

A-125042

ARP 2003

Philadelphia Gas Works



800 West Montgomery Avenue, Philadelphia, PA 19122

Senior Attorney

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FEB 28 2003

February 28, 2003

VIA EXPRESS MAIL

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

IRP - 125042

James McNulty, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
2nd Floor, 1 North
400 North Street
Harrisburg, PA 17120

DOCUMENT ORIGINAL

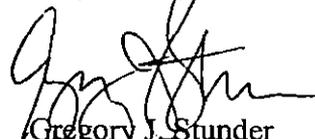
RE: Philadelphia Gas Works Annual Resource Planning Report

Dear Secretary McNulty,

Enclosed for filing is an original and seven (7) copies of Philadelphia Gas Works Annual Resource Planning Report, Forms 1 and 2.

Please contact me if you have any questions regarding this filing at 215-684-6878.

Respectfully submitted,



Gregory J. Stunder
Senior Attorney

Enclosures

cc: Calvin Birge, Conservation, Economics and Energy Planning (w/enc.)
Office of Consumer Advocate (w/enc.)
Office of Small Business Advocate (w/enc.)
Office of Trial Staff (w/enc.)

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FEB 28 2003

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

ANNUAL RESOURCE PLANNING REPORT

Philadelphia Gas Works

Philadelphia, Pennsylvania

March 2003

Forms 1 & 2

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

**Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, Pennsylvania 19122**

**ANNUAL RESOURCE PLANNING REPORT
MARCH 2003**

Forms 1 & 2

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

PHILADELPHIA GAS WORKS

TABLE OF CONTENTS

<u>EXHIBIT NO.</u>	<u>REGULATION</u>	<u>DESCRIPTION</u>
1	59.81	General
2	59.81	Forms IRP-Gas 1A, and 1B Annual and Peak Day Energy Demand
3	59.81	Forms IRP-Gas 2A, 2B, and 2C Annual and Peak Day Energy Resources, And transmission and storage contracts

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 unbound 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) 684-6713. The following individual will be available to answer questions concerning each section:

Ms. Maria Hogan, Administrator – Gas Planning at (215) 684-6618.

Section 59.81 **Forms IRP-Gas 1A, and 1B – Annual and Peak Day Demand**

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.

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

Index Year Actual Year	Historical Data		Current Year	Three Year Forecast ⁽²⁾		
	-2 2000-2001 ⁽¹⁾	-1 2001-2002	0 2002-2003	1 2003-2004	2 2004-2005	3 2005-2006
Firm Requirements:						
Retail Residential	44,865	35,591	47,192	46,193	46,018	45,947
Retail Commercial	12,550	10,369	12,862	13,162	13,311	13,409
Retail Industrial	1,476	1,098	1,316	1,690	1,854	2,008
Electric Power Generation						
Exchanges with Other Utilities						-
Unaccounted For Gas	2,478	1,416	2,644	2,384	2,390	2,397
Company Use	107	126	127	93	93	93
Other	-	-	-	-	-	-
Subtotal Firm	61,476	48,599	64,141	63,522	63,666	63,855
Interruptible Requirements:						
Retail	5,865	6,315	7,678	6,740	5,943	5,402
Electric Power Generation	123	114	141	99	78	58
Company's Own Plant	290	258	427	293	391	330
Unaccounted For Gas	245	185	376	392	165	180
Subtotal Interruptible	6,522	6,872	8,622	7,523	6,577	5,971
SUBTOTAL FIRM AND INTERRUPTIBLE	67,999	55,471	72,763	71,045	70,243	69,825
Transportation:						
Firm Residential						
Firm Commercial						
Firm Industrial						
Interruptible Residential						
Interruptible Commercial	-	-	-	-	-	-
Interruptible Industrial ⁽³⁾	822	2,416	3,682	4,245	5,323	5,855
Other - Non-Utility Power Producers	7,011	9,903	9,204	9,101	9,101	9,101
Subtotal Transportation	7,833	12,318	12,886	13,346	14,424	14,956
TOTAL GAS REQUIREMENTS	75,832	67,790	85,649	84,391	84,668	84,781
Increase (Decrease)	na	(8,042)	17,859	(1,258)	277	114
Percent Change (%)	na	-10.61%	26.34%	-1.47%	0.33%	0.13%

⁽¹⁾ Revised

⁽²⁾ Deregulation is assumed only to affect interruptible customers and not firm customers.

⁽³⁾ For the forecasted years, Commercial and Industrial transportation are combined.

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

Index Year Actual Year	Historical Data		Current Year	Three Year Forecast ⁽²⁾		
	-2 2000-2001 ⁽¹⁾	-1 2001-2002	0 2002-2003	1 2003-2004	2 2004-2005	3 2005-2006
Firm Requirements:						
Retail Residential	375.7	319.2	435.8	513	509	508
Retail Commercial	105.1	93.0	118.8	146	147	148
Retail Industrial	12.4	9.8	12.2	19	21	22
Electric Power Generation	0.0	0.0	0.0	0	0	0
Exchanges with Other Utilities	0.0	0.0	0.0	0	0	0
Unaccounted For Gas	20.7	12.7	21.6	26	26	27
Company Use	0.9	1.1	1.2	1	1	1
Other	0	0	0.0	0	0	0
Subtotal Firm	514.8	435.8	589.5	705	704	706
Interruptible Requirements:						
Retail	4.2	22.8	25.1	0	0	0
Electric Power Generation	0.0	0.0	0.0	0	0	0
Company's Own Plant	1.1	0.6	1.5	3	3	3
Unaccounted For Gas	0.0	0.0	0.0	0	0	0
Subtotal Interruptible	5.3	23.5	26.6	3	3	3
SUBTOTAL FIRM AND INTERRUPTIBLE	520.1	459.3	616.1	708	708	709
Transportation:						
Firm Residential	0.0	0.0	0.0	0	0	0
Firm Commercial	0.0	0.0	0.0	0	0	0
Firm Industrial	0.0	0.0	0.0	0	0	0
Interruptible Residential	0.0	0.0	0.0	0	0	0
Interruptible Commercial	0.0	0.0	0.0	0	0	0
Interruptible Industrial	0.0	0.3	0.8	0	0	0
Other - Non-Utility Power Producers	20.1	36.9	41.8	0	0	0
Subtotal Transportation	20.1	37.2	42.6	0	0	0
TOTAL GAS REQUIREMENTS	540.2	496.5	658.8	708	708	709
Increase (Decrease)	na	(44)	162	49	(0)	1
Percent Change (%)	na	-8.10%	32.69%	7.44%	-0.02%	0.17%

⁽¹⁾ Revised

⁽²⁾ Deregulation is assumed only to affect interruptible customers and not firm customers.

⁽³⁾ Peak Day is forecasted at a 2 degree temperature.

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.

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

Index Year Actual Year	Historical Data				Current Year		Three Year Forecast ⁽²⁾					
	-2 2000-2001		-1 2001-2002		0 2002-2003		1 2003-2004		2 2004-2005		3 2005-2006	
	Annual	Peak ⁽¹⁾	Annual	Peak ⁽¹⁾	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak
Gas Supply for Sales Service												
TETCO	-	-	-	-	-	-	-	-	-	-	-	-
TRANSCO	9,521	52.7	5,401	1.0	17,035	55.2	12,301	53.4	19,379	53	19,378	53
Spot Purchases	54,431	219.4	53,905	189.8	56,710	181.9	56,528	242.7	51,322	254	50,608	222
Storage Withdrawals	17,233	125.1	14,817	257.3	17,041	208.1	13,189	173.6	11,511	162	10,874	176
LNG Withdrawal	3,612	123.0	1,242	11.2	3,432	170.9	2,237	238	2,179	238	3,471	257
Company Production	-	-	-	-	-	-	-	-	-	-	-	-
LNG Purchases	-	-	-	-	127	-	-	-	-	-	-	-
Exchanges with other LDCs	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total Gas Supply	84,797	520.1	75,364	459.3	94,344	616.1	84,255	708	84,392	708	84,330	709
Total Transportation Services	7,833	20.1	12,318	37.2	12,886	42.6	13,346	-	14,424	-	14,956	-
TOTAL GAS SUPPLY AND TRANSPORTATION SERVICE	92,629	540.2	87,683	496.5	107,230	658.8	97,601	708	98,816	708	99,286	709
Deductions												
Underground Storage Injections & Fuels	12,855	-	16,425	-	18,032	-	10,821	-	11,822	-	11,741	-
LNG Liquefactions & Fuels	3,109	-	1,666	-	3,551	-	2,389	-	2,326	-	2,763	-
Sales to other LDC's	834	-	1,802	-	-	-	-	-	-	-	-	-
Total Deductions	16,798	-	19,893	-	21,582	-	13,210	-	14,149	-	14,505	-
NET GAS SUPPLY	75,832	540.2	67,790	496.5	85,648	658.8	84,391	708	84,668	708	84,782	709

⁽¹⁾ Revised

⁽²⁾ Peak Day is forecasted at a 2 degree temperature.

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

Index Year Actual year	Historical Data				Current Year		Three Year Forecast ⁽²⁾					
	-2 2000-2001 ⁽¹⁾		-1 2001-2002		0 2002-2003		1 2003-2004		2 2004-2005		3 2005-2006	
	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak
<u>City Gate Transportation Contracts:</u>												
Transcontinental Transmission Corp.	3,723	43	3,723	57	3,723	53	3,723	52	3,723	52	3,723	52
Texas Eastern Transmission Corp.	2,570	30	2,570	41	2,570	39	2,570	43	2,570	43	2,570	43
Texas Eastern Transmission Corp.	2,390	13	2,390	19	2,390	20	2,390	20	2,390	20	2,390	20
Transcontinental Transmission Corp.	453	5	453	5	453	5	453	4	453	4	453	4
Total	9,137	91	9,137	122	9,137	117	9,137	120	9,137	120	9,137	120
<u>Upstream Transportation Contracts:</u>												
Transcontinental Transmission Corp.	58,546	158	58,546	158	58,546	159	58,546	160	58,546	160	58,546	160
Texas Eastern Transmission Corp.	26,578	72	26,578	73	26,578	72	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	3	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	274	98,456	290	98,456	290	98,456	293	98,456	293	98,456	293
<u>Storage-Related Transportation Contracts:</u>												
Dominion Transmission Inc.	9,110	25	9,110	25	9,110	25	9,110	22	9,110	22	9,110	22
Dominion Transmission Inc.	2,760	3	2,760	8	2,760	8	2,760	7	2,760	7	2,760	7
Equitrans	1,911	5	1,911	5	1,911	5	1,911	5	-	-	-	-
Total	13,782	33	13,782	37	13,782	37	13,782	33	11,870	28	11,870	28

⁽¹⁾ Revised

⁽²⁾ Peak Day is forecasted at a 2 degree temperature.

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

Index Year Actual year	Historical Data				Current Year		Three Year Forecast					
	-2 2001		-1 2002		0 2003		1 2004		2 2005		3 2006	
	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak
Transcontinental Transmission Corp.	3,723	43	3,723	57	3,723	53	3,723	52	3,723	52	3,723	52
Dominion Transmission Inc.	3,481	28	3,481	32	3,481	32	3,481	28	3,481	28	3,481	28
Transcontinental Transmission Corp.	3,086	22	3,086	28	3,086	20	3,086	36	3,086	36	3,086	36
Texas Eastern Transmission Corp.	2,467	30	2,467	41	2,467	39	2,467	43	2,467	43	2,467	43
Texas Eastern Transmission Corp. ANR	2,219	13	2,219	19	2,219	20	2,219	20	2,219	20	2,219	20
ANR	1,824	12	1,824	12	1,824	12	-	-	-	-	-	-
Transcontinental Transmission Corp.	165	-	802	34	802	13	802	80	802	80	802	80
Equitrans	507	5	507	5	507	5	507	5	-	-	-	-
Transcontinental Transmission Corp.	453	5	453	5	453	5	453	4	453	4	453	4
Total	17,925	158	18,562	233	18,562	199	16,738	269	16,231	264	16,231	264

⁽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
ANR	03/31/2003
Transcontinental Transmission Corp.	10/31/2013
Equitrans	03/31/2004
Transcontinental Transmission Corp.	04/15/2004

⁽²⁾ For purposes of this report, all contracts due to expire, except ANR and Equitrans, are assumed renewed for the forecast years.

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

PHILADELPHIA GAS WORKS
800 WEST MONTGOMERY AVENUE
PHILADELPHIA, PENNSYLVANIA

Annual Resource Planning Summary Report

Filed: March 2003

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

PHILADELPHIA GAS WORKS
2003 Annual Resource Planning Summary Report

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INTRODUCTION

SECTION I -- PGW's Overall Approach to Integrated Resource Planning

SECTION II -- Supply Forecasting Methodology and Assumptions

SECTION III -- Demand Forecasting Methodology and Assumptions

SECTION IV -- Design Day Forecasting Methodology and Assumptions

SECTION V -- PGW Corporate Modeling System

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 6 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 meeting its contractual obligations to supply all of its current customers in its service territory on the coldest day and throughout the season. 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, intending to secure the lowest overall price, consistent with the primary 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 maximize net contributions subject to reliability constraints. Supply contract obligations are honored and prudent Gas Control operational requirements are assumed. Storage contracts are drawn upon so as to always maintain an inventory level sufficient for protection in the event that design temperature conditions should occur in the remaining segment of any 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, maximizing net contributions subject to reliability constraints.

II. Supply Forecasting Methodology and Assumptions

Basic Assumptions

The PGW Gas Supply Policy Committee, representing 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. 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 damage to peak day and peak winter season delivery capability. Direct control of all storage is sought 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 deliverability 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 long term supply contracts are necessary to support pipeline transportation capacity because reliance upon best effort spot suppliers to fill wintertime capacity required 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 deliverability equal to approximately 59% 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 Standard and Poors' "DRI Price Forecast") 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

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

do not contain bundled transportation to the PGW city gate. Therefore, storages must flow within PGW's contractual upstream capacity rights on TETCO and TGPL. Typical daily delivery from these fields utilizes approximately 9% of the daily TETCO and TGPL capacity rights to the Philadelphia city gates. These storage fields also act as a physical fixed price counter to 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) Customer Survey - Information as gathered by PGW's Marketing Department and used for annual projections by month and year.
- 2) 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.
- 3) Historical Data -- data showing long-term demand trends, conservation and utilization patterns by the various classes of customers -- Residential, Commercial, Industrial and Interruptible.
- 4) Judgement -- 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 reliable to experienced temperature 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 customer's non-temperature sensitive load requirements, 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, reveals 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, as well as supplementary range heating. This overall heating requirement can be expressed in terms of the cubic feet of gas utilized per degree of temperature change on a per customer basis for each separate customer classification.

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

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 as a tool to measure space heating requirements, i.e., on a day experiencing an average temperature of 40 degrees F. there would be counted 25 degree days. The annual 4555 degree days, which compose 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 and space heating factors and customer counts, when applied to a calendar based daily temperature pattern, produces a daily statement 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 that left the plant initially to supply customers' requirements, while sales are those volumes reported on customer meters. The variation between sendout and sales is that portion which is lost and unaccounted for in the PGW distribution system. In addition, they differ on a monthly basis in the distribution pattern. For the convenience of distributing meter reading and billing efforts uniformly over the available number of working days in a month, the majority of PGW customers are divided into 20 individual groups or cycles, containing residential, commercial and industrial accounts within a specific geographic area.

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

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 readings.

For example, assume the month of January contained 900 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 company records for these customers would have reflected 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 December temperature experience, while cycle 20 customers, with meter readings taken possibly December 28 and January 29, would reflect principally the January temperature experience.

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

Methodology Used to Develop Monthly Estimates

A trial domestic factor is developed by class of customer from sales reported for the previous year's summer months. 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 domestic 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.

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

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 cold 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, the following categories 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 budget run. Declines are projected for anticipated losses to electric and other fuels or demolitions and from 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 within 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 count 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 has indicated.

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 non-interruptible customers.

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

Finally, incremental Marketing efforts are concentrated on Air Conditioning and Co-generation opportunities. Rate design has been implemented fostering off-peak increase in utilization of current supply resources in an air conditioning discount, an interruptible Co-generation Rate and a Natural Gas Vehicle (NGV) Service. It is intended to limit on-peak expansion to acceptable interruptible availability of current resources rather than allowing the creation of new peak demands, prospective load management.

IV. Design Day Forecasting Methodology and Assumptions

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

The projected demands for design day is developed utilizing previous winter period 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 is reduced to base sendout by removal of the interruptible load. A computer generated linear regression procedure is utilized to develop a calculated sendout versus the actual sendout from which the necessary constants (factors) required to have the calculated sendout match, within a reasonable percent of error to the actual sendout are developed. The process is repeated in a quadratic regression and a cubic regression procedure. This approach produces a curvilinear regression method, the results of which are analyzed by statistical significance testing and the best-fit curve is selected for use in developing the design day sendouts. The factors derived from the curve selected are used to calculate current load requirements for a 0 degrees F day and a -5 degrees F hour. 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 expectations on an annual basis (by day) to the derived base-year design day requirements.

V. PGW Corporate Modeling System

General Description

The corporate model 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 re-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, supplemental fuel 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 a base fuel charge and a fuel adjustment factor known as the Gas Cost Rate (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, transferring its 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 both base non-fuel and base fuel revenue statements, GCR revenues, senior citizen discounts, and cycle and budget 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 model 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.

V. **PGW Corporate Modeling System (Continued)**

The model allows the evaluation of future winter requirements on both normal and design temperature patterns and the extrapolation of current years 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.

CERTIFICATE OF SERVICE

I hereby certify that I have this day served a true copy of the foregoing document upon the participants listed below in accordance with the requirements of § 1.54 (relating to service by a participant).

VIA EXPRESS MAIL

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Gregory J. Stunder

Date: February 28, 2003

Philadelphia Gas Works



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H-125042

ORIGINAL

May 30, 2003

VIA EXPRESS MAIL

James McNulty, Secretary
Pennsylvania Public Utility Commission
Commonwealth Keystone Building
2nd Floor, 1 North
400 North Street
Harrisburg, PA 17120

RECEIVED

BTL

MAY 30 2003

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

RE: Philadelphia Gas Works - Annual Resource Planning Report

Dear Secretary McNulty,

Please find enclosed the original and seven (7) copies of Philadelphia Gas Works' Annual Resource Planning Report, that includes Forms 3-9 and the Summary Report.

Please contact me if you have any questions regarding this filing at 215-684-6878.

Respectfully submitted,

Gregory J. Stunder, Esquire

Enclosures

cc (w/enc): Calvin Birge, Bureau of Conservation, Economics, and Energy Planning
Office of the Consumer Advocate
Office of the Small Business Advocate
Office of Trial Staff

ANNUAL RESOURCE PLANNING REPORT

Forms 3 - 9

**Philadelphia Gas Works
Philadelphia, Pennsylvania**

June 2003

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

**Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, Pennsylvania 19122**

ANNUAL RESOURCE PLANNING REPORT

June 2003

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

**PHILADELPHIA GAS WORKS
ANNUAL RESOURCE PLANNING REPORT**

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59.82	Form IRP-Gas 5 Energy Conservation Report-Program Description
59.82	Form IRP-Gas 6 Energy Users 6
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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 unbound 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, 2C, 3, 4A, 4b, 5, 6, 7, 8 and 9 along with a general discussion of the methodologies, data sources, and assumptions are being submitted to meet the requirements of the June 1 filing. Please note that Forms 1A, 1B, 2A, 2B, 2C were already filed in the company's March 1 filing and included herein, without modification, for completeness.

All questions concerning the ARPR should be directed to Mr. Kenneth Dybalski, Manager – Gas Planning (215) 684-6317. The following individuals will be available to answer questions concerning specific forms:

Ms. Maria Hogan - Forms 3,4 and 6 at (215) 684-6618

Ms. Cristina Coltro – Forms 5,7,8, and 9 at (215) 684-6785

Section 59.81 **Forms IRP-Gas 3 - Historical, Current and Forecast Number of Customers**

Provide the number of year end customers displayed by component parts.

Response: Please see the attached form.

FORM-IRP-GAS-3: NUMBER OF CUSTOMERS
REPORTING UTILITY: PHILADELPHIA GAS WORKS

	Index Year Fiscal Year	Historical Data		Current Year	Three Year Forecast		
		-2	-1	0	1	2	3
		2000-2001 (1)	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
Firm Customers							
Retail Residential		498,292	492,562	492,893	488,228	485,823	483,481
Retail Commercial		27,508	26,713	26,755	27,387	27,604	27,814
Retail Industrial		1,127	1,022	1,051	1,457	1,647	1,830
Other		-	-	-	-	-	-
Subtotal Sales Service		526,927	520,297	520,699	517,072	515,074	513,125
Electric Power Generation		3	3	4	2	2	1
Interruptible Customers		466	465	471	381	337	307
Transportation Service ⁽¹⁾		8	8	50	132	189	227
CUSTOMER TOTAL		527,404	520,773	521,224	517,588	515,602	513,660
Increase (Decrease)		na	(6,631)	451	(3,636)	(1,985)	(1,942)
Percent Change (%)		na	-1.3%	0.1%	-0.7%	-0.4%	-0.4%

⁽¹⁾ The increase in Transportation customers is due to Interruptible customers switching to transportation.

Note: Customer Count is based on the average number of billings over the course of the year.

Section 59.81 **Forms IRP-Gas 4A and 4B - Annual and Peak Day Energy Supply and Demand**

Response: Please see the attached forms.

FORM-IRP-GAS-4A: ANNUAL SUPPLY AND REQUIREMENTS SUMMARY
 REPORTING UTILITY: PHILADELPHIA GAS WORKS
 (Volumes in MMcf)

Index Year Actual Year	Historical Data		Current Year	Three Year Forecast		
	-2 2000-2001	-1 2001-2002	0 2002-2003	1 2003-2004	2 2004-2005	3 2005-2006
Gas Supply:						
Supply Contracts	63,951	59,306	73,745	68,829	70,701	69,986
Storage Withdraws	17,233	14,817	17,041	13,189	11,511	10,874
LNG	3,612	1,242	3,559	2,237	2,179	3,471
Subtotal Gas Supply	84,797	75,364	94,344	84,255	84,392	84,330
Transportation	7,833	12,318	12,886	13,346	14,424	14,956
TOTAL GAS SUPPLY	92,629	87,683	107,230	97,601	98,816	99,286
Requirements:						
Firm Requirements	61,476	48,599	64,141	63,522	63,666	63,855
Liqufaction	3,109	1,666	3,551	2,389	2,326	2,763
Interruptible Requirements	6,522	6,872	8,622	7,523	6,577	5,971
Storage Injections	12,855	16,425	18,032	10,821	11,822	11,741
Sales to other LDC's	834	1,802	-	-	-	-
Subtotal Firm & Interruptible	84,797	75,364	94,345	84,255	84,392	84,330
Transportation	7,833	12,318	12,886	13,346	14,424	14,956
Load Reductions						
TOTAL GAS REQUIREMENTS	92,629	87,683	107,231	97,601	98,816	99,286
Surplus (Deficiency)	0	(0)	(0)	0	0	0

FORM-IRP-GAS-4B: PEAK DAY SUPPLY AND REQUIREMENTS SUMMARY ⁽¹⁾
 REPORTING UTILITY: PHILADELPHIA GAS WORKS
 (Volumes in MMcf)

Index Year Actual Year	Historical Data		Current Year	Three Year Forecast		
	-2 2000-2001	-1 2001-2002	0 2002-2003	1 2003-2004	2 2004-2005	3 2005-2006
Gas Supply:						
Supply Contracts	272	191	237	296	308	276
Storage Withdraws	125	257	208	174	162	176
LNG	123	11	171	238	238	257
Subtotal Gas Supply	520	459	616	708	708	709
Transportation	20	37	43	-	-	-
TOTAL GAS SUPPLY	540	496	659	708	708	709
Requirements:						
Firm Requirements ⁽²⁾	515	436	590	705	704	706
Interruptible Requirements	5	23	27	3	3	3
Subtotal Firm & Interruptible	520	459	616	708	708	710
Transportation	20	37	43	-	-	-
Load Reductions	-	-	-	-	-	-
TOTAL GAS REQUIREMENTS	540	496	659	708	708	709
Surplus (Deficiency)	(0)	0	(0)	0	0	(0)

⁽¹⁾ Peak Day is forecasted at a 2 degree temperature.

⁽²⁾ Firm requirements for the forecast years include plant use.

Section 59.82 **Forms IRP-Gas 5 - Energy Conservation Report-Program Description**

Response: Please see the attached forms.

FORM-IRP-GAS-5 PROGRAM DESCRIPTION

Company: Philadelphia Gas Works (PGW)

Program: Conservation Works Program (CWP)

Existing [X] Proposed []

Contact Person: Cristina Coltro
(215) 684-6785

Objective: To reduce energy usage, therefore, making bills more affordable for low-income customers whose usage is average or above average and who are participants in the Customer Responsibility Program.

Details of Activity and Implementation Schedule:

Eligible customers are targeted for program participation. For each participating household, PGW's contractors will perform an energy diagnostic audit, energy education, and conservation treatments such as home repairs, automatic clock thermostat, insulation, etc.

Actual and/or Anticipated Results:

Year	Peak Load Reduction Mcf	Electric Mwh	Energy Savings		Other Results
			Gas Mcf	Oil Gallons	
2000 (1)			12.5		4087 Homes w/ Treatment
2001 (1)			13		4225 Homes w/ Treatment
2002 (2)			13		3219 Homes w/ Treatment

Monetary and Personal Resources:

Year	Personnel Est. Hrs. (4)	Categorized program Expenses		
		Outside Services	Admin. (PGW Internal)	Total
1999 (1)	40,887	\$1,909,267	\$60,000	\$1,969,267
2000 (1)	44,957	\$1,999,867	\$60,000	\$2,059,867
2001 (1)	46,475	\$2,352,533	\$60,000	\$2,412,533
2002 (2)	35,409	\$1,915,215	\$60,000	\$1,975,215

(1) Actual

(2) Actual number of participants, actual expenditure, estimated energy savings

(3) Personnel hours were estimated by multiplying the number of homes by 11, the average number of hours spent per home.

C. Coltro
05/30/03

Section 59.82 **Forms IRP-Gas 6 - Energy Users**

Response: . Please see the attached forms.

FORM-IRP-GAS-6
ENERGY USERS
COMPANY: PHILADELPHIA GAS WORKS

Fiscal Year Ending August 31, 2002

	<u>Number of Customers</u>	<u>Sales (Mcf)</u>
Firm:		
Residential:		
Heating	426,826	34,210,520
Non-heating	65,737	1,763,216
Commercial	26,713	10,479,831
Industrial	<u>1,022</u>	<u>1,109,793</u>
Sub-total Firm	520,298	47,563,360
Interruptible		
Commercial & Industrial	<u>468</u>	<u>6,428,968</u>
Total Gas Sold	520,766	53,992,328
<i>Unbilled Adjustment</i>		(506,326)
Transportation	<u>8</u>	<u>12,309,266</u>
Total	<u>520,774</u>	<u>65,795,268</u>

Section 59.82 **Forms IRP-Gas 7 - Conservation and Load Management Program Cost
Benefit Analysis Inputs**

Response: Please see the attached forms.

FORM-IRP-GAS-7 PROGRAM SUMMARY

Company: Philadelphia Gas Works (PGW)

Program Name	Peak Load Reduction (Mcf)	Energy Use Change (Mcf)	Personnel Est. Hrs (4)	Categorized Program Expenses		
				Outside Services	Adm.	Total
Conservation Works Program (CWP) - 1999 (1)	NA	13.45	40,887	\$1,909,267	\$60,000	\$1,969,267
Conservation Works Program (CWP) - 2000 (1)	NA	12.5	44,957	\$1,999,867	\$60,000	\$2,059,867
Conservation Works Program (CWP) - 2001 (1)	NA	13	46,475	\$2,352,533	\$60,000	\$2,412,533
Conservation Works Program (CWP) - 2002 (2)	NA	13	35,409	\$1,915,215	\$60,000	\$1,975,215

(1) Actual

(2) Actual figures except for Energy Savings

(4) Personnel hours were estimated by multiplying the number of homes by 11, the average number of hours spent per home

Section 59.82 **Forms IRP-Gas 8 - Conservation and Load Management Program Cost
Benefit Analysis Results**

Response: Please see the attached forms.

Company Name:
FORM-IRP-GAS-8

Philadelphia Gas Works (PGW)
Cost-Benefit Analysis Input

PROGRAM:

Conservation Works Program

t	Year	Energy Savings (E) Mcf	Average Energy Cost (ACE) \$ per Mcf	Avoided Energy Cost (MCE) \$ per Mcf	Participant Demand Savings (D) Mcf	Utility Capacity Savings (G) Mcf	Average Demand Costs (ACD) \$/Mcf	Avoided Demand Costs (MCD) \$/Mcf	Participant Costs (PC) \$
1	2001	53,835	\$ 7.71	\$ 5.50002	N/A	N/A	N/A		\$ -
2	2002	53,835	\$ 10.99	\$ 2.51743	N/A	N/A	N/A		\$ -
3	2003	53,835	\$ 8.96	\$ 3.30462	N/A	N/A	N/A		\$ -
4	2004	53,835	\$ 12.85	\$ 3.68947	N/A	N/A	N/A		\$ -
5	2005	53,835	\$ 7.40	\$ 3.66952	N/A	N/A	N/A		\$ -
6	2006	53,835	\$ 7.42	\$ 3.69131	N/A	N/A	N/A		\$ -
7	2007	53,835	\$ 7.50	\$ 3.76980	N/A	N/A	N/A		\$ -
8	2008	53,835	\$ 7.52	\$ 3.78735	N/A	N/A	N/A		\$ -
9	2009	53,835	\$ 7.58	\$ 3.85143	N/A	N/A	N/A		\$ -
10	2010	53,835	\$ 7.65	\$ 3.91551	N/A	N/A	N/A		\$ -
11	2011	53,835	\$ 7.71	\$ 3.97959	N/A	N/A	N/A		\$ -
12	2012	53,835	\$ 7.78	\$ 4.04367	N/A	N/A	N/A		\$ -
13	2013	53,835	\$ 7.84	\$ 4.10775	N/A	N/A	N/A		\$ -
14	2014	53,835	\$ 7.90	\$ 4.17183	N/A	N/A	N/A		\$ -
15	2015	53,835	\$ 7.97	\$ 4.23591	N/A	N/A	N/A		\$ -
16	2016	29,452	\$ 8.03	\$ 4.29999	N/A	N/A	N/A		\$ -
17	2017	29,452	\$ 8.10	\$ 4.36407	N/A	N/A	N/A		\$ -
18	2018	29,452	\$ 8.16	\$ 4.42815	N/A	N/A	N/A		\$ -
19	2019	29,452	\$ 8.22	\$ 4.49223	N/A	N/A	N/A		\$ -
20	2020	29,452	\$ 8.29	\$ 4.55631	N/A	N/A	N/A		\$ -
21	2021	29,452	\$ 8.35	\$ 4.62039	N/A	N/A	N/A		\$ -
22	2022	29,452	\$ 8.42	\$ 4.68447	N/A	N/A	N/A		\$ -
23	2023	29,452	\$ 8.48	\$ 4.74854	N/A	N/A	N/A		\$ -
24	2024	29,452	\$ 8.54	\$ 4.81262	N/A	N/A	N/A		\$ -
25	2025	29,452	\$ 8.61	\$ 4.87670	N/A	N/A	N/A		\$ -

Company Name:
FORM-IRP-GAS-8

Philadelphia Gas Works (PGW)
Cost-Benefit Analysis Input

PROGRAM:

Conservation Works Program

		Discount Rates								
t	Year	Incentive Cost (l) \$	Utility Costs (UC) \$	Participant (d) %	Non-Participant (d) %	Utility (1) (d) %	Escalation Rate (e) %	System Sales or Demand (S) Mcf	Sales or Demand Ratio (f) %	
1	2001	\$ -	\$2,352,534	5.9	5.9	5.9	\$ -	66,667,918	0.0094	
2	2002	\$ -	\$ -	5.9	5.9	5.9	\$ -	58,640,508	0.0107	
3	2003	\$ -	\$ -	5.9	5.9	5.9	\$ -	69,189,282	0.0091	
4	2004	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
5	2005	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
6	2006	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
7	2007	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
8	2008	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
9	2009	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
10	2010	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
11	2011	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
12	2012	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
13	2013	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
14	2014	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
15	2015	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096	
16	2016	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100	
17	2017	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100	
18	2018	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100	
19	2019	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100	
20	2020	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100	
21	2021	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100	
22	2022	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100	
23	2023	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100	
24	2024	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100	
25	2025	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100	

(1) The Participant, Non-Participant and Utility discount rates are based on PGW's long-term debt and AFUDC (Allowance for Funds Used During Construction)

Section 59.81 **Forms IRP-Gas 9 - 2000 Annual Resource Summary Planning Report**

Response: The Summary Report is included as a separate document.

Company Name:
FORM-IRP-GAS-9

Philadelphia Gas Works (PGW)
Cost-Benefit Analysis Input

Program:

Conservation Works Program (CWP)

Period of Analysis		Total Utility Benefits (Bu)	Total Utility Costs (Cu)	Revenue Reduction Cost (Cr)	Participant Revenue Requirement (Rp)	Total participant Benefits (Bp)	Total Participant Costs (Cp)
Beginning Year	Ending Year	\$	\$	\$	\$	\$	\$
2001	2025	\$ 2,595,045	\$ 2,352,534	\$ 5,536,261	\$ 40,167	\$ 5,536,261	\$ 40,167

Discounted Payback Period Yrs.	NET PRESENT VALUE			BENEFIT COST RATE			Rate Impact Non Part (RIMnp) \$/Mcf
	Participant (NPVp) \$	Non-Part (NPVnp) \$	Utility (NPVu) \$	Participant (BCRp)	Non-Part (BCRnp)	Utility (BCRu)	
25	\$ 5,496,094	(5,243,827.02)	\$242,511.09	137.83	0.33	1.10	0.037

ORIGINAL

**ANNUAL RESOURCE
PLANNING REPORT**

Summary Report

**Philadelphia Gas Works
Philadelphia, Pennsylvania**

June 2003

BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

ORIGINAL

**Philadelphia Gas Works
800 West Montgomery Avenue
Philadelphia, Pennsylvania 19122**

ANNUAL RESOURCE PLANNING REPORT

June 2003

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

**PHILADELPHIA GAS WORKS
ANNUAL RESOURCE PLANNING REPORT**

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Section V PGW Corporate Modeling System

Section VI Summary Tables

Exhibit No.	Regulation	Description
1	59.81	Forms IRP-Gas 1A, and 1B Annual and Peak Day Energy Demand (Originally Submitted March 1)
2	59.81	Forms IRP-Gas 2A, 2B, and 2C Annual and Peak Day Energy Resources, And transmission and storage contracts (Originally Submitted March 1)
3	59.81	Form IRP-Gas 3 Historical, Current and Forecast Number Of Customers
4	59.81	Forms IRP-Gas 4A and 4B Annual and Peak Day Energy Supply and Demand

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5	59.82	Form IRP-Gas 5 Energy Conservation Report-Program Description
6	59.82	Form IRP-Gas 6 Energy Users 6
7	59.82	Form IRP-GAS 7 Conservation and Load Management Program Summary
8	59.82	Form IRP-Gas 8 Conservation and Load Management Program Cost Benefit Analysis Inputs
9	59.82	Form IRP-Gas 9 Conservation and Load Management Program Cost Benefit Analysis Results

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 unbound 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, 2C, 3, 4A, 4b, 5, 6, 7, 8 and 9 along with a general discussion of the methodologies, data sources, and assumptions are being submitted to meet the requirements of the June 1 filing. Please note that Forms 1A, 1B, 2A, 2B, 2C were already filed in the company's March 1 filing and included herein, without modification, for completeness.

All questions concerning the ARPR should be directed to Mr. Kenneth Dybalski, Manager – Gas Planning (215) 684-6317. The following individuals will be available to answer questions concerning specific forms:

Ms. Maria Hogan - Forms 1,2,3,4 and 6 at (215) 684-6618
Ms. Cristina Coltro – Forms 5,7,8, and 9 at (215) 684-6785

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 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 6 sections:

- I. PGW's Overall Approach to Integrated Resource Planning
- II. Supply Forecasting Methodology and Assumptions
- III. Demand Forecasting Methodology and Assumptions
- IV. Peak Day Forecasting Methodology and Assumptions
- V. PGW Corporate Modeling System

PGW purchase gas supplies, plans and performs accounting processes and operates on a fiscal year basis from September through August.

I. PGW's Overall Approach to Integrated Resource Planning

PGW Optimization Standard for Purchasing and Utilizing Gas Supplies

As reasonably anticipated, PGW intends meeting its contractual obligations to supply all of its current customers in its service territory on the coldest day and throughout the season. 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, intending to secure the lowest overall price, consistent with the primary 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 maximize net contributions subject to reliability constraints. *Supply contract obligations are honored and prudent Gas Control operational requirements are assumed.* Storage contracts are drawn upon so as to always maintain an inventory level sufficient for protection in the event that design temperature conditions should occur in the remaining segment of any 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, maximizing net contributions subject to reliability constraints.

II. Supply Forecasting Methodology and Assumptions

Basic Assumptions

The PGW Gas Supply Policy Committee, representing 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. 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 damage to peak day and peak winter season delivery capability. Direct control of all storage is sought 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 deliverability 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 long term supply contracts are necessary to support pipeline transportation capacity because reliance upon best effort spot suppliers to fill wintertime capacity required 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 deliverability equal to approximately 59% 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

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

do not contain bundled transportation to the PGW city gate. Therefore, storages must flow within PGW's contractual upstream capacity rights on TETCO and TGPL. Typical daily delivery from these fields utilizes approximately 9% of the daily TETCO and TGPL capacity rights to the Philadelphia city gates. These storage fields also act as a physical fixed price counter to 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) Customer Survey - Information as gathered by PGW's Marketing Department and used for annual projections by month and year.
- 2) 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.
- 3) Historical Data -- data showing long-term demand trends, conservation and utilization patterns by the various classes of customers -- Residential, Commercial, Industrial and Interruptible.
- 4) Judgement -- 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 reliable to experienced temperature 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 customer's non-temperature sensitive load requirements, 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, reveals 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, as well as supplementary range heating. This overall heating requirement can be expressed in terms of the cubic feet of gas utilized per degree of temperature change on a per customer basis for each separate customer classification.

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

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 as a tool to measure space heating requirements, i.e., on a day experiencing an average temperature of 40 degrees F. there would be counted 25 degree days. The annual 4555 degree days, which compose 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 and space heating factors and customer counts, when applied to a calendar based daily temperature pattern, produces a daily statement 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 that left the plant initially to supply customers' requirements, while sales are those volumes reported on customer meters. The variation between sendout and sales is that portion which is lost and unaccounted for in the PGW distribution system. In addition, they differ on a monthly basis in the distribution pattern. For the convenience of distributing meter reading and billing efforts uniformly over the available number of working days in a month, the majority of PGW customers are divided into 20 individual groups or cycles, containing residential, commercial and industrial accounts within a specific geographic area.

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

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 readings.

For example, assume the month of January contained 900 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 company records for these customers would have reflected 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 December temperature experience, while cycle 20 customers, with meter readings taken possibly December 28 and January 29, would reflect principally the January temperature experience.

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

Methodology Used to Develop Monthly Estimates

A trial domestic factor is developed by class of customer from sales reported for the previous year's summer months. 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 domestic 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.

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

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 cold 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, the following categories 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 budget run. Declines are projected for anticipated losses to electric and other fuels or demolitions and from 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 within 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 count 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 has indicated.

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 non-interruptible customers.

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

Finally, incremental Marketing efforts are concentrated on Air Conditioning and Co-generation opportunities. Rate design has been implemented fostering off-peak increase in utilization of current supply resources in an air conditioning discount, an interruptible Co-generation Rate and a Natural Gas Vehicle (NGV) Service. It is intended to limit on-peak expansion to acceptable interruptible availability of current resources rather than allowing the creation of new peak demands, prospective load management.

IV. Design Day Forecasting Methodology and Assumptions

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

The projected demands for design day is developed utilizing previous winter period 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 is reduced to base sendout by removal of the interruptible load. A computer generated linear regression procedure is utilized to develop a calculated sendout versus the actual sendout from which the necessary constants (factors) required to have the calculated sendout match, within a reasonable percent of error to the actual sendout are developed. The process is repeated in a quadratic regression and a cubic regression procedure. This approach produces a curvilinear regression method, the results of which are analyzed by statistical significance testing and the best-fit curve is selected for use in developing the design day sendouts. The factors derived from the curve selected are used to calculate current load requirements for a 0 degrees F day and a -5 degrees F hour. 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 expectations on an annual basis (by day) to the derived base-year design day requirements.

V. PGW Corporate Modeling System

General Description

The corporate model 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 re-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, supplemental fuel 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 a base fuel charge and a fuel adjustment factor known as the Gas Cost Rate (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, transferring its 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 both base non-fuel and base fuel revenue statements, GCR revenues, senior citizen discounts, and cycle and budget 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 model 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.

V. PGW Corporate Modeling System (Continued)

The model allows the evaluation of future winter 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.

Section 59.81 **Forms IRP-Gas 1A, and 1B – Annual and Peak Day Demand**

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.

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

Index Year Actual Year	Historical Data		Current Year	Three Year Forecast ⁽²⁾		
	-2 2000-2001 ⁽¹⁾	-1 2001-2002	0 2002-2003	1 2003-2004	2 2004-2005	3 2005-2006
Firm Requirements:						
Retail Residential	44,865	35,591	47,192	46,193	46,018	45,947
Retail Commercial	12,550	10,369	12,862	13,162	13,311	13,409
Retail Industrial	1,476	1,098	1,316	1,690	1,854	2,008
Electric Power Generation						
Exchanges with Other Utilities						-
Unaccounted For Gas	2,478	1,416	2,644	2,384	2,390	2,397
Company Use	107	126	127	93	93	93
Other	-	-	-	-	-	-
Subtotal Firm	61,476	48,599	64,141	63,522	63,666	63,855
Interruptible Requirements:						
Retail	5,865	6,315	7,678	6,740	5,943	5,402
Electric Power Generation	123	114	141	99	78	58
Company's Own Plant	290	258	427	293	391	330
Unaccounted For Gas	245	185	376	392	165	180
Subtotal Interruptible	6,522	6,872	8,622	7,523	6,577	5,971
SUBTOTAL FIRM AND INTERRUPTIBLE	67,999	55,471	72,763	71,045	70,243	69,825
Transportation:						
Firm Residential						
Firm Commercial						
Firm Industrial						
Interruptible Residential						
Interruptible Commercial	-	-	-	-	-	-
Interruptible Industrial ⁽³⁾	822	2,416	3,682	4,245	5,323	5,855
Other - Non-Utility Power Producers	7,011	9,903	9,204	9,101	9,101	9,101
Subtotal Transportation	7,833	12,318	12,886	13,346	14,424	14,956
TOTAL GAS REQUIREMENTS	75,832	67,790	85,649	84,391	84,668	84,781
Increase (Decrease)	na	(8,042)	17,859	(1,258)	277	114
Percent Change (%)	na	-10.61%	26.34%	-1.47%	0.33%	0.13%

⁽¹⁾ Revised

⁽²⁾ Deregulation is assumed only to affect interruptible customers and not firm customers.

⁽³⁾ For the forecasted years, Commercial and Industrial transportation are combined.

FORM-IRP-GAS-1B: PEAK DAY REQUIREMENTS ⁽³⁾
 REPORTING UTILITY: PHILADELPHIA GAS WORKS
 (VOLUMES IN MMcf)

Index Year Actual Year	Historical Data		Current Year	Three Year Forecast ⁽²⁾		
	-2 2000-2001 ⁽¹⁾	-1 2001-2002	0 2002-2003	1 2003-2004	2 2004-2005	3 2005-2006
Firm Requirements:						
Retail Residential	375.7	319.2	435.8	513	509	508
Retail Commercial	105.1	93.0	118.8	146	147	148
Retail Industrial	12.4	9.8	12.2	19	21	22
Electric Power Generation	0.0	0.0	0.0	0	0	0
Exchanges with Other Utilities	0.0	0.0	0.0	0	0	0
Unaccounted For Gas	20.7	12.7	21.6	26	26	27
Company Use	0.9	1.1	1.2	1	1	1
Other	0	0	0	0	0	0
Subtotal Firm	514.8	435.8	589.5	705	704	706
Interruptible Requirements:						
Retail	4.2	22.8	25.1	0	0	0
Electric Power Generation	0.0	0.0	0.0	0	0	0
Company's Own Plant	1.1	0.6	1.5	3	3	3
Unaccounted For Gas	0.0	0.0	0.0	0	0	0
Subtotal Interruptible	5.3	23.5	26.6	3	3	3
SUBTOTAL FIRM AND INTERRUPTIBLE	520.1	459.3	616.1	708	708	709
Transportation:						
Firm Residential	0.0	0.0	0.0	0	0	0
Firm Commercial	0.0	0.0	0.0	0	0	0
Firm Industrial	0.0	0.0	0.0	0	0	0
Interruptible Residential	0.0	0.0	0.0	0	0	0
Interruptible Commercial	0.0	0.0	0.0	0	0	0
Interruptible Industrial	0.0	0.3	0.8	0	0	0
Other - Non-Utility Power Producers	20.1	36.9	41.8	0	0	0
Subtotal Transportation	20.1	37.2	42.6	0	0	0
TOTAL GAS REQUIREMENTS	540.2	496.5	658.8	708	708	709
Increase (Decrease)	na	(44)	162	49	(0)	1
Percent Change (%)	na	-8.10%	32.69%	7.44%	-0.02%	0.17%

⁽¹⁾ Revised

⁽²⁾ Deregulation is assumed only to affect interruptible customers and not firm customers.

⁽³⁾ Peak Day is forecasted at a 2 degree temperature.

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.

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

Index Year Actual Year	Historical Data				Current Year		Three Year Forecast ⁽²⁾					
	-2 2000-2001		-1 2001-2002		0 2002-2003		1 2003-2004		2 2004-2005		3 2005-2006	
	Annual	Peak ⁽¹⁾	Annual	Peak ⁽¹⁾	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak
Gas Supply for Sales Service												
TETCO	-	-	-	-	-	-	-	-	-	-	-	-
TRANSCO	9,521	52.7	5,401	1.0	17,035	55.2	12,301	53.4	19,379	53	19,378	53
Spot Purchases	54,431	219.4	53,905	189.8	56,710	181.9	56,528	242.7	51,322	254	50,608	222
Storage Withdrawals	17,233	125.1	14,817	257.3	17,041	208.1	13,189	173.6	11,511	162	10,874	176
LNG Withdrawal	3,612	123.0	1,242	11.2	3,432	170.9	2,237	238	2,179	238	3,471	257
Company Production	-	-	-	-	-	-	-	-	-	-	-	-
LNG Purchases	-	-	-	-	127	-	-	-	-	-	-	-
Exchanges with other LDCs	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-
Total Gas Supply	84,797	520.1	75,364	459.3	94,344	616.1	84,255	708	84,392	708	84,330	709
Total Transportation Services	7,833	20.1	12,318	37.2	12,886	42.6	13,346	-	14,424	-	14,956	-
TOTAL GAS SUPPLY AND TRANSPORTATION SERVICE	92,629	540.2	87,683	496.5	107,230	658.8	97,601	708	98,816	708	99,286	709
Deductions												
Underground Storage Injections & Fuels	12,855	-	16,425	-	18,032	-	10,821	-	11,822	-	11,741	-
LNG Liquefactions & Fuels	3,109	-	1,666	-	3,551	-	2,389	-	2,326	-	2,763	-
Sales to other LDC's	834	-	1,802	-	-	-	-	-	-	-	-	-
Total Deductions	16,798	-	19,893	-	21,582	-	13,210	-	14,149	-	14,505	-
NET GAS SUPPLY	75,832	540.2	67,790	496.5	85,648	658.8	84,391	708	84,668	708	84,782	709

⁽¹⁾ Revised

⁽²⁾ Peak Day is forecasted at a 2 degree temperature.

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

Index Year Actual year	Historical Data				Current Year		Three Year Forecast ⁽²⁾					
	-2 2000-2001 ⁽¹⁾		-1 2001-2002		0 2002-2003		1 2003-2004		2 2004-2005		3 2005-2006	
	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak
<u>City Gate Transportation Contracts:</u>												
Transcontinental Transmission Corp.	3,723	43	3,723	57	3,723	53	3,723	52	3,723	52	3,723	52
Texas Eastern Transmission Corp.	2,570	30	2,570	41	2,570	39	2,570	43	2,570	43	2,570	43
Texas Eastern Transmission Corp.	2,390	13	2,390	19	2,390	20	2,390	20	2,390	20	2,390	20
Transcontinental Transmission Corp.	453	5	453	5	453	5	453	4	453	4	453	4
Total	9,137	91	9,137	122	9,137	117	9,137	120	9,137	120	9,137	120
<u>Upstream Transportation Contracts:</u>												
Transcontinental Transmission Corp.	58,546	158	58,546	158	58,546	159	58,546	160	58,546	160	58,546	160
Texas Eastern Transmission Corp.	26,578	72	26,578	73	26,578	72	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	3	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	274	98,456	290	98,456	290	98,456	293	98,456	293	98,456	293
<u>Storage-Related Transportation Contracts:</u>												
Dominion Transmission Inc.	9,110	25	9,110	25	9,110	25	9,110	22	9,110	22	9,110	22
Dominion Transmission Inc.	2,760	3	2,760	8	2,760	8	2,760	7	2,760	7	2,760	7
Equitrans	1,911	5	1,911	5	1,911	5	1,911	5	-	-	-	-
Total	13,782	33	13,782	37	13,782	37	13,782	33	11,870	28	11,870	28

⁽¹⁾ Revised

⁽²⁾ Peak Day is forecasted at a 2 degree temperature.

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

Index Year Actual year	Historical Data				Current Year		Three Year Forecast					
	-2 2001		-1 2002		0 2003		1 2004		2 2005		3 2006	
	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak	Annual	Peak
Transcontinental Transmission Corp.	3,723	43	3,723	57	3,723	53	3,723	52	3,723	52	3,723	52
Dominion Transmission Inc.	3,481	28	3,481	32	3,481	32	3,481	28	3,481	28	3,481	28
Transcontinental Transmission Corp.	3,086	22	3,086	28	3,086	20	3,086	36	3,086	36	3,086	36
Texas Eastern Transmission Corp.	2,467	30	2,467	41	2,467	39	2,467	43	2,467	43	2,467	43
Texas Eastern Transmission Corp.	2,219	13	2,219	19	2,219	20	2,219	20	2,219	20	2,219	20
ANR	1,824	12	1,824	12	1,824	12	-	-	-	-	-	-
Transcontinental Transmission Corp.	165	-	802	34	802	13	802	80	802	80	802	80
Equitrans	507	5	507	5	507	5	507	5	-	-	-	-
Transcontinental Transmission Corp.	453	5	453	5	453	5	453	4	453	4	453	4
Total	17,925	158	18,562	233	18,562	199	16,738	269	16,231	264	16,231	264

⁽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
ANR	03/31/2003
Transcontinental Transmission Corp.	10/31/2013
Equitrans	03/31/2004
Transcontinental Transmission Corp.	04/15/2004

⁽²⁾ For purposes of this report, all contracts due to expire, except ANR and Equitrans, are assumed renewed for the forecast years.

Section 59.81 **Forms IRP-Gas 3 - Historical, Current and Forecast Number of Customers**

Provide the number of year end customers displayed by component parts.

Response: Please see the attached form.

FORM-IRP-GAS-3: NUMBER OF CUSTOMERS
REPORTING UTILITY: PHILADELPHIA GAS WORKS

	Historical Data		Current Year	Three Year Forecast			
	Index Year Fiscal Year	-2	-1	0	1	2	3
		2000-2001 (1)	2001-2002	2002-2003	2003-2004	2004-2005	2005-2006
Firm Customers							-
Retail Residential		498,292	492,562	492,893	488,228	485,823	483,481
Retail Commercial		27,508	26,713	26,755	27,387	27,604	27,814
Retail Industrial		1,127	1,022	1,051	1,457	1,647	1,830
Other		-	-	-	-	-	-
Subtotal Sales Service		526,927	520,297	520,699	517,072	515,074	513,125
Electric Power Generation		3	3	4	2	2	1
Interruptible Customers		466	465	471	381	337	307
Transportation Service ⁽¹⁾		8	8	50	132	189	227
CUSTOMER TOTAL		527,404	520,773	521,224	517,588	515,602	513,660
Increase (Decrease)		na	(6,631)	451	(3,636)	(1,985)	(1,942)
Percent Change (%)		na	-1.3%	0.1%	-0.7%	-0.4%	-0.4%

⁽¹⁾ The increase in Transportation customers is due to Interruptible customers switching to transportation.

Note: Customer Count is based on the average number of billings over the course of the year.

Section 59.81 **Forms IRP-Gas 4A and 4B - Annual and Peak Day Energy Supply and Demand**

Response: Please see the attached forms.

FORM-IRP-GAS-4A: ANNUAL SUPPLY AND REQUIREMENTS SUMMARY
 REPORTING UTILITY: PHILADELPHIA GAS WORKS
 (Volumes in MMcf)

Index Year Actual Year	Historical Data		Current Year	Three Year Forecast		
	-2 2000-2001	-1 2001-2002	0 2002-2003	1 2003-2004	2 2004-2005	3 2005-2006
Gas Supply:						
Supply Contracts	63,951	59,306	73,745	68,829	70,701	69,986
Storage Withdraws	17,233	14,817	17,041	13,189	11,511	10,874
LNG	3,612	1,242	3,559	2,237	2,179	3,471
Subtotal Gas Supply	84,797	75,364	94,344	84,255	84,392	84,330
Transportation	7,833	12,318	12,886	13,346	14,424	14,956
TOTAL GAS SUPPLY	92,629	87,683	107,230	97,601	98,816	99,286
Requirements:						
Firm Requirements	61,476	48,599	64,141	63,522	63,666	63,855
Liqufaction	3,109	1,666	3,551	2,389	2,326	2,763
Interruptible Requirements	6,522	6,872	8,622	7,523	6,577	5,971
Storage Injections	12,855	16,425	18,032	10,821	11,822	11,741
Sales to other LDC's	834	1,802	-	-	-	-
Subtotal Firm & Interruptible	84,797	75,364	94,345	84,255	84,392	84,330
Transportation	7,833	12,318	12,886	13,346	14,424	14,956
Load Reductions						
TOTAL GAS REQUIREMENTS	92,629	87,683	107,231	97,601	98,816	99,286
Surplus (Deficiency)	0	(0)	(0)	0	0	0

FORM-IRP-GAS-4B: PEAK DAY SUPPLY AND REQUIREMENTS SUMMARY ⁽¹⁾
 REPORTING UTILITY: PHILADELPHIA GAS WORKS
 (Volumes in MMcf)

Index Year Actual Year	Historical Data		Current Year	Three Year Forecast		
	-2 2000-2001	-1 2001-2002	0 2002-2003	1 2003-2004	2 2004-2005	3 2005-2006
Gas Supply:						
Supply Contracts	272	191	237	296	308	276
Storage Withdraws	125	257	208	174	162	176
LNG	123	11	171	238	238	257
Subtotal Gas Supply	520	459	616	708	708	709
Transportation	20	37	43	-	-	-
TOTAL GAS SUPPLY	540	496	659	708	708	709
Requirements:						
Firm Requirements ⁽²⁾	515	436	590	705	704	706
Interruptible Requirements	5	23	27	3	3	3
Subtotal Firm & Interruptible	520	459	616	708	708	710
Transportation	20	37	43	-	-	-
Load Reductions	-	-	-	-	-	-
TOTAL GAS REQUIREMENTS	540	496	659	708	708	709
Surplus (Deficiency)	(0)	0	(0)	0	0	(0)

⁽¹⁾ Peak Day is forecasted at a 2 degree temperature.

⁽²⁾ Firm requirements for the forecast years include plant use.

Section 59.82 **Forms IRP-Gas 5 - Energy Conservation Report-Program Description**

Response: Please see the attached forms.

FORM-IRP-GAS-5 PROGRAM DESCRIPTION

Company: Philadelphia Gas Works (PGW)

Program: Conservation Works Program (CWP)

Existing [X] Proposed []

Contact Person: Cristina Coltro
(215) 684-6785

Objective: To reduce energy usage, therefore, making bills more affordable for low-income customers whose usage is average or above average and who are participants in the Customer Responsibility Program.

Details of Activity and Implementation Schedule:

Eligible customers are targeted for program participation. For each participating household, PGW's contractors will perform an energy diagnostic audit, energy education, and conservation treatments such as home repairs, automatic clock thermostat, insulation, etc.

Actual and/or Anticipated Results:

Year	Peak Load Reduction Mcf	Electric Mwh	Energy Savings		Other Results
			Gas Mcf	Oil Gallons	
2000 (1)			12.5		4087 Homes w/ Treatment
2001 (1)			13		4225 Homes w/ Treatment
2002 (2)			13		3219 Homes w/ Treatment

Monetary and Personal Resources:

Year	Personnel Est. Hrs. (4)	Categorized program Expenses		
		Outside Services	Admin. (PGW Internal)	Total
1999 (1)	40,887	\$1,909,267	\$60,000	\$1,969,267
2000 (1)	44,957	\$1,999,867	\$60,000	\$2,059,867
2001 (1)	46,475	\$2,352,533	\$60,000	\$2,412,533
2002 (2)	35,409	\$1,915,215	\$60,000	\$1,975,215

(1) Actual

(2) Actual number of participants, actual expenditure, estimated energy savings

(3) Personnel hours were estimated by multiplying the number of homes by 11, the average number of hours spent per home.

C. Coltro
05/30/03

Section 59.82 **Forms IRP-Gas 6 - Energy Users**

Response: Please see the attached forms.

FORM-IRP-GAS-6
ENERGY USERS
COMPANY: PHILADELPHIA GAS WORKS

Fiscal Year Ending August 31, 2002

	<u>Number of Customers</u>	<u>Sales (Mcf)</u>
Firm:		
Residential:		
Heating	426,826	34,210,520
Non-heating	65,737	1,763,216
Commercial	26,713	10,479,831
Industrial	1,022	1,109,793
Sub-total Firm	<hr/> 520,298	<hr/> 47,563,360
Interruptible		
Commercial & Industrial	468	6,428,968
Total Gas Sold	<hr/> 520,766	<hr/> 53,992,328
Unbilled Adjustment		(506,326)
Transportation	8	12,309,266
Total	<hr/> 520,774	<hr/> 65,795,268

Section 59.82 **Forms IRP-Gas 7 - Conservation and Load Management Program Cost
Benefit Analysis Inputs**

Response: Please see the attached forms.

FORM-IRP-GAS-7 PROGRAM SUMMARY

Company: Philadelphia Gas Works (PGW)

Program Name	Peak Load Reduction (Mcf)	Energy Use Change (Mcf)	Personnel Est. Hrs (4)	Categorized Program Expenses		
				Outside Services	Adm.	Total
Conservation Works Program (CWP) - 1999 (1)	NA	13.45	40,887	\$1,909,267	\$60,000	\$1,969,267
Conservation Works Program (CWP) - 2000 (1)	NA	12.5	44,957	\$1,999,867	\$60,000	\$2,059,867
Conservation Works Program (CWP) - 2001 (1)	NA	13	46,475	\$2,352,533	\$60,000	\$2,412,533
Conservation Works Program (CWP) - 2002 (2)	NA	13	35,409	\$1,915,215	\$60,000	\$1,975,215

(1) Actual

(2) Actual figures except for Energy Savings

(4) Personnel hours were estimated by multiplying the number of homes by 11, the average number of hours spent per home

Section 59.82 **Forms IRP-Gas 8 - Conservation and Load Management Program Cost
Benefit Analysis Results**

Response: Please see the attached forms.

Company Name:
FORM-IRP-GAS-8

Philadelphia Gas Works (PGW)
Cost-Benefit Analysis Input

PROGRAM:

Conservation Works Program

t	Year	Energy Savings (E) Mcf	Average Energy Cost (ACE) \$ per Mcf	Avoided Energy Cost (MCE) \$ per Mcf	Participant Demand Savings (D) Mcf	Utility Capacity Savings (G) Mcf	Average Demand Costs (ACD) \$/Mcf	Avoided Demand Costs (MCD) \$/Mcf	Participant Costs (PC) \$
1	2001	53,835	\$ 7.71	\$ 5.50002	N/A	N/A	N/A		\$ -
2	2002	53,835	\$ 10.99	\$ 2.51743	N/A	N/A	N/A		\$ -
3	2003	53,835	\$ 8.96	\$ 3.30462	N/A	N/A	N/A		\$ -
4	2004	53,835	\$ 12.85	\$ 3.68947	N/A	N/A	N/A		\$ -
5	2005	53,835	\$ 7.40	\$ 3.66952	N/A	N/A	N/A		\$ -
6	2006	53,835	\$ 7.42	\$ 3.69131	N/A	N/A	N/A		\$ -
7	2007	53,835	\$ 7.50	\$ 3.76980	N/A	N/A	N/A		\$ -
8	2008	53,835	\$ 7.52	\$ 3.78735	N/A	N/A	N/A		\$ -
9	2009	53,835	\$ 7.58	\$ 3.85143	N/A	N/A	N/A		\$ -
10	2010	53,835	\$ 7.65	\$ 3.91551	N/A	N/A	N/A		\$ -
11	2011	53,835	\$ 7.71	\$ 3.97959	N/A	N/A	N/A		\$ -
12	2012	53,835	\$ 7.78	\$ 4.04367	N/A	N/A	N/A		\$ -
13	2013	53,835	\$ 7.84	\$ 4.10775	N/A	N/A	N/A		\$ -
14	2014	53,835	\$ 7.90	\$ 4.17183	N/A	N/A	N/A		\$ -
15	2015	53,835	\$ 7.97	\$ 4.23591	N/A	N/A	N/A		\$ -
16	2016	29,452	\$ 8.03	\$ 4.29999	N/A	N/A	N/A		\$ -
17	2017	29,452	\$ 8.10	\$ 4.36407	N/A	N/A	N/A		\$ -
18	2018	29,452	\$ 8.16	\$ 4.42815	N/A	N/A	N/A		\$ -
19	2019	29,452	\$ 8.22	\$ 4.49223	N/A	N/A	N/A		\$ -
20	2020	29,452	\$ 8.29	\$ 4.55631	N/A	N/A	N/A		\$ -
21	2021	29,452	\$ 8.35	\$ 4.62039	N/A	N/A	N/A		\$ -
22	2022	29,452	\$ 8.42	\$ 4.68447	N/A	N/A	N/A		\$ -
23	2023	29,452	\$ 8.48	\$ 4.74854	N/A	N/A	N/A		\$ -
24	2024	29,452	\$ 8.54	\$ 4.81262	N/A	N/A	N/A		\$ -
25	2025	29,452	\$ 8.61	\$ 4.87670	N/A	N/A	N/A		\$ -

PROGRAM:

Conservation Works Program

		Discount Rates							
		Incentive	Utility Costs	Participant	Non-Participant	Utility (1)	Escalation Rate	System	Sales or
t	Year	Cost (I)	(UC)	(d)	(d)	(d)	(e)	Sales or Demand (S)	Demand Ratio (f)
		\$	\$	%	%	%	%	Mcf	%
1	2001	\$ -	\$2,352,534	5.9	5.9	5.9	\$ -	66,667,918	0.0094
2	2002	\$ -	\$ -	5.9	5.9	5.9	\$ -	58,640,508	0.0107
3	2003	\$ -	\$ -	5.9	5.9	5.9	\$ -	69,189,282	0.0091
4	2004	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
5	2005	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
6	2006	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
7	2007	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
8	2008	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
9	2009	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
10	2010	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
11	2011	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
12	2012	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
13	2013	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
14	2014	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
15	2015	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0096
16	2016	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100
17	2017	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100
18	2018	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100
19	2019	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100
20	2020	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100
21	2021	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100
22	2022	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100
23	2023	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100
24	2024	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100
25	2025	\$ -	\$ -	5.9	5.9	5.9	\$ -	65,421,830	0.0100

(1) The Participant, Non-Participant and Utility discount rates are based on PGW's long-term debt and AFUDC (Allowance for Funds Used During Construction)

Section 59.81 **Forms IRP-Gas 9 - 2000 Annual Resource Summary Planning Report**

Response: The Summary Report is included as a separate document.

Company Name:
FORM-IRP-GAS-9

Philadelphia Gas Works (PGW)
Cost-Benefit Analysis Input

Program:

Conservation Works Program (CWP)

Period of Analysis		Total Utility Benefits (Bu) \$	Total Utility Costs (Cu) \$	Revenue Reduction Cost (Cr) \$	Participant Revenue Requirement (Rp) \$	Total participant Benefits (Bp) \$	Total Participant Costs (Cp) \$
Beginning Year	Ending Year						
2001	2025	\$ 2,595,045	\$ 2,352,534	\$ 5,536,261	\$ 40,167	\$ 5,536,261	\$ 40,167

Discounted Payback Period Yrs.	NET PRESENT VALUE			BENEFIT COST RATE			Rate Impact Non-Part (RIMnp) \$/Mcf
	Participant (NPVp) \$	Non-Part (NPVnp) \$	Utility (NPVu) \$	Participant (BCRp)	Non-Part (BCRnp)	Utility (BCRu)	
25	\$ 5,496,094	(5,243,827.02)	\$242,511.09	137.83	0.33	1.10	0.037