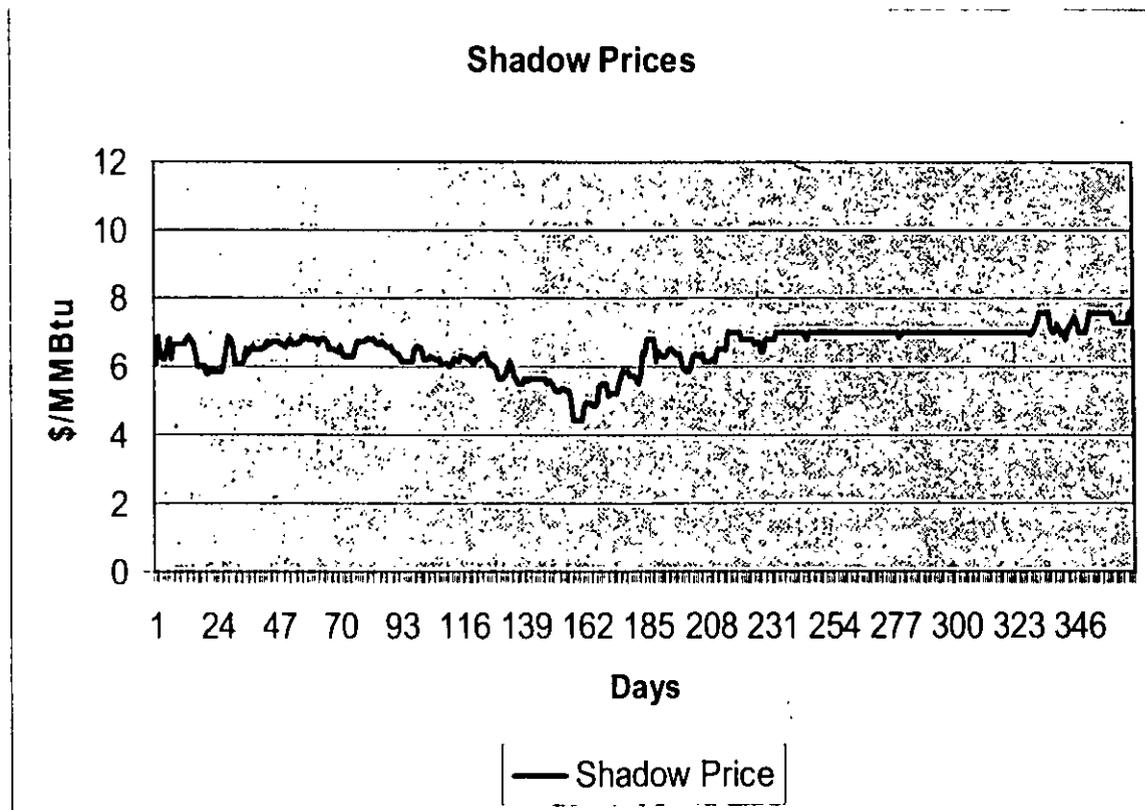
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# LNG 1 Bcf Case and No Equitrans Suggests a Closer Look at Equitrans

- Reducing LNG storage by 1 Bcf combined with reducing Equitrans does not lead to interruption.

- Our estimate that the savings from avoided Equitrans (and associated transportation) fixed costs is partially offset by higher purchased gas costs.

- On net, eliminating Equitrans creates a $0.4 million savings

- Higher volatility in gas prices will reduce this advantage.
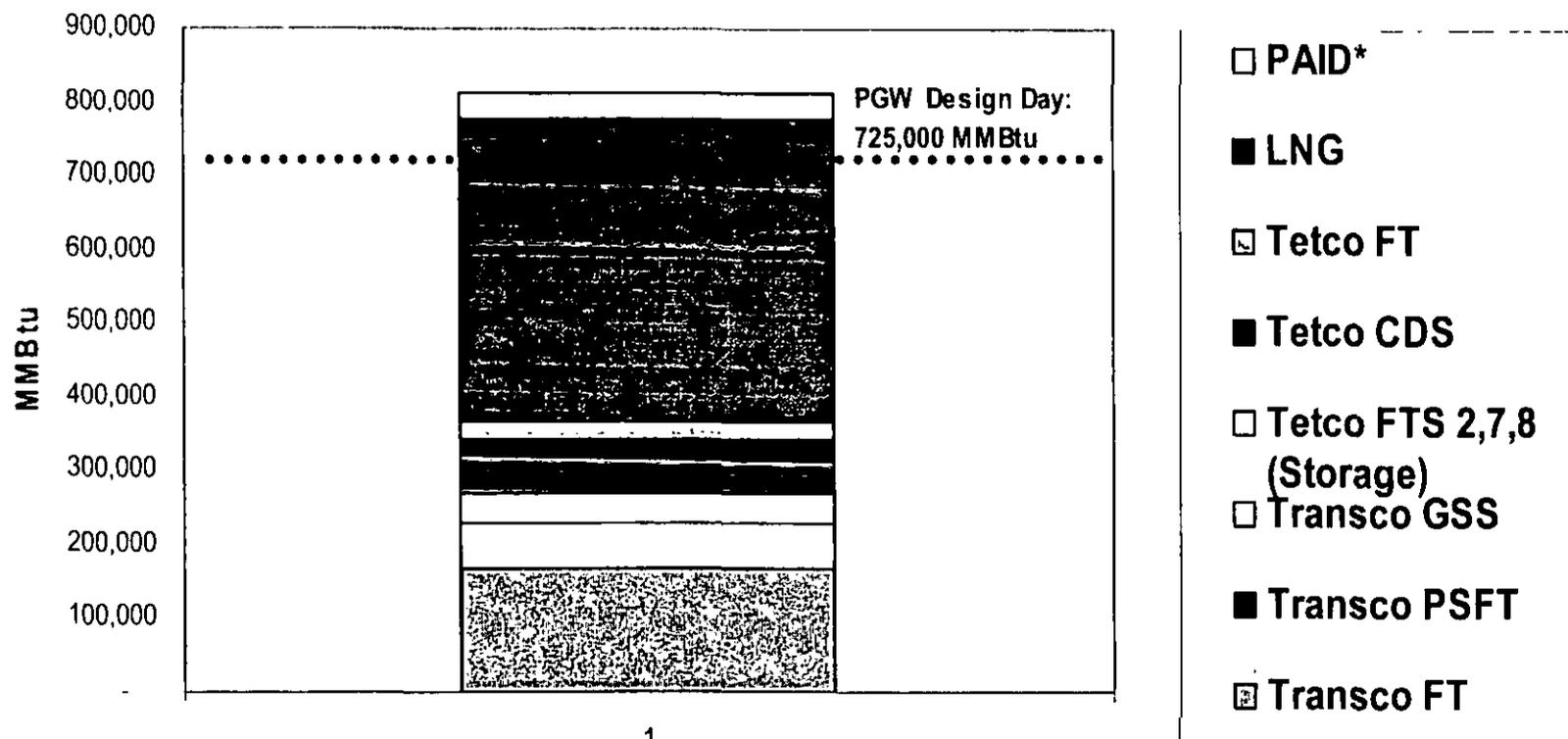
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**Shadow Prices**



y-axis: $/MMBtu (0, 2, 4, 6, 8, 10, 12)

x-axis: Days (1 24 47 70 93 116 139 162 185 208 231 254 277 300 323 346)

— Shadow Price

# Outline

**ICF**
INTERNATIONAL

- Introduction

- Market Context

- Design Winter and Day Analysis

- Supply Analysis and Issues

- Conclusions and Recommendations

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# Observation:  Design Day Deliverability is an Incomplete Measure of Asset Value

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PGW Design Day Stack MDQ



Legend:
- □ PAID*
- ■ LNG
- ▣ Tetco FT
- ■ Tetco CDS
- □ Tetco FTS 2,7,8 (Storage)
- □ Transco GSS
- ■ Transco PSFT
- ▣ Transco FT

PGW Design Day: 725,000 MMBtu

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PAID released capacity has no annual demand charge.

# Observation: Design Day Deliverability is an Incomplete Measure of Asset Value

**ICF**
INTERNATIONAL

- Comparing Design Day requirements with available options is not a complete analysis.

- PGW operates with a 12 percent reserve margin over Design Day sendout requirements. This does not appear unreasonable.

  - Deliverability options on Design Day include

    Transco long haul pipeline capacity

    Transco GSS storage

    Tetco/Dominion/Equitrans Storage delivered through Tetco FTS services

    LNG

    PAID – released capacity which has no long term fixed costs

- Design Day does not account for "Design Hour" requirements to maintain system pressures

- Design Day does not account for storage optionality in volatile gas markets.

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# Conclusions and Recommendations

**ICF**

- PGW's approach to estimating design winter and day conditions is reasonable and yields results that are prudent for capacity planning purposes.

- PGW uses its full pipeline capacity during winter seasons. Overall capacity utilization is higher for Transco, which is the lower cost pipeline, than it is for Tetco.

  - PGW has some opportunities to release capacity on these pipes, or engage in off-system sales when capacity is not needed for native load.

  - PGW should not permanently release capacity without call-back rights for winter seasons.

- PGW storage services appear adequate to meet peak requirements.

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# Conclusions and Recommendations contd.

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- WSS is seldom used to full capacity due largely to the fact it must use mainline pipeline capacity to redeliver gas.
  - Nevertheless, WSS is strategic for optimizing gas purchases and hedging prices to the system. Eliminating WSS would cost the system more than the savings from avoided reservation charges.
- Equitrans storage is a close call and should be looked at carefully
- Trading opportunities exist around the WSS, Equitrans, and other storage services in conjunction with pipeline capacity – however, this was not analyzed.
  - Any off system sales employing LNG would require coordination among all PGW's supply assets.
- LNG optimization must focus on improving liquefaction capabilities.
  - Without expanding the liquefaction above the expander system, substantial interruptions could occur.
  - A strategy to use an expanded system to undertake third party sales would create benefits for PGW and its customers.

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**Philadelphia Gas Works**
Pennsylvania Public Utility Commission
52 PA Code 53.61. et seg.

**Item 53.64(i)** Utilities shall comply with the following:

(1) Thirty days prior to the filing of a tariff reflecting increases or decreases in purchased gas expenses. gas utilities under 66 Pa.C.S. § 1307 (f) recovering expenses under that section shall file a statement for the 12-month period ending 2 months prior to the filing date under 66 Pa.C.S.§ 1307(f) as published in accordance with subsection (b) which shall specify:

(i) The total revenues received under 66 Pa.C.S. § 1307(a). (b) or (f). including fuel revenues received. whether shown on the bill as 66 Pa.C.S.§ 1307(f) as published in accordance with subsection (b) which shall specify:

(ii) The total gas expenses incurred.

(iii) The difference between the amounts in sub paragraphs (I) and (ii).

(iv) Evidence explaining how actual costs incurred differ from the costs allowed under subparagraph (ii).

(v) How these costs are consistent with a least cost fuel procurement policy. as required by 66 Pa.C.S. § 1318 (relating to determination of just and reasonable natural gas rates).

**Response:** Please see attached schedule. Additionally. please refer to Item 53.64(c)(6) for a detailed discussion regarding the company's least cost fuel procurement policy.

## GCR
## STATEMENT OF RECONCILIATION
### January through December 2006

| | | NET COST OF FUEL 1 $ | FIRM SALES 2 (Mcf) | IRC FACTOR APPLIED 3 $ | INTERRUPT REVENUE CREDIT 4= (2 *3) $ | APPLICABLE EXPENSES 5 = (1 - 4) $ | GCR FACTOR APPLIED 6 $ | GCR REVENUE BILLED 7 $ | OVER/ (UNDER) RECOVERY 8=7-5 $ | NATURAL GAS REFUNDS 9 $ | CUMULATIVE OVER/(UNDER) RECOVERY 10 $ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PRIOR YEAR'S CARRYOVER: | | | | | | | | | | | (59,561,303) |
| JANUARY 06 * | Actual | 95,464,674 | 8,099,883 | 0.1960 | 1,587,577 | 93,877,097 | 12.5632 | 101,728,280 | 7,851,183 | 186,076 | (51,524,044) |
| FEBRUARY | Actual | 91,242,555 | 7,578,910 | 0.1960 | 1,485,466 | 89,757,089 | 12.5632 | 95,160,912 | 5,403,823 | 0 | (46,120,220) |
| MARCH | Actual | 71,601,995 | 7,174,333 | 0.1960 | 1,406,169 | 70,195,826 | 12.5632 | 90,111,685 | 19,915,859 | 0 | (26,204,361) |
| APRIL * | Actual | 28,012,400 | 4,131,863 | 0.1960 | 809,845 | 27,202,555 | 12.5632 | 51,664,280 | 24,461,725 | 0 | (1,742,636) |
| MAY | Actual | 16,029,235 | 2,021,163 | 0.1960 | 396,148 | 15,633,087 | 12.5632 | 25,750,849 | 10,117,762 | 0 | 8,375,126 |
| JUNE * | Actual | 17,789,076 | 1,510,585 | 0.2060 | 311,105 | 17,477,971 | 11.9095 | 17,814,089 | 336,118 | 16,133 | 8,727,377 |
| JULY * | Actual | 13,516,388 | 1,248,614 | 0.2159 | 269,576 | 13,246,812 | 11.2558 | 14,009,367 | 762,555 | 0 | 9,489,932 |
| AUGUST 06 * | Actual | 14,356,355 | 1,115,682 | 0.2159 | 240,876 | 14,115,479 | 11.2558 | 12,450,004 | (1,665,475) | 595,478 | 8,419,934 |
| SUBTOTAL JAN.TO AUG. 06 | | 348,012,678 | 32,881,032 | | 6,506,762 | 341,505,916 | | 408,689,466 | 67,183,550 | 797,687 | 8,419,934 |
| 2005-2006 FINALIZED OVERCOLLECTION | | | | | | | | | | | 8,419,934 |
| 2005-2006 INTEREST CREDIT ON COMMODITY | | | | | | | | | | | 1,414,333 |
| TOTAL "E" FACTOR | | | | | | | | | | | 7,005,601 |
| SEPTEMBER 06 * | Actual | 14,913,479 | 1,189,490 | 0.2159 | 256,811 | 14,656,668 | 11.2558 | 13,367,379 | (1,289,289) | 0 | 5,716,312 |
| OCTOBER | Actual | 27,000,627 | 1,690,638 | 0.2159 | 365,009 | 26,635,618 | 11.2558 | 19,002,000 | (7,633,618) | 101,017 | (1,816,290) |
| NOVEMBER | Actual | 39,228,787 | 3,605,450 | 0.2159 | 778,417 | 38,450,370 | 11.2558 | 40,608,317 | 2,157,947 | 0 | 341,657 |
| DECEMBER 06 | Actual | 68,599,816 | 5,214,295 | 0.1794 | 935,445 | 67,664,371 | 11.0839 | 58,870,473 | (8,793,898) | | (8,452,241) |
| SUBTOTAL SEPT. TO DEC. 06 | | 149,742,709 | 11,699,873 | | 2,335,681 | 147,407,028 | | 131,848,169 | (15,558,859) | 101,017 | (8,452,241) |
| TOTAL 2006 | | 497,755,387 | 44,580,904 | | 8,842,443 | 488,912,944 | | 540,537,635 | 51,624,691 | 898,704 | (8,452,241) |

* Actual GCR Revneue Revised

## Philadelphia Gas Works

Pennsylvania Public Utility Commission
52 Pa. Code §53.61. et seq.

**Item 53.65 (1)**

> The costs of the affiliated gas. transportation or storage as compared to
> the average market price of other gas. transportation or storage and the
> price of other sources of gas. transportation and storage.

**Response:**

> PGW has no affiliates. see response to 53.64(c)(1) for price of gas.
> transportation and storage.

## Philadelphia Gas Works

Pennsylvania Public Utility Commission
52 Pa. Code §53.61. et seq.

**Item 53.65 (2)**

Estimates of the quantity of gas. transportation or storage available to the utility from all sources.

**Response:**

PGW has no affiliates and provided is a summary of all transport. storage and LNG capacity.