212 Locust Street
Suite 300
Harrisburg, PA 17101

T: 717 237 7160
F: 717 237 7161
www.wolfblock.com

Wolf, Block, Schorr and Solis-Cohen LLP

ORIGINAL

ALAN KOHLER
DIRECT DIAL: (717) 237-7172
E-MAIL: AKOHLER@WOLFBLOCK.COM

DOCUMENT FOLDER

October 18, 2000

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SECRETARY'S BUREAU

James McNulty, Secretary
PA Public Utility Commission
North Office Bldg., Rm. B-20
Harrisburg, PA 17105

RE: Gas Safety Plan for Philadelphia Gas Works; A-125042

Dear Mr. McNulty:

Enclosed for filing in compliance with the Commission's September 13, 2000 Order at A-125042, please find Philadelphia Gas Works' Winter Survey and Inspection Plan.

A copy of the Plan is being served on the parties of record as evidenced by the attached Certificate of Service.

Respectfully submitted,

Alan Kohler

Alan Kohler
For WOLF, BLOCK, SCHORR and SOLIS-COHEN LLP

AK/jlg
Enclosure

cc: John M. Quain, Chairman (w/enc.)
Robert K. Bloom, Vice Chairman (w/enc.)
Nora Mead Brownell, Commissioner (w/enc.)
Aaron Wilson, Jr., Commissioner (w/enc.)
Terrance J. Fitzpatrick, Commissioners (w/enc.)
Veronica Smith (w/enc.)
Joseph T. Finnan (w/enc.)
Parties of Record (w/enc.)

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DSH:24460.1

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 FIRST-CLASS MAIL

Tanya McCloskey, Esq.
Steve Keene, Esq.
Office of Consumer Advocate
5th Floor, Forum Place Bldg.
555 Walnut Street
Harrisburg, PA 17101-1921

Angela Jones, Esq.
Office of Small Business Advocate
Commerce Building, Suite 1102
300 North 2nd Street
Harrisburg, PA 17101

Johnnie Simms, Esq.
Office of Trial Staff
PA Public Utility Commission
901 N. 7th Street, Rear
P.O. Box 3265
Harrisburg, PA 17105-3265

Philip Bertocci, Esq.
Community Legal Services
1424 Chestnut Street
Philadelphia, PA 19102

Janet Parrish, Esq.
Senior Hearing Examiner
Philadelphia Gas Commission
One Parkway Building
1515 Arch St., 9th Floor
Philadelphia, PA 19102

Date: October 18, 2000

Alan Kohler, Esquire

DSH:24403.1

PHILADELPHIA GAS WORKS

WINTER SURVEY

AND

INSPECTION PLAN

Submitted In Compliance With The Directives Of The Pennsylvania Public Utility Commission In Its Order Entered September 13, 2000 At Docket No. A-125042

October 18, 2000

I. INTRODUCTION AND SUMMARY

This Winter Survey and Inspection Plan ("Plan") has been prepared and is being submitted by the Philadelphia Gas Works ("PGW") in response to and in compliance with the Commission's Order of September 13, 2000 at Docket No. A-125042. This Plan is being submitted following consultation with the Commission's Gas Safety Division as required by the Commission.

The Plan addresses a number of issues pertaining to PGW's natural gas distribution system. First, the Plan provides the Commission with background information regarding PGW's distribution system and the Company's practices and procedures which have led to an exemplary safety record over recent years. Indeed, in many cases, the practices and procedures, including those pertaining to main inspection and leakage detection, developed by PGW go well beyond the requirements included in federal pipeline safety regulations. Furthermore, PGW's conscious design of its distribution system as a "utilization pressure" or low pressure system significantly reduces the risks associated with the distribution system as compared to other utilities.

Second, the Plan summarizes a Main Replacement Study conducted by Navigant Consulting, Inc. ("Navigant Report") which was issued on February 11, 2000. The Navigant Report confirms that while PGW does maintain a high proportion of cast iron pipes in its system, the Company's diligent practices and procedures have resulted in leakage rates approximately at or below the leakage rates experienced by other major gas

utilities with much smaller proportions of cast iron mains, including several under the Commission's jurisdiction. Additionally, main breaks and associated incidents have been well within normal limits.

Furthermore, this Plan provides for an inspection schedule, including consideration of inspection prioritization issues, as required by the Commission's Order. PGW believes its existing inspection program is not only adequate, but exceeds industry standards. However, in response to the Commission's Order, the Plan includes the addition of a supplemental inspection of the "higher risk" portions of its system on a bi-weekly basis. These supplemental inspections will provide further assurance that the safety of PGW's distribution system is preserved over the coming winter.

Finally, as required by the Commission, the Plan addresses the types of instruments being utilized by PGW for testing purposes and demonstrates that PGW has recently purchased and is placing into service state-of-the-art Optical Methane Detection ("OMD") units, the most sensitive gas detection devices available in the industry today. Utilization of this equipment will provide further assurance that any leaks are detected prior to raising safety concerns.

Overall, the Plan not only complies with the Commission's Order by implementing aggressive inspection procedures and utilizing the best technology available, but also demonstrates PGW's continued commitment to an exemplary safety record. It is this commitment which has and will continue to assure that all Philadelphia customers served

by PGW are provided service which is not only dependable and reliable, but which is safe and adequate as well.

II. BACKGROUND

PGW is the twenty-sixth largest local distribution company presently operating in the United States. Furthermore, it is the twelfth largest eastern gas LDC and the largest municipally owned LDC in the country.

PGW operates a distribution system which includes approximately 6,000 miles of gas mains and service lines; including over 3,000 miles in gas mains. The Company serves over one half million customers.

PGW is typical of LDCs which serve older, urban areas in that its mains are mostly cast iron with some unprotected steel with the balance made up of plastic. Furthermore, because PGW serves such a highly concentrated, urban area, it has fewer miles of main than other similarly sized gas utilities.[1]

Of PGW's 3006 miles of gas mains, 1758 miles or 58% are cast iron. Of that 1758 miles of cast iron main, over 1251 miles, or over 71% of those mains, are more than four inches in diameter – a significant factor since larger diameter cast iron mains have a lower breakage rate and incident level.

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[1] For example, UGI serves a little more than half the customers served by PGW, but maintains approximately one thousand more miles of gas mains than the Gas Works. NFG serves almost as many customers as PGW, but maintains more than three times the gas main mileage as the Gas Works.

PGW's gas distribution system was designed and constructed as a "utilization pressure" or low pressure system. In fact, PGW operates almost all of the cast iron portion of its system at 0.25 pounds per square inch – significantly lower pressure than most other gas utilities. The low pressure nature of its system has and continues to contribute to the overall safety of the system.

Despite the age of its system, the vast majority of PGW's cast iron mains have never experienced a break. In fact, of the over 21,000 segments of main pipe in the distribution system, only a little more than 7000 segments or less than 27% have ever experienced a break of any kind. Furthermore, only 2,300 segments or approximately 10% have ever experienced more than one break.

As with all gas distribution systems, PGW's systems does experience gas leaks. In this regard, PGW has adopted and performed leakage surveys since as early as 1954, well before the implementation of federal gas safety regulatory requirements. In fact, PGW has always adopted policies which generally require leakage surveys far more frequently than applicable federal gas safety requirements and conducts surveys in instances when no federal requirement exists.

PGW's practices and procedures applicable to leakage surveys demonstrate its serious commitment to a completely safe distribution system. PGW conducts a leakage survey of all blocks in its distribution system every two years despite the fact that federal gas safety standards only require such a leakage survey every five years. PGW conducts

a leakage survey of its high pressure system as well as of all intersections on its system annually even though federal gas safety requirements only impose a legal requirement for such a survey every five years. PGW surveys in advance of all resurfacing or paving projects and conducts a winter patrol of the cast iron areas of system even though neither of these surveys is required under federal law. The following chart summarizes PGW's existing leakage survey program and compares the frequency of its leakage surveys to federal gas safety requirements:

Program	PGW requirements	Federal code requirements DOT 192.723
All blocks	Every 2 years	Every 5 yrs. Unp. Stl. 3yrs.
All intersections	Annually	Every 5 yrs.
High Pressure System (35#)	Annually	Every 5 yrs.
150# System	Every 6 mo.	Every 5 yrs.
Center city	Every 6 mo.	Annually
Business areas	Annually	Annually
Ahead of resurfacing or paving	As notified	Not required
Winter patrol of cast iron areas	Annually	Not required

PGW's Distribution Department Bulletin #127 ("Leak Survey Bulletin") issued on September 22, 1976, as revised on May 21, 1998, establishes PGW's minimum schedule for leakage surveys.[2] In addition to establishing a minimum frequency for various types of leakage surveys, the Leak Survey Bulletin provides that each leakage survey will utilize leak detection equipment to test the atmosphere system in manholes, at cracks in

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[2] PGW's Distribution Department Bulletin #127 is attached hereto as Exhibit "A".

the pavements and sidewalks and at other locations, such as, gas and water curb stop boxes, sewer vents, etc. These procedures maximize PGW's ability to discover gas leaks before they become safety concerns.

The details of PGW's leak investigation procedures are established through PGW's Leak Investigation Procedures Handbook ("Leak Investigation Handbook").[3] As reflected in the Leak Investigation Handbook, the overriding objective of PGW's efforts to investigate gas leaks is "Actions Must Always Be Taken To Protect People First And Then Property." The Handbook establishes the Gas Works' minimum requirements for investigation of customer home leaks, street leaks, underground street troubles and general street troubles.

For all reported outside odor complaints, fire and police emergencies and all reported water leaks and cavities, PGW investigative procedures, as reflected in the Leak Investigation Handbook, includes a complete block check (including the intersections). This procedure exceeds the industry standard "area check" and provides for numerous additional safety inspections in addition to planned survey work. Furthermore, all inside leak complaints are subject to a minimum requirement of safety checks of two building basements, the home of the customer reporting the leak and the homes of the residents on both sides of reporting customer's premises. If a reading or odor is detected, PGW personnel are required to investigate at least six properties in the surrounding area: the

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[3] PGW's Leakage Handbook is attached hereto as Exhibit "B".

affected home, the contiguous homes, two additional homes neighboring the affected home and the home across the street from the affected home. Again, these required procedures meet or exceed industry standards.

Overall, the good operational condition of PGW's distribution system combined with aggressive leakage detection and leakage investigation procedures which exceed industry standards provide PGW customers and Philadelphia residents with maximum assurance of a safe, reliable system. Indeed, PGW prides itself on its exemplary safety record and its ongoing commitment to the safety of the public who live and work on or around its gas delivery system.

III. THE NAVIGANT REPORT

The sound operational condition of PGW's system and the Company's commitment to safety is confirmed by a recent independent report referred to as the Navigant Report.[4] The Report confirms that like many older, city distribution systems, PGW's system includes a relatively high proportion of cast iron mains (58% of the mains in the system). However, the Report also indicates that PGW's record of main leaks per mile is in line with other Pennsylvania LDCs with a far less proportion of cast iron mains in their respective systems.[5] Furthermore, Navigant reported that PGW has experienced

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[4] A copy of the Navigant Report is attached hereto as Exhibit "C".

[5] The Report indicates,based on review of 1998 data, that despite the high proportion of cast iron mains PGW's rate of a little over ½ of a main leak per line (continued...)

a downward trend of main leaks in its system.[6] At the same time, the Report concludes that PGW's record of cast iron leaks has remained below the industry average since 1995.[7]

The Navigant Report also indicates that PGW has a satisfactory record pertaining to service leaks or breaks and resulting incidents,[8] particularly in the cast iron portion of its system. Furthermore, the Report confirms, as indicated above, that the vast majority of PGW's main segments have never broken and that this factor contributes to the safety of PGW's system.[9]

In evaluating PGW's record of cast iron breaks, Navigant compared PGW's record to a similar (undisclosed) LDC in the northeastern part of the country. The comparison revealed that PGW's number of break-caused incidents per 10,000 breaks is 31.5, about half of the incident rates of the other LDC.[10] While cast iron main leaks are a major cause

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[5](...continued)
is very similar to the experience of Pennsylvania LDCs like Columbia and NFG. Furthermore, PGW's leakage rate is below that experienced by PECO Gas and well below the leakage rate experienced by UGI. Navigant Report at 4, 8.

[6] Navigant Report at 11.

[7] Navigant Report at 20-21.

[8] Incidents are recorded when certain criteria are met in terms of physical damage or injury associated with the escape of gas.

[9] Navigant Report at 32-35.

[10] Navigant Report at 13. As indicated above and explained in more detail below, one of the major contributors to PGW's safety record is the low pressure nature of (continued...)

of incidents, it is clear that given the nature and age of its system, PGW has maintained an exemplary safety record.

The Report also confirms, as indicated previously, that unlike some companies, PGW operates its cast iron systems almost entirely at low pressure (0.25 psi or utilization pressure). This allows PGW to avoid the substantial risk associated with high pressure cast iron mains — a factor which, if it existed, would have a detrimental effect on the safety of PGW's system.[11]

It is important for the Commission to acknowledge and understand that the low pressure nature of PGW's system is a critical factor in terms of the risk assessment of PGW's distribution system as compared to the distribution systems of the other LDCs. Indeed, it is a factor which PGW substantially relies upon in evaluating the overall safety of its system and in developing and prioritizing its main replacement program. Furthermore, unlike many other utilities, PGW does not upgrade pressure in the cast iron portion of its system to accommodate requests by customers or other system modifications and instead replaces the necessary pipe – even if increasing pressure would be less costly to the Company. PGW also prioritizes main replacements involving higher

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[10](...continued)
its distribution system. In fact, the Navigant Report concluded that PGW's low incident ratio as compared to the other LDCs was largely due to the fact that the other LDC had a higher pressure distribution system.

[11] Navigant Report at 7, 13.

operating pressures. These practices are an important factor in reducing the risk of PGW's system and in maintaining its safety record. In fact, all mains presently identified for replacement have been and are currently operating at utilization pressure or 0.25 psi — an extremely low measure of main operating pressure by any assessment.

While the Commission's Order does not address the main replacement policies of PGW, it is noteworthy that even given the sound operating condition of its distribution system, PGW does recognize the importance of an aggressive main replacement program with particular focus on the cast iron portions of its system. In fact, PGW has included funds in its Capital and Operating Budgets submitted to the Philadelphia Gas Commission which would provide for a main replacement program which replaces approximately 1% or 18 miles of existing cast iron main per year, thus eliminating all trouble-prone cast iron mains within five years.[12] However, the Capital and Operating Budgets submitted to the Gas Commission includes $52 million in additional revenues to reflect the revenue requirement it claimed before the Gas commission, including the monies necessary to fund the main replacement program.

IV. INSPECTION SCHEDULE AND TESTING INSTRUMENTS

The Commission's September 13, 2000 Order specifically requires PGW's Plan to: 1) include an aggressive plan for pipeline inspection and leakage surveys which takes into

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[12] Such a main replacement program would conform to the recommendation included in the Navigant Report. Navigant Report at 40-41.

account the effects that corrosion and frost have on certain portions of the pipeline; 2) addresses the types of instruments being used for the testing of pipelines; and 3) includes an evaluation of whether adequate procedures are in place to ensure access to inside meters during inspections. The Plan developed by PGW in response to the Commission's Order establishes a very aggressive inspection and survey program which exceeds industry standards and which utilizes state-of-the-art technology. This Plan, as fully described below, should fully satisfy the Commission's concerns regarding the safety of PGW's system in the coming winter months.

A. Inspections and Surveys

As the foundation for the inspection and survey program, PGW has existing procedures in place providing for winter patrols of the cast iron portions of its distribution system. In fact, PGW has been performing mobile flame ionization surveys of its system since the technology became available in the early 1970s.[13] Under PGW's existing survey procedures, two vehicles equipped with flame ionization detection equipment survey PGW's distribution system from 10:00 p.m. to 6:00 a.m. from Sunday evening through Friday morning throughout the winter season. This Winter Patrol has proved itself to be a valuable tool in assuring the safety of PGW's distribution system and protecting the general public. Because PGW believes that any and all breaks in the cast

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[13] A copy of PGW News announcing the introduction of mobile flame ionization surveys is attached as Exhibit "D".

iron portion of its distribution system are potentially hazardous, PGW conducts the Winter Patrol equally on all blocks served by cast iron mains.

The normal start-up date for PGW's Winter Patrol is the second week in December. However, in response to the Commission's Order and in order to assure that the Commission's concerns with the safety of PGW's distribution system are satisfied, this Plan accelerates the start-up date of the Winter Patrol for this coming year to November 1, 2000.

Furthermore, in response to the Commission's Order and in order to satisfy the Commission's concerns, this Plan includes an additional inspection program which is specifically focused on the "higher risk" portion of PGW's distribution system as identified by PGW ("Higher Risk Winter Patrol"). PGW currently has in place a main replacement program which prioritizes mains for replacement based on factors such as pipe diameter, break and leak histories, pressure and volume of gas and proximity of the facilities to schools, hospitals or customers.[14] The Higher Risk Winter Patrol will focus its inspection efforts on the portions of PGW's system which have been identified for replacement within PGW's main replacement program. Furthermore, the criteria for replacement along with the frequency of patrol (bi-weekly) of these higher risk areas will effectively account for and closely scrutinize the potential effects (leaks and breaks) that

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[14] The Navigant Report concluded that PGW's Main Replacement Prioritization Model was sound. Navigant Report at 47.

corrosion and frost may have on certain portions of the distribution system, particularly the cast iron portion.

The Higher Risk Winter Patrol will be conducted with two vehicles equipped with state-of-the-art Optical Methane Detection equipment. These vehicles will patrol higher risk blocks (to the best of PGW's ability) on a bi-weekly basis and will provide continuing surveillance of higher risk blocks every two weeks. This supplemental Winter Patrol will also utilize established PGW Block Survey Procedures and Leak Investigation Procedures, as discussed above, including a complete block check when required and a house check at the front foundation wall. Overall, this Higher Risk Winter Patrol will provide even further assurance of a safe distribution system for the coming winter.

B. Testing Instruments

As indicated above, PGW has been utilizing flame ionization gas detection units since the early 1970's when the technology was first introduced. These units remain effective industry tools for detecting leaks and breaks and will continue to be utilized in PGW's Winter Patrol of the entire cast iron portion of its distribution system commencing on November 1, 2000.

In addition, a new generation of mobile gas detection technology was introduced in late 1998 called Optical Methane Detection or OMD. At the time the technology was introduced in the marketplace, PGW pursued the acquisition of OMD devices to replace its flame ionization units. In the spring of this year, PGW purchased two OMD units.

While these units will eventually replace the flame ionization units, the OMD units are being utilized this winter in the Higher Risk Winter Patrol included in this Plan. Accordingly, under this Plan, PGW crews will be operating the most sensitive, state-of-the-art leak detection equipment available to assure the safety of its system this winter.[15]

C. Inside Access Procedures

The Commission's September 13, 2000 Order requires PGW to evaluate whether adequate procedures are in place to ensure access to inside meters during inspections and surveys. As indicated above, PGW's Handbook establishing the Company's procedures for investigating leaks and leak reports is attached as Exhibit "B". As part of those procedures, the Leak Investigation Handbook includes Section III, which establishes PGW's policies and procedures for entry into customer premises.[16] The Handbook includes procedures for forcible entry when necessary and establishes requirements pertaining to various potential scenarios. These procedures and requirements have been designed consistent with PGW's overall objective which recognizes that "Action Must Always Be Taken To Protect People First Then Property." Overall, PGW has evaluated these procedures and has determined that the procedures are adequate to satisfy the Commission's concerns.

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15 A report endorsing OMD equipment is attached hereto as Exhibit "E".

16 Exhibit "B" at I-3 – I-3b.

D. Monthly Reports

The Commission's September 13, 2000 Order requires that under this Plan, PGW should submit monthly reports outlining compliance with the Plan on an ongoing basis. The first monthly report has been directed to be submitted by December 15, 2000, covering the entire previous calendar month, with subsequent reports continuing through April 15, 2000.

Under this Plan, PGW will submit monthly reports to the Commission outlining compliance with the Plan. PGW has developed a monthly safety report form which documents its Winter Patrol activities and measures the number of blocks surveyed, the number of miles surveyed, total manhours dedicated, the number of broken mains, the number of joint leaks, the number of other main leaks, the number of service leaks and other relevant categories. PGW intends to utilize this form in submitting its monthly report to the Commission.[17] These monthly reports are in addition to the standard, detailed inspection results recorded by PGW in the normal course of business. Preparation and submission of these reports will provide further assurance that the safety of PGW's system is being fully protected.

IV. CONCLUSION

PGW has developed this Winter Survey and Inspection Plan in order to comply with the Commission's September 13, 2000 Order and in order to provide further

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[17] A copy of the form of report is attached hereto as Exhibit "F".

assurance that the safety of its distribution system is fully maintained during the coming winter months. PGW gas safety personnel has met with and consulted with the Commission's Gas Safety Division in developing this Plan and is confident that the Plan satisfies the Gas Safety Division's concerns. This Plan, along with PGW's existing policies and procedures for protecting the safety of its distribution system, demonstrates PGW's ongoing commitment to a completely safe distribution system for its customers and for the Philadelphia general public.

EXHIBIT "A"

PGW Distribution Department Bulletin #127 Leak Survey

Distribution Department Bulletin #127
Leak Surveys

The following is the minimum schedule for leak surveys:

Description	Frequency
• Natural Gas Supply Mains and Extensions (50 psig and above)	Semi Annually
• High Pressure Distribution (10 to 35 psig operating pressure)	Annually
• Intermediate Pressure Distribution (2 to 5 psig operating pressure)	Once each two (2) years*
• Center City (all pressure levels)	Semi Annually
• Business Areas (all pressure levels)	Annually
• General Area - Entire System (low pressure distribution 6.5" W.C. average)	Once each two (2) years*
• Customer Owned Underground Metered Piping (By Agreement)	Once each three (3) years*
• Non-Traditional	Annually
• Ivy Hill Transmission Main	Quarterly
• Franklin Mills	Semi-Annually
• 656 psi Line (0-60 to Trigen Corp.)	Semi-Annually

* North-south and east-west streets surveyed on alternate years to assure coverage of all intersections once each year.

Surveys are also made ahead of major parades, ahead of street repaving, street resurfacing, etc.

Upon receipt of notice for blasting, leak surveys will be conducted prior to and immediately following the blast. Extent of the survey will be determined by the Survey Supervisor.

All surveys shall be accomplished by utilizing leak detection equipment to test the atmosphere in gas, electric, telephone, sewer and water systems manholes, at cracks in pavements and sidewalks and at other locations, such as, gas and water curb stop boxes, sewer vents, etc., providing an opportunity for find gas leaks.

In addition, visual observations shall be made to detect possible effects of leaking gas on vegetation and to detect other conditions such as water, sewer and other underground or surface defects which could affect gas distribution facilities. If flame ionization equipment is used all readings shall be confirmed with a gas detection instrument and reported in % LEL or, when appropriate, % gas scale. Flame ionization equipment shall be set for 50 ppm unless otherwise specified due to existing operating conditions.

The frequency of leak surveys of buried bridge mains shall be in accordance with the above minimum requirements; however, the survey shall be made using portable flame ionization equipment and shall include a visual observation of the condition of the bridge to determine the existence of obvious structural defects.

Investigation and repair of detected leaks shall be in accordance with the following requirements:

a) Distribution Department Bulletin #126
"Investigation and Repair of Underground Gas Leaks"

b) Street Leak Procedure - Section I of the Distribution Department Foreman's Handbook

The procedure for service valve inspections is described in Section X of the Distribution Department Foreman's Handbook.

Steven A. Groeber
STEVEN A. GROEBER

APPROVED: Brian C Schenk/d
BRIAN C. SCHENK

DD/BCS/dls

cc: Messrs. Gregory D. Martin
Dennis E. Stinson
Distribution Department Supervisory Personnel

Original Issue Date: 9/22/76
Revised Date: 5/21/98

EXHIBIT "B"

PGW Leak Investigation Procedures

HANDBOOK FOR DISTRIBUTION FOREMEN

SECTION I

DISTRIBUTION DEPARTMENT OPERATING INSTRUCTIONS

The material contained in this handbook has been compiled to serve as a memory aid and guide to assist the Distribution Department crew leader in the performance of the daily work.

The rules here listed represent minimum requirements and are not meant to limit the Foreman in making decisions which experience, safety and common sense indicate.

ACTIONS MUST ALWAYS BE TAKEN TO PROTECT PEOPLE FIRST AND THEN PROPERTY.

The highest ranking Distribution Department person has the authority and responsibility on all street and leak investigations.

Policy Approach by Employees to Customer's Houses when Distribution is the First Person on a Leak Investigation Scene

1. In all cases, we will always enter the main entrance. Distribution Department vehicles are never to use the rear driveways in connection with our work. On a leak complaint, we will test the general atmosphere with our GDI upon entering the customer residence. If you receive a 40% LEL or higher you must evacuate. If evacuation is necessary notify the Dispatcher immediately.

Policy Approach by Employees to Customer's Houses when Field Services Department is on the Leak Investigation Scene

1. In all cases, if FSD personnel are on the scene contact them immediately and obtain leak information. Direct FSD serviceperson to continue their leak investigation under the Distribution Foreman's direction. Any discrepancies or disagreements with FSD management personnel should be referred immediately to a Distribution Supervisor or the Work Dispatcher on duty. When both departments are involved, the highest ranking Distribution supervisory employee on the scene has the authority and responsibility on all street leak investigations.

STREET LEAK PROCEDURE

I.	Nature of Complaint and Conditions	Minimum Requirements				
1	Gas Leak Inside - Gas entering customer's premises from outside.	A	B	C	D	
2	Manhole Leak - Gas entering sewers, ducts, etc. from underground source.	A	B	C	D	
3	Leak in Street - Gas escaping into air from underground source.	A	B	C	D	
4	Foreign Odor - Odor from underground source and coming through foundation walls, drain, vent, stop box, manhole, etc. or odor from an indefinite overground source such as gasoline, cleaning fluid, paint, chemicals, etc.			C	D	
5	No odor outside - "No Odor" report by FSD.			C	D	
6	Gas leak reported by FSD and Distribution Department finds no gas leak - inside or outside.	A	B	C	D	
* 7	Checking reports of odor in subways, tunnels, sewers or other large confined places.			C	D	
* 8	Electrical Burnout - (Carbon Monoxide Indicator inspection required.)			C	D	
9	Check to final Street Leak, including rustouts at front foundation wall.					E
10	An odor complaint received directly from a customer on the street - notify Dispatcher.	A	B	C	D	

* Complaint must be checked by an Assistant Supervisor or Supervisor at the same time as the first visit by Distribution Department Workmen.

Revised 8/6/98

Street Leak Procedure

II. Explanation of Minimum Requirements

A. Visit the house affected when you arrive. The visit to a house should include an examination of stop and vent boxes and of all other exterior points that may indicate the presence of gas. If odor is strong, or there is a 40% LEL in the general atmosphere as you enter the customer's house as indicated by a gas detection instrument, evacuate the premises. If you decide to evacuate, notify the Dispatcher immediately.

B. Visit the adjoining houses on each side of house affected, visiting them in regular order and continuing until you find no odor of gas or GDI readings in two (2) houses next to one another. (The house from which the complaint came, if clear, can be considered one of the two consecutive houses.)

C. Check all manholes, traffic control boxes, PGW pressure control boxes, fire alarm boxes and any other type box to which electrical connections are made between major intersections and in major intersections. A major intersection is one at which the house number system changes.

D. Use Gas Detection Instrument (GDI) at every point where Distribution Department employee makes smell test to investigate for gas leak.

E. Use Gas Detection Instrument (GDI) at every point where odor or reading was reported before gas leak was found by Distribution Department workers. (See VII of this procedure for GDI Instructions.)

III. General Requirement

A. If any house which this rule instructs you to visit is apparently closed tight and you are unable to gain entrance, make the exterior examination, also examine at cellar windows and at any other place where you might find an indication of the inside atmosphere. If you detect an odor coming from the premises, or if you believe, from your examination inside the adjacent houses, that gas may be present inside the house, you should make forcible entry.

III. General Requirement - Cont'd

If you decide to make forcible entry *inform the Dispatcher* to notify the Police and Fire Departments, being sure to give the Dispatcher the address of the house(s) you are making a forcible entry into. If you have forced entry, do as little damage a possible; make out an Accident Report detailing the customer's property damage after leak is repaired.

If a FSD employee is on the job, direct FSD to make the forced entry, assist FSD if necessary. Remember, it is your responsibility to examine the FFW and make a thorough investigation.

B. A Foreman should call for a locksmith to gain entrance under the following conditions:

- Immediate forced entry is not necessary.
- FSD is not on location.
- You have exhausted all other options to gain entrance (check with neighbors, Dispatcher call customer, etc.)

Locksmith Procedure

- Foremen calls Dispatcher for locksmith.
- Dispatcher or Clerk calls for locksmith and calls 911 to report forced entry to police. Log the event in the locksmith sheet.
- Foreman must call back Dispatchers with a final report.
- Dispatchers or Clerks will log the final report of all houses entered, then transfer the Foreman to Risk Management Department with a final report, extension 6535 or extension 6014 (out-of-hours, leave message).
- Foreman will make a verbal report to Risk Management. Fill out an Accident Report only if damage is incurred.
    - When calling Risk Management as part of the Locksmith Procedure, please supply the following:
        - Name of the Locksmith
        - How did he get in?
            - Picked the lock
            - Drilled the lock
        - Front or back door?
        - Information about the leak.

Locksmith Procedure - Cont'd

- Foreman will sign and leave Form #M-6489 to inform the customer you had to enter the premise.
- Foreman will sign voucher for Locksmith.
- Minimize PGW liability exposure, a Foreman and only one (1) other PGW employee should enter the premise and conduct the investigation.

C. When gas odor is present in the premises, instruct the customer not to switch electric lights on or off. Shut off all sources of ignition and thoroughly ventilate and keep ventilated by opening cellar windows and entryways. If FSD is available direct them to assist you.

D. If odor is strong or there is a 40% LEL reading in the general atmosphere as you enter the house as indicated by a gas detection instrument's lower explosive limit reading, evacuate the premises first and then continue to shut off gas to the meter and remove all other sources of ignition, but do not switch electric lights on or off. **ACTION MUST ALWAYS BE TAKEN TO PROTECT PEOPLE FIRST THEN PROPERTY**. If it is necessary to evacuate, notify the Work Dispatcher immediately.

E. If, under any conditions, a customer or others disagree with the Distribution Department's decision that the cause of a "Foreign Odor" or "No Odor" is not gas, the disagreement must be settled by a Supervisor.

F. If a gas leak is along the route of a main operating over 35 psi and the source can not be determined, at least three (3) barholes must be drilled. A combustible gas indicator must be used to check these barholes.

G. A manhole investigation is not complete until it is extended to cover and to find clear the most closely connected manhole in all directions along the route of the utility conduit or sewer in which a reading or an odor exists.

H. Whenever you are following this Street Leak Procedure, you are required to issue a Street Leak Progress Report stating precisely what you checked (house addresses, manholes, curb boxes, etc.) and what you found noting LEL or % gas readings, the number of the instrument used and the odor as a result of your smell test.

IV. Underground Street Troubles that Affect PGW Company Structures

The kind of underground street troubles about which the following statement deals, are those evident underground troubles usually brought to our attention due to a condition observed on the street surface, or as a result of a condition we encounter in the performance of our work, but not caused by our own work. These underground troubles are:

1. Water leaks from either water mains or water services.

2. Sewer system faults. These may be either visible sewer system failures or any of the following which may be the effect of a sewer system failure:

    a) Cavity
    b) Cave-in
    c) Paving fault, such as surface crack, settlement, depression, etc.

3. Surface faults in paving caused by settlement in "area" fills; or settlement caused by poor backfill over underground structures.

V. General Street Trouble Procedure

There can be no standard procedure that would cover all of the conditions that may be encountered, due to variation of conditions and other factors that in each case require common sense and good judgment. It will help to describe in a general way a few variation of conditions and list a few minimum requirements.

In every cases, all manholes must be examined as in Requirements C and D of the Street Leak Procedure.

Revised 8/26/98

V. General Street Trouble Procedure - Cont'd

In sewer manholes, observe for such conditions as abnormal volume of water, unusual clarity of water, or water clouded by mud or other earth content, bricks or any unnatural debris. Unusual conditions observed in sewers such as these specifically named above, or the existence of water, either still or running, in other manholes, indicates a suspicious condition that will require a thorough and complete investigation to determine the source of the water leak related to the point it enters the sewer system or the duct line. It is important that this point be related to the nearest PGW underground structure. The sound of water running or leaking in a drain vent, at a water stop, at a water service or a fire plug, is an almost infallible lead to important underground trouble.

Whenever an underground street trouble is separated by reasonable distance from our gas main or service, barholes are acceptable to determine the solidity of the foundation under our structures. Make an exploratory opening wherever PGW structures are obviously endangered. Whether or not to backfill such an opening is dependent on judgment about whether the opening may endanger our main or create other hazards. To cut main, to abandon mains, to provide bagholes and men to bag off, and to prepare to use grease, are obvious precautionary steps to be taken when necessary. In cases of doubt about procedure, a Supervisor's decision must be obtained.

On any kind of water leak where the shut off or reduction of water leakage will reduce the danger to PGW structures, we should request the Water Department to take such steps.

Revised 8/26/98

LEAK/FIRE PROCEDURE

VI. Fire Procedure

The following procedure should be followed when a Distribution Department Crew is dispatched to the scene of a fire:

1. The Foreman and one (1) crew member should report to the Fire Officer in charge or to the Communications Van, if it is on the scene, **equipped with a curb key, spoon bar, 14 inch pipe wrench, hard hat, boots, rain suit, ray light and GDI.** The Foreman should then be guided by the Fire Chief as to what duties must be performed.

2. At the first opportunity, the Foreman must contact the Dispatcher giving all pertinent information relating to the fire location, properties involved and company involvement. If you, as the Foreman, are required to shut off mains, services or to check drips, the Dispatcher must be advised at this time. The Foreman should also confirm with the Dispatcher what future contacts will be necessary. If additional FSD, crew or supervisory assistance is required, the Dispatcher must be told as soon as possible.

3. If immediate action is required in shutting off gas to affected or threatened properties, this work should be completed a soon as possible and reported immediately to the Fire Chief. This information must also be recorded on Form 537.

4. If you can not shut off the service valve to the building affected, notify the Dispatcher in order to ascertain if there is 2-way gas. Also, request the active services on either side of the house affected by fire in the event that you must affect a shut off with grease.

Revised 5/27/99

If an emergency grease shut off is required, the Foreman must receive supervisory approval. After receiving permission to grease off proceed to affect a gas shut off. See Section I - 6, Emergency grease Pumping Equipment for additional information.

NOTE: After the gas fed fire is put out the time of affected shut off must be called in to the Dispatcher.

5. The Foreman must remain on the scene of the fire and continue their duties under the direction of the Fire Chief. You should have FSD personnel check properties adjacent to the fire for possible leaks or fluctuations in pressure due to water entering services or mains from damaged installations. **Gas must be shut off to appliances and/or meters under water or in danger of so being**.

6. When released by the Fire Chief, an effort must be made to restore service to any building shut-off and not affected by the fire. A complete block check must be made with your GDI. Should it become necessary to leave gas officially shut-off, the proper work forms must be generated and completed.

7. If fire damage is extensive, indicating that the property might be demolished, the Fire Marshall on the job must be contacted. Have FSD personnel request permission for removal of meters. Do not remove any meters without the Fire Marshall's permission.

8. When all necessary checks have been made and the work has been completed, release FSD personnel and the grease truck, if applicable, and call the Dispatcher to report that you have been released.

FIELD SERVICE DEPARTMENT

LEAK/FIRE DUTY SECTION

INDEX

APPENDIX

LEAK/FIRE DUTY SECTION

OPERATING ACCOUNTS

			Account	Pseudo	Nature of Order Code
MAINS AND SERVICES -	(All work with the Distribution Department)		879201	100	511,512,513 514,515,530 810,894
METERS AND REGULATORS -					
a. Meter Connections			893502	506	511,512,513 514,515,810
b. Repairing Leaks on Meters			878103	503	511,512,513 514,515,810
c. Change Meter due to a leak		(Leak)	879201	100	810
		(Change)	878103	503	880
d. Change Regulator due to a leak		(Leak)	879201	100	511,512,513
		(Change)	893503	507	515,810,864
FUEL LINE -					
Permanent or temporary repair			879201	100	511,512,513 515,864

NOTE: When it is not a PGW policy to repair, make safe and issue a hazard tag.

APPLIANCES -

Charge time to the appropriate appliance accounts
(See individual appliance sections.)

GENERAL -				
a. No gas leak (or no odor found)	879201	100	510,511,512 513,514,515 516,518,530 810
b. Foreign odors	879201	100	510,511,512 513,514,515 810
c. Fire duty	879201	100	517
d. Odorometer check	184205	705	527

NOTE:
WHEN ASSISTING (820) OR RELIEVING (819) COMPANY SERVICEPERSON, USE THE SAME ACCOUNT AS THE PRIMARY PERSON.

Gas Leak Order Coverage

Leak orders take precedence over any other type of work. A gas odor complaint must be visited immediately after being received from any source including: the Dispatcher, a Customer, or another PGW employee, even if it necessitates changing your lunch period, canceling an appointment or temporarily suspending your current service order. ACTIONS MUST ALWAYS BE TAKEN TOWARD PROTECTING PEOPLE FIRST AND THEN PROPERTY.

All of the procedures described in this section, must be followed. Due to the variations of job conditions there can be no standard procedure that would cover all situations that may be encountered. Therefore, the Serviceperson must exercise good judgment and care in the application of the following procedures. Even if the gas leak is found before the investigation is finished, all of the steps outlined herein must be completed in full.

Gas Leak order coverage as outlined below, applies to the following:

A) **Confined Gas Leak Inside:** Confined to one location including inside gas appliance leaks, carbon odors, and carbon monoxide alarms

B) **Unconfined :** Street Leaks, Service Leaks, Outside Odor in a General Area, Foreign Odors, No Odor (No GDI Readings), and Outside Appliance Leaks.

An unconfined gas leak is defined as a situation where there is a possibility of a leak or odor seeping either into or from adjoining houses, apartments or buildings, or where the investigation can not confirm any gas leak or odor.

NOTE:

1. If during your initial gas leak investigation it is determined that an emergency exists and immediate assistance of the Distribution Department is required, promptly contact the Dispatcher via voice radio or mobile telephone (if available). Provide the Dispatcher with details concerning the emergency situation at hand. Complete FORM 09 after you have established control of the situation.

2. Mobile phones should be off when entering properties with a reported gas leak.

3. It is necessary to accurately record the time the order was received and your arrival time. If the Serviceperson is using the DXT system, the DXT will record the time the high priority order was received (FORM 05 was sent to the terminal) and your arrival time when denoted on FORM 03 (FORM 06 sent to the terminal). Every effort must be made to keep FORM 09 current. Proper work orders must be completed and/or generated on the DXT for recording data whether received from the Dispatcher, a Customer or another PGW employee.

Gas Leak Investigation Procedure

1. Initial Gas Leak Investigation

A Gas Detection Instrument (GDI) check must be made at every location visited on every leak or odor complaint, including fires, explosions or other incidents. The number of the GDI instrument assigned to the Serviceperson must be recorded by the Serviceperson on FORM 01 when logging on to the system at the beginning of your shift.

NOTE: **If during your work shift it is determined that your GDI must be exchanged, *the new GDI number must be recorded on your FORM 01* and transmitted at that time.**

A. Zero your GDI using fresh air before entering the premise (SEC I -17).

B. Knock on the door **(do not use the doorbell)**. Verify the Customer's name and address.

C. Question the Customer - where and/or when was the odor present?

D. Enter the premise and take a GDI reading in the general atmosphere. If the reading received is 40% LEL or higher (2% gas - 98% air), **evacuate the premises.**

E. Go to the area of complaint and determine the source of the odor. The Serviceperson *should not switch lights on or off.*

F. Eliminate <u>all</u> sources of ignition. Eliminate the source of gas, if possible. Obtain GDI readings in the general atmosphere at the area of complaint and where the gas odor is strongest. If GDI readings or a strong gas odor in the general atmosphere indicate there is a possibility of an explosion, evacuate the premises. In addition, **evacuate** the premises on each side of the property in question. If an evacuation is not necessary, caution the Customer not to smoke or use any type of electrical appliances or switches. Thoroughly ventilate the premises and keep the premises ventilated. <u>**Notify the FSD Dispatcher of any evacuations as soon as possible**</u>. (This can be accomplished through voice radio and then thru FORM 02).

G. Repair or make safe. If a leak is discovered in which a temporary repair may be made, issue a Hazard Tag (see SEC IV). All information pertaining to the hazardous condition must be recorded on FORM 08 - Additional Information.

H. **Examine the entire premises to see that no one has been overcome.**

I. Examine all appliances and piping, fuel line, meter and meter connections, service, foundation walls and curb boxes using your GDI. This information should be recorded on FORM 09 and transmitted.

Gas Leak Investigation Procedure - Continued

J. **A meter and piping test is required.** Indicate if the tests passed (P) or failed (F) on FORM 06 - Completed Orders. In the case of master meters, where a piping test is not possible, indicate so by typing the letter (N) in both the meter and piping test fields on FORM 06.

When conducting your examination, if it is determined that the leak or odor could be seeping into or from an adjoining location, building or apartments, it should now be considered an unconfined leak, follow the applicable procedure described on the following pages.

2. Street Leaks

A. Notify the Dispatcher promptly after a GDI reading or gas odor indicates a gas leak from an underground source. Use FORM 09 to record the location, time and instrument readings for each of the properties visited. The Notify DIST and TYPE fields must be used on all 513 and 514's to allow both the FSD and the Distribution Dispatcher to view the information supplied and determine if a Distribution Department crew is needed. This notification is required whether a Distribution Department crew is on the job or not. A message will be sent to the terminal confirming the receipt of your Leak Survey. Use FORM 02 to notify the FSD Dispatcher of any details, including evacuations if required, or to request additional help. If you are occupied in more important duties, ask another capable person to notify the Dispatcher for you.

B. Examine locations on both sides of the source of the leak or complaint, and across the street. GDI checks must be made in the general atmosphere in every location visited. If readings are obtained, begin Leak Investigation Procedure starting with Section I - 3, Paragraph 1D. This examination must be continued in each direction until the Serviceperson obtains zero readings in at least two consecutive premises or as indicated in the diagrams on the following pages. If your examination should reveal an odor or GDI reading at the rear or side foundation wall of any of the premises visited, it will be necessary to examine locations in the rear. No CGI's are permitted except on the opposite side of the street as shown in Figures 2A thru 2F, 2I and 2J.

C. At each location visited, follow complete leak investigation procedures. If during the course of your investigation you discover a street leak, a meter and piping test must be made in the property where the odor or the GDI reading is obtained. In addition, a meter and piping test must be made in the properties on each side of the leak. All GDI checks and meter and piping test results must be recorded on FORM 09 and transmitted with the address/location, time and instrument readings for each of the properties visited.

NOTE: (a) **The premise from which the complaint came, if clear, can be considered one of the two consecutive premises.** **(See Page 12 - No Odors, No GDE Readings)**

(b) **If a reading is obtained in a sewer vent, curb box, manhole, crack in the street, etc..., entry must be made to that premise and the procedure outlined in paragraphs 2A & 2B above must be followed.**

D. With your GDI, examine all curb boxes, vent boxes, sewer inlets, manholes, cracks in the street, regulator vents and any point that may show the presence of gas. Continue to use FORM 09 to inform the Dispatcher of any changes or new readings you may have obtained.

E. If required, wait on the job for the Distribution Department crew to arrive. While on the job, continue revisiting those premises covered during the initial investigation and check all premises required by the Leak Investigation Procedure. Use FORM 09 to inform the Dispatcher of any changes or new readings you may have obtained. When the Distribution Department crew arrives, report to the Foreman and provide all of the details of your investigation. Continue your investigation under the supervision of the Distribution Foreman. The highest ranking Distribution Supervisory employee has the authority and the responsibility at all street leaks and leak investigations when both departments are involved.

F. Should the leak be of such a nature that additional help is required, or if relieved by another Serviceperson, all details of the leak investigation must be given to that Serviceperson.

G. When on a street leak, do not leave the job until properly released by the Distribution Foreman or Supervisor. Once released, send a FORM 02 message to the Dispatcher stating the release time.

H. It is realized that certain matters not mentioned in the above procedures may take precedence over some of the details shown. The necessity of giving First Aid treatment, for obtaining doctors or other help, and for attending to other urgent matters, is a matter for decision by the employee on the job.

Unconfined Leaks Inside

FIG 2A. MIDDLE OF THE BLOCK

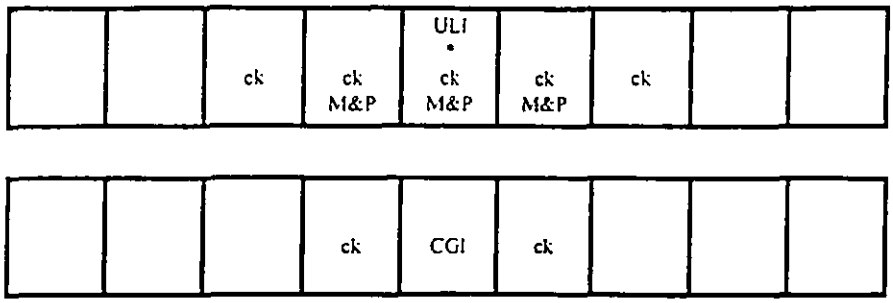


FIG. 2B CORNER PROPERTY

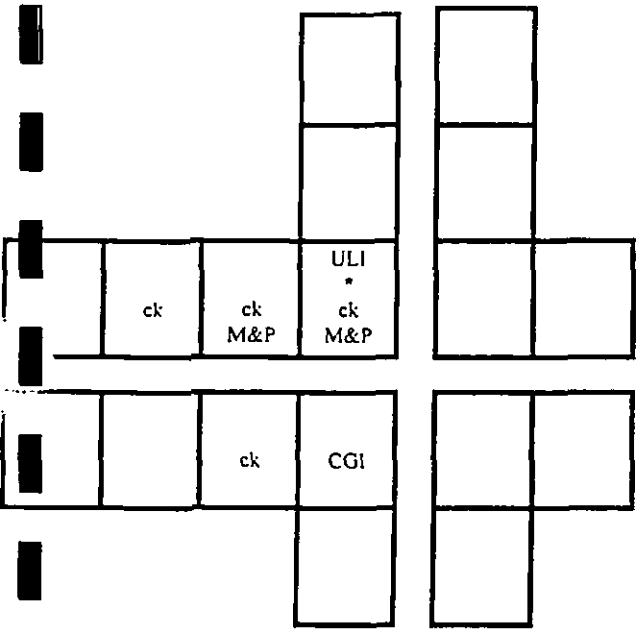
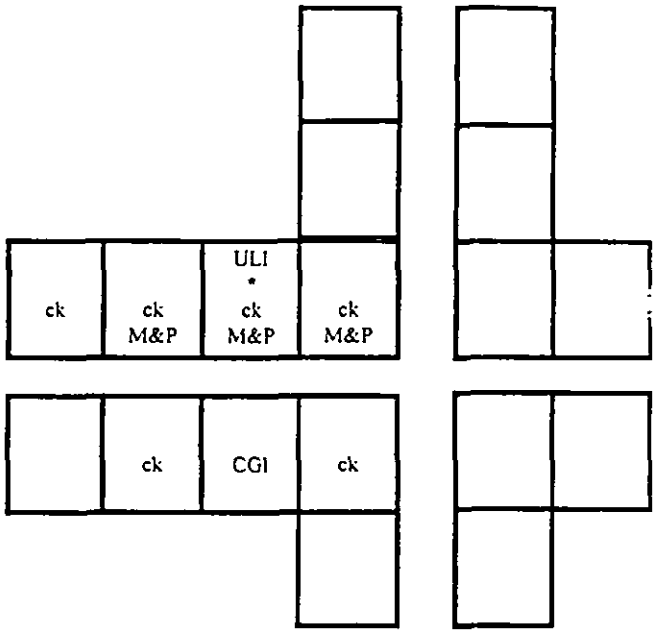


FIG. 2C PROPERTY ADJACENT TO CORNER



Note: In each of the diagrams shown above, the below listed symbols represent:

KEY

*	- The origin of the leak or leak complaint address
ULI	- Unconfined Leak Inside
ck	- Properties requiring a GDI check
CGI	- Permissible CGI's
M&P	- Meter and Piping Test required if odor or GDI reading is obtained

Unconfined Leaks Inside - continued

FIG. 2D MIDDLE OF THE BLOCK (TWIN PROPERTIES)

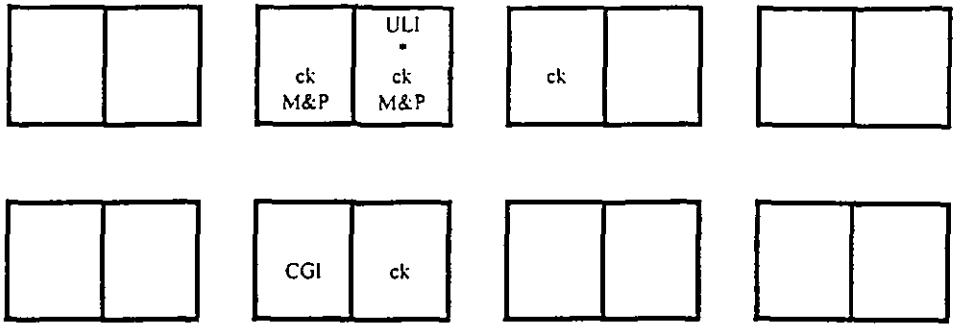


FIG. 2E CORNER PROPERTY (TWIN PROPERTIES)

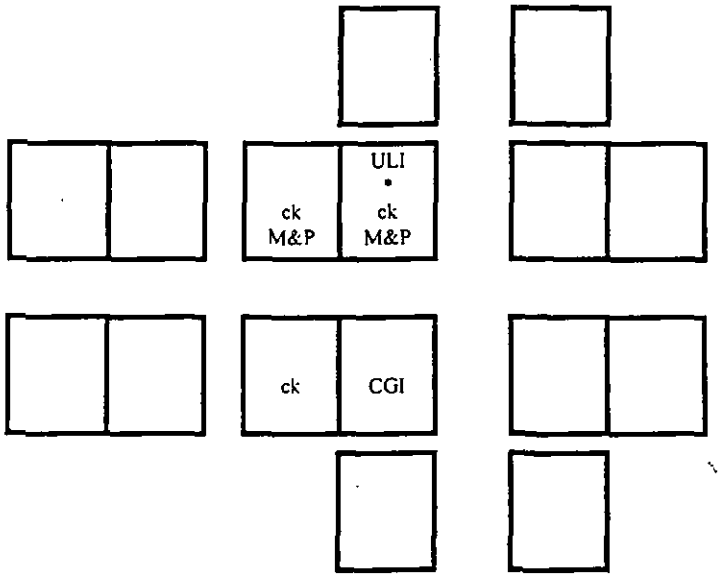
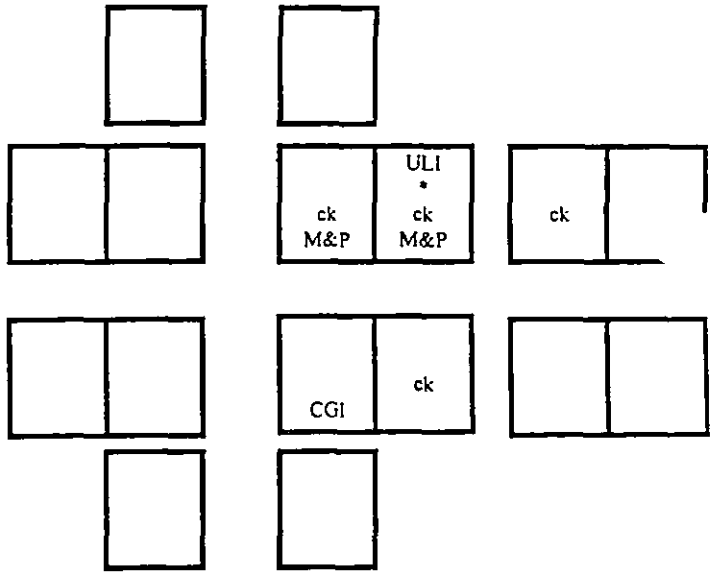


FIG. 2F PROPERTY ADJACENT TO CORNER (TWIN PROPERTIES)



Note: In each of the diagrams shown above, the below listed symbols represent:

KEY

*	-	The origin of the leak or leak complaint address
ULI	-	Unconfined Leak Inside
ck	-	Properties requiring a GDI check
CGI	-	Permissible CGI's
M&P	-	Meter and Piping Test required if odor or GDI reading is obtained

Street Leaks - Continued

UNCONFINED LEAK OUTSIDE

FIG. 2G IN THE STREET - INTERSECTION (NO CGI'S PERMITTED

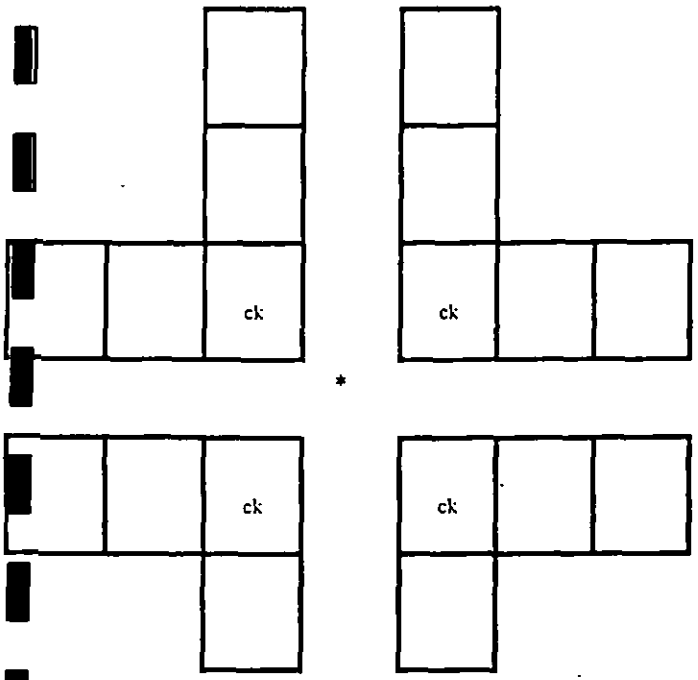


FIG. 2H IN STREET(OR ALLEYWAY) BETWEEN HOUSES (No CGI'S permitted)

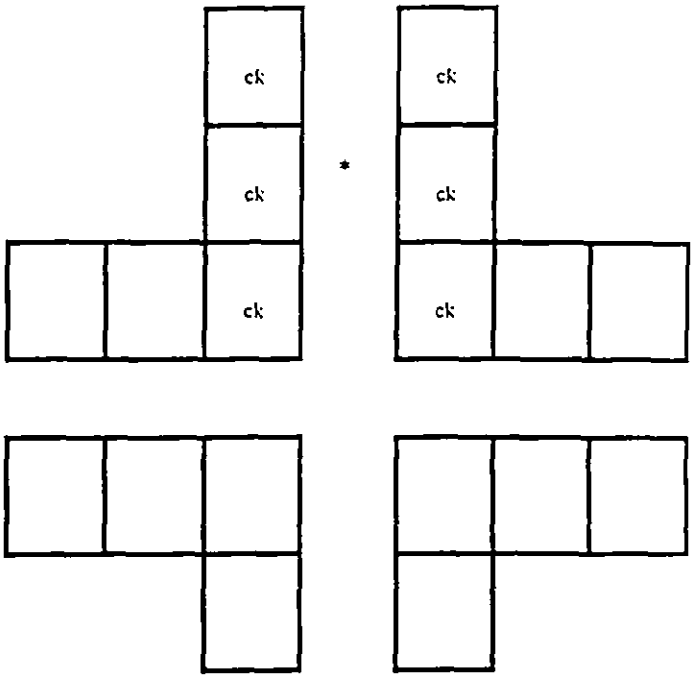
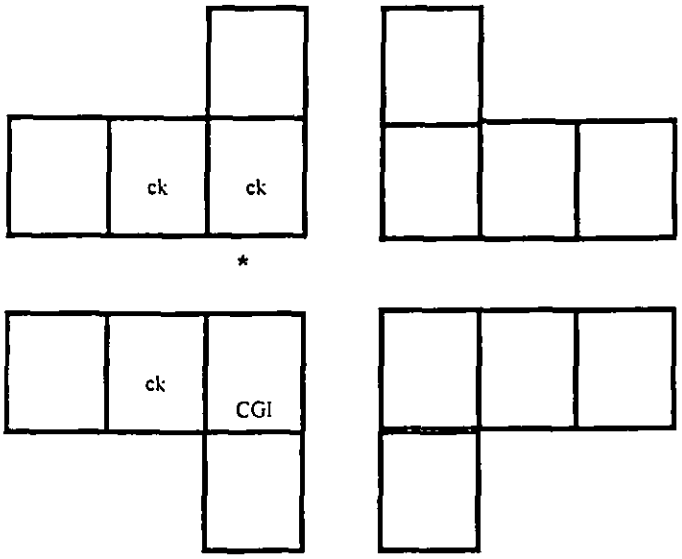


FIG. 2I CORNER PROPERTY - IN THE FOOTWAY (OR ALLEYWAY) IN THE SEWER VENT AND/OR CURB BOX

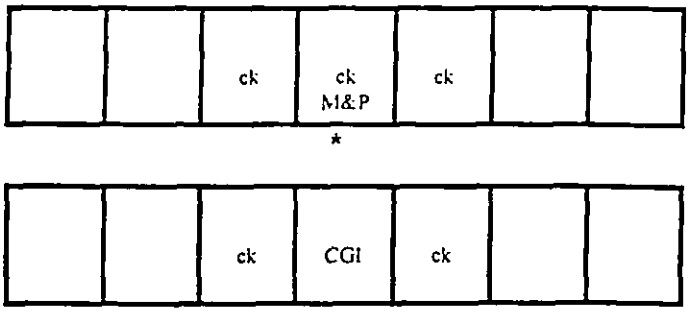


KEY

* - Origin of leak complaint
ck - Properties requiring a GDI check
CGI - Permissible CGI'S
M&P - Meter and Piping Test required *if odor or GDI reading is obtained*

Street Leaks - Continued

FIG. 2J MIDDLE OF THE BLOCK IN THE FOOTWAY (OR ALLEYWAY) IN A SEWER VENT AND/OR CURB BOX



KEY

* - The origin of leak complaint
ck - Properties requiring a GDI check
CGI - Permissible CGI'S
M&P- Meter and Piping Test required if odor or GDI reading is obtained

3. **Service Leaks**

A. When your examination gives any indication that the source of the gas odor could be a service supplying a single dwelling, and after a complete Street Leak Investigation has been finished, the following steps must be implemented when possible: the service must be shut off at the curb box (if one is installed), a service stopper installed (low pressure) or a temporary repair made using approved sealant and wrapping the service.

B. Use Form 09 to record the address/location, time and instrument readings for each of the properties visited. The NOTIFY DIST. and TYPE field must be used to allow both the FSD and Distribution Dispatchers to view the supplied readings and determine if a Distribution crew is needed. This notification is required whether a Distribution Department crew is on the job or not. A message will be sent to the terminal confirming the receipt of your Leak Survey. Use FORM 02 to notify the Dispatcher of any other details concerning the job.

C. Wait on the job for the Distribution crew to arrive. While on the job, continue revisiting those premises covered during the initial investigation and check all premises required by the Leak Investigation Procedure. Use FORM 09 to inform the Dispatcher of any changes or any new readings you may have obtained. When the Distribution crew arrives, report to the Foreman and provide all of the details of your investigation. Continue your investigation under the direct supervision of the Distribution Foreman. The highest ranking Distribution Department Supervisory employee has the authority and responsibility at all street leaks and leak investigations when both departments are involved.

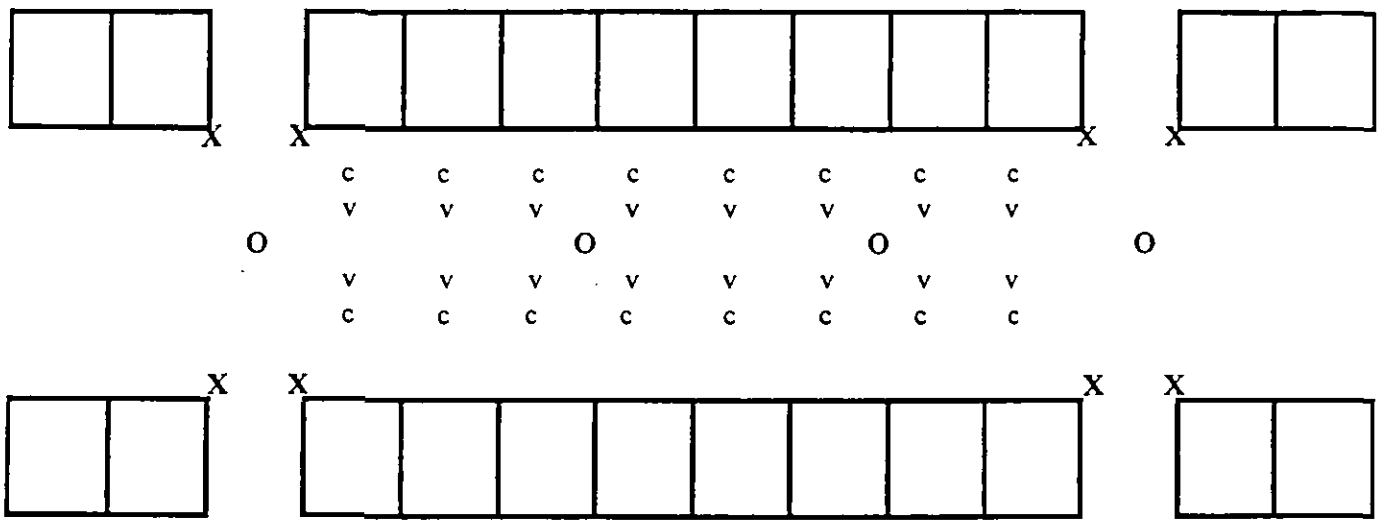
NOTE: **In all cases of gas service leaks, follow the complete Street Leak Investigation Procedure.**

4. Outside Odor in a General Area

Whenever a gas odor has been reported outside in a general area, such as a complete block of homes or an intersection, proceed as follows:

A. Question anyone in the area pertaining to the nature and location of the odor reported.
   1. Make GDI examinations of sewer inlets, all four corners at each end of the block, manholes, curb boxes, vent boxes and any point that may show the presence of gas as shown in figures 4A and 4B.

Figure 4A. OUTSIDE ODOR IN A GENERAL AREA - COMPLETE BLOCK CHECK



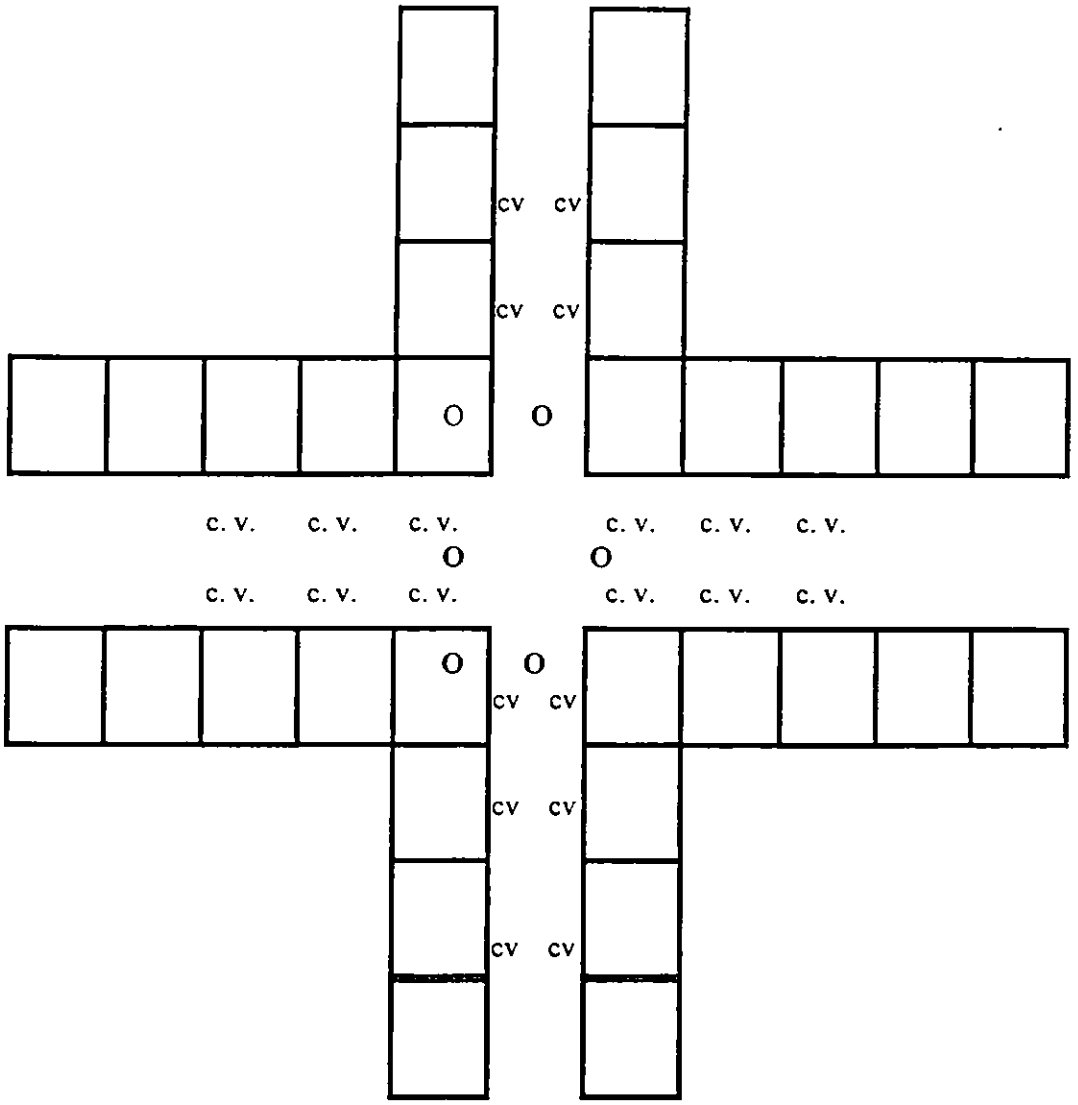
KEY

c - curb boxes
v - vent boxes
o - manholes
x - corner properties

NOTE: At each corner property, check all curb boxes, vent boxes, cracks in street, sewer inlets and manholes.

Outside Odor in a General Area - Continued

FIG. 4B OUTSIDE ODOR IN A GENERAL AREA AT AN INTERSECTION



2. If your examination should reveal any GDI readings or gas odors, a complete Street Leak Investigation must be made according to the Leak Investigation Procedure Beginning on SEC. I - 2.

   If during the leak investigations, you record a GDI reading or encounter an odor coming from an underground source, and the odor or reading is not present in any of the premises visited, notify the FSD Dispatcher promptly. The Serviceperson shall remain on the job unless otherwise instructed.

5. Outside Gas Appliances

On leak orders resulting from "leaks at outside gas appliances", it is necessary in every case to follow the Leak Investigation Procedure for the premises in question. It is not necessary to visit additional houses or notify the Distribution Department if the complaint is the result of a gas leak of an outside appliance. **Contact the FSD Dispatcher via mobile telephone, voice radio, or Form 02 - Freeform Communication to have the 513 or 514 complaint canceled. The Service person will then generate the appropriate nature of order.**

6. Foreign Odors (Any odor other than PGW gas)

A. Try to identify the type of odor and determine its source after questioning the Customer about the complaint.

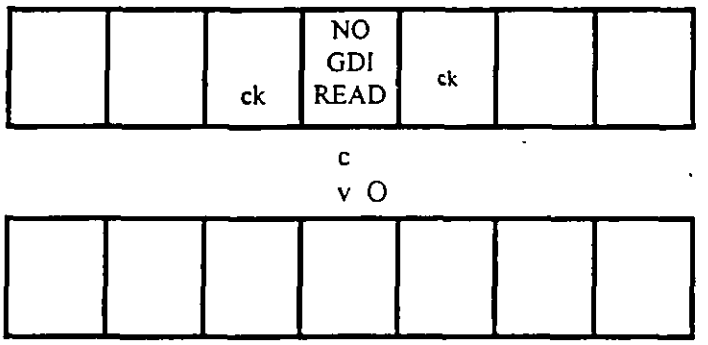
B. If the odor can be traced to a definite and positive source (no odor or GDI readings evident in drains, vents, curb boxes, manholes, or coming through a foundation wall), notify the FSD Dispatcher of the details using the proper forms. The Serviceperson may leave the job.

NOTE: **In all cases, complete the entire Street Leak Investigation except when otherwise notified by the FSD Dispatcher.**

7. No Odor and No GDI Reading

When no odor or GDI reading is detected by the Serviceperson either inside or outside of the premises of the complaint, the leak investigation in this case will consist of a GDI check in at least one (1) of the adjoining premises on each side. The curb boxes, vent boxes and sewer inlets, manholes, regulator vents and any other point that may show the presence of gas must be examined as well (see fig. 7 below). If a CGI is encountered, a GDI check shall be made at the mail box, sewer vents, curb boxes, doors, windows, front, rear or side walls of the adjoining premises. The Serviceperson must forward the results of the outside investigation using FORM 09 to list the location, time and instrument readings for each of the premises visited.

FIG. 7 NO LEAK NO ODORS - NO GDI READINGS



8. CGI Procedure

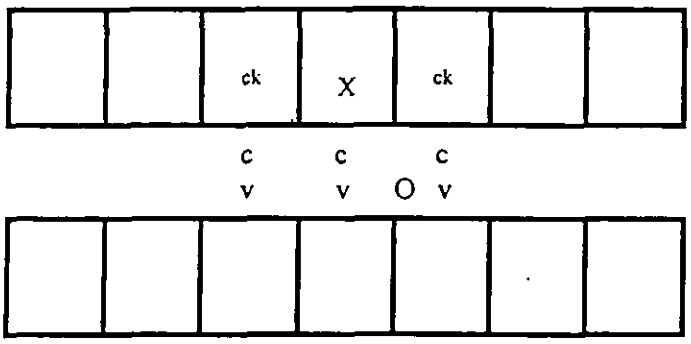
Should the premises be CGI from which the leak or odor complaint was received, the following steps should be implemented :

1. If there is a possibility of gas leak inside the premises, as evident by GDI readings or by readings obtained from adjoining premises, shut off gas at the curb cock (if one is installed) and make a forcible entry.

2. Using your mobile telephone, phone the customer . If there is no answer notify the FSD Dispatcher through FORM 03 that the premises is CGI. The Dispatcher will try calling the customer. Verify name and address with a neighbor or any other investigatory means.

3. Question neighbors as to the likelihood of people being in the house or apartment. Follow the Leak Investigation Procedure with your GDI by examining at least one (1) premise on each side of the source of leak or complaint. This examination includes front and rear of premises, mailbox and curb boxes, sewer vents, etc... (See Fig. 8)

FIG. 8



KEY
X - CGI
c - curb box
v - vent box
o - manhole

4. You are justified in making a forcible entry either with or without the police or a neighbor and without consulting the Dispatcher, if you believe that there may be people affected by gas inside or there is a danger of explosion. Do this with the minimum of damage, and notify the Dispatcher and Risk Management Department as soon thereafter as possible. Leave a "Notice of Emergency Break-In" card on the customers premises (Form # 14-6489) (See Sample, SEC I - A1).

OR

Should your examination reveal no odor or evidence of escaping gas, and you have no reason to believe anyone is in the house, notify the Dispatcher. Leave a CGI notice (Form # 490) (See Sample, SEC I - A2) once the Dispatcher has instructed you to do so. If CGI on further visits, the same procedure as outlined for the first visit must be followed. Always contact the FSD Dispatcher giving all details.

CGI Procedure - Continued

The Dispatcher must be contacted for all of the following conditions:

1. As soon as you establish the need for the Distribution Department or if the situation changes while making your checks.
2. Any emergency or incident - Contact the Dispatcher immediately.
3. Any newsworthy item (Including evacuations).
4. After all outside investigations.
5. If there is a need for additional help.
6. If there is a need for Police or Fire Department.
7. Progress reports every hour when on a Street Leak Investigation.
8. When released from a Street Leak Investigation.
9. When on Fire duty. Call as soon as possible as to PGW involvement.
10. To verify any needed information; address, name, meter number, apartment, etc.

9. Leak Calls For Quick Service

When the Customer admits to telephoning in a leak to obtain quick service, the following procedure must be implemented:

A. A GDI check must be made at the appliance and foundation walls.

B. The results (time and reading) of the necessary checks recorded on Form 06 in the appliance and foundation wall fields.

No appliance service will be performed when responding to a gas leak for fast service. If the appliance is not operating, make it safe. If the appliance is operable when you arrive, you shall leave the appliance operable unless a class A hazard exists (See Special Bulletin # 1344 "FSD Policy - No Service on Leak Calls For Fast Service".

10. Special Leak Procedure During Declared Emergencies

When advised by the FSD Dispatcher, the Serviceperson will contact the Distribution Department Leak Classifier by phoning 684-6376 and be prepared to answer the following questions:

1. Address of complaint.
2. Type of premises.
3. Where is the leak most intense?
4. Can the premises be ventilated?
5. Can ventilation be continued?
6. Are there any open flames in the basement?
7. Location of odor, if only in one place.
8. When and where did the customer first smell the odor?
9. GDI readings at the various locations in the premises.

Fire Duty Procedure

The following procedure should be followed when an FSD Serviceperson is dispatched to the scene of a fire:

1. The Serviceperson should report to the Fire Officer in charge or to the Communications Van, if it is on the scene, equipped with a curb key, spoon bar, 14 inch pipe wrench, hard hat, boots, rain suit, flashlight and GDI. The Serviceperson must remain at the scene of the fire and continue his/her duties under the supervision of the Fire Officer in charge.

2. If immediate action is required in shutting off gas to affected or threatened *properties, this work should be completed as soon as possible and reported* immediately to the Fire Officer in charge. This information must also be recorded on the proper FSD forms.

3. At the first opportunity, the Serviceperson must contact the FSD Dispatcher (via mobile phone if available) giving all pertinent information relating to the fire location, properties involved and Company involvement. If a mobile phone is not available, this information can be recorded thru the use of FORM 02 or voice radio. If the Distribution Department is required to shut off mains, services or to check drips, the FSD Dispatcher must be advised at this time. The Serviceperson should also confirm with the Dispatcher what future contacts will be necessary. If additional FSD assistance is required, the Dispatcher must be told as soon as possible.

4. He/she should check properties adjacent to the fire for possible leaks or fluctuations in pressure due to water entering services or mains from damaged installations. **Every effort must be made to shut the gas off to appliances and/or meters under water.**

5. When released by the Fire Officer in charge, an effort must be made to restore service to any building shut off and not affected by the fire. The necessary GDI checks must be made. Should it become necessary to leave the gas officially off, the proper work forms must be generated and completed on the DXT.

6. If fire damage is extensive, indicating that the property might be demolished, the Fire Marshall on the job must be contacted and permission to remove the meters must be requested. Do not remove any meters without the Fire Marshall's permission.

7. When all necessary checks have been made and the work has been completed, the Serviceperson must send a Form 02 message stating they have been released and are now leaving the fire scene.

Gas Detection Instrument Instructions

Before using any gas detection instrument, completely familiarize yourself with the following operating instructions:

General

The scale on the gas detection instrument (GDI) indicates whether combustible gas is present in the sample of atmosphere being tested. If the meter indicates that combustible gas is present, it does not necessarily mean that PGW gas is present but may mean that gasoline vapor, sewer gas, etc., is present or a combination of combustible gases is present in the sample of air being tested.

Care of your GDI

It is the responsibility of each Serviceperson to insure their GDI is turned in to the Meter Shop for calibration every six (6) weeks and to make a battery and filament check of their GDI at the start of their work shift (See SEC. I-19, 20, 21). An air leak check of the GDI should also be performed at this time. This check can be completed by simply squeezing the aspirator bulb and placing your finger over the inlet of the sampling hose. If the aspirator bulb inflates, it is an indication that an air leak exists and the GDI should be turned in for repair. Care should be taken not to draw water or any other liquid into the GDI.

When to use the Gas Detection Instrument

Listed below are at least four examples of when the GDI is used.

1. The GDI is used on every leak or odor complaint or examination.

2. When making an investigation where an explosion or fire has occurred, regardless of the cause.

3. After disturbing the service, the front foundation wall and the curb box must be checked before lighting the appliances.

4. When making a turn-on from the curb box, the front foundation wall and the curb box must be checked before leaving the premises.

Zeroing your GDI

Purge the GDI with fresh air before entering the any leak complaint or before taking a reading. Five (5) squeezes of the aspirator bulb will purge the instrument. This must be done in order to adjust the pointer to "Zero".

GDI Instrument Readings - Continued

Instrument Readings To Be Reported When Using The GDI

The scale on the GDI meter ranges from zero to 100. The pointer on the scale indicates the percentage of combustible gas present in terms of the lower explosive limit (LEL) of the sample being tested. When the sample of atmosphere being tested is at the lower explosive limit or a 100 reading on the GDI meter (5% gas and 95% air), an explosion could occur if a source of ignition is introduced.

The readings obtained with a GDI fall into four (4) categories. These categories are defined as follows:

A. ZERO
After the pointer is calibrated at zero using a fresh air sample and no further movement of the pointer occurs after the sample of air is tested, the reading is zero. This zero reading indicates that there is no combustible gas present in the sample of air being tested (0% gas - 100% air).

B. From Zero To 100
A reading on this portion of the scale indicates the percentage of combustible gas in terms of lower explosive limit (LEL). Readings obtained in this range must be reported to the Dispatcher in terms of percentage. For example - a reading of 60 indicates the sample being tested is 60% of the lower explosive limit. In terms of the amount of gas present, that 60% reading contains 3% gas and 97% air.

	Percentage Gas and Air	
GDI READINGS (PERCENT L.E.L.)	% GAS	% AIR
0	0	100
20	1	99
40	2	98
60	3	97
80	4	96
100	5	95

C. Over 100
If the pointer moves beyond 100 and remains in that region, it indicates that the sample being tested is within the explosive range of the combustible mixture. This reading must be reported to the Dispatcher as a 100% reading. This reading is critical since the sample being tested contains the proper ratio of gas to air (between 5% gas - 95% air and 15% gas - 85% air), that if a source of ignition is introduced, an explosion could occur.

GDI Instrument Readings - Continued

D. Pointer Moves To Extreme Right (Above 100) Then And Returns To Zero Or Below. This reading should be reported to the Dispatcher as a 100+ reading. This reading indicates that the sample being tested is at or above the upper explosive limit. The upper explosive limit is defined as 15% gas - 85% air. This reading is critical, since the sample being tested is saturated with gas and could contain 15% or more gas. If outside air is introduced to this sample without all sources of ignition being eliminated, an explosion could occur since it would reduce the ratio of gas to air to be within the lower explosive limit. when 100+ is entered on the DXT, it should be entered as 999.

NOTE: **If several different readings are observed during your investigation, report the maximum reading to the Dispatcher and on your FORM 09.**

Care of Your GDI

Use extreme care in handling the GDI. Care should be taken not to draw water or any other liquid into the GDI.

Identification

Each GDI is numbered and marked PGW.

Remember

If during your work shift it is determined that your GDI must be exchanged, the new GDI number must be recorded on your Form 01 and transmitted at that time.

Operating Instructions - MSA Type GDI

1. Lift the on-off bar on the rheostat knob one quarter of the way in a clockwise direction. This enables the battery circuit to close. The meter pointer should move rapidly up the scale and then return slowly to some point below zero.

2. Purge the GDI with fresh air. This must be done in order to adjust the pointer to "Zero". The five (5) foot sampling hose must be in place. Five (5) squeezes of the aspirator bulb will purge the instrument.

3. Adjust the rheostat knob until the meter pointer rests at zero. The meter pointer is adjusted to zero by rotating the rheostat knob in the clockwise direction.

4. Check the meter pointer at zero after the instrument has been taken to the location where the test is to be made. Readjust if necessary (do not squeeze the aspirator bulb).

5. Aspirate the sample through the instrument until the highest reading is obtained (not less than five (5) squeezes of the bulb).

6. To turn off the GDI, rotate the rheostat knob counter clockwise until the on-off bar drops into the position in its slot. The GDI should be turned off immediately after using it in order to preserve the life of the batteries.

Check On Batteries And Detector Filament

1. If the meter pointer remains below zero when the rheostat knob is turned to its extreme clockwise position, the battery cells are exhausted and must be replaced.

2. When the meter pointer moves to the extreme right when the GDI is turned on and can not be adjusted to zero, the detector filament is burned out and must be replaced.

3. This check should be made each day at the start of your shift. If batteries are defective, they should be replaced by the Serviceperson. If the filament is defective, the GDI should be exchanged.

4. Your GDI meter must be checked by the Meter Shop every six (6) weeks for calibration.

Operating Instructions - DAVIS Type GDI

1. Move the on-off switch to the "On" position.

2. Turn the V and LEL switch to the "V" position.

3. Lift the knob marked "V" and adjust the meter pointer to the green arrow.

4. Turn the switch to the "LEL".

5. Purge the GDI with fresh air. Aspirate the bulb until the pointer is at Zero with the five (5) foot sampling hose coupled to the instrument.

6. Aspirate the sample through the GDI until the highest reading is obtained (not less than five (5) squeezes of the bulb).

7. To turn off the GDI, throw the on-off switch to the "Off" position. Closing the cover of the indicator does this automatically. The GDI should be turned off immediately after using it in order to preserve the life of the batteries.

Check On Batteries And Detector Filament

1. Batteries should be replaced when the meter pointer can not be adjusted to the green arrow with the switch in the "V" position.

2. When a filament burns out, the meter pointer will remain either at the top of the scale or below zero. If the filament is defective, the GDI should be exchanged.

3. Your GDI meter must be checked by the Meter Shop every six (6) weeks for calibration.

NOTE:

The GDI should be exchanged whenever erratic action occurs. For example: If the pointer moves up the scale smoothly during the test but then sticks and starts to move ahead rapidly and in a jerking motion, that GDI should be exchanged. Remember: If you exchange your GDI in the course of your work day, you must issue and transmitt a new form 01 with new GDI number recorded.

Operating Instructions - Gas Trac And Sensit Combustible Gas Detectors

1. Slide the on-off swit.. to the "On" position. Allow several minutes for the green "Ready" light to indicate that the instrument is ready.

2. Adjust the variable tick rate to tick about once a second by means of the thumb-operated control wheel.

3. The tick rate will rapidly increase when the unit senses combustible gases or other contaminants.

4. The location of the gas leak can be pinpointed by slowing the tick rate with the control wheel and continuing to look for the spot that makes the tick rate accelerate again.

5. The gas-trac also has four (4) lights that come on when special concentrations of methane gas and air are detected. A brief explanation is as follows:

   a. **Green "Ready" Light** - Indicates that the instrument is ready for use and that the surrounding atmosphere is in a satisfactory, non-explosive range.

   b. **Amber "Slight" Light** - Indicates that the surrounding atmosphere contains 1/10% of one% methane in the gas/air mixture.

   c. **Amber Medium Light** - Indicates that the surrounding atmosphere contains 1% methane in the gas/air mixture.

   d. **Red "Alarm" Light** - Indicates the surrounding atmosphere contains 2% or more methane in the gas/air mixture.

6. The Serviceperson assigned the Gas-trac or Sensit gas detectors will use the instrument on every gas leak investigation in conjunction with the GDI.

7. The Gas-trac and Sensit gas detection instrument must be checked for calibration by the Meter Shop every six (6) weeks.

NOTE: **The Gas-trac and Sensit gas detectors should be exchanged whenever erratic action occurs. For example - if the tick rate becomes erratic, the unit should be turned into the Meter Shop for service.**

Use of Odorometer

General Description

The odorometer is an instrument which uses a constant speed, motor-driven blower (either electrically or battery powered) to draw in room air which is discharged from an opening at the top of the case. The gas to be tested is supplied to the instrument under its own pressure and metered by a flow meter (rotometer) and is controlled by a gas flow adjusting valve. The concentration of the gas in the air stream (% gas in air) is determined by referring to the table attached to the odorometer.

Method of Use

1. Turn on the blower motor switch.

2. The gas supply to be tested should be connected to the gas inlet fitting on the front panel of the odorometer. The gas pressure should be below1/2# or .5psig; preferably from 5 to 10 inches. Purge the air from the connection hose.

3. The observer should place his/her nose about one (1) inch from the discharge opening.

4. The gas flow adjusting valve located in the center if the panel shall be opened slowly, while sniffing the air discharged from the top of the odorometer until the gas odor is first detected. Check this adjustment by squeezing the hose to stop the gas flow and allow only air to discharge, clearing the instrument and the nose, then releasing the hose.

Range of Input

1. Make all readings from the bottom of the ball float.

2. The new odorometers have two (2) ball floats, a lightweight glass float (top) and a heavier stainless steel ball float (bottom, both in the same metering tube. The older style odorometers have only one ball float). Take readings only on the glass ball float when both are within the flow meter (rotometer) scale of measurement; take readings on the metal float when the glass ball float reaches the top of the tube.

3. Use the rotometer reading to find the percent of gas in the air by referring to the table attached to the odorometer.

4. Generally, the readings will be from .01% to .45% gas in the air. Smaller readings indicate higher odor levels. If the reading is .5% gas in the air or higher, indicating a weak reading, the FSD Dispatcher should be notified, giving the address and odorometer reading.

NOTE: **A weak reading is any reading .5% gas in air or higher. (e.g., .6%, etc.)**

Use Of Odorometer - Continued

Daily Odorometer Check

During that period, when the Specialist is assigned the odorometer, two (2) readings shall be taken at different locations, one (1) at his/her assigned station and one (1) while on a service call, and the results noted on Form #M-6630 (See Sample SEC I - A3). The completed "Daily Odorometer Readings" form shall be placed with your completed work each day. In the event the scheduled Specialist will not be able to make the tests, the Specialist shall notify the Area Supervisor.

Special Odorometer Check (Major Incident or Explosion)

1. A Specialist, if available, will be dispatched on any major incident where the odor of the gas may be a factor. An odorometer is available in the FSD Dispatching Office for use out-of-hours.

2. The Field Services Department person assigned to make the tests must consult with the Distribution Department Supervisor on the job for direction on where to make the tests. This is necessary because of distribution piping system barriers such as railroads, parks and creeks, closed systems with different pressure levels, etc...

3. **The odor shall be tested at a minimum of four (4) locations, two (2) on either side of the *major incident or explosion. These tests should be made as discreetly as possible. If the* required checks do not show acceptable levels, additional checks musr be made in each direction until acceptable levels are found.**

4. The report of the odorometer readings and addresses should be recorded on Form #M-6630 and forwarded to the Superintendent, Technical Services.

LEAK/FIRE DUTY SECTION

NOTICE OF EMERGENCY BREAK-IN - SAMPLE (FORM #M - 6489)

IMPORTANT!

We are sorry. Because of an emergency, a PGW serviceperson had to enter this property:

Address _____

Date _____ Time _____ P.R. No. _____

When leaving, the serviceperson closed and secured the area that was entered. For additional information, please call 684-6535 between 8 a.m. and 4:30 p.m., Monday through Friday. At other times, call 684-6014.

PHILADELPHIA GAS WORKS

M-6489 Rev. 9-92

(SPANISH TRANSLATION ON BACK)

CGI NOTICE - SAMPLE (FORM #069-6490)

Your gas serviceperson was here.

Date_____ ___a.m.___p.m.

We called to_____

_____

Please call 235-2050 to let us know when we may return to provide the service you requested.

PHILADELPHIA GAS WORKS

Form 069-6490 Rev.8-90

DXT FORM 09 - SAMPLE

```
**************************************************************
*                                                            *
*      #09      + LEAK SURVEY INFORMATION +                  *
*      JOB____ SERIAL_____                                   *
*      NOTIFY DIST____  TYP_____ (X, F, E, L, N)             *
*      LOCATION/ADDRESS                TIME     LEL          *
*      _____________________________  _____  _____          *
*      _____________________________  _____  _____          *
*      _____________________________  _____  _____          *
*      _____________________________  _____  _____          *
*      _____________________________  _____  _____          *
*      _____________________________  _____  _____          *
*                                                            *
**************************************************************
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NOTE: **FORM 09 INSTRUCTIONS CAN BE FOUND IN THE MOBILE TERMINAL MANUAL (9-1)**

DAILY ODOROMETER READINGS - SAMPLE (FORM #6630)

DAILY ODOROMETER READINGS

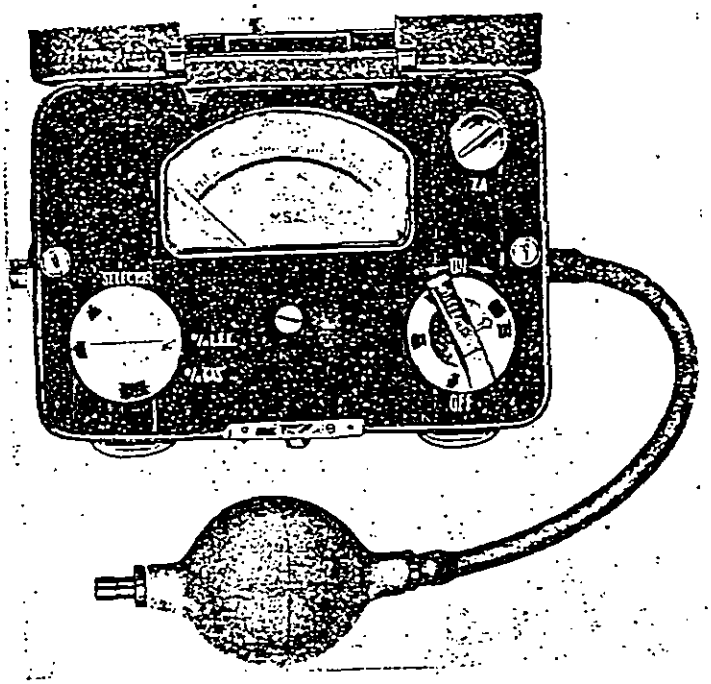
NAME_____ P.R. # _____

ODOROMETER #_____ DATE _____

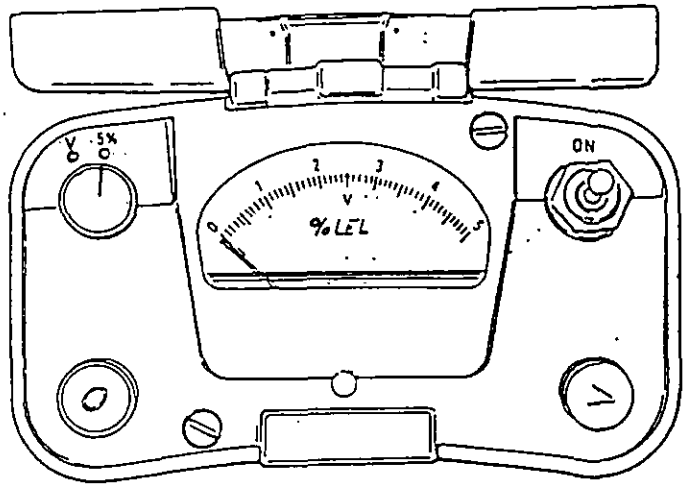
	ADDRESS	TIME	ROTOMETER READING	% GAS IN AIR (*)
1.				
2.				

Form #M 6630 Rev. 4/78

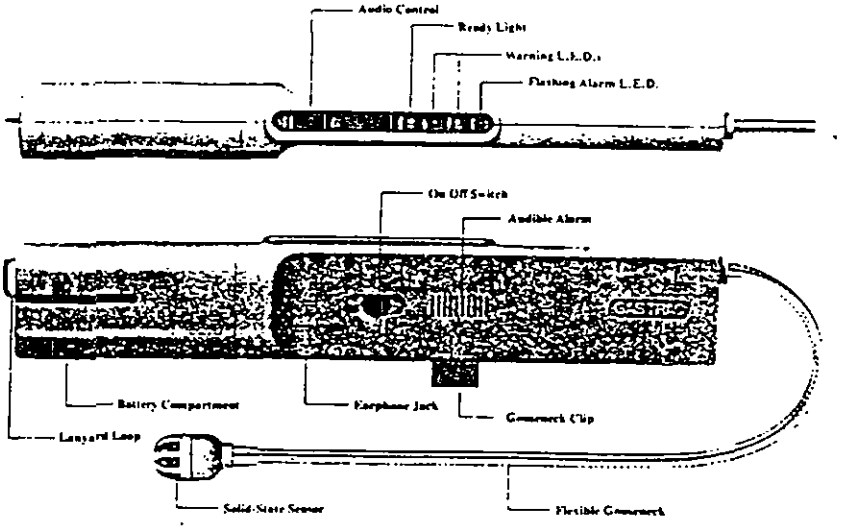
MSA TYPE GDI - SAMPLE



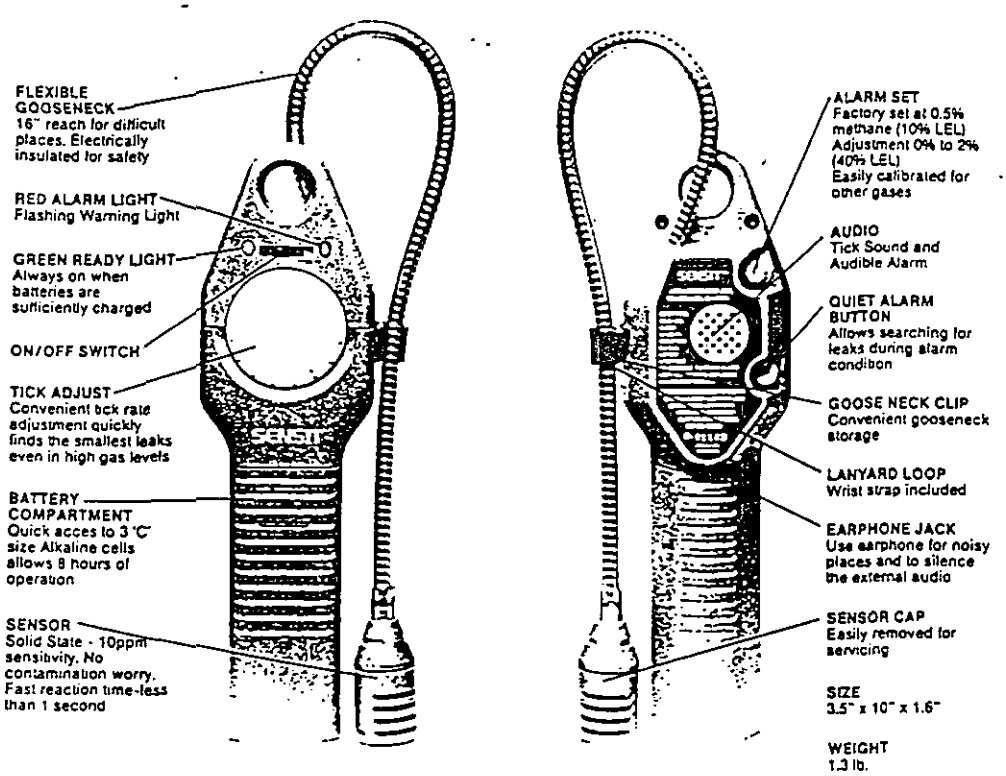
DAVIS TYPE GDI - SAMPLE



GAS TRAC GAS DETECTOR - SAMPLE



SENSIT GAS DETECTOR - SAMPLE



LEAK/FIRE DUTY SECTION

ODOROMETER - SAMPLE

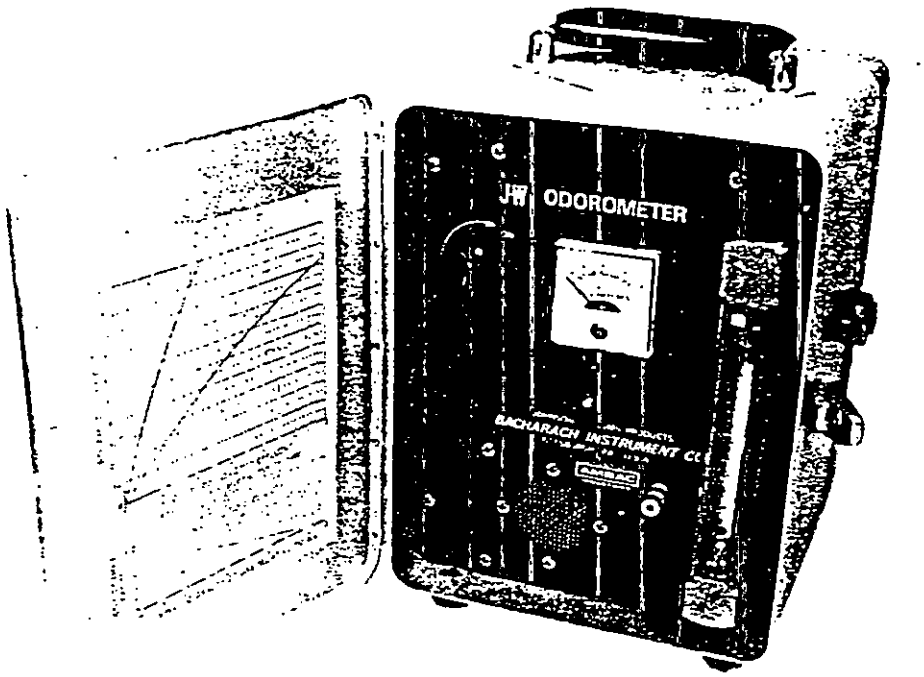


EXHIBIT "C"

Navigant Study, February 11, 2000

Philadelphia Gas Works
Mains Replacement Study

Navigant
CONSULTING, INC.

February 11, 2000

Table of Contents

This report is the result of a Mains Replacement Study

This report was prepared as a result of a study performed in late 1999 by Navigant Consulting, Inc. The scope of the study was Philadelphia Gas Works' replacement budget for cast iron and bare steel mains and the associated services replacement. This included both types of replacement, i.e., prudent - that which is motivated solely by risk reduction, and enforced - that which is motivated by related construction.

The analysis includes benchmarking, trend review, recommended replacement levels, and for cast iron mains, a Cast Iron Mains Risk Model that predicts the risk associated with different levels of cast iron main replacement. This risk is shown to be most closely related to breaks on cast iron main. Also, PGW's CI Mains Replacement Prioritization Model is reviewed. This model allows PGW to make maximum use of replacement funding by targeting those segments of cast iron main that are most likely to break.

This study updates and extends a similar study done in 1995. It is consistent with other reviews of mains replacement done for other companies in that it uses data from the US Department of Transportation Office of Pipeline Safety to benchmark performance, it reviews the company's own trends, and it recommends replacement levels based on a model of risk mitigation.

Benchmarking PGW - Top 25 Eastern Gas LDC Peer Group

	Company	Total Services	Unprotected steel Services	%	Main Miles	Cast iron main Miles	%	Unprotected steel Main miles	%
1	NICOR	1,724,295	23,337	1%	26,549	561	2%	209	1%
2	Consumers Power	1,437,426	19,648	1%	22,807	872	4%	214	1%
3	AGL	1,277,398	59,441	5%	26,352	291	1%	1939	7%
4	Columbia of Ohio	1,207,252	201,316	17%	18,060	319	2%	4069	23%
5	PSE&G	1,153,327	41,608	4%	16,194	4,815	30%	1289	8%
6	East Ohio	1,095,578	638,254	58%	18,179	51	0%	7013	39%
7	MichCon	1,083,588	59,772	6%	16,492	2,830	17%	1894	11%
8	NIPSCO	654,203	-	0%	12,908	49	0%	127	1%
9	Laclede	565,669	13,110	2%	7,586	945	12%	40	1%
10	BUG	535,427	30,344	6%	3,909	1,939	50%	316	8%
11	Indiana Gas	534,473	62,508	12%	10,383	202	2%	1637	16%
12	**PGW**	**511,545**	**244,759**	**48%**	**3,006**	**1,758**	**58%**	**547**	**18%**
13	Peoples Gas Light	496,136	9,484	2%	3,944	1,932	49%	0	0%
14	NiMo	482,497	148,352	31%	8,223	1,032	13%	1467	18%
15	Alabama Gas	472,948	54,264	11%	8,948	1,230	14%	185	2%
16	National Fuel Gas	462,858	129,938	28%	9,470	594	6%	2979	31%
17	BG&E	454,029	97,289	21%	5,592	1,458	26%	91	2%
18	LILCO	420,771	183,536	44%	6,491	421	6%	3715	57%
19	Boston Gas	418,978	264,715	63%	5,948	2,557	43%	1804	30%
20	Columbia of PA	380,594	93,321	25%	6,839	91	1%	2448	36%
21	Con Ed	364,246	159,296	44%	4,152	1,486	36%	1470	35%
22	NJNG	361,688	68,496	19%	5,799	163	3%	750	13%
23	PECO	361,672	68,966	19%	5,884	920	16%	557	9%
24	CG&E	338,534	22,834	7%	4,562	1,033	23%	199	4%
25	Peoples Natural	332,650	80,595	24%	6,206	71	1%	2383	38%
26	UGI	267,098	42,597	16%	4,270	495	12%	603	14%

Benchmarking PGW - Top 25 Eastern Gas LDC Peer Group

There are various appropriate measures of a local distribution company's (LDC's) size: revenue, customers, services. The source of the benchmark data we used is the US Department of Transportation's Office of Pipeline Safety Annual Reports of LDC's. These reports include the number of services, which is an appropriate indicator of size, and is close to the number of customers.

While PGW is the 26th largest LDC in the USA, it is the 12th largest among its peers -- Eastern gas LDC's, and it is the largest municipal LDC, the others being investor-owned. Because PGW will soon be regulated by the Pennsylvania Public Utility Commission, we have included UGI for comparison as well, even though it is not among the top 25 Eastern gas LDC's by size.

Like many companies that serve older, urban areas, PGW's mains are mostly cast iron, with some unprotected steel, and very little plastic. As a result, half of its services are unprotected steel as well. It has fewer miles of main than any of its peers, because of its densely urban territory. In that regard, its territory resembles that of companies like Brooklyn Union Gas, Boston Gas, Peoples Gas Light & Coke of Chicago, or Consolidated Edison of New York.

PGW's system is mostly cast iron, especially 4-6 inch

Main miles by type & size	2" or less	Over 2" thru 4"	Over 4" thru 8"	Over 8" thru 12"	Over 12"	Total
Cast Iron		372	1075	132	179	1758
Ductile Iron		57	77	5		139
Steel	55	281	455	100	120	1011
Plastic	9	66	23			98
Total	64	776	1630	237	299	3006

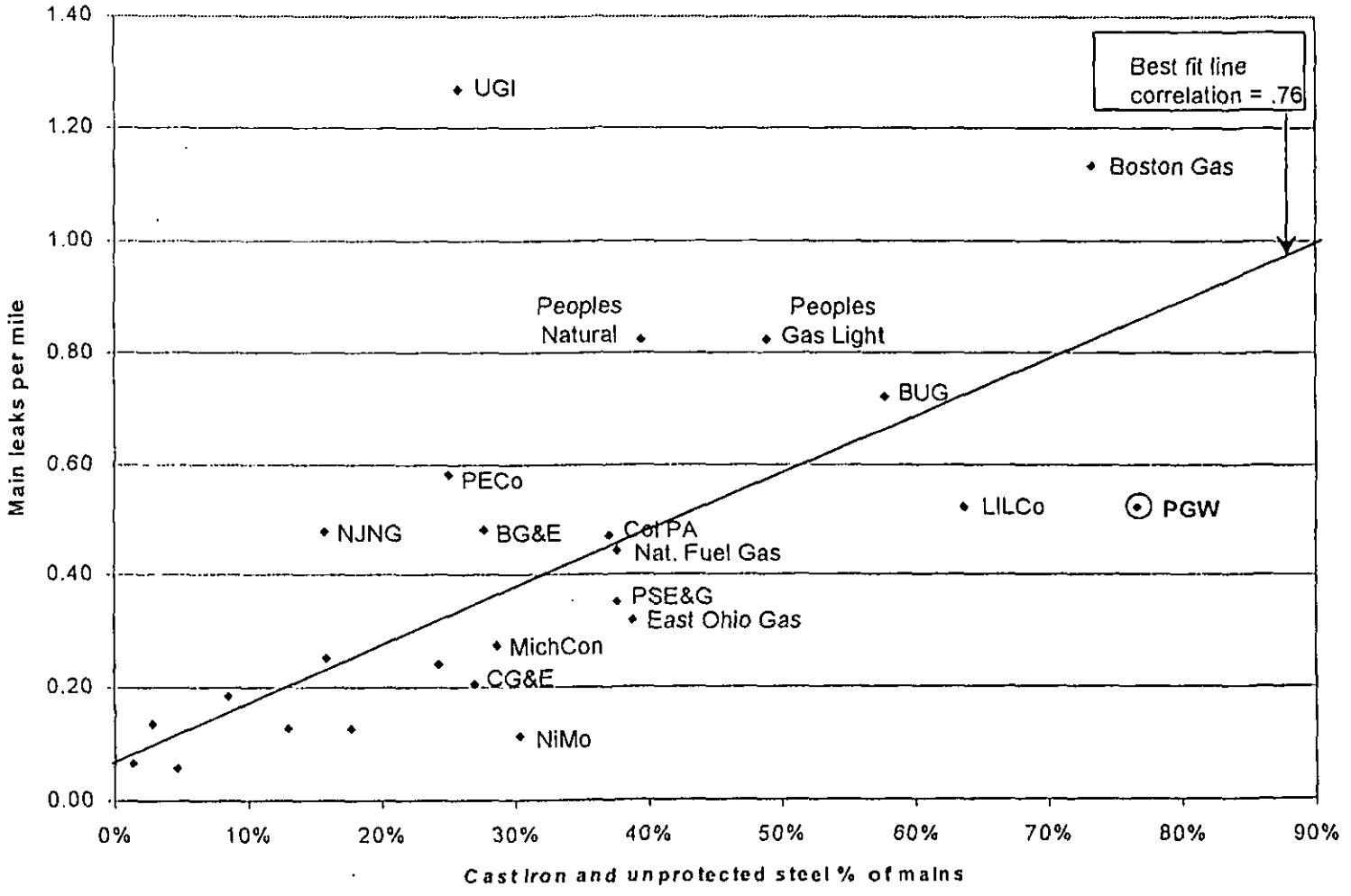
Source: PGW's 1998 Annual Report to the US DOT

PGW's mains are mostly cast iron, especially 4-6 inch

Almost half of PGW's total of 3,006 miles of main at the end of 1998 consisted of cast iron of diameters 3 to 8 inch, predominantly 4 inch and 6 inch. Like most gas companies, PGW replaced almost all of its cast iron mains of 2-3 inches in diameter because of the tendency of such 'small bore' pipe to break.

Unlike some companies, PGW operates its cast iron system almost entirely at low pressure (1/4 psi or 'utilization pressure'). Were it not so, an analysis of risk would have to include the pressure at which the mains are operated as well.

PGW's mains leak rate is consistent with its type of mains



Source: U.S. DOT 1998 Annual Report - Gas Distribution System.
Companies Ranked: Top 25 Eastern Gas LDC's, and UGI
Note: Graph Excludes Con Ed (2.02 leaks/mile, 70% bare steel and cast iron).

Navigant CONSULTING, INC.

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9

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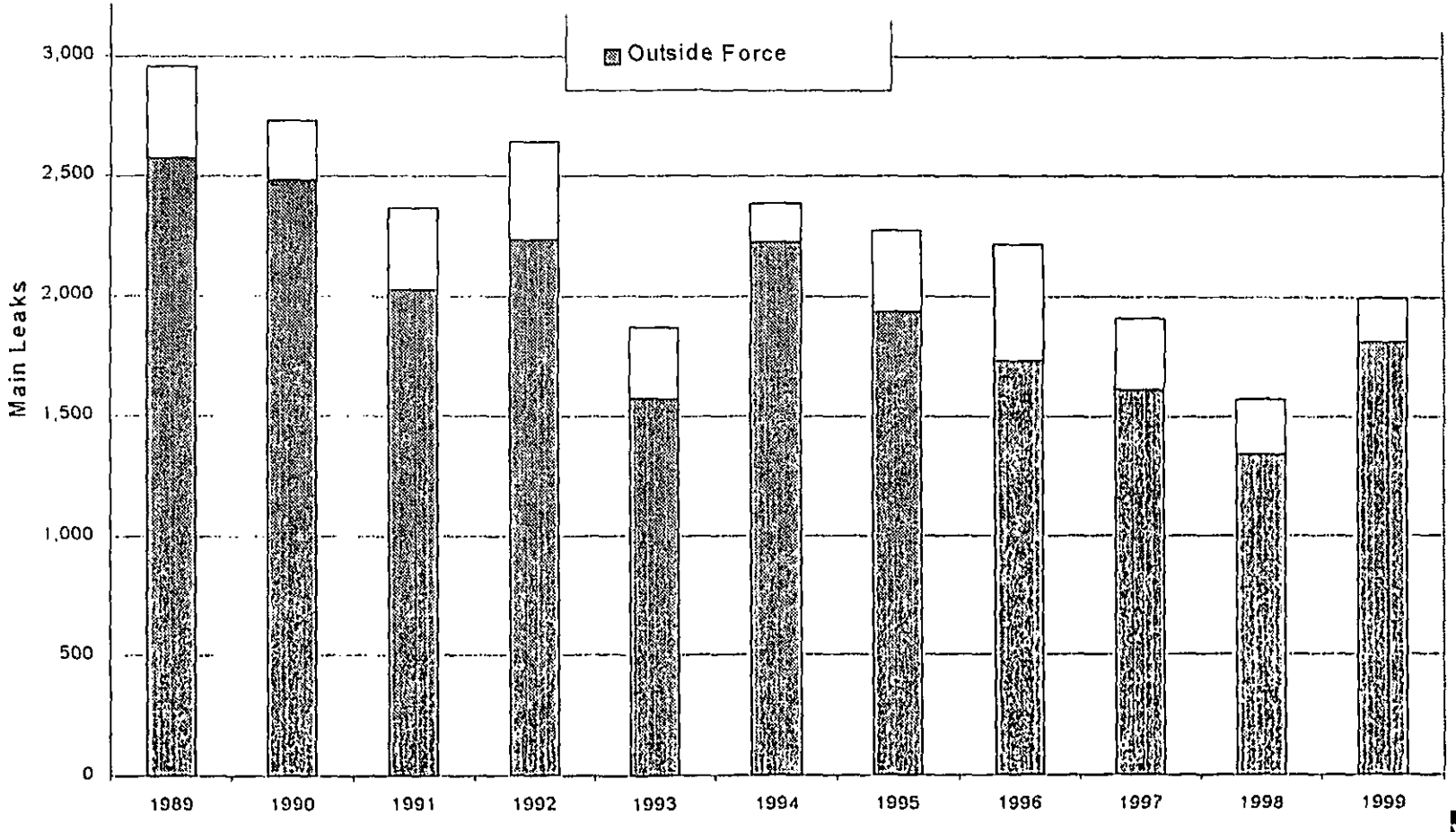


Navigant CONSULTING, INC.

There is a downward trend in PGW's main leaks

PGW's main leaks have averaged around 2,000 per year for over ten years. The numbers in 1997 and 1998 were lower, but this is likely due to milder weather, as the experience of 1999 shows. Deep frost tends to cause breaks and the subsequent thawing and ground movement tends to cause joint leaks, so milder weather tends to be associated with fewer leaks.

Almost all of PGW's main leaks are due to 'outside force', which chiefly means ground movement causing joint leaks or main breaks. The 'other' types are mainly taps, drip rods and sand holes.

Responding to leaks is a major part of any gas company's operations, and attention to leaks is an important part of system safety and integrity. Having reviewed PGW's procedures for leak response and finding them satisfactory, we now turn to the factors which are most likely to cause incidents, especially cast iron main breaks.

CI main breaks are the main source of incidents

Cause	Leaks	Incidents	Incidents per 10,000 leaks	Risk Multiple
CI main breaks	10,760	83	77.1	385.5
Service leaks	125,941	9	.7	3.5
Main corrosion	16,560	1	.6	3.0
CI joint leaks	82,877	2	.2	1.0

Source: Independent study of another northeast gas utility

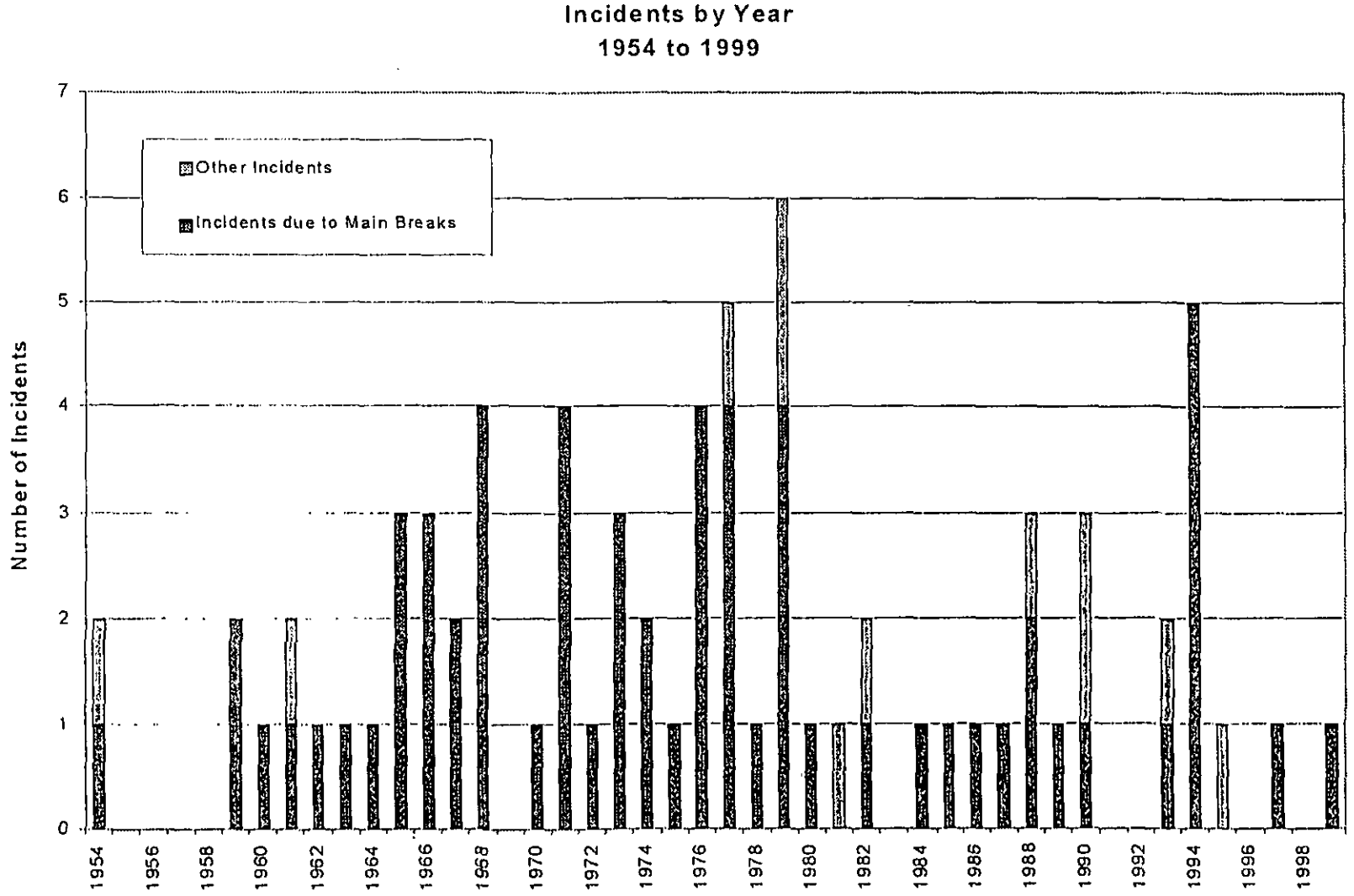
PGW's data generally confirm this relationship as well

CI main breaks are the main source of incidents

Cast iron tends to develop leaks, particularly at the joints between pipe segments. It can also break circumferentially, which is classified as a 'leak', but is more typically called a 'break'. Typically, joint leaks cause gas to escape at a slow rate, especially when the gas is at utilization pressure. Joint leaks on cast iron are often comparable to a pinhole corrosion leak on steel mains or services. A cast iron main break can cause more gas to escape, and therefore normally presents a more serious risk.

Other companies' experience confirms PGW's that cast iron main breaks are an order of magnitude more likely to cause incidents than other types of leaks. As the chart on the next page, shows, over the last 45 years PGW has had 63 incidents due to main breaks and 12 due to other causes, compared to approximately 20,000 breaks, more than 65,000 main leaks and over 200,000 service leaks. PGW's number of break-caused incidents per 10,000 breaks is 31.5, about half of the other company's experience (the other company has some cast iron at higher pressure, which is more likely to cause an incident when it breaks). PGW's number of other incidents per 10,000 other leaks is .45, about the same as the combined ratio for all of the other company's non-break leaks. The ratio of incident rates is 70, which, while half of the the comparable ratio for the other company, still strongly demonstrates that cast iron main leaks are more likely to cause incidents than other leaks by not just a multiple but by an order of magnitude (not just 7 times but 70 times).

PGW's incident history shows no obvious trend for now



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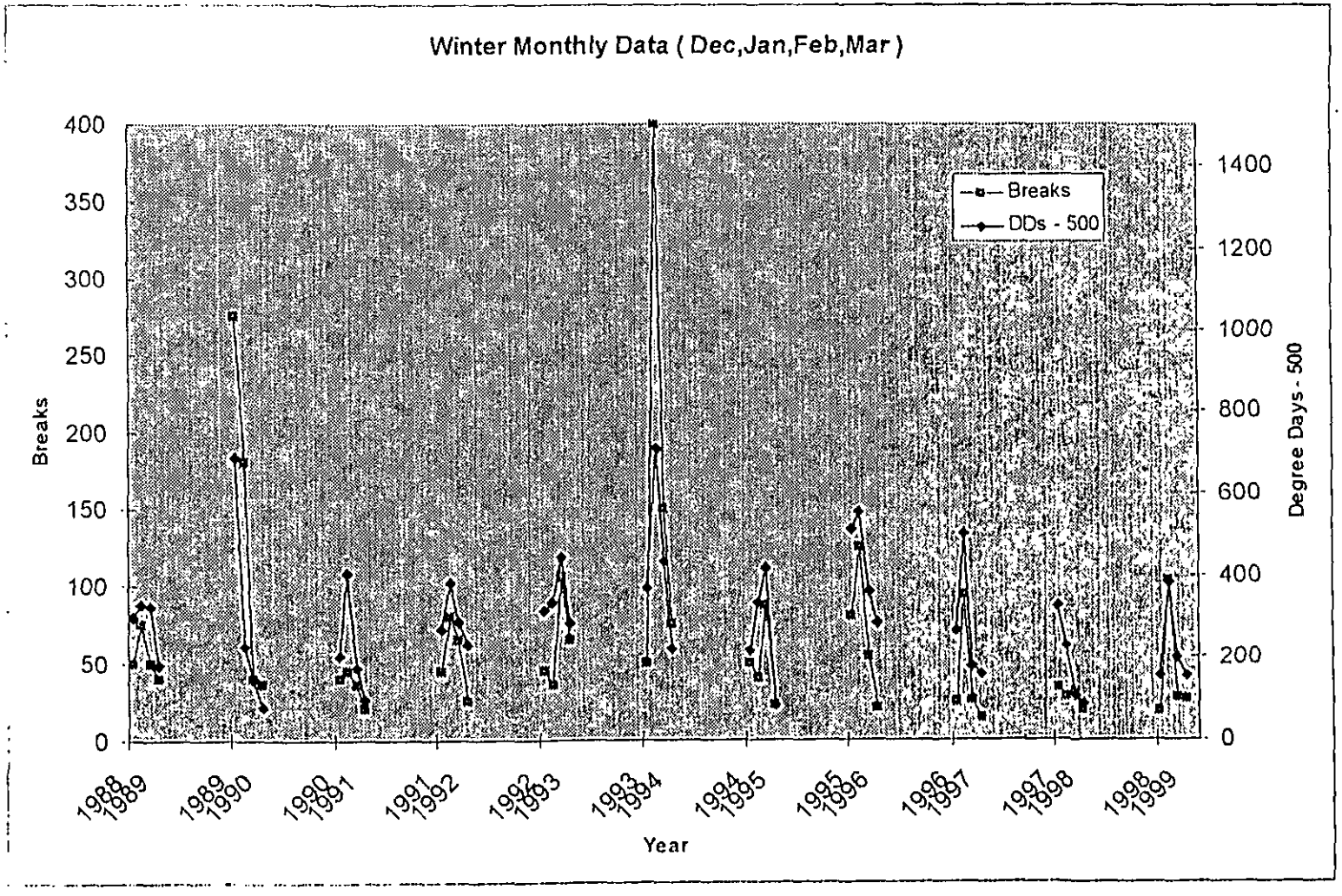
PGW's incident history shows no obvious trend

Incidents are recorded when certain criteria are met in terms of physical damage or injury associated with the escape of gas, e.g., an explosion resulting from a serious gas leak. For LDC's, as opposed to high pressure pipelines, most incidents occur when a large quantity of gas escapes or when a slow leak is allowed to accumulate gas into a large quantity due to frost, extensive pavement, or other impediments to venting.

For PGW and companies like it that have large amounts of cast iron at utilization pressure, the key to avoiding incidents is to avoid breaks. Avoiding service leaks, main corrosion leaks, and joint leaks is necessarily secondary. PGW's incident history demonstrates that cast iron main breaks are the predominant cause of incidents.

If PGW's breaks were to begin to increase, it might be expected to cause an upward trend in incidents. Likewise, reducing breaks could cause a downward trend in incidents.

Frost causes breaks, so severe weather raises the risk



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Frost causes breaks, so severe weather raises the risk

Another key to predicting incidents is to note the relationship to severe weather. Since severe weather tends to cause breaks, and breaks tend to cause incidents, severe weather tends to cause incidents, as is evidenced by the fact that two of the highest years for incidents were 1977 and 1994.

The kind of severe weather that causes breaks is a sustained period of below-freezing weather that allows the ground frost to extend deep into the ground, hardening the ground above the main and allowing vibrations from surface traffic to be transmitted to the pipe, often causing it to break. Also, the subsequent thawing can cause bending stress that also leads to breaks.

It is important, then, not to be lulled into complacency by mild weather. As soon as another severe winter occurs, PGW can expect breaks to occur at a rate of as much as 600-800 per year, which could cause incidents to rise as well.

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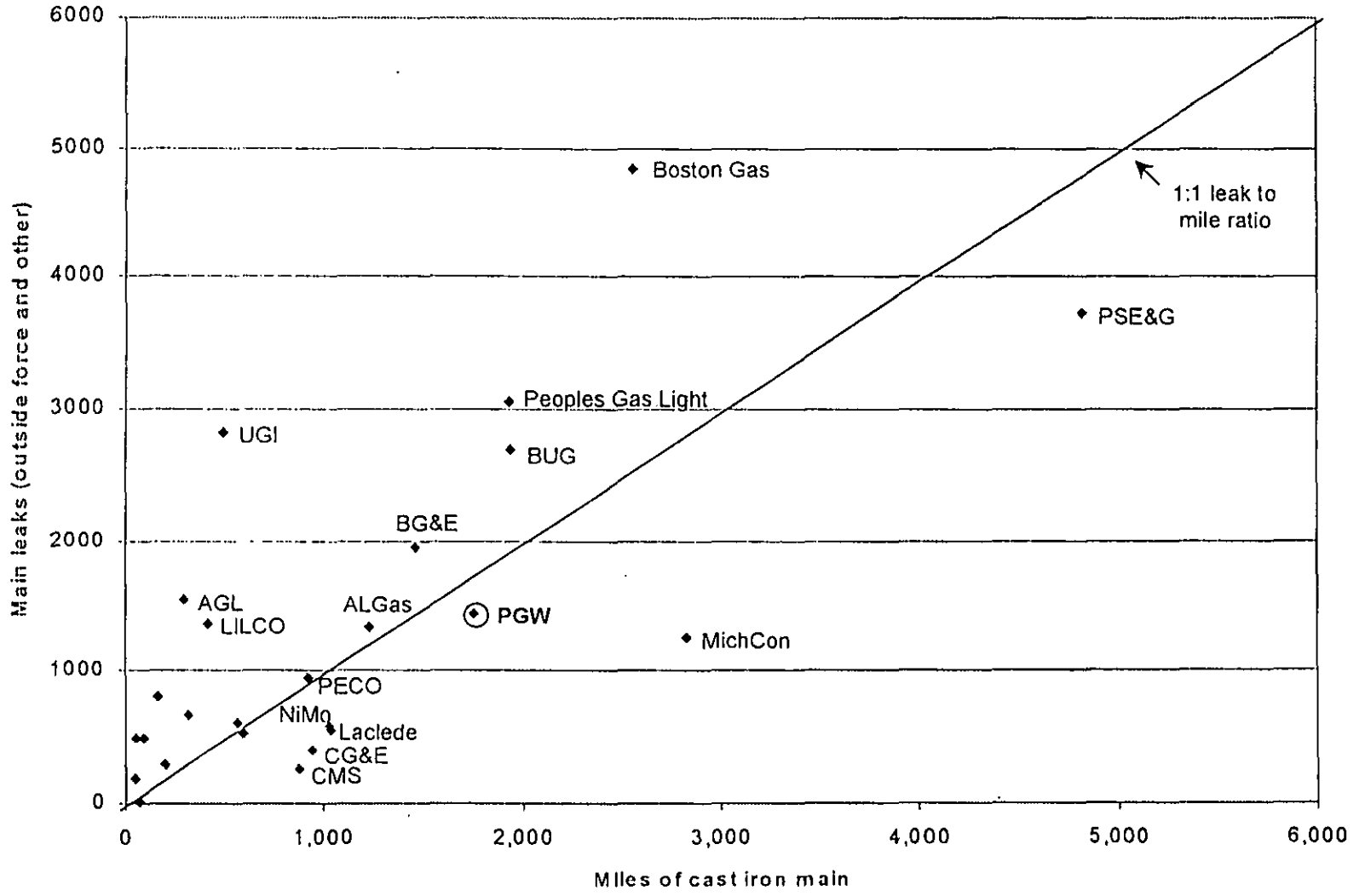
Cast Iron Mains Review

The purpose of the cast iron mains review is to examine the system integrity of PGW's cast iron mains. While this report also reviews steel mains and services, there is an emphasis on the cast iron mains review because of the higher risk associated with breaks on cast iron mains.

The review follows a standard methodology, including benchmarking, trend analysis, replacement budget recommendations based on a risk model, and a review of the prioritization model used for selecting which segments of cast iron main should be replaced. This is the same methodology which was employed in the 1995 report for PGW, and it has also been used effectively for other companies.

As part of this review, we also comment on ways in which the PGW Cast Iron Main Replacement Prioritization Model could be enhanced due to newer data and technology.

PGW's cast iron leaks at the typical rate or less



Source: U.S. DOT 1998 Annual Report - Gas Distribution System.
Companies Ranked: Top 25 Eastern gas LDC's and UGI.
Note: Graph Excludes Con Ed (1,486 miles, 6,476 leaks).

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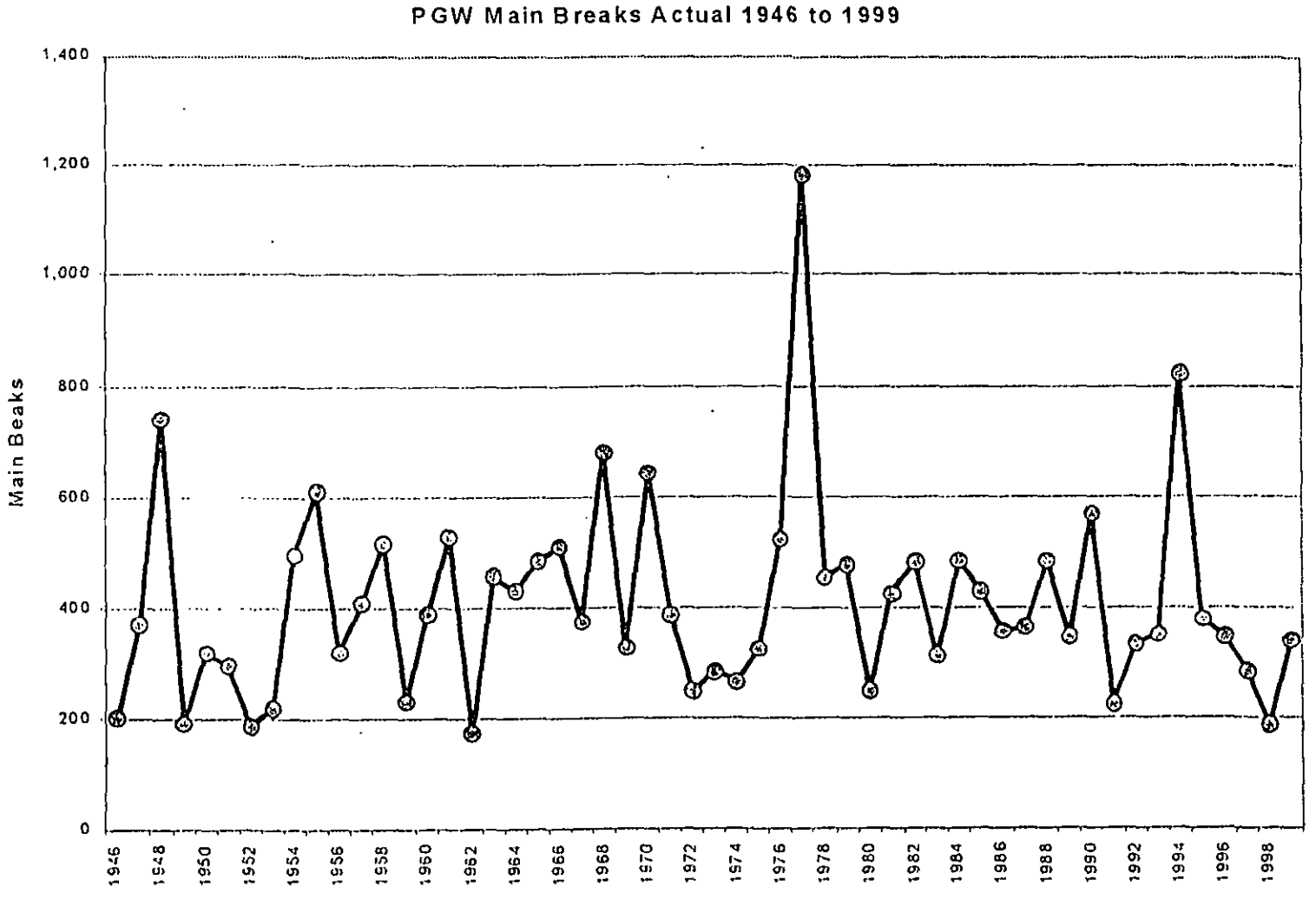
PGW's cast iron leaks at the typical rate or less

Companies tend to replace cast iron main that leaks too much or that might tend to break. As a result of this normal replacement, most companies find their cast iron system experience one leak per mile of main. In comparing between companies, it is useful to look at only those leaks classified as due to outside force (frost, or soil movement) or 'other'(because some companies record joint leaks in that category).

In 1998, PGW's rate of .8 per mile compared favorably to the industry average. PGW's cast iron main leak rate per mile has remained lower than the industry average since the 1995 study.

PGW's break history shows no obvious trend



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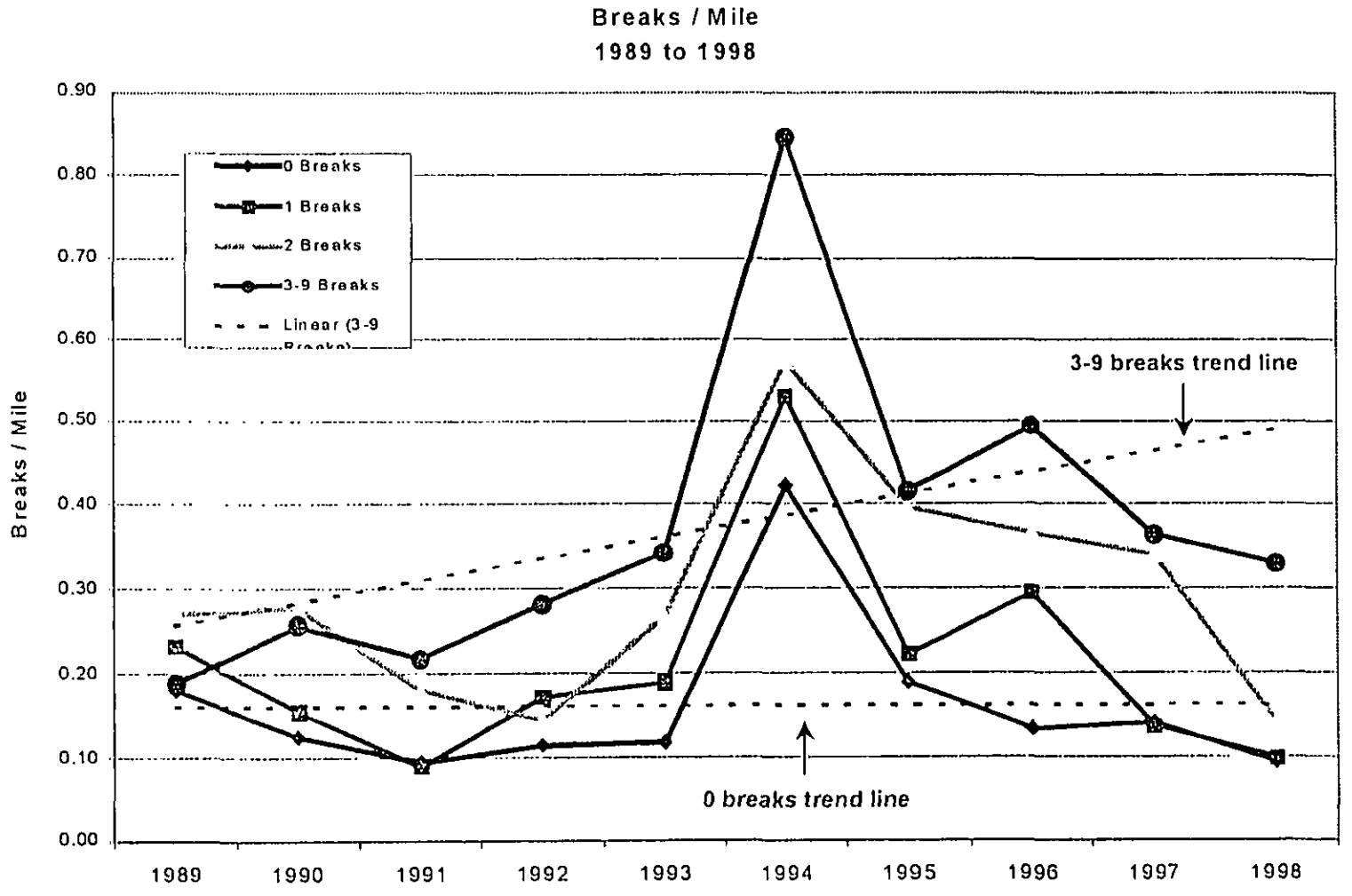
PGW's CI main breaks show no obvious trend

Cast iron main breaks are driven chiefly by two factors: nearby construction and severe, sustained cold. Nearby construction tends to undermine the soil. Severe, sustained freezing weather causes the ground frost to extend from the surface of the road or ground toward the top of the main. Since the ground cover over the main acts as a cushion from above-ground shocks like heavy vehicle traffic, a frost that extends deep into the ground causes those shocks to reach the pipe, potentially breaking it. In addition, deep frost can cause breaks to develop into incidents by allowing gas to migrate toward buildings instead of venting through the soil.

It is clear to see that hard winters like 1977 and 1994 cause breaks to more than double from normal levels. It is also clear that since 1995, PGW's breaks have averaged closer to 350 than the 400 typical of previous years. This may only reflect, however, the relatively mild weather of the past few years.

However, some of PGW's CI shows an increasing break rate



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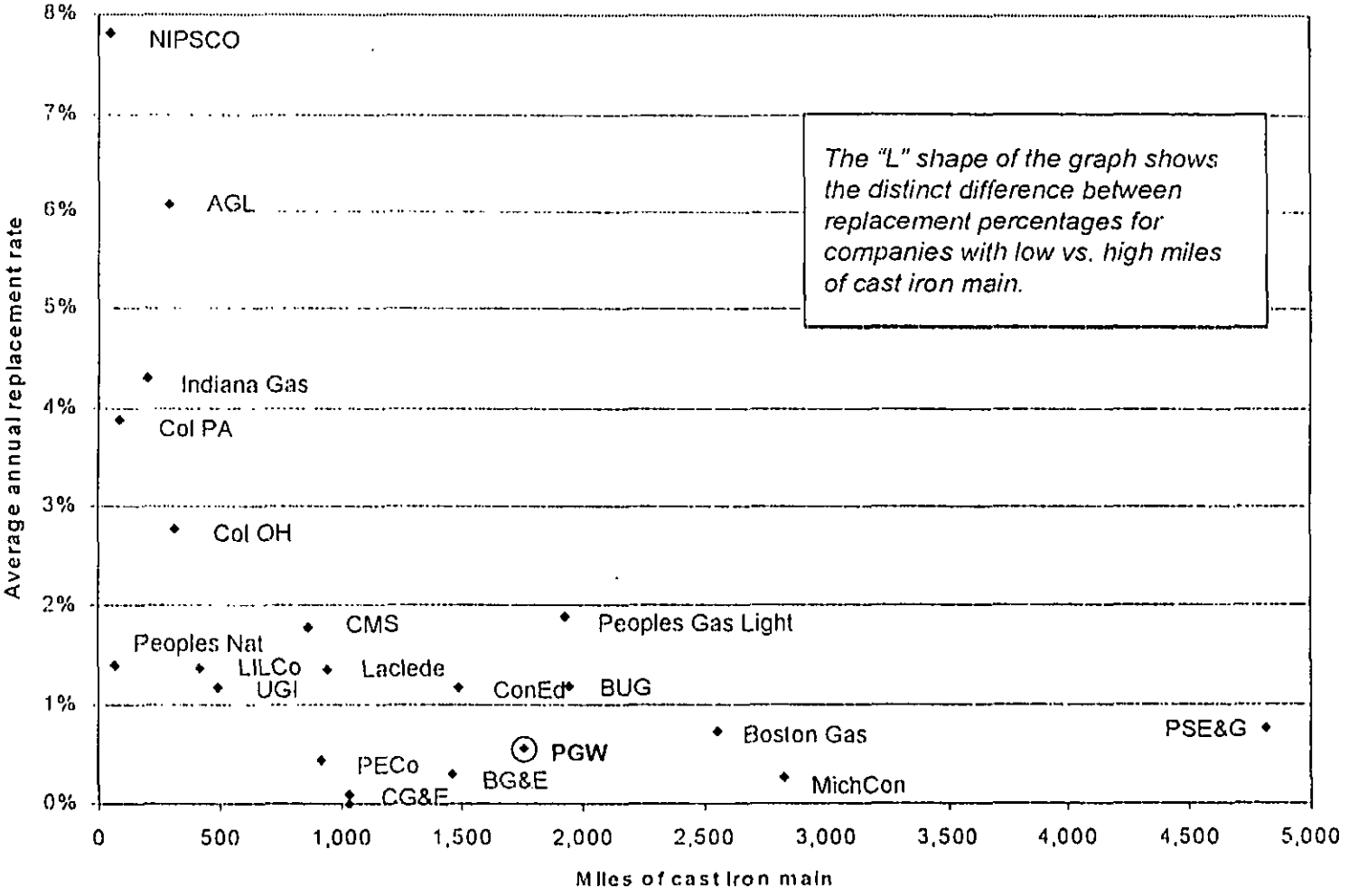
However, some of PGW's CI shows an increasing break rate

While the overall number of breaks has been relatively constant at 400 per year in normal weather, it is clear that for the last ten years some of PGW's pipe has been breaking at an increasing rate. When segments of pipe are separated into categories of how many previous breaks each segment has had, the pipe with three or more previous breaks has been breaking at an increasing rate.

It is hard to see this trend overall, because the majority of breaks still come on cast iron pipe segments that have never broken before. When pipe segments are classified by degrees of risk, the pipe segments that have broken before represent segments with higher risk, since they can be predicted to break at a higher rate. Managing risk involves managing the inventory of those segments with higher risk, and replacing pipe at a rate such that the inventory of such segments does not grow over time.

Cast iron mains replacement of 1 to 2 percent is typical



Source: U.S. DOT 1998 Annual Report - Gas Distribution System.
Companies Ranked: Top 25 Eastern gas LDC's, and UGI.
Note: Graph Excludes NJNG (163, 12.2%), NICOR, AL Gas, Nat'l Fuel Gas, East OH Gas (All missing data)

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Cast iron mains replacement of 1-2 percent is typical

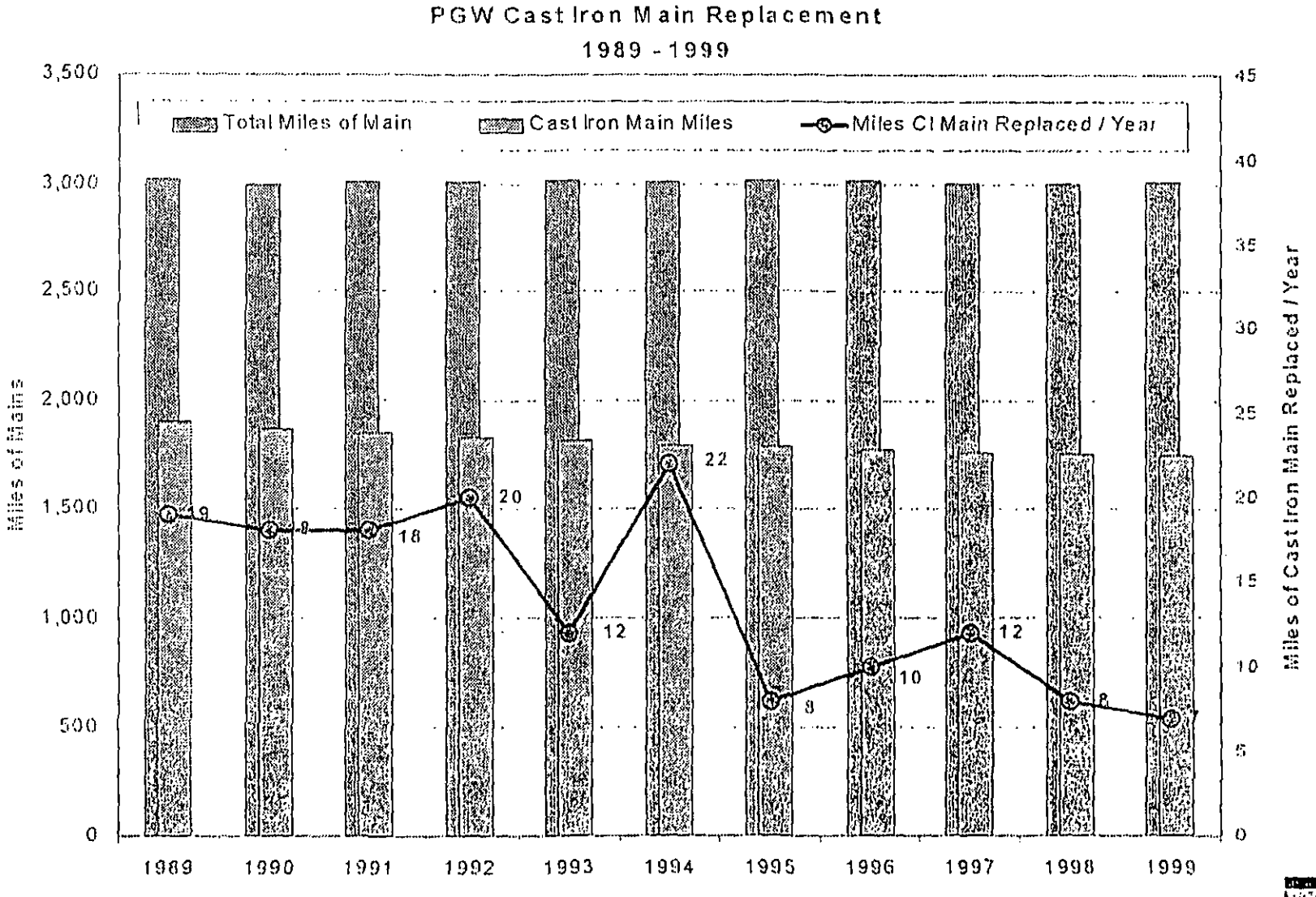
The annual replacement percentage of cast iron main by natural gas distribution companies falls into two distinct groups. The first group are those companies with less than 500 miles of cast iron main. For the LDC's with less than 500 miles of cast iron main, most have a cast iron annual replacement percentage exceeding 2%. This is because they are nearing the end of their replacement programs and can afford to reach for the benefits of complete replacement.

For the LDC's with greater than 500 miles of cast iron main, no company replaces more than 2% of its cast iron main annually. For this second group of companies, the average annual replacement percentage is close to 1 percent per year. At that rate, a company could take 100 years to replace all of its cast iron. This difference between the two groups is evidenced by the L-shape of the graph.

Over the 1995 to 1998 time period, PGW's annual replacement percentage has been only 0.56 percent per year, below the industry average for its peer group (LDC's with greater than 500 miles of cast iron main).

It should be noted that the data used for this comparison are the changes in year-end values of cast iron inventory. As such, what we call 'replacement' is actually the combination of replacement and abandonment, in that it includes anything that causes the inventory to decrease. For our analysis of PGW's main replacement budget, the distinction is not that crucial, because on average PGW's reduction in cast iron inventory equals the footage of new plastic that must be put in place, with the additional abandonment being mainly ductile steel or other steel.

PGW's CI main replacement dropped in 1995



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PGW's CI replacement dropped in 1995

From 1989 to 1994, PGW was replacing cast iron main at a rate of about 20 miles per year, which was about 1 percent of its inventory. (The normal rate was depressed in 1993, probably because of a labor work stoppage). In 1995, that rate fell to less than half that amount, and has averaged 9.4 miles per year since then.

Replacement of main should be based on risk

Risk Rank	Size	Miles	Breaks Per mile	Cost Per foot	Replacement Cost ($000)
1	3"	38	.3	$140	$28,311
1	4"	499	.3	$140	$368,639
2	6"	799	.2	$140	$590,769
3	8"	98	.1	$150	$77,616
4	10", 12", 14"	125	.02	$300	$198,634
5	16"	51	.01	$425	$115,117
5	20", 24"	98	.01	$500	$259,776
6	30" +	49	.00	$625	$160,319
	All sizes	1758	.22	$194	$1,799,181

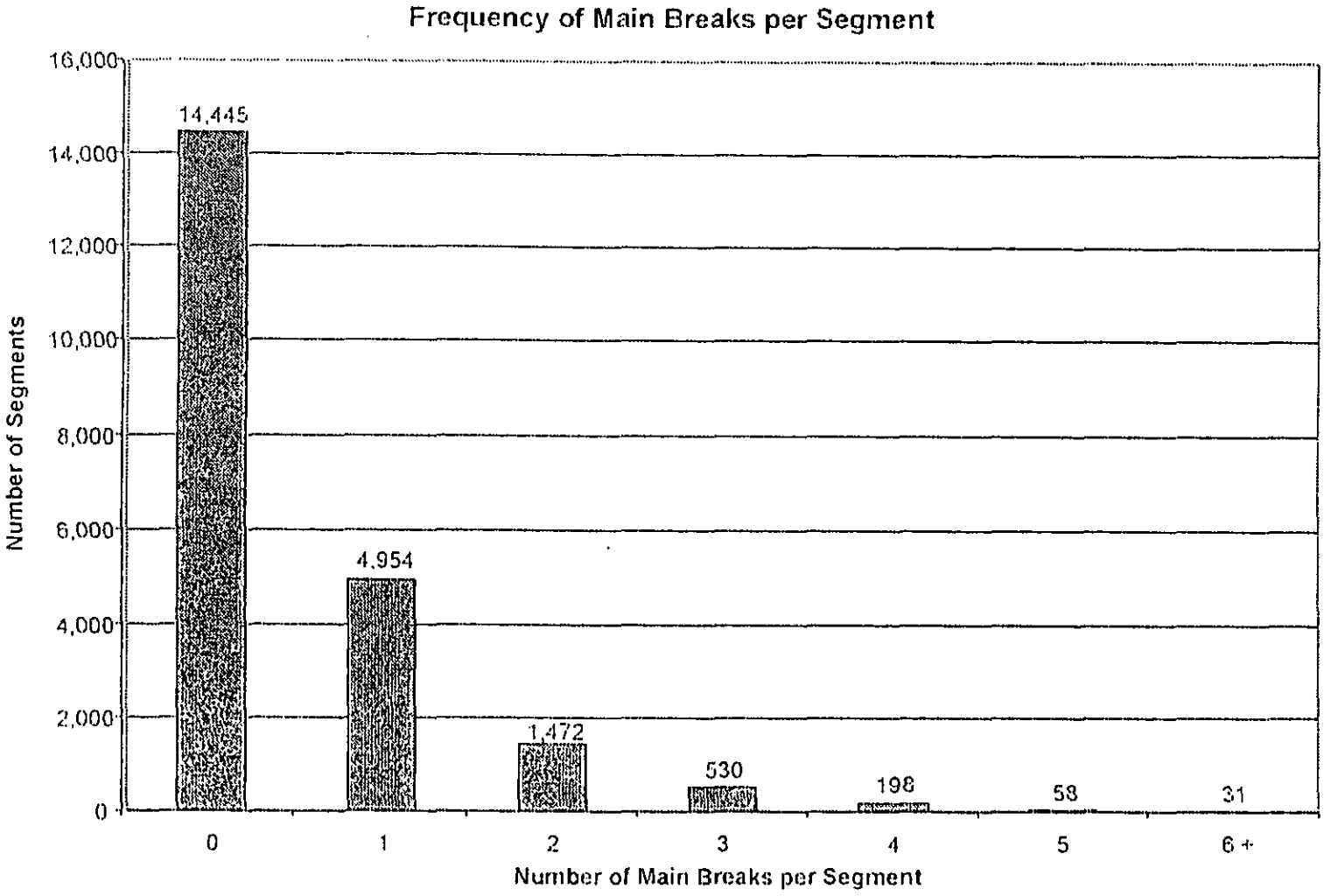
One driver of the risk of cast iron mains breaks is pipe size: smaller diameter cast iron mains break more often

Replacement of main should be based on risk

Replacement of all of PGW's cast iron mains would cost $1.5 - $2.0 billion in today's dollars. Replacement of only the 3 inch and 4 inch cast iron mains would cost almost $400 million. Obviously, there needs to be a way to target a smaller population of mains in order to make good progress annually toward the goal of risk reduction.

In the 1995 study, the recommended replacement was based on a Cast Iron Mains Risk Model that recognized, as did the Cast Iron Mains Replacement Prioritization Model, that smaller diameter mains represented higher risk. In addition, there was an effort to try to capture in the risk model other drivers of cast iron mains breaks such as the number of previous breaks and also the age of the pipe. Data on the latter were limited. Since then, PGW has accumulated more data on pipe age, adding that field to all new breaks and major repairs to cast iron mains. There is still, however, only a limited amount of data on pipe age. The data on previous breaks, however, is useable, as shown on the next four pages.

Most of PGW's CI main segments have never broken



Source: PGW Underground Facilities Database.

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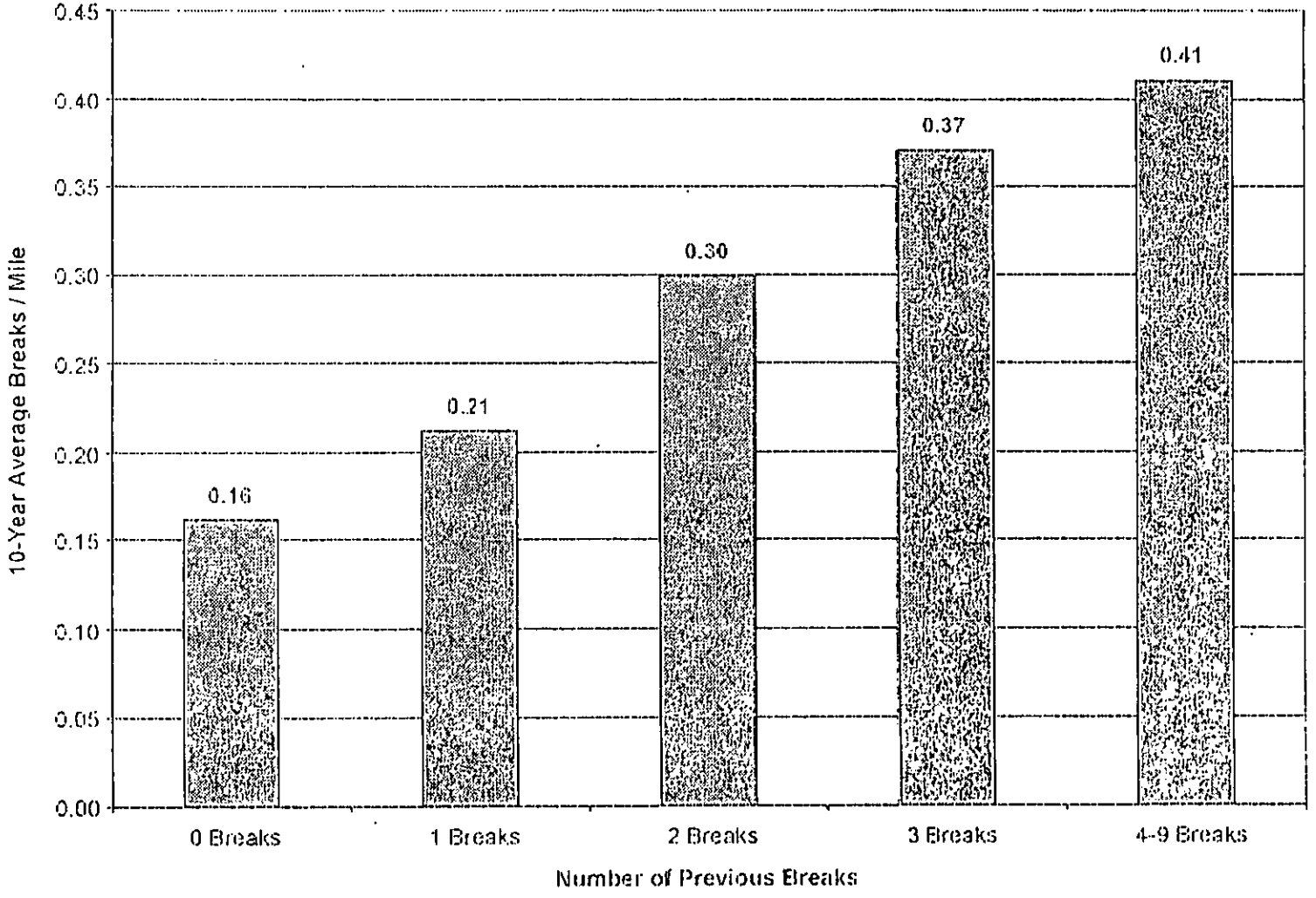
Most of PGW's CI main segments have never broken

One of the key insights from PGW's Underground Facilities Database is that a majority of PGW's segments* have never broken. This demonstrates why replacing all of PGW's cast iron main is not warranted.

Even for 3 or 4 inch main, segments that have not broken in the past do not warrant replacement at this time. Even if some segments of pipe are over 100 years old, it would be better to replace newer pipe that has broken 3, 4, or 5 times than to replace 100-year old pipe that has never broken.

*One refinement was the use of 'segments' instead of 'blocks'. Because some blocks have multiple pipelines in different condition and diameter, it was best to separate the pipe into different 'segments', I.e., a block of pipe that is distinct in size, type, and location.

CI mains that have broken before are more likely to break again



Source: PGW Underground Facilities Database.

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CI mains that have broken before are more likely to break again

As part of this study, we proposed to refine the risk model still further, using the data and systems that have been developed since 1995. The refinement builds on one of the insights identified earlier - that the number of previous breaks is also a key predictor of future breaks.

Using a ten-year history of cast iron mains segments*, we determined the conditional probability that a segment with a certain number of previous breaks would break in the current year. For example, we first took all pipe that had not broken before and computed the number of miles of such pipe and the number of breaks of such pipe in the first year. Then we computed for the pipe that was still unbroken how many miles there were and how many breaks in the second year, etc.

In the end, we had a ten-year history of the probability that a segment would break in the current year based on how many times it had broken in the past.

Because the number of segments that have broken five or more times is relatively small, we smoothed and extrapolated the curve. The annual break rates per mile used for segments that had broken 0,1,2,3,4,5, and 6 times in the past were 0.16, 0.21, 0.30, 0.37, 0.41, 0.48, and 0.54.

A risk model allows targeted replacement to reduce breaks

Reduction in number of breaks per year due to replacement of segments of cast iron mains by number of previous breaks

Previous Breaks Per Segment	Segments	Breaks Per Mile Per Year	Breaks Avoided Per Year	Replacement Cost($000)	Cumulative Avoided Breaks	Cumulative Replacement Cost ($000)
0	14,445	.16	187	$1,341,606	333	$1,799,181
1	4,954	.21	84	$318,099	146	$457,574
2	1,472	.30	36	$90,400	62	$139,475
3	530	.37	16	$32,367	26	$49,075
4	198	.41	7	$12,031	10	$16,709
5	58	.48	2	$3,480	3	$4,678
6 or more	31	.54	1	$1,198	1	$1,198

A risk model allows targeted replacement to reduce breaks

Using the information about break rates by number of previous breaks, it is possible to target the level of replacement needed to achieve an acceptable number of breaks.

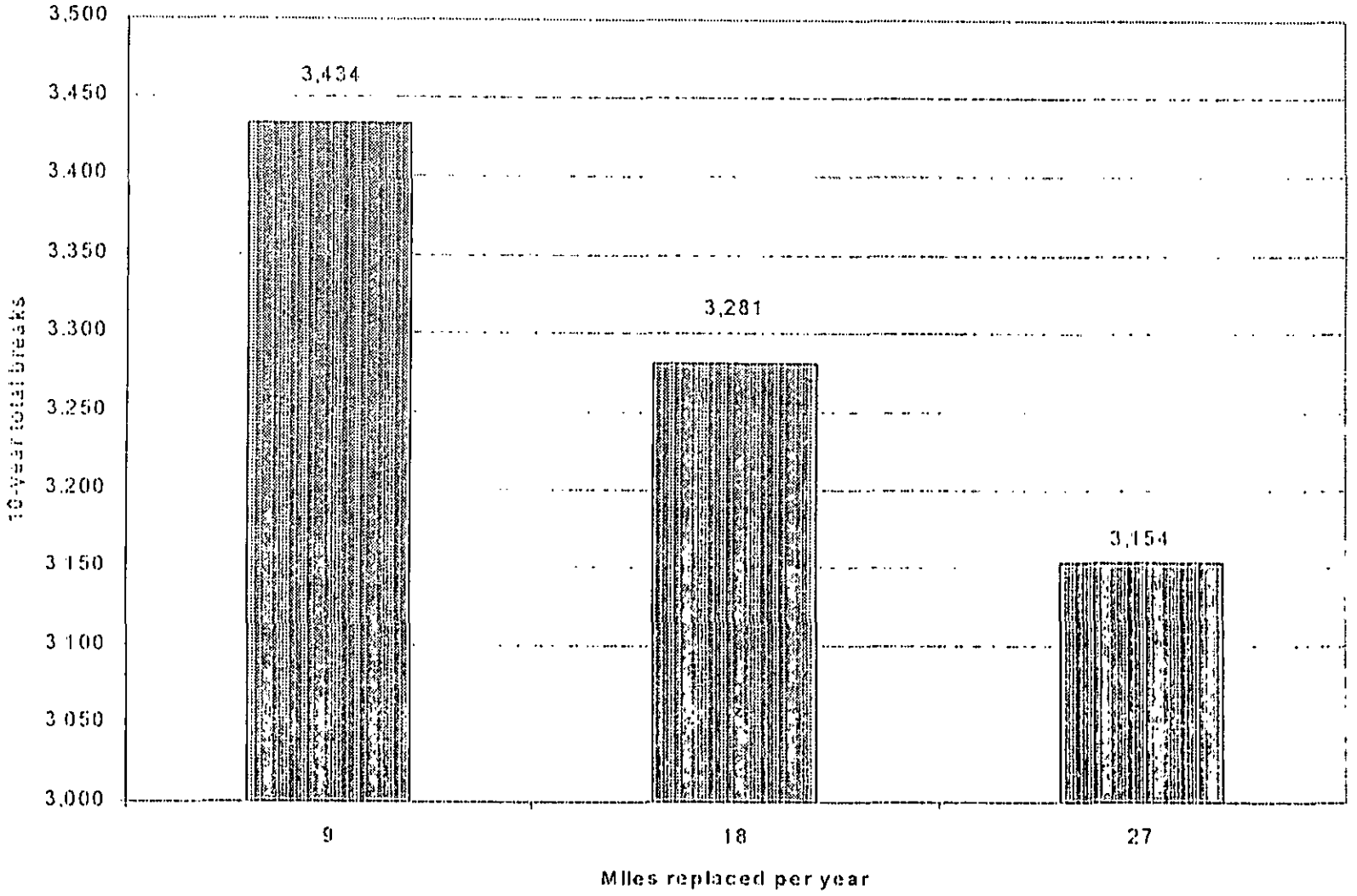
At the margin, if the most break-prone segments that can be identified in advance have break rates of .41-.54 per mile per year, or .03-.04 breaks per segment per year (or 3-4 breaks per segment over ten years), and it cost approximately $60,000 to replace a segment of cast iron main (most of the break-prone mains are 3-6 inch which can be replaced at $140 per foot, 428 feet per segment), then it costs approximately $1.7 million to avoid one break per year.

Obviously, if one knew exactly which segments would break each year, it would only cost $60,000 to avoid one break, but because one must replace about 29 segments to avoid the one that will break this year, it costs $1,700,000 to avoid one break.

Moreover, the more replacement is done, the more expensive it is per break avoided, because the segments, being lower in risk, are less likely to break. So, it could take 40 or more replaced segments to avoid one break.

Also, this is a static view. The fully developed, dynamic risk model allows for the fact that cast iron main deteriorates over time and segments that have only 1 or 2 breaks today will eventually transition into segments with 3 or 4 breaks, and therefore higher break rates in the future.

PGW's cast iron main breaks can be projected under various replacement funding levels



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PGW's cast iron main breaks can be projected under various replacement funding levels

Using the model described above, PGW's cast iron main breaks can be projected under various assumptions about the funding of replacement.

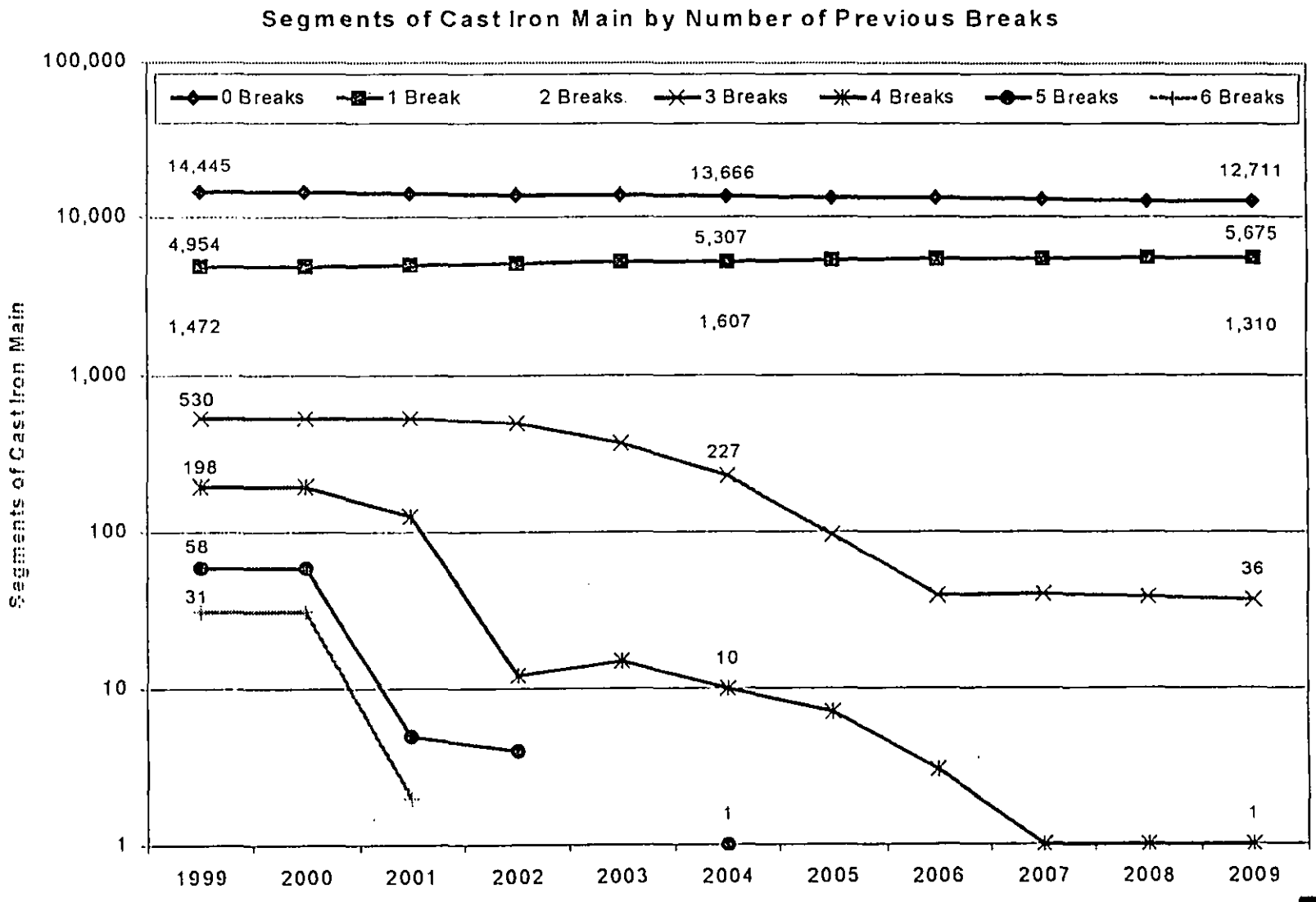
Three funding scenarios were examined:

Replacement Miles per Year			Initial	Initial
Total	Enforced	Prudent	Percent	Funding
9	5.65	3.35	.5 percent	$ 6.7 million
18	5.65	12.35	1.0 percent	$13.3 million
27	5,65	21.35	1.5 percent	$20.0 million

Funding in subsequent years was allowed to grow at the rate of inflation, keeping the miles replaced constant. Also, the percent replaced was allowed to grow slightly as the remaining inventory decreased yet the replacement mileage remained constant.

Starting from an initial projection in 2000 of 336 breaks per year, the level of breaks achieved by the tenth year are projected to be 353, 324, and 255, respectively.

A 18-mile replacement program eliminates most of PGW's trouble-prone pipe in 5 years



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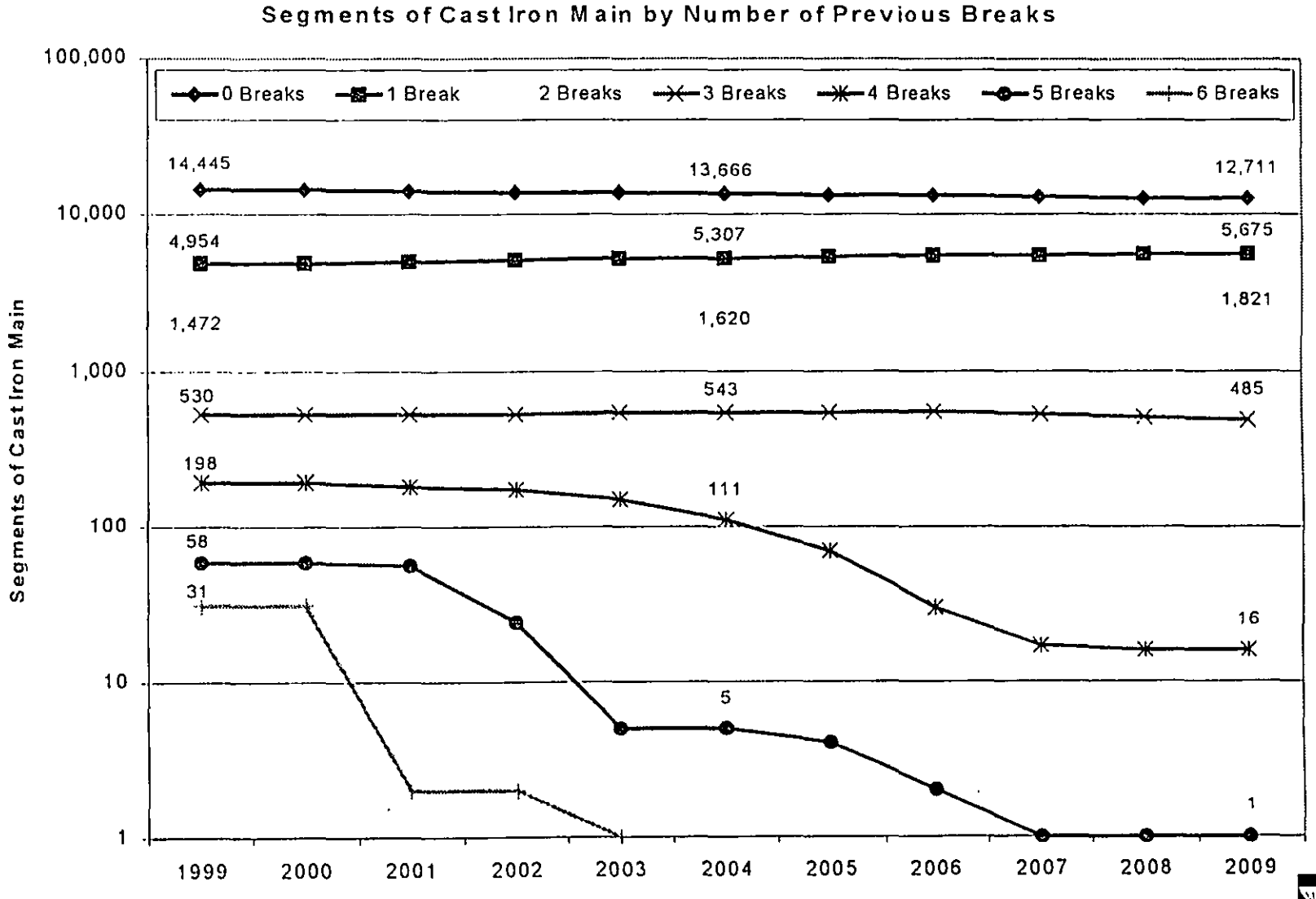
An 18-mile replacement program eliminates most of PGW's trouble-prone pipe in 5 years

An 18-mile replacement program, or about 1 percent of the current inventory per year, aggressively attacks the worst pipe segments - those with 3, 4, or more breaks already. In fact, in three years there would be less than 20 pipe segments with 4 or more breaks, assuming actual replacement followed the indicated prioritization.

This would be so even though new pipe that breaks would normally add to the inventory of pipe that is broken so many times. The reason can be seen from the chart above: even the inventory of mains with 3 breaks would be aggressively reduced under this program, so much so that the inventory of pipe with 4 or more breaks could be effectively eliminated. It even stabilizes and eventually reduces reduces the inventory of mains with 2 breaks.

Such a program would be expected to stabilize the number of breaks at a level of less than 330 per year, under normal weather (and even less under the mild winters PGW has had lately).

A 9-mile replacement program eliminates some trouble-prone pipe, but allows some to grow



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A 9-mile replacement program eliminates some trouble-prone pipe, but allows some to grow

A 9-mile replacement program is not adequate to reduce PGW's risk. It is better than nothing, and if prioritized accordingly, it would eliminate the number of segments with 5 or more breaks and halve the number with 4 breaks in three years.

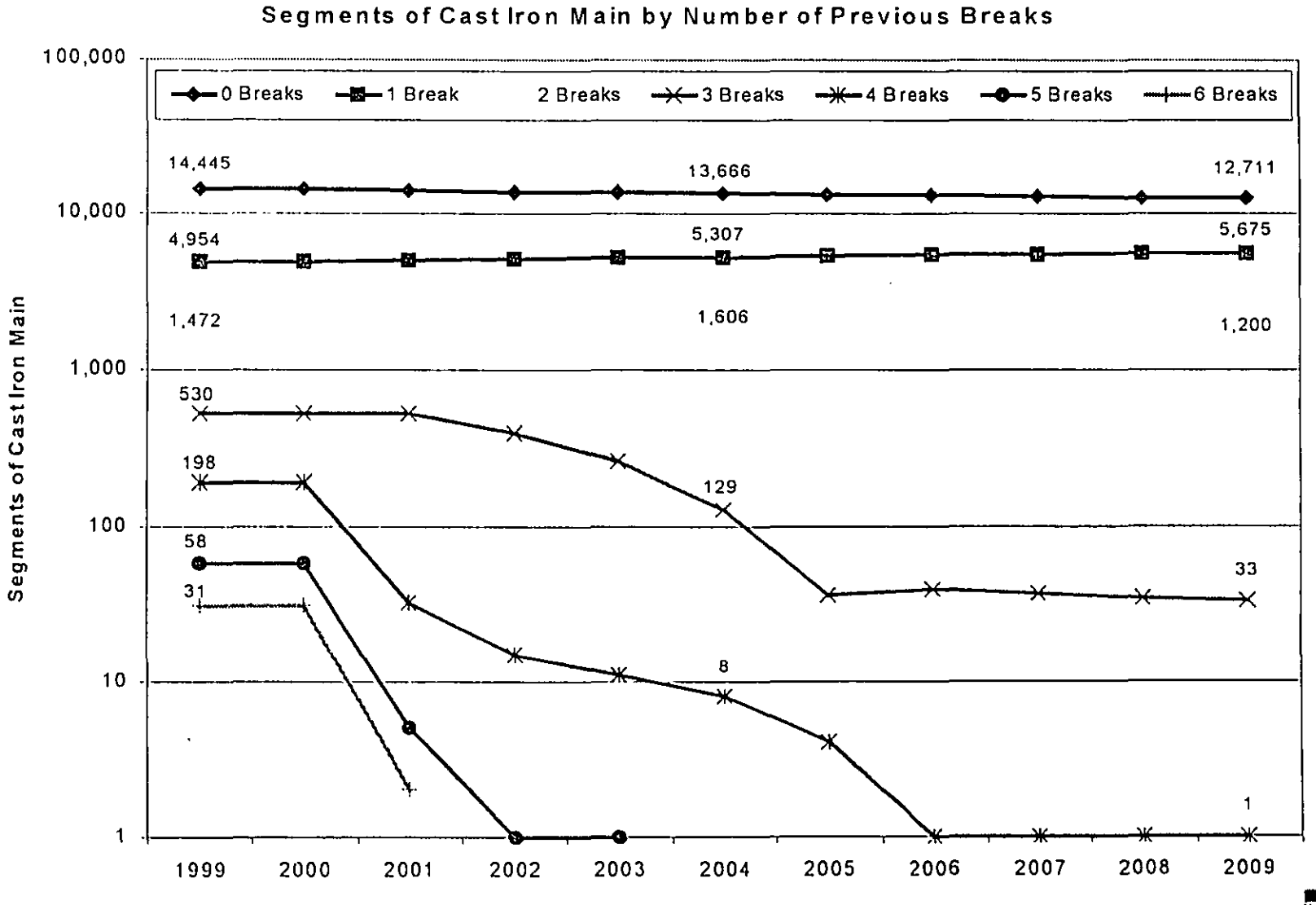
But, because it is not sufficient to stabilize the inventory of mains with 2 breaks, it only slightly reduces the inventory of segments with 3 breaks. This is in sharp contrast to the 18-mile program which would substantially eliminate the 3-break category reducing it from 530 segments at first to less than 40 and still falling.

Maintaining gas system integrity is much like walking on a treadmill. There is a certain pace that must be maintained or one falls behind. If the treadmill itself is slow, it may take a while to realize that you are falling behind, but if you are alert you can recognize immediately that you are not keeping up.

The level of replacement needed at this time by PGW to not fall behind on system integrity is not 9 miles per year. Rather, a level like 18 miles per year is required to maintain a stable level of risk and to keep breaks from getting worse now and in the future.

In addition, if PGW experiences another very severe winter in terms of the kind of sustained cold that can accelerate cast iron main breaks, it may require a one-time additional amount of replacement to recover from the deterioration caused by such a situation. The next two pages address this scenario.

A one-time increase accelerates the path to the goal



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A one-time increase accelerates the path to the goal

For this scenario, we started with the 18-mile program and then added a one-time increase of $8 million of overall funding, with $5.7 million going into additional prudent replacement of cast iron mains, and $2.3 million to cover the associated services that would be replaced at the same time. (All of the previous analyses have addressed only the mileage of cast iron mains replacement, and the dollars budgeted for that category only, but there is normally another 25 percent or so of expense associated with replacing services, and this figure needs to be added when dealing with the total budget impact of changes in mains replacement mileage).

The additional $5.7 million of prudent replacement, or 93 segments, has the effect of accelerating the progress of the 18-mile program by approximately a year. The inventories of segments with 3, 4, and 5 breaks each reach their long-run levels one year earlier than under the standalone 18-mile program.

In short, this would be a way to 'buy a year' of accelerated progress while staying on the path that keeps the overall risk level constant to declining.

PGW's CI Mains Replacement Prioritization Model is sound, and should continue to be improved

Illustrative

Score	Block	Street	Size	Breaks	Leaks	PSI	Prox to Sch/Hosp	Prox to Cust
112	1200	Market	4	4	18	.25	N	N
98	800	8th	6	3	12	.25	N	N

The PGW Cast Iron Mains Replacement Prioritization Model allows PGW to evaluate and rank individual replacement projects in order to make maximum use of the budgeted replacement mileage. It provides an overall framework for evaluation within which PGW can also exercise case-by-case discretion based on factors not included in the model (such as pipe age, when known).

PGW's CI Mains Replacement Prioritization Model is sound, and should continue to be improved

As part of the 1995 study, a new PGW Cast Iron Mains Replacement Prioritization Model was adopted for selecting which blocks would be replaced using the budgeted replacement funds. The prioritization model exploited the fact that break rates for PGW's cast iron main differ significantly by factors such as:

pipe diameter,
break and leak histories,
pressure (and volume of gas)
proximity to school, hospital, or customer.

There is strong evidence that pipe age, especially the category of 'Old City' cast iron that predates UGI's 1898 acquisition, influences break rates apart from diameter, break history, and other factors. As that data becomes more useable as a broad screening tool, it should be tested for incorporation in the Replacement Prioritization Model. In the meantime, where it is known on a case by case basis, it may be used to supplement the model, just as other factors involving experience and judgment are allowed to have an influence at the margin.

In 1995, the hypothesis of association with water main breaks was tested, but, while there is clearly a simultaneous correlation, their was found to be no predictive value.

Other hypotheses which might be tested in the future include depth of cover, since shallow depth may lead to more susceptibility to frost.

We recommend the 18-mile replacement program

Considering the factors discussed above, the program which we would recommend at this time is the 18-mile program. Summarizing the reasons:

- The risk of incidents is driven by the risk of cast iron main breaks
- The risk of cast iron main breaks is reduced through replacement of break-prone mains
- The 18-mile program is required to virtually eliminate the break-prone segments (those with 3, 4, 5, or more breaks already) over the next 5-10 years
- The 18-mile program is required to keep cast iron main breaks from trending up
- The 18-mile program is approximately 1 percent of current inventory, which is comparable to what other companies with similar inventories average
- A program of much more than 18 miles would begin to experience diminishing returns once the break-prone segments were reduced
- A nine-mile program, while better than nothing, would represent a state of not keeping up with the gradual deterioration of the system, and would allow some break-prone categories to increase over the next ten years
- The relatively mild winters of late are not typical of the secular average. As normal weather returns, or with a severe winter in terms of depth of frost, breaks can be expected to increase substantially. The 18-mile program would allow PGW to replace some of the most break-prone segments in the first few years, which would better prepare the system for severe weather that is likely to recur some time in the future.

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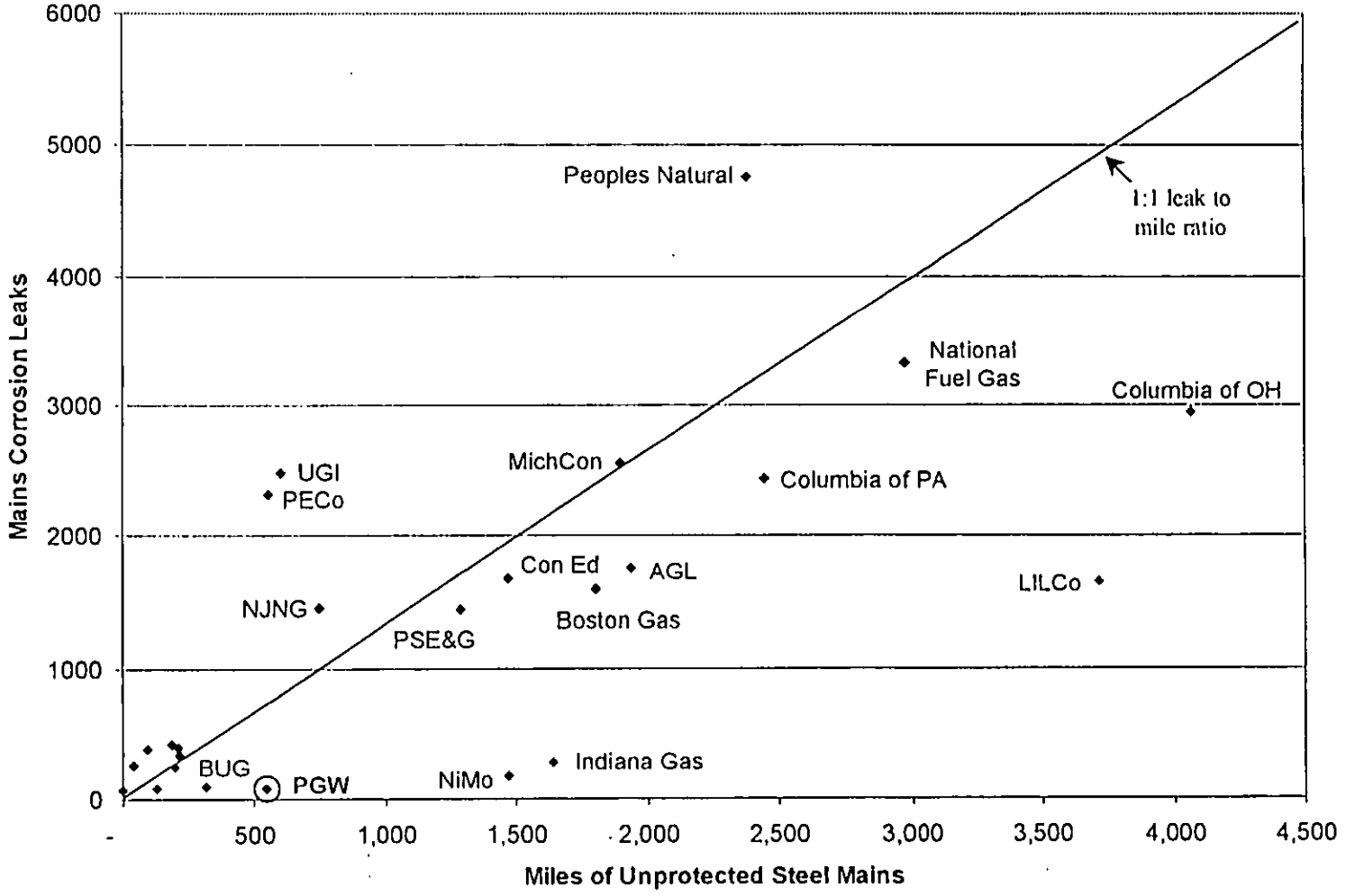
Unprotected steel main leaks at a rate of one per mile



Source: U.S. DOT 1998 Annual Report - Gas Distribution System.
Companies Ranked: Top 25 Eastern Gas LDC's, and UGI.
Note: Graph Excludes East Ohio (7,013 miles, 5,134 leaks).

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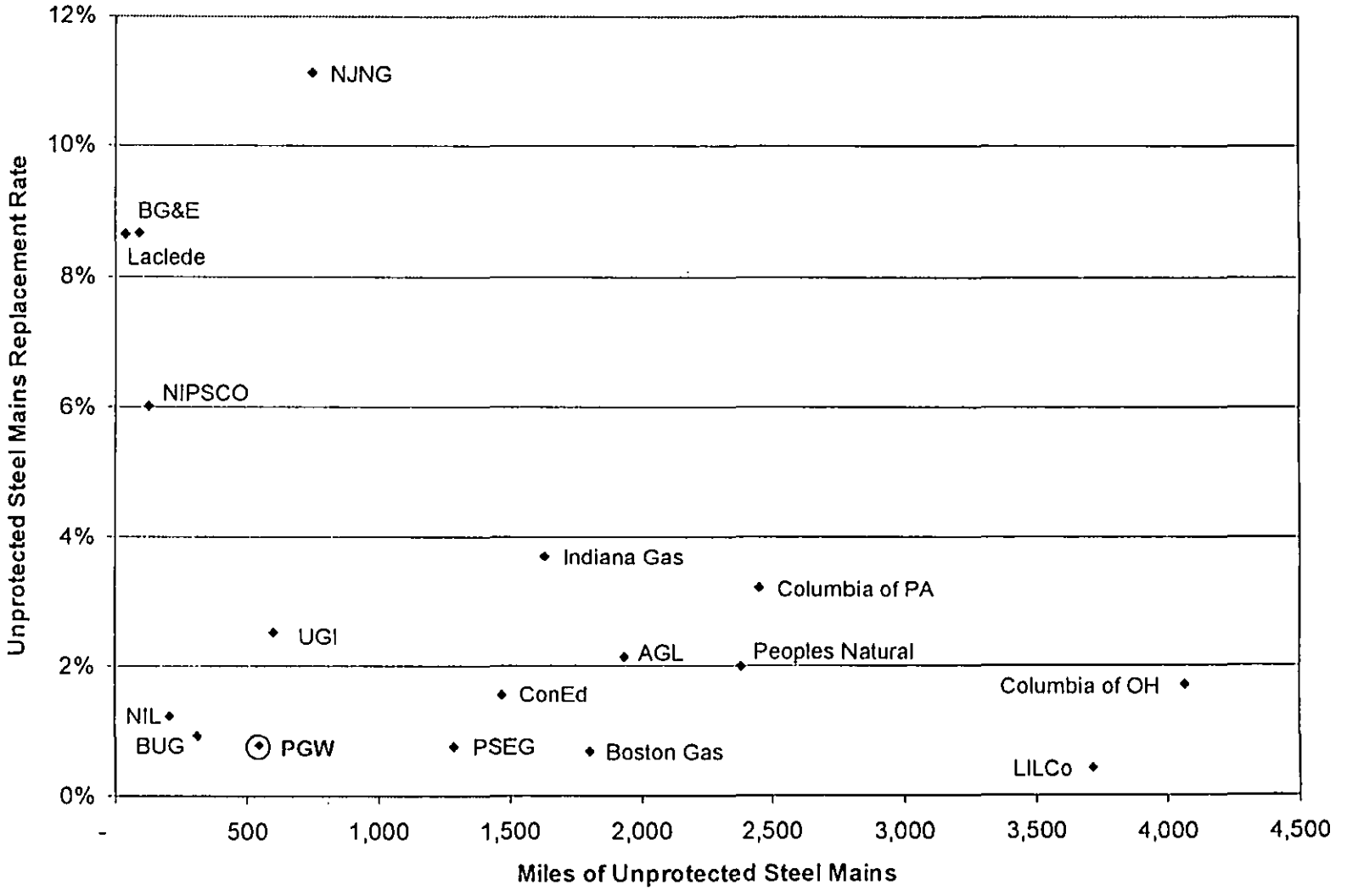
Unprotected steel tends to leak at one per mile

Like the relationship between outside force and other leaks and miles of cast iron main, a 1:1 leak to miles ratio is a rule of thumb for corrosion leaks and miles of unprotected steel main.

In 1998, PGW's 0.2 corrosion leaks per mile of unprotected steel main is well below the average experienced by the top fifty distribution companies.

Unprotected steel mains replacement of 1- 4% is typical



Source: U.S. DOT 1998 Annual Report - Gas Distribution System
Companies Ranked: Top 25 Eastern Gas LDC's, and UGI

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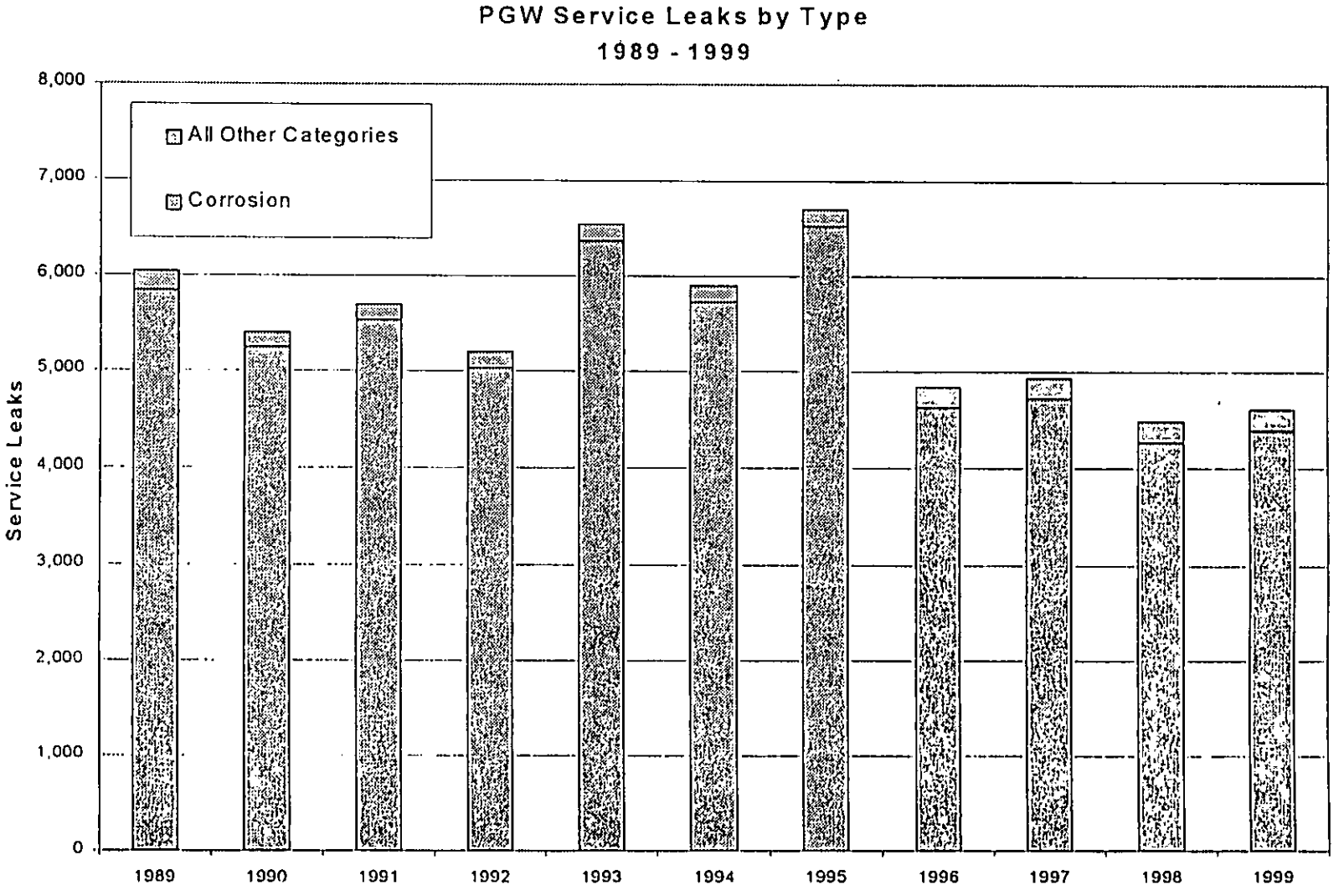
Unprotected steel mains replacement of 1- 4% is typical

The pattern of replacement for unprotected steel is similar to that of cast iron: LDC's with less than 500 miles replace at high rates, while those with more than 500 miles replace at lower rates. The replacement rates for steel are somewhat higher because unprotected steel probably has a shorter life than cast iron, and a 100 year program would not suffice (although some are replacing at that rate for now).

In studying replacement rates, we use the DOT data on inventories of pipe by type, tracking the change over the years. This means that what we are calling replacement includes abandonment. In older areas such as some parts of PGW's territory, redundant main exists that can be simply abandoned instead of replaced since the load can be served by other facilities.

Table of Contents

PGW's service leaks have been lower of late



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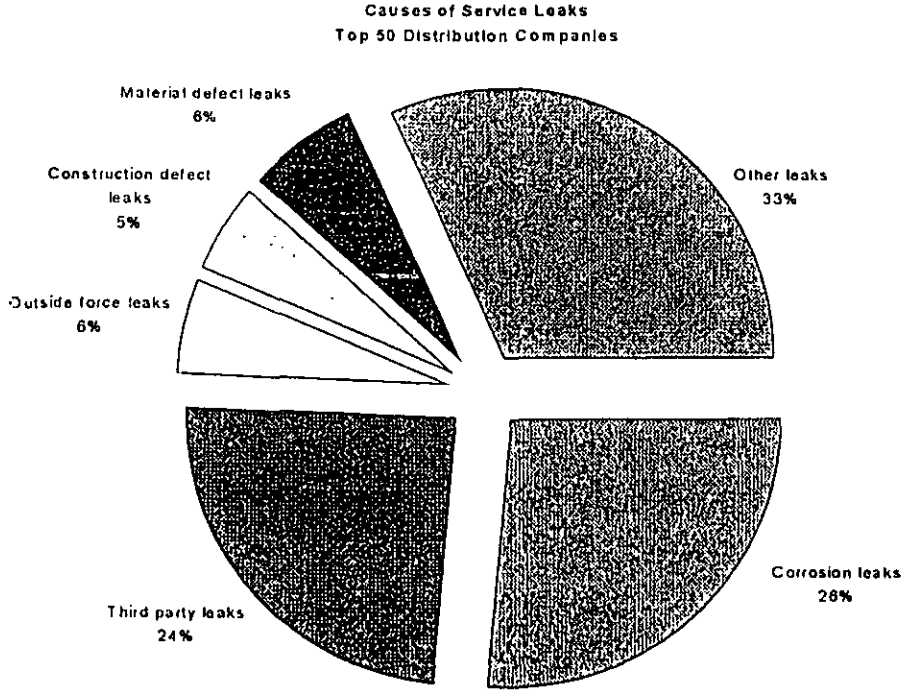
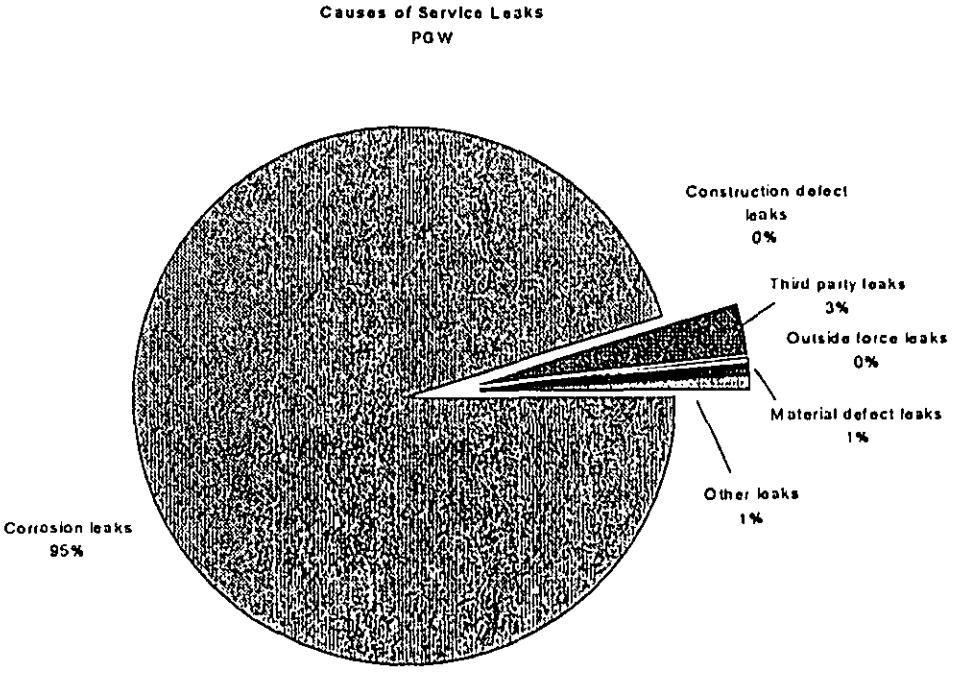
PGW's service leaks have been lower of late

While service leaks have been somewhat lower of late, it is hard to discern a clear trend. The main cause of service leaks is corrosion, which is not weather related. Still, PGW's rate of corrosion leaks on unprotected steel services is higher than average, as indicated in the benchmarking.

Service leaks are driven by corrosion and dig-ins





Source: U.S. DOT 1998 Annual Report - Gas Distribution System.
Companies Ranked: Top 50 companies by order of number of services, and UGI.

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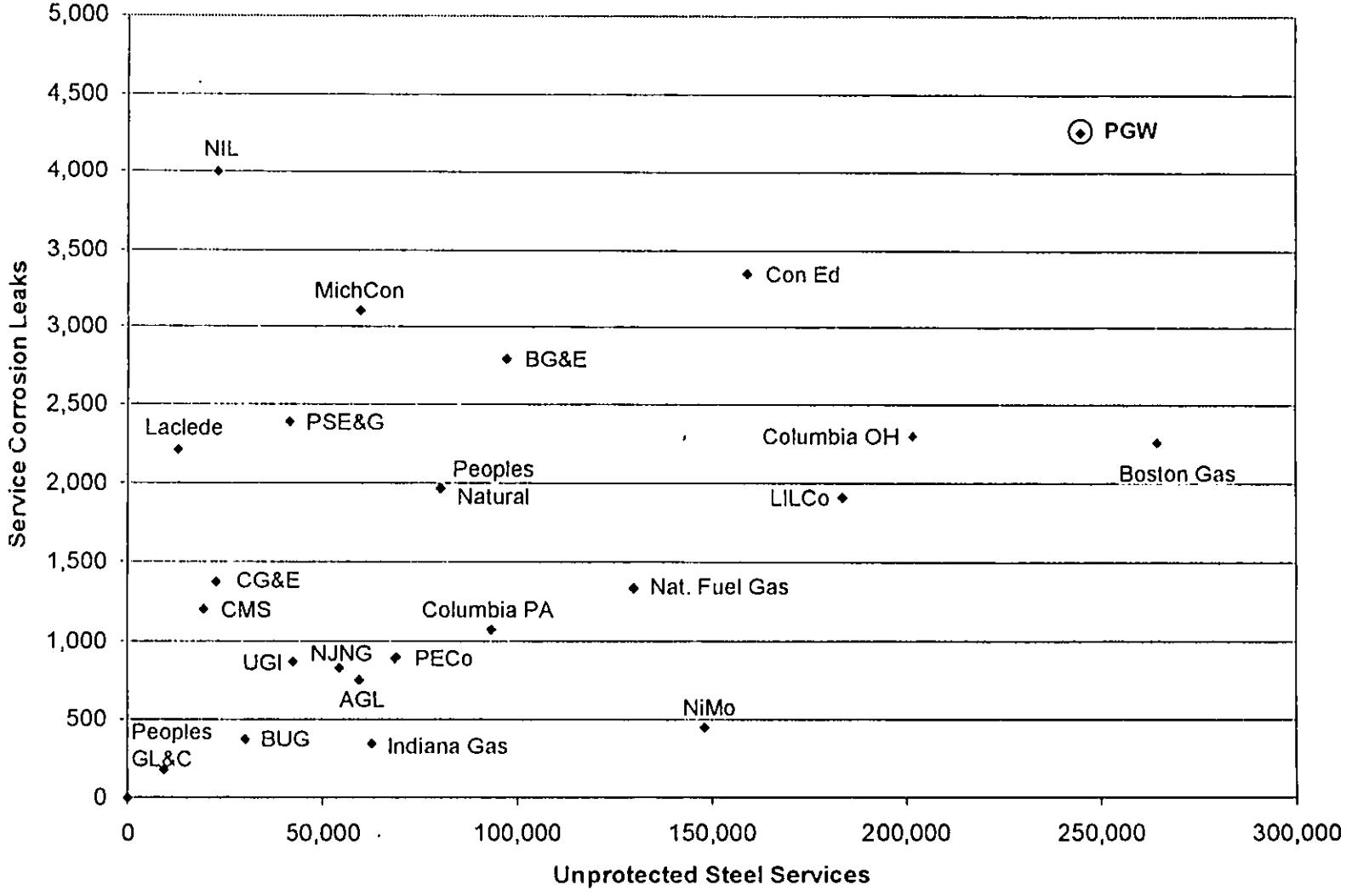
Service leaks are driven by corrosion and dig-ins

For services, dig-ins are a major cause of leaks. Since dig-ins are not related to pipe condition or maintenance, there is not as good a relationship between overall service leak rates and the percentage of services that are unprotected steel.

Because PGW has relatively few dig-ins, and because it has a high percentage of unprotected steel services, ninety-five percent of PGW's service leaks are due to corrosion. This is not an indication of poor maintenance, since there is no maintenance of corrosion protection on unprotected steel. The issue is that unprotected steel services should be replaced with plastic or protected steel, typically at the same time as the associated cast iron or unprotected steel main is replaced, or as a method of leak repair on the service.

Unprotected steel drives corrosion service leaks



Source: U.S. DOT 1998 Annual Report - Gas Distribution System
Companies Ranked: Top 25 Eastern Gas LDC's, and UGI
Note: Graph Excludes East Ohio (10,763 leaks and 638,254 unprotected steel services)

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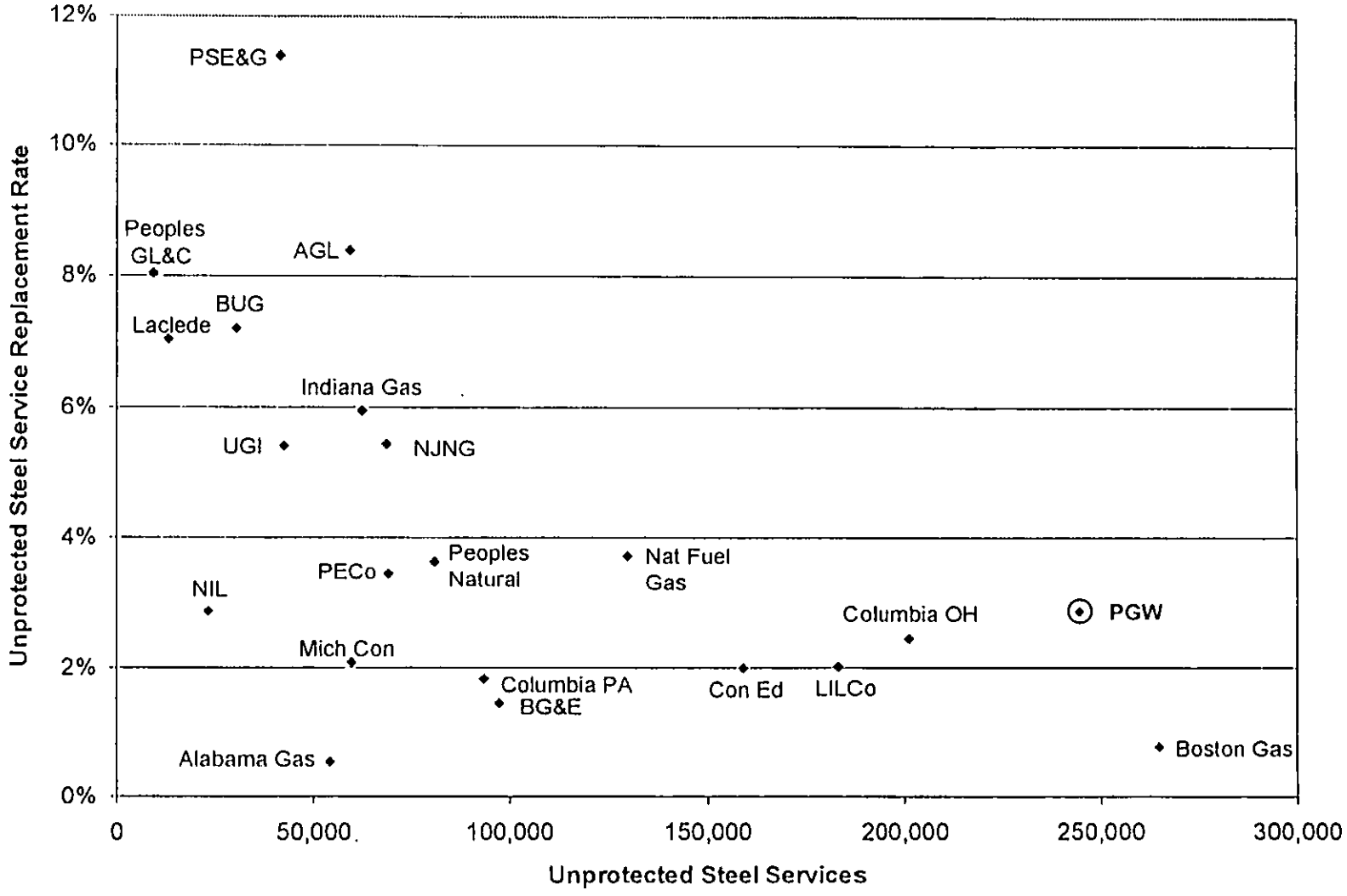
Unprotected steel drives corrosion service leaks

Just as unprotected steel main tends to leak at one per mile, unprotected steel services tend to leak at about the same rate. If the typical service is 50 feet, there are about 100 services per mile, so a leak rate of one per mile is about one every hundredth service, or 1000 leaks per 100,000 unprotected steel services.

Most of the LDC's exhibit such a leak rate. PGW's is somewhat higher, at about 1.5 corrosion leaks per 100 services. Some of the companies that show even higher ratios have a data classification problem - they classify some of their steel services as protected when they are really not. Lone Star Gas, for example, has insulation between the services and the mains, which means the services do not benefit from the protection on the mains. Thus, they probably have a larger number of 'unprotected' services than they report on the DOT survey.

Unprotected steel service replacement of 1- 5% is typical



Source: U.S. DOT 1998 Annual Report - Gas Distribution System.
Companies Ranked: Top 25 Eastern Gas LDC's, and UGI.

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Unprotected steel service replacement of 1- 5% is typical

Replacement of unprotected steel services follows a pattern similar to replacement of cast iron or unprotected steel mains. Whereas for the latter the threshold for when companies did aggressive replacement was 500 miles, for services the threshold is about 50,000 services, which would be equivalent to 500 miles of 50-foot services.

Services replacement is usually a little more aggressive than cast iron main replacement because services would be replaced either as part of a cast iron main replacement program, a bare steel main replacement program, or just as repairs to service leaks, since it is usually not cost effective to repair a 50-foot service rather than just replace it, particularly since it might need to be repaired again soon, and replacement by insertion is often a feasible, low-cost repair.

EXHIBIT "D"

PGW News, 1972

Mobile 'Winter Patrol' Adding Flexibility To Leak Detection Survey

An old-timer as American cities go, Philadelphia has one of the country's largest underground gas distribution systems—an invisible, 6,000-mile maze of mains and service lines.

Responsible for operating, maintaining and further constructing this wide-spread giant of a network, the PGW Distribution Department places priority emphasis on the detection and repair of gas leaks before they become hazardous. Additionally important, Distribution's leak detection-repair program is handled in such a way to pose only minimal inconvenience, if even that, to some 550,000 PGW customers.

Distribution has conducted an effective, year-round street leak survey program for the past 18 years, according to Department Manager Leonard Orlando, Jr. "Our survey inspection takes the form of an aggressive preven-

PHILADELPHIA GAS WORKS
PGW
NEWS
VOLUME XLIII NUMBER 6 FEBRUARY, 1972
Published monthly except in mid-summer since November, 1928. Editorial office: Industrial Relations Department, 1800 N. 9th Street, Philadelphia, Pennsylvania 19122. Phone AC 215 796-1260.
William B. Hall, III, Editor

FEATURED THIS MONTH

ON THE COVER

When there was talk last month of locating Philadelphia's 1976 Bicentennial in West Fairmount Park (since destined for Eastwick), considerable attention was focused on the area around Memorial Hall (photographed at night with a wide angle lens by PGW Technical Assistant-Photographer Henry E. Bartle). On N. Concourse Drive, near 42nd St. and Parkside Ave., Memorial Hall was built for the 1876 Centennial Exposition and dedicated by President Ulysses S. Grant. After the expo, the Hall was the city's art center until 1928, when exhibits were removed to the Art Museum on the Parkway. Now headquarters for the Fairmount Park Commission and Park Police, the Hall also houses an indoor swimming pool and recreation center.

tive maintenance program to find trouble before it results in emergency notice from our customers," he explained.

Initially, the PGW leak detection program consisted of four two-man teams. These teams walked Philadelphia streets, while checking the atmosphere below ground with combustible gas indicating instruments. Still used by Distribution, these crews are on the street from 6:45 a.m. until 3:15 p.m. on most days of the year.

"An important consideration in our survey program is the training of employees assigned to this work so they become skilled in observing street surface conditions and evidence of other underground deterioration," stated Mr. Orlando.

Cold weather conditions . . .

He noted that cold weather and winter conditions cause varying effects on the distribution system, including expansion and contraction due to extreme temperature changes and frost penetration below street and sidewalk paving.

These winter-time conditions also affect other neighboring underground structures to the PGW mains and service lines, such as city water and sewer facilities. Failure of the neighboring structures may also affect the PGW distribution network.

To aid in its frigid weather inspection, Distribution purchased a flame ionization leak detection unit for use on an experimental basis during the winter of 1970-71. The purpose of the test run was to determine whether a "winter patrol" could effectively survey for indications of gas leaks over large areas of the city on a continuing and relatively high-speed basis.

The trial period proved successful, resulting in the purchase of a second flame ionization unit last fall. Now, during the current winter, two mobile detection units are

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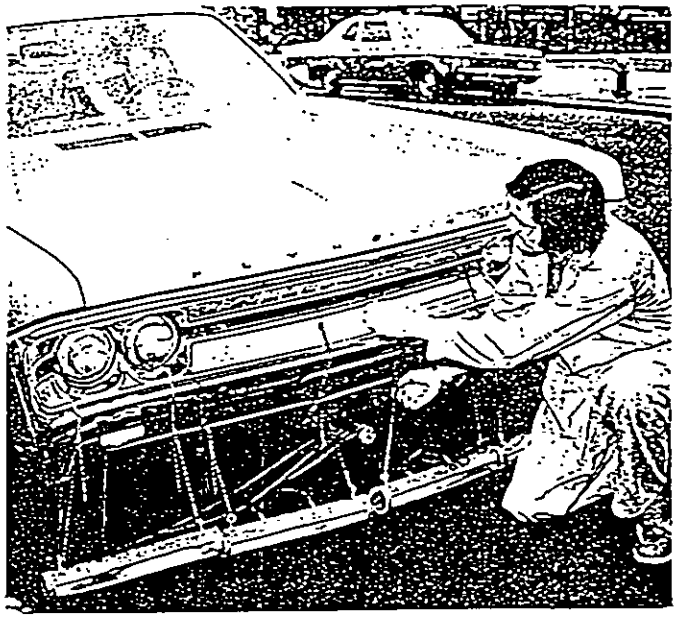
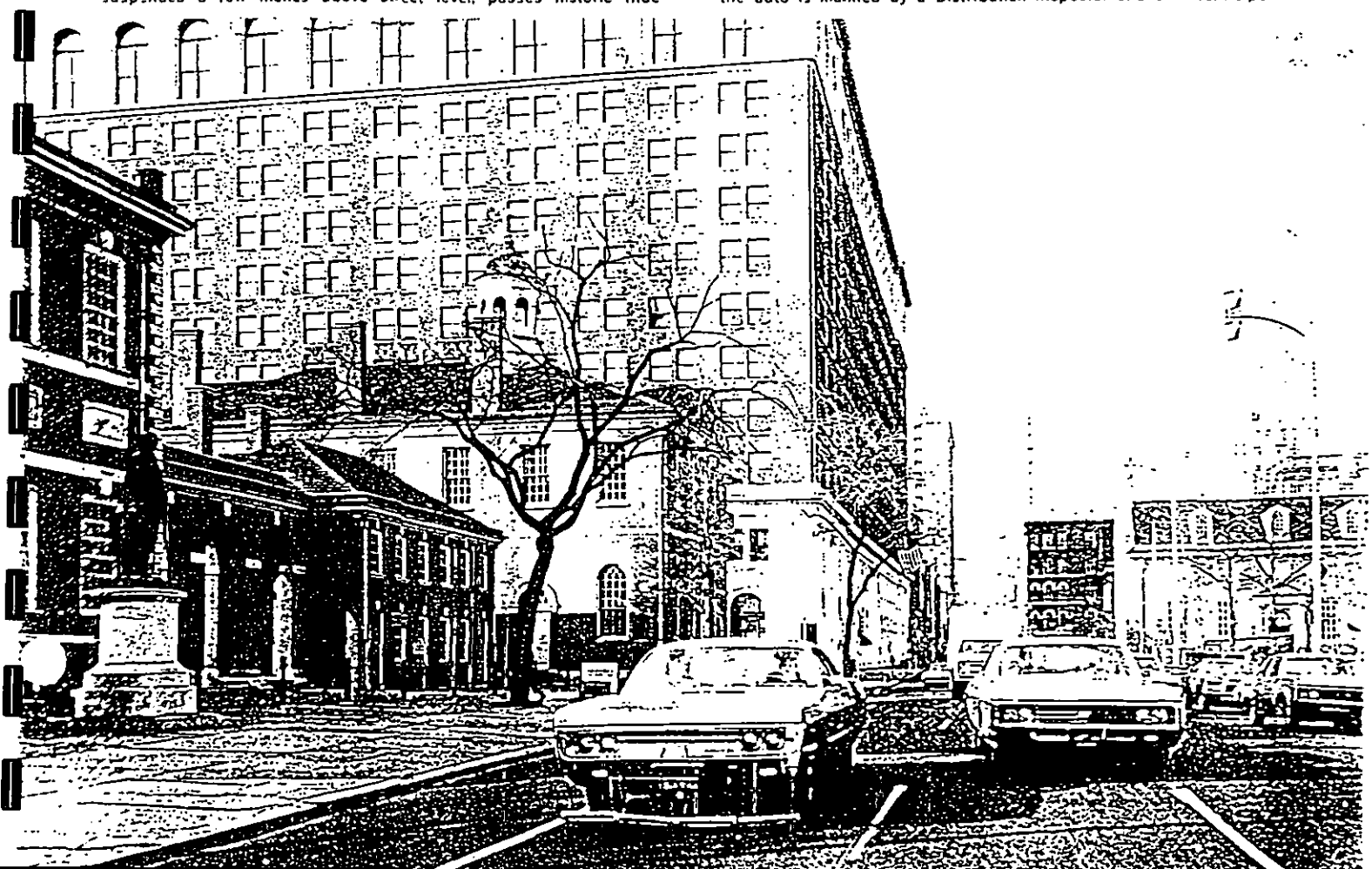


DISTRIBUTION ENGINEERING Assistant Gregory R. Campbell (right) adjusts probe cylinders he designed for mobile leak detection units.

A MOBILE gas leak detection car (left), with four probe cylinders suspended a few inches above street level, passes historic Independence Hall while traveling east on Chestnut St. Radio-equipped, the auto is manned by a Distribution Inspector and a driver-helper.



in use every night on Philadelphia streets.

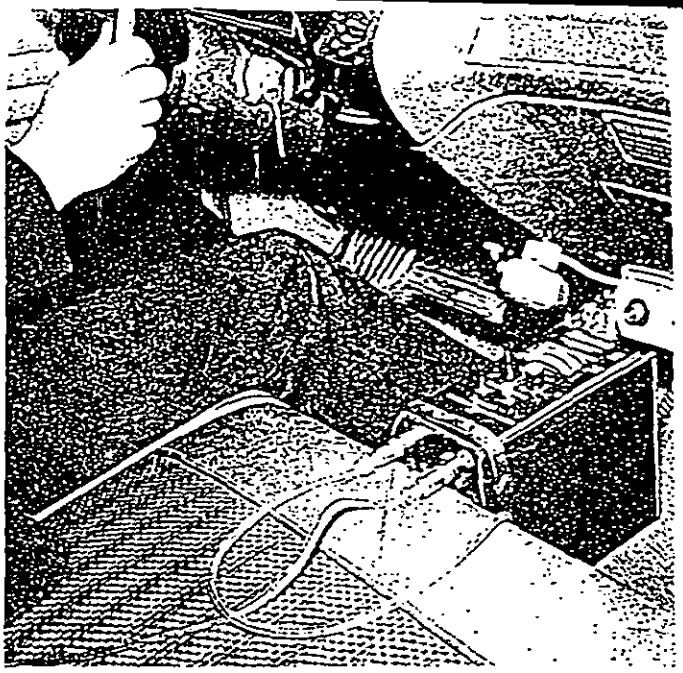
"The principle under which the flame ionization leak detector works may be best understood by saying the machine draws in the atmosphere—just like a vacuum cleaner," explained Daniel M. McHugh, Supervisor, Distribution and the department's street leak survey coordinator.

Atmospheric samplings collected by the detector are absorbed through a probe and passed into a chamber containing a controlled hydrogen flame. If the mixture contains gas, then the flame is ignited. This reaction transmits a signal to a meter, which denotes the intensity of the leak. As the signal is triggered, an alarm also sounds to alert the operator of the leak detection instrument.

The controlled hydrogen flame in the machine chamber is maintained by a fuel supply and comprised of 60 percent hydrogen, 40 percent nitrogen. The instrument is so sensitive that it has the capacity to detect a gas leak where the atmospheric sample contains as little as 10 parts per million.

McHugh disclosed that since the leak detection vehicle must travel between five and 10 miles per hour, it is operated from 10 p.m. and 6:30 a.m. to minimize inconvenience to vehicular traffic. "Our leak detector is so sensitive that it picks up all hydro-carbons, such as carbon monoxide from other vehicles," commented McHugh. "This is another reason we gear our mobile program for extensive after-dark use—there are less vehicles being operated."

A FLAME ionization unit is versatile enough that it may be used as a back-pack in a walking detection survey, as illustrated below by Distribution Gang Foreman James O. Dort. (Photos by Henry Bartle)



WEIGHING ONLY eight pounds, the flame ionization leak detector is battery-operated and can be spotted on the car floor for mobile use.

A radio-equipped mobile leak detector team, each consisting of a Distribution Inspector and a driver-helper, can survey approximately 30 miles per night by following a daily route map detailed by the Distribution plotting staff at Montgomery Station.

McHugh further explained that if the indicator registers a leak, the trouble spot is immediately double checked with a combustible indicator. If this check indicates the presence of a gas leak, the Distribution Inspector radios his PGW dispatcher. The latter, in turn, contacts a repair crew by radio and orders it to the scene to investigate and make necessary repairs.

For car use, four mobile probe cylinders are attached across the front of the leak detection vehicle. Suspended a few inches above street level, the novel probes were designed by Gregory R. Campbell, an Engineering Assistant in Distribution.

Weighing only eight pounds, the flame ionization leak detector is battery operated and can be positioned for mobile use on the car floor under the dashboard. The same type of detection device is versatile enough that it may be used as a back-pack in a walking leak detection survey.

Special walking surveys cover such locales where access to the underground atmosphere is not available through manholes or curb-stop boxes.

Mobile flame ionization units traveling the city streets on winter nights, while providing more flexibility in PGW leak surveys throughout the rest of the year, have proven an invaluable supplement to Distribution's long-standing leak survey program. ●

EXHIBIT "E"

OMD (Optical Methane Detection) Equipment Report

MEMORANDUM

SUBJECT: REQUEST FOR PURCHASE OF ONE OPTICAL METHANE DETECTOR INSTRUMENT

TO: Brian Schenk

FROM: Steve Groeber

DATE: November 19, 1998

PGW has for a long time endorsed leak survey work as a viable means to reduce the potential hazards of gas leaks which could affect our customers and their property. As early as 1956 PGW presented a paper to the AGA endorsing walking surveys as a means of preventive maintenance to a gas facility. This was long before the advent of federal code requirements. In the late 1960's early 70's, flame ionization equipment was developed and quickly became adapted to PGW use as a supplemental mobile survey performed throughout the winter period, particularly during frost conditions. Our company's diligence in performing preventive gas leak detection surveys has been modeled by the gas industry as well as adopted within federal government codes as they were developed.

The last flame ionization units were purchased in 1990-91. They were mounted on new vans. One of these 1990 vintage flame ionization vehicles has already been taken out of service. Two remaining units are also due to be replaced soon. Since 1996 I have been following the advancements of a new technology that could replace FI equipment, Optical Methane Detector (OMD). OMD has been trialed for the past two years by numerous gas companies and is clearly the new technology of choice. It is more expensive to purchase, but benefits on operational efficiencies and productivity far outweigh the initial cost difference of the two technologies.

Below is a list of improvements OMD has over conventional FI technology:

	OMD	FI
Sensitivity	1 PPM Sampled 10,000 x /sec.	50 PPM Continuous
Travel speed	15-30 MPH	5-10 MPH
Accuracy	Methane sensitive	Various combustibles
Calibration	Internal-self	Conventional span and zero checks
Installation	Minimal parts	Hydrogen fuel tank hoses, vacuum pump, hoses
Reporting	Data entry port	Conventional strip chart
Inclement weather	Will work in rain & snow	Will not work in rain or snow

Attached are quotations for conventional FI units versus OMD units. If ordered soon, Heath promises delivery prior to December 31st and PGW will stand to improve productivity as soon as possible. I do expect a marked increase in productivity using the OMD unit. When this is assured we could then proceed to reassess our survey requirements and evaluate the replacement needs of our other FI units.

Attachments

cc: Messrs. M.J.Bezak
J.J.Jolly
J.J.Pearce
E.Poole
D.Stinson

M E M O R A N D U M

SUBJECT: Optical Methane Detector
GRI co-sponsor

TO: Brian Schenk

FROM: Steven A. Groeber SAG

DATE: November 29, 1996

As I mentioned in our Operational Staff Meeting in October, I was contacted by the Gas Research Institute (GRI) who was soliciting our participation to sponsor the final production costs of the Optical Methane Detector (OMD). This unit can be mounted onto a vehicle and be used in the same manner as Flame Ionization (FI) equipment. Advantages of the OMD over the FI equipment is that methane is the only product detected, driving speed can be increased, reaction to detection is immediate, and the unit can be used in rain or snow conditions.

GRI is asking for support of $50,000 which would include first rights for further field tests, but they are only going to continue 6 to 10 field tests. They are also offering one OMD unit to be given to the sponsor regardless of field tests or not. The cost for a unit is planned to be $15,000 when available for market.

This product will be available in about one year. Our existing units are still operational. I recommend PGW does not contribute at this time. Transportation has not indicated replacement of our FI vans this year. We will continue to monitor the performance of these units and consider it as a replacement.

STEVEN A. GROEBER

DD/SAG/rd

Attachment

cc: Messrs. G.Martin
D.Stinson

HEATH CONSULTANTS

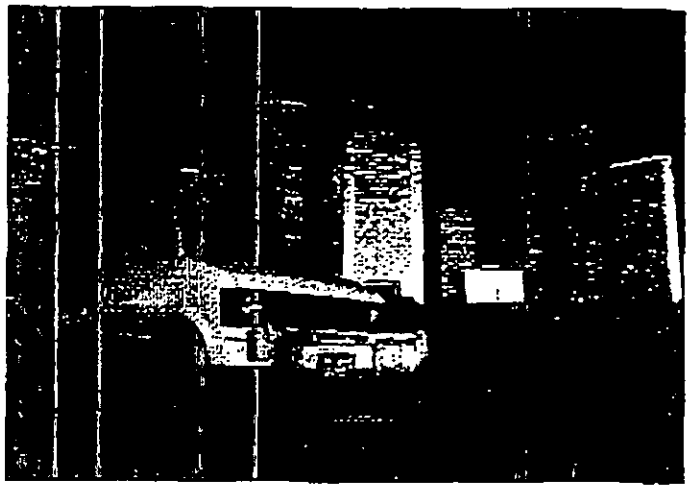
NEW OMD™ OPTICAL METHANE DETECTOR

Increase Speed, Accuracy and Productivity

The Optical Methane Detector (OMD™) is the new mobile leak detector designed and tested in a Gas Research Institute program and manufactured by Heath Consultant Incorporated. The OMD was specifically designed for the mobile inspection of buried natural gas distribution, transmission and gathering pipelines. This new technology combines sensitivity, selectivity and speed through the use of optics and electronics.

Field tests have proven that given adequate survey and meteorological conditions the OMD increases productivity 50% or more over current mobile survey. A contributing factor to the increased productivity is the instantaneous response to leak indications versus the time delay present with current flame-ionization technologies. Much of the maintenance associated with flame-ionization units, including moving parts, external fuel gases , outside sources of dust, dirt, moisture and water ingress, is eliminated with the OMD.

The OMD is mounted on the front of a survey vehicle. It employs an infra red (IR) light beam that shines across the front of the vehicle. An optical filter in front of the detector transmits methane IR wavelengths from the light source. In the absence of methane, these wavelengths are unaffected and produce a steady output signal from the detector. The presence of methane then causes a signal, audio and visual, which is transmitted to a display in analog and digital from inside the vehicle. The OMD can detect leak indications in concentrations of less than 1 part per million (ppm) at 10,000 measurements per second.



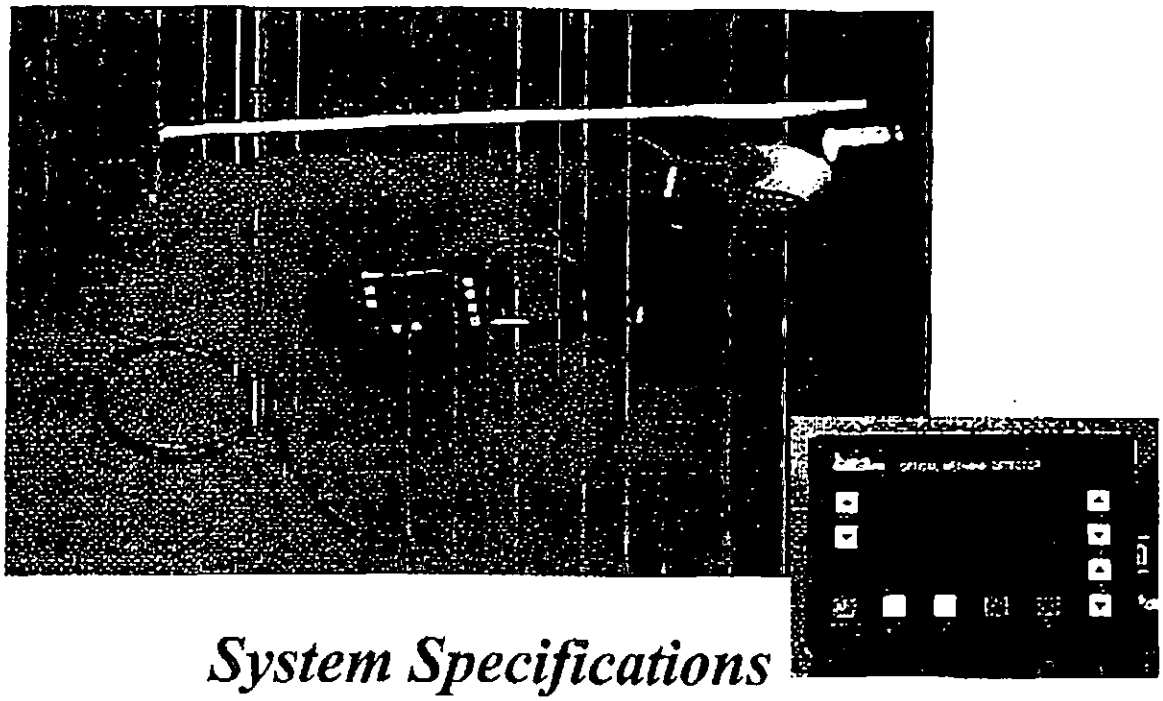
The OMD operates reliably under a variety of environmental conditions including inclement weather, wind and temperature from -20° F to +110° F. The OMD sensitivity is not affected by small fluctuations in the light beam caused by reasonable amounts of dust, dirt, water or snow. An internal calibration check cell is included so the operator can verify proper operation from the vehicle cab at any time before, during or after the survey, as well as alerting the operator if conditions are not optimal.

Installation on various types of survey vehicles is very simple and can normally be accomplished in a matter of hours. All cables are provided with the OMD including the power cable to operate the unit from the survey vehicle's 12 volt battery. An RS232 port is available whereby a personal computer may be connected to acquire and save survey data.

For more information and pricing call **1-800-HEATH-US (432-8487).**

Heath Consultants Incorporated

OMD™
Optical Methane Detector



System Specifications

Configuration:	Double ended
Sensitivity:	1 PPM / meter CH_4 at 25 MPH
Measurement Range:	1 to 200 PPM
Display Ranges:	10, 30 and 90 PPM
Self Test:	During boot up
Calibration Test:	Via operator, self contained
Calibration:	Via RS-232 through software
Base Line Compensation:	Via RS-232 through software
Display:	Backlit 2" x 6" graphics LCD
Operator Interface:	Sealed membrane switch overlay
Operator Alarms:	Audible with adjustable set point
Signal:	High pitch increases with concentration
Error:	Low pitch for Warm up, Low Light, Failure & Battery Low

System Power:	60 watts @ 12 VDC
System Voltage:	10-16 VDC
System Weight:	
External Sub-Systems:	17 pounds
Power Box:	6 pounds
Cables	4 pounds
Internal Display:	3 pounds
Mechanical Mounting:	Strut bracket mount
Installation Time:	2 hours, typical
External Housing Rating:	NEMA 35 and IP 54
Display Housing Rating:	Spill Proof
External Sub-System Materials:	Aluminum and plastic
Environmental PCB Control:	Conformal PCB coating
Operating Temperature Range:	-22 °F to 122 °F
Operating Humidity Range:	5 to 100% RH

For Information:

1-800-HEATH-US

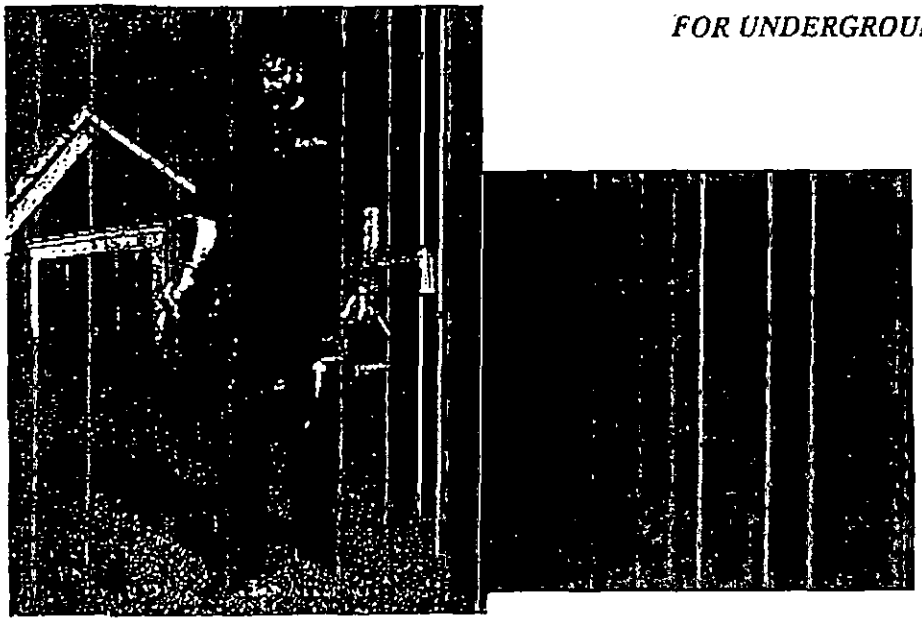
www.heathus.com

HEATH CONSULTANTS

Heath Consultants Incorporated
9030 Monroe Rd
Houston, TX 77061
713-844-1383
713-844-1309 fax

Heath's Detecto-Pak® 4 Flame Ionization Detector

THE LEADING GAS DETECTOR IN SEARCHING FOR UNDERGROUND LEAKS.



Heath Consultants Incorporated has combined the dependability of field proven Flame Ionization technology with computer-age electronics design to develop an instrument that is sure to quickly become an industry leader. Heath Consultants Incorporated introduces the NEW Detecto Pak 4, a portable flame ionization gas leak detector for walking and mobile leak surveys. It reads from 0-10, 0-50, 0-100, 0-1,000, and 0-10,000 parts per million (PPM) and has a fast response time due to its strong internal sample pump system. The DP 4 is the most cost effective, dependable and flexible instrument on the market.

FLAME IONIZATION TECHNOLOGY

Heath was the first manufacturer to introduce flame ionization technology into the gas industry for portable and mobile gas leak detection applications. The DP 4 utilizes this well known and field proven flame ionization principle to measure very small quantities of hydrocarbons. A controlled amount of fuel is admitted to a detector cell along with an air sample drawn by an internal sampling pump. When hydrocarbons are present in the sample, ionization occurs. The amount of ionization is electrically measured and converted to a visual indication of hydrocarbon level in PPM via the instrument meter.

Heath designed the DP 4 to maximize its operational life. The fuel flow system incorporates advanced design elements. Fewer mechanical components requiring fewer adjustments have made the DP 4 more stable, resulting in more reliable fuel flow rates and calibration settings. The DP 4 has a new modular design that is rugged and weather resistant. Mechanical controls have been replaced by membrane switches that last longer and are more dependable.

Many of the design features are based on "intelligent" electronics that save time and money. The DP 4 monitors the cell base temperature, automatically stopping the fuel flow if the temperature is too high, thus preventing damage to the instrument. The DP 4 automatically stops the fuel flow when it is turned "Off", extending the operating supply in the fuel cylinder and eliminating the need for the operator to remove the cylinder after each use. When the DP 4 is turned "Off", the sample pump remains on for 1 minute to gradually cool the detector cell, preventing condensation and corrosion and extending the life of the instrument. The DP 4 automatically monitors the input sample flow rate and alerts the user when the sample rate is not within an allowed range with audio and light emitting diode (LED) alarms.

It also controls the zero adjust and instrument range selection in a simple push button operation. Options include enhanced outputs for data logging with both 0-10 volt and isolated 4-20 mA current signals and headphones with an adjustable volume.

EASY OPERATION

The DP 4 uses conventional 40% hydrogen and 60% nitrogen fuel, making it compatible with existing systems. Calibration in the field continues to be simple. The DP 4 can be carried with a shoulder strap or the built-in handle that is ergonomically designed for comfort. Also, it can be easily used in a mobile leak unit equipped with an auxiliary sample system. Whether you are searching for leaks on a service line or gas main, the DP 4's internal sample pump provides a strong sample flow for finding the smallest leaks in the quickest time.

Operating the DP 4 is easy with new design features. The operator can manually set the Audio/LED alarm limit to the PPM level of preference. The battery pack uses Nickel-Metal-Hydride (NiMH) technology for longer operating life, smaller space, lighter weight and reduced maintenance. The DP 4 provides manual meter back lighting that, when selected, will remain on for 15 minutes at a time.

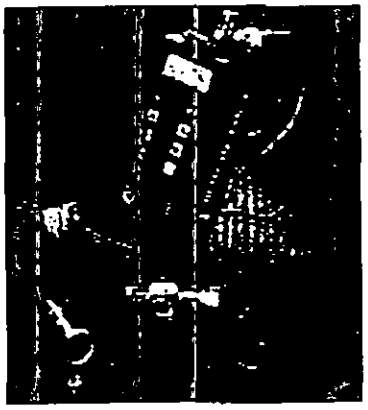
TOTAL LOWEST COST OF OWNERSHIP

The NEW DP 4 combines Heath's 60 years experience and excellent reputation with the 20+ years of field proven flame ionization technology to give you the most cost effective gas leak detector you can own. The DP 4 stays in the field longer because its new durable modular design and more reliable components can take the abuse of day to day operations, reducing the need for maintenance and repairs. With its new design, electronic and mechanical advances, the DP 4 gives you the capability to detect gas leaks with confidence.

Heath DP® 4 Flame Ionization Gas Leak Detector

Specifications

Weight:	7 lbs. (3.2 kg.).
Weight of Shoulder Strap:	6.4 oz. (181 g).
Telescopic Probe:	Extends from 25 to 41 inches (63 cm to 104 cm); 1 lb. (.45 kg.).
Sensitivity:	5-scale operation: 0-10, 50, 100, 1000, and 10,000 ppm gas in air.
Sampling Rate:	2.0 liters per minute, nominal.
Fuel Consumption:	30 cc per minute (40% hydrogen and 60% nitrogen)
Meter Readout:	Analog meter.
Alarms:	Pulsating audible and visual alarm for leak indications; continuous for flame-out indication. Low sample audible alarm and light emitting diode (LED) indicator.
Ignition:	Piezo-electric high-voltage spark.
Batteries:	Nickel-Metal-Hydride (NiMH) rechargeable battery pack. 1.2 AHr capacity at 12 VDC.
Battery Charger:	Available in 110 VAC or 220 VAC, 50-60 Hz (must specify) 14 oz., (0.4 kg.).
Lecture Bottle Capacity:	Approximately 7 cubic inches.
Daily Operating Life:	Approximately 10 hours (batteries fully charged and 2 fuel cylinders filled to 1750 P.S.I.).
Total Shipping Weight:	29 lbs. (13.2 kg.).
Data Logging Output:	(Optional) 0-1; 0-2.5; 0-10 Voltage or 4-20 mA.
Case Dimensions:	28"L x 19½" W x 9"H (71 cm x 49 cm x 23 cm)
Warranty:	One year parts and labor, excluding abuse and unauthorized modification.



Descriptions

DP 4 complete - includes telescopic probe assembly, 3 fuel cylinders, transfiller, 110 VAC battery charger, extra filters, shoulder carrying strap, lecture bottle o-rings, grease, instruction manual, and carrying case. P/N 0608800

DP 4 complete with 220 VAC battery charger - P/N 0608801

Accessories:

DP 4 calibration kit - field kit in a blue case with 100 PPM CH_4 (2.25 lbs.). P/N 8300122

Calibration Gas - *100 PPM methane/balance air.* Disposable bottle. P/N 8300129

Mobile Accessory Kit - consisting of front sample assembly with tubing, high-volume pump with fittings, power cable, mounting brackets, carrying handle, and necessary hardware. 21.25 lbs. P/N 0628375

IGT

Heath Consultants Incorporated
9030 Monroe Road
Houston, TX 77061
(713) 844-1300
FAX (713) 844-1309
1-800-HEATH-US
www.heathus.com

DISTRIBUTED BY:

Heath Consultants Incorporated

QUOTATION REQUEST

November 17, 1998

Steve A. Groeber
Philadelphia Gas Works
800 W Montgomery Ave
Philadelphia, PA 19122

Dear Mr. Groeber,

Thank you for your recent inquiry and as requested it is my pleasure to submit the following information for your consideration.

DP 4 COMPLETE 110V	HNP#0608800	3750.00 EACH
MOBILE KIT,DPIV,POST MOUNT	HPN#0628375	1830.05 EACH

Prices quoted are good for 30 days from the date of this letter and are shipped F.O.B. Houston, TX. Shipping and applicable tax are extra.

We appreciate this opportunity to be of service. Should you require additional information, please contact me at our Customer Service Department at 1-800-432-8487.

Sincerely,

Shellie Hoops

Shellie S. Hoops
Customer Service Department
www.heathus.com

cc:rs/file

Technology Improves gas leak detection

by Dr. L.L. Altpeter, Paul Beckendorf, and Dr. Tom Henningsen, Published in the April 1997 Issue of Gas Industries.

A new technology to detect natural gas leaks is based on the absorption of infrared light by methane in natural gas. When commercialized, the new detector will increase leak survey productivity 20 to 50% by permitting a vehicle equipped with this detector to travel at normal traffic speeds.

For many years, the state-of-the art technology for detecting, locating, and repairing leaks has been the flame ionization unit. While the FIU has excellent sensitivity, its response time is slow. In more recent years, the FIU has been adapted for mobile surveys of gas mains.

However, because of its slow response time, the maximum speed of the surveying vehicle ranges from 3 to 7 mi./hr. As a result, many utilities conduct leak surveys on foot, rather than in vehicles. In addition, the FIU responds to ppm levels of any combustible, or oxidizable, substance in the intake air sample, creating the possibility of false positives.

The commitment to accurately locate and repair leaks is very labor intensive, and can cost a large utility several million dollars per year. With gas utilities pursuing every opportunity to enhance productivity, the gas leak function becomes a prime target for scrutiny.

Recognizing the gas industry's need for an improved leak detection system, the Gas Research Institute and the Westinghouse Science and Technology Center developed an improved system to detect natural gas leaks. The result was a system that offers significant productivity advantages over state-of-the-art systems.

Optical methane detector

In 1988, GRI and WSTC began working on the development of an improved method to detect natural gas leaks. In 1991, the researchers decided to focus on the analysis of the spectral absorption of light by natural gas, using the principle that methane has fundamental infrared absorption bands at 3.3 lm. The principle behind this application was already being developed for use in the detection of post-combustion gases. Subsequent laboratory and field evaluations of a prototype verified the viability of the application for natural gas detection.

"The system offers significant productivity advantages."

The optical methane detector uses a quartz halogen light source that shines a beam of light through the atmosphere to a receiver. Within the receiver, the light passes through an optical filter system and then to a detector. The filter transmits only those wavelengths of light in the 3.3-lm range that are absorbed by methane. The extent of absorption is proportional to the methane concentration. Natural gas levels are as low as one part per million are detectable with the OMD.

In the absence of methane, the wavelengths of light in the 3.3-lm range are unaffected and the detector produces a steady output signal. When methane enters the beam path, a sudden change in the light level occurs at the detector.

The resulting change in the detector output becomes a signal to alert the operator that methane has been detected. The OMD's detection system makes 14,000 measurements per second, which allows 30 measurements for every inch when the vehicle is traveling at 25 mi./hr. The system's speed of response provides for accurate measurements while the vehicle is moving with the flow of the traffic.

The primary advantage the OMD offers is the ability to conduct leak surveys faster. A number of other features also make it very attractive. Since the OMD does not require hydrogen gas and the associated plumbing system to operate the system, safety is enhanced. The system can be mounted on a vehicle by one person in less than 2 hrs.

Since no elaborate piping system is required, the OMD can easily be moved between vehicles. The OMD requires no maintenance. Calibration of the OMD is accomplished by the operator from the driver's seat with the flick of a switch. Finally, the OMD is selective for methane, so many false positive readings are eliminated.

Field Evaluations

A total of 11 gas utilities conducted field evaluations of the OMD. Each evaluation lasted a minimum of two weeks. At the end of each evaluation, the utility provided written feedback on the performance of the unit. The range of conditions encountered included snow, sleet, and rain. The temperatures during the evaluations ranged from -10 degrees F in Minneapolis to over 110 degrees F in Tucson. After each evaluation, the prototype was returned to WSTC for inspection to determine how the detector held up during field evaluations. The OMD's strong performance during these field evaluations confirmed the

potential productivity enhancements that the detector promised during the concept stage.

Subsequent meetings with gas utilities reinforced the need for a product that is rugged, reliable, accurate, all-weather operational, low maintenance, cost competitive, and operates with a one-person crew. In addition, gas utilities expressed the desire to have a unit that can be used remotely from the vehicle to check facilities that can not be surveyed by vehicle.

The next steps

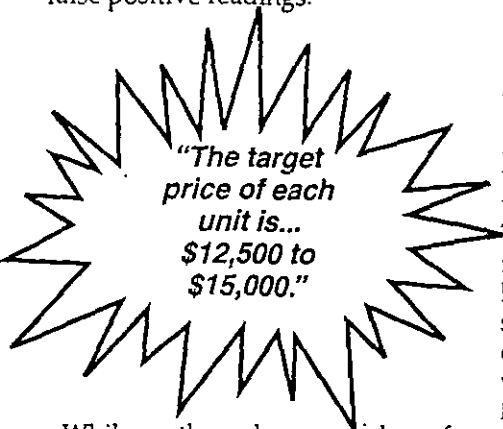
In December 1996, GRI contracted with Heath Consultants to be the commercializer of the OMD. GRI and Heath expect that the OMD will be introduced to the natural gas market by December 1997. The target price of each unit is in the range of $12,500 to 15,000. In addition to the U.S. market, there is growing international interest in this new technology.

It would be desirable for the OMD to have the ability to survey in those areas where the gas mains are located in boulevard strips. This could be achieved by mounting the light source and receiver on one side of the vehicle and shining the light at a reflector mounted on a telescopic arm that could be extended beyond the width of the vehicle on the opposite side of the vehicle.

Another potential enhancement would be to place a reflector on each building that has gas service in a line-of-sight to the street. The reflector would be placed on, or next to, the gas meter wherever possible. This would enable the survey of line-of-sight gas services from an OMD-equipped vehicle with a light source directed at the reflector from the vehicle. While this second enhancement would not address all gas service areas, it could reduce the need to walk many services.

There are other technologies that will be the next steps in leak surveying:

✓ *Ethane detection.* Leak surveyors occasionally encounter indications of methane from sources other than natural gas that give false positive readings.



While methane has a number of sources other than natural gas, ethane is a unique signature gas in the great majority of sources of natural gas. The OMD filter can be modified to detect ethane, or both ethane and methane, virtually eliminating false positives. Ethane is present in natural gas at about 1%, so the detector would need to be able to read in parts per billion.

✓ *Automated leak detection.* Another development is automated methane detection, which is being evaluated at Minnegasco. The AMD software package combines the OMD or an FIU with a global positioning system. As the vehicle moves along its route, its position is automatically plotted on a map of the area. If a gas leak is detected, the leak position is marked. This information can either be saved for future downloading, or transmitted to the office for evaluation.

The AMD system makes possible a paperless leak management system. Minnegasco estimates a 30% increase in productivity with such a system. An AMD system allows the office to evaluate leak information from several units simultaneously. The AMD system also allows the office to know whe leak survey units are at any giv. time. Finally, with an AMD system, the driver may not need to return to the dispatch center. The driver can download the survey results from a PC to the center via modem at home, or deliver the results the following day.

✓ *Remote leak detection.* A future development for leak surveying will be the ability to survey with a stand-off, or remote device. This could be envisioned as a flashlight version, either handheld or vehicle-mounted. A version of this concept is being explored as basic research by GRI, using a laser diode that is selective for natural gas. The laser images the gas plume and the leak concentrations are recorded from the reflected signal. This technology is not expected to be available for several years.

For the natural gas industry to be successful in today's competitive climate, it must identify opportunities to reduce operating and maintenance costs. The leak survey function is one of these opportunities. Each year, the U.S. natural gas industry surveys 285,000 mi. of mains and services, at an annual cost of approximately $30 million. With productivity enhancements of 20 to 50%, the optical methane detector will have significant positive impact on the gas industry's operating and maintenance costs.

Write 4102 on GASFAX card.

Dr. L.L. Altpeter represents Advanced Sensor & Technologies; Paul Beckendorf represents the Gas Research Institute; and Dr. Tom Henningsen represents the Carnegie-Melon Research Institute. *This article was adapted from a paper presented at a recent American Gas Association*

Mobile leak detector speeds up surveys

The Optical Methane Detector, a new leak-survey device, is prompting great reviews from its field testers. George Ragula, distribution technology manager of Public Service Electric & Gas in New Jersey, says his company has anxiously awaited the availability of the detector, now ready for distribution. "The methane detector [manufactured by Heath] provided the same accuracy as the flame ionization system, with significant increases in productivity."

The OMD is designed to obtain accurate methane leak readings at more than five times the speed of conventional mobile gas-leak-detecting methods. During field evaluations at 12 gas utilities, the engineering prototype is reported to have accurately detected gas leaks at up to 40 mi./hr. It is expected to provide productivity increases of 20 to 50% or more.

The OMD employs a light beam that shines across the front of the vehicle on which it is mounted. The light beam, which is perpendicular to the path of the vehicle, enters a detection unit, where it is analyzed. The methane sensitive detector sends a signal to an output panel next to the driver when methane is detected. The OMD takes 10,000 measurements per second, allowing the vehicle to travel with the flow of traffic while still taking accurate measurements.

Some of the benefits promised with the new mobile system are:

- ✓Increased survey speed.
- ✓Simple calibration process.
- ✓Minimal maintenance.
- ✓No compromise in ability to detect leaks.
- ✓Easily installed and moved between vehicles.
- ✓No need for hydrogen fuel source.

Comments from field test participants appear to bear out those claims.

After only a week of using the OMD, officials at Brooklyn Union Gas were sold. Sal Trupiano, senior research engineer, reports that surveyors found the detector so sensitive, "they had to tone it down. It was picking up exhaust and sewer gas." An adjustment was easily made, enabling them to choose the levels of gas detection. Trupiano says employees were able to travel 30 to 45 mi./hr. as opposed to 5 to 7 mi./hr. with standard equipment. Time was also saved in not backtracking to locate leaks, due to the infrared system's instant reading. "Testing made the decision," says Trupiano.

PSE&G used the detector during three weeks of January testing, going high speeds over cast iron mains with elevated pressures. The system did well, says Ragula. "In a normal survey mode, we see how this could easily double, or even triple, productivity."

Surveyors here, too, were impressed with the instantaneous response of the optical beam. "With the flame ionization system, as you go past the leak, it takes a certain amount of time for gas to go through the unit and the buzzer to go off. By the time the leak is detected, you've driven way past it."

Ragula appreciates the increased safety in using this system, asking, "Why travel around with a hydrogen tank if you don't need to?" With the conventional method, he says, sucking in water and resultant pump breakdown is also a problem. With the OMD, there is less to maintain and less to repair. "It's simple to install, use, and maintain. We're pleased with the response."

Ken Nath, field services manager of Peoples Natural Gas in Pittsburgh, says he's pretty excited about it. PNG participated in tests by running a standard FI truck along with a truck outfitted with the OMD. Results with the OMD were as accurate as with the standard testing equipment. In addition, as both vehicles were driven to another location at speeds of 35 to 40 mi./hr., the OMD alarm, which had been left on, suddenly sounded. When the testing crew backtracked to the place where the alarm first went off, the standard equipment and the OMD both confirmed the presence of a leak. Nath says, "This is the first new piece of technology in the industry in a long time. We need to keep up the pace, and this piece of equipment can do that."

The methane detector is the result of a partnership between Gas Research Institute, which sponsored the research; Heath Consultants Incorporated, the product manufacturer; and Carnegie-Mellon Research Institute, who provided technology support.

Write 11350 on GASFAX card.

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CALENDAR

November 6-8, Midwest Gas Association Senior Gas Executive Conference, Colorado Springs. Contact 612/832-9915.

November 15-17, SGA Executive Management Conference, Orlando. Contact 214/620-8505.

December 1-2, PDA Handheld Forum & Expo, St. Louis. Contact 415/252-8008.

April 26-29, 1998, AM/FM International Conference XXI, San Jose, California. For additional information, contact: 303/337-0513.

May 19-21, 1998, 73rd International School of Hydrocarbon Measurement, U.S. Postal Service Technical Training and Conference Center, Norman, OK. Contact Dr. Leon Crowley, 405/325-1217.

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NOVEMBER 1997

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GENERAL WINTER PATROL SURVEY NOVEMBER 1,2000 THRU MARCH 31, 2001

	NOVEMBER 2000	DECEMBER 2000	JANUARY 2001	FEBRUARY 2001	MARCH 2001	TOTAL
Blocks Surveyed						0
Miles Surveyed						0
Total Manhours						0
Broken Mains						0
Joint Leaks						0
Misc.Main Leaks						0
Service leaks						0
Total Leaks						0
Leak Orders Originated						0

Leak Orders Originated per Block						
Blocks per Leak Order Originated						
Miles per Hour						
Blocks per Hour						
Manhours per Block						

PRUDENT WINTER PATROL SURVEY NOVEMBER 1,2000 THRU MARCH 31, 2001

	NOVEMBER 2000	DECEMBER 2000	JANUARY 2001	FEBRUARY 2001	MARCH 2001	TOTAL
Blocks Surveyed						0
Total Manhours						0
Broken Mains						0
Joint Leaks						0
Misc.Main Leaks						0
Service leaks						0
Total Leaks						0
Leak Orders Originated						0

Leak Orders Originated per Block						
Blocks per Leak Order Originated						
Miles per Hour						
Blocks per Hour						
Manhours per Block						

Wolf, Block, Schorr and Solis-Cohen LLP

212 Locust Street
Suite 300
Harrisburg, PA 17101

T: 717 237 7160
F: 717 237 7161
www.wolfblock.com

DANIEL CLEARFIELD
DIRECT DIAL: (717) 237-7173
E-MAIL: DCLEARFIELD@WOLFBLOCK.COM

May 4, 2001

A-125042
DOCUMENT
FOLDER

VIA HAND DELIVERY

James McNulty, Secretary
PA Public Utility Commission
Commonwealth Keystone Building
400 North Street
Harrisburg, PA 17120

RE: PGW Official Bond Document Submission Pursuant to 66 Pa. C.S. § 2212(e)

Dear Mr. McNulty:

Enclosed for filing is an original and nine (9) copies of the Independent Consultant's Engineering Report, April 25, 2001, prepared by Black & Veatch Corporation. This Report is being submitted to thePUC pursuant to the requirements of Section 2212(e) of the Public Utility Code which requires that ¶ "[a]ll documents that are required to be submitted to the governing body of the city by the First Class City Revenue Bond Act . . . shall also be submitted to the commission for its information."

The Black & Veatch Engineering Report has been prepared and submitted to City of Philadelphia Director of Finance Janice D. Davis in conjunction with the issuance of $119,280,000 (preliminary) Gas Works Revenue Bonds, Third Series (the 2001 Bonds), as required by Section 8 of the First Class City Revenue Bond Act and Section 4.03(a) of the General Gas Works Revenue Bond Ordinance of 1998. As required by that Act and Ordinance, Ms. Davis has also transmitted the Chief Financial Officer's letter, copies of which will be submitted to the PUC under separate cover. We also will be filing, as soon as it is available, the Fourth Supplemental Ordinance authorizing the 2001 Bonds, as introduced in City Council.

DSH:27095.1

In accordance with Section 2212(e), please place this public report on file with the Commission for its information.

Very truly yours,

Daniel Clearfield

Daniel Clearfield
For WOLF, BLOCK, SCHORR and SOLIS-COHEN LLP

DC/kec
Enclosures

cc: *Veronica Smith*, Dep. Exec. Dir. (w/enc)
Karen Moury, Law Bureau (w/enc)
Andrew Tubbs, Law Bureau (w/enc)
Attached Service List (w/enc)

ORIGINAL

Engineering Report

A-125042

$119,280,000
Gas Works Revenue Bonds
(1998 General Ordinance) Third Series

Philadelphia Gas Works
Philadelphia, Pennsylvania

BLACK & VEATCH
Corporation

BLACK & VEATCH

8400 Ward Parkway
P.O. Box 8405
Kansas City, Missouri 64114 USA

Tel: (913) 458-2000

Black & Veatch Corporation

April 25, 2001

Ms. Janice D. Davis
Director of Finance
City of Philadelphia
13th Floor, Municipal Services Building
1401 John F. Kennedy Boulevard
Philadelphia, PA 19102

Dear Ms. Davis:

In accordance with our agreement with the Philadelphia Gas Works ("PGW") through the Philadelphia Facilities Management Corporation, the management entity for PGW, we submit herewith our consulting engineers' report to be included as an appendix to the official statement ("Official Statement") prepared by PGW in connection with its issuance of $119,280,000* Gas Works Revenue Bonds, Third Series (the "2001 Bonds") and upon which you may rely in furnishing your report required by Section 8 of the First Class City Revenue Bond Act and Section 4.03(a) of the General Gas Works Revenue Bond Ordinance of 1998. The purpose of this report is to present the findings of our evaluation of PGW's gas works system (the "System") and to set forth information concerning financial factors relating to the 2001 Bonds. This report is based on our analysis of the records and capital improvement programs of PGW, physical inspection of predominantly above-ground facilities and underground facilities at existing sites, discussions with key PGW personnel and such other investigations, as we have deemed necessary.

The evaluation of the System, which includes a discussion of organization, management, and staffing; system service area; supply facilities; distribution facilities; and the Capital Improvement Program (the "CIP") for fiscal years 2001 through 2006, is presented in the first part of the report. The second part of the report contains financial feasibility information including analyses of gas rates and rate methodology; projection of future operation and maintenance expenses; CIP financing plans; projection of revenue requirements as a determinant of future revenues; and assessing the ability of PGW to satsify the covenants in the City Ordinances authorizing the issuance of the Prior Bonds and the 2001 Bonds. A listing of our principal assumptions and opinions developed as a result of our studies is presented at the end of this report.

In conducting our studies, we reviewed the books, records, agreements, capital improvement programs, and customers, sales and financial projections of PGW as we deemed necessary to express our opinion of PGW's operating results and projections. While we consider such books, records, documents, and projections to be reliable, Black & Veatch has not verified the accuracy of these documents.

Black & Veatch is one of the oldest, largest and most diversified engineering, procurement, and construction firms in the United States. Over the past decade, the firm has expanded into the worldwide market and maintains a global network of regional, marketing, and project offices. Founded in 1915, the

*Preliminary, subject to change.

firm employs over 8,400 people performing financial, economic, and engineering studies and design and construction of facilities for clients in government and industry in the fields of energy, water, and wastewater. The firm has extensive experience in the design and analysis of the operation and financing of electric, natural gas, water, and wastewater systems serving communities ranging in size from small villages to large metropolitan systems of the magnitude of the System.

In this report, where standards or requirements are indicated as being applicable, being fulfilled, or to be attained, such standards or requirements are those promulgated by the Pennsylvania Public Utilities Commission (the "PUC") and other Federal, State, and local agencies, in accordance with the provisions of Federal laws and the laws of the Commonwealth of Pennsylvania governing the storage, delivery, and sale of gas. Capitalized terms not otherwise defined herein shall have the same meanings as ascribed to them in the Official Statement. References made herein to specific years are for the fiscal years ending August 31, unless otherwise noted.

The report includes our assessment of the condition of PGW's physical plant including PGW's existing storage and distribution facilities, based upon on-site inspections of facilities. We also reviewed and evaluated existing and planned natural gas transportation and supply contracts with respect to volumes of gas to be delivered. The general physical condition of the System's facilities has been evaluated using three rating categories - good, adequate, and poor - as described below.

- *Good*: The facility is in condition to provide reliable operation in accordance with design parameters and requires only routine maintenance.
- *Adequate*: The facility is operating at or near design levels, however, non-routine renovation, upgrading, and repairs are needed to ensure continued reliable operation. Significant expenditures for these improvements may be required.
- *Poor*: The facility is not being operated within design parameters. Major renovations are required to restore the facility and assure reliable operation. Major expenditures for these improvements may be required.

The ratings assigned in this report are the result of physical inspections of individual above-ground facilities and underground facilities at existing sites conducted in February and March 2001.

An evaluation of a gas storage, and distribution system of the magnitude and complexity of PGW's requires an assessment of each of the System's various components. The evaluation described in this report is based on estimates of the degree of improvement that has been and will be provided by the projects in the current CIP and their impact in meeting service requirements.

The proceeds from the 2001 Bonds, along with available fund balances and internally generated funds are to be used in part to finance capital improvement expenditures scheduled in the CIP for 2001 through 2002. The remaining capital improvement expenditures scheduled for 2003 through 2006 are expected to be financed, in part, with future bond issues. *See "Capital Improvement Program Financing."*

In conducting our analyses and in forming an opinion of the projection of future operations summarized in this report, Black & Veatch has made certain assumptions with respect to conditions, events, and circumstances that may occur in the future. The methodology utilized by Black & Veatch in performing the analysis follows generally accepted practices for such projections. Such assumptions and methodologies are summarized in this Report and are reasonable and appropriate for the purpose for which they are used. While Black & Veatch believes the assumptions are reasonable and the projection methodology valid, actual results may differ materially from those projected, as influenced by the conditions, events, and circumstances that actually occur.

Based on these analyses and the assumptions set forth or referred to in this report, we offer the following opinions to indicate PGW's conformance with specific requirements which must be met for the issuance of the 2001 Bonds as provided in the 1975 and 1998 General Ordinances:

1. PGW is a competently managed and operated gas distribution utility. PGW and its facilities are organized, operated and maintained at a level equal to, or in excess of, regulatory requirements and generally accepted industry practices. PGW's facilities are in good operating condition.

2. Based on our evaluation of financial projections covering the period September 1, 2000 through August 31, 2006, and on the basis of actual and estimated future annual financial operations of PGW's facilities and certain assumptions with respect thereto over the amortization period of the 2001 Bonds, which Black & Veatch believes to be reasonable, current and future project revenues, which are pledged under the 1975 General Ordinance and the 1998 General Ordinance, comply with the requirements of the definition of Project Revenues in Section 2 of the Act, and over the amortization period of the 2001 Bonds and the Prior Bonds, such Project Revenues will be adequate to meet all expenses of operation and maintenance, repair and replacement, reserve fund deposits, debt service on the bonds issued under the 1975 General Ordinance and debt service on the Bonds issued under the 1998 General Ordinance, as the same shall become due and payable, and the surplus requirements of the rate covenants contained in Section 4.03(b) of the 1975 General Ordinance and Section 4.03(b) of the 1998 General Ordinance.

3. The Project Revenues and Gas Works Revenues which are pledged as security for the bonds issued under the 1975 General Ordinance and the 1998 General Ordinance, respectively, are currently and are projected to be sufficient to comply with the Rate Covenants set forth in Section 4.03(b) of the 1975 General Ordinance and Section 4.03(b) of the 1998 General Ordinance.

4. The capital improvements proposed during the projection period, September 1, 2000 through August 31, 2006, will, along with continued good operation and maintenance practices, enable PGW to maintain its system in good operating condition. Review of present management practices indicates that good operation and maintenance is likely to continue.

5. Contracted PGW gas supplies plus (a) spot market purchases (b) anticipated additional contracted supplies plus supplemental gas capacities, as well as (c) the pipeline transport capacity to move these supplies to PGW, are adequate to meet PGW's projected demand on a day of maximum demand (a "design peak day"), or an hour of maximum demand (a "design peak hour"), and during a year of maximum demand (a "design peak year").

Very truly yours,

BLACK & VEATCH

Larry W. Loos

Larry W. Loos
Vice President

Enclosure

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Introduction

The Philadelphia Gas Works ("PGW") is a gas distribution utility owned by the City of Philadelphia, Pennsylvania (the "City"), that acquires, stores, and distributes gas to residents and other customers within the City.

Under the terms of certain of the current revenue bond covenants, PGW is obligated to charge and collect rents, rates and charges to maintain net revenues at or above certain specified levels in excess of annual debt service requirements. In addition, prior to the issuance of bonds under the General Gas Works Revenue Ordinance of 1975 ("1975 Ordinance") or the General Gas Works Revenue Ordinance of 1998 ("1998 Ordinance"), a financial report from the City's Chief Fiscal Officer, which may be given in reliance on an engineering report, is required.

Purpose

The purpose of this report is to summarize findings of engineering studies performed by Black & Veatch Corporation ("Black & Veatch") related to the gas system of the Philadelphia Gas Works and to set forth information concerning the financial factors relating to the issuance of the $119,280,000[1] Gas Works Revenue Bonds, Third Series (the "2001 Bonds").

Scope

This report addresses the organization and management, physical condition, adequacy of system capacity, operation and maintenance practices, and staffing levels of PGW's systems. It provides a review of the proposed capital improvement program ("CIP") and includes the results of engineering studies regarding the financial requirements of the gas works system. Evaluation of the projected financing of future operating and capital improvement needs is based upon a review of historical operating and financial data and projected capital program and operating budget information provided by PGW. Projections of revenues and revenue requirements are presented for the fiscal years 2001 through 2006. The financial feasibility of the issuance of the 2001 Bonds is evaluated recognizing the results of these analyses and PGW's projected compliance with applicable revenue bond covenants.

PGW representatives and others have provided certain historical data and other information presented in this report. Black & Veatch has not conducted detailed verification tests of this information. As is normal in preparing the types of projections summarized in this report, certain assumptions have been made with respect to conditions, events, and circumstances that may occur in the future. While it is believed the assumptions made are reasonable and the methodology valid, actual results may differ significantly from those projected, as influenced by the conditions, events, and circumstances that actually occur. The methodology utilized in performing the analyses follows generally accepted practices for such projections under similar conditions.

Black & Veatch Qualifications

Black & Veatch is one of the largest and most experienced engineering firms in the United States specializing in utility engineering. Our experience includes the planning, design, operation analysis, and construction of gas, electric, water, and wastewater systems. In addition, the firm has extensive experience in assisting utilities with management and financial aspects of their operations. The firm has

[1] Preliminary, subject to change.

been engaged in more than 35,000 projects for over 6,200 clients, including utilities owned by municipalities ranging in size from small villages to large metropolitan regions, investor-owned utilities, industrial and commercial businesses, local and state agencies and the United States Government. Since 1972, the City of Philadelphia's Water Department has engaged Black & Veatch for various consulting services. These consulting services have included engineering evaluation reports for all Water and Wastewater System Revenue Bonds sold by the City since 1974 and various projects involving the development of water and wastewater rates.

Experienced personnel from Black & Veatch have performed the physical evaluation of PGW's gas supply and distribution systems. In performing our engineering assessment of PGW, Black & Veatch reviewed the current condition and operation and maintenance of the gas supply and distribution systems. We conducted inspections of PGW's major facilities in February and March 2001, including eight of nine city gate stations and PGW's two liquefied natural gas facilities. We also interviewed key members of PGW's management team on numerous occasions in February and March 2001, regarding operations and maintenance issues and practices.

The financial feasibility review has been performed by personnel from the Management Consulting Division of Black & Veatch which provides services in such areas as utility rates, utility property valuation, depreciation rate studies, financial analysis and planning, non-audit accounting, management and operations analysis and the preparation of independent engineering reports for official statements.

Organization and Management

The Philadelphia Gas Works is owned by the City of Philadelphia and is responsible for the acquisition, storage, and distribution of gas within the limits of the City. As described in greater detail herein (*See "The PGW Gas System"*), PGW is the largest municipally owned gas utility in the nation.

PGW's operations are managed by the Philadelphia Facilities Management Corporation ("PFMC"), a not-for-profit corporation whose Board is appointed by the Mayor. PFMC's responsibilities are set forth in a Management Agreement between the City and PFMC, which delegates responsibility for PGW's operation to an executive management team provided by PFMC. Under the Management Agreement, those responsibilities that are not specifically granted to PFMC fall under the domain of the Philadelphia Gas Commission ("PGC"), except to the extent preempted by the Pennsylvania Public Utility Commission ("PUC").

Prior to the passage of the Natural Gas Choice and Competition Act ("Gas Choice Act")[2], rates charged by PGW were regulated exclusively by the PGC because PGW was not a "public utility" within the meaning of the Pennsylvania Public Utility Code, as it was defined prior to the passage of the Gas Choice Act. On June 22, 1999, the Pennsylvania General Assembly passed the Gas Choice Act which amends the Public Utility Code by providing for the implementation of choice of suppliers of natural gas for retail customers of gas distribution companies. In addition, the Gas Choice Act provides that PGW is subject to regulation by the PUC, effective July 1, 2000, and that choice among natural gas suppliers will be provided to PGW's customers in 2003 after the resolution of PGW's initial tariff and restructuring proceedings by the PUC.

City of Philadelphia

The City of Philadelphia was founded in 1682 and merged with the County of Philadelphia in 1854. There are two principal governmental entities in Philadelphia: (1) the City, which performs ordinary municipal functions as well as traditional county functions; and (2) the School District, which has boundaries coterminous with the City and has responsibility for all public primary and secondary education. The court system in Philadelphia, consisting of Common Pleas, Municipal, and Traffic Courts, is part of the Commonwealth of Pennsylvania (the "Commonwealth") Judicial System. Although the Commonwealth pays judges and top level administrators, the City pays all other court costs, with partial reimbursement from the Commonwealth.

The City is governed primarily under the Home Rule Charter[3], which provides for the election, organization, powers, and duties of the legislative branch (the "City Council"); the powers and duties of the executive and administrative branches; and the City's fiscal and budgetary matters, contracts, procurement, property, and records.

The School District is governed primarily under the 1965 Educational Supplement to the Home Rule Charter. It has no independent taxing powers and may levy only the taxes authorized on its behalf by the City and Commonwealth. The School District is managed by a nine-member Board of Education appointed by the Mayor. In some matters, including the incurrence of short-term and long-term debt, separate laws of the Commonwealth govern the City and the School District. The School District is a separate political subdivision of the Commonwealth and the City has no property interest in or claim on any revenues or property of the School District.

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[2] Act of June 22, 1999, P.L. 122, No. 21, §3 (66 Pa. C.S.A. §2201 et seq.).

[3] Philadelphia Home Rule Charter, 351 Pa. Code §1.1-100 et seq., adopted pursuant to authorization of the First Class City Home Rule Act approved April 21, 1949, P.L. 665, §1 et seq. (53 P.S. §13101 et seq.).

Philadelphia Gas Works

In March 1835 a City ordinance was passed authorizing private ownership and operation of a public gas utility under trustee management. This ordinance also contained an option clause permitting the City to take ownership of the gas utility properties by issuing City bonds to the private stockholders. This option initiating City ownership of gas utility properties to ultimately form PGW was exercised March 1, 1841, and has since been continuously in effect. Manufactured gas production commenced February 8, 1836 and service was inaugurated February 10, 1836 to 46 gas lamps along Second Street.

During its 165 years of existence, the operation and management of PGW has evolved to its present configuration through a variety of arrangements. Initially the private owners managed it. In 1841, a Board of Trustees assumed management of PGW in accordance with an enabling City ordinance. This arrangement continued through April 1887 when the City under the Director of Public Works assumed management and operation of PGW. Serious financial and operating problems led to replacement of this arrangement on November 12, 1897. At that time, the City, unable to sell PGW, contracted with the United Gas Improvement Company ("UGI"), now UGI Corporation, for the operation and management of PGW under authority granted by the Home Rule Charter. Operation and management by UGI continued through December 31, 1972.

On December 5, 1972, the City caused the incorporation of the Philadelphia Facilities Management Corporation as a not-for-profit Pennsylvania corporation for the specific purpose of operating PGW. PFMC currently manages PGW in accordance with the original agreement with the City dated December 29, 1972, effective January 1, 1973, as subsequently amended (the "Management Agreement"). The relationship between the City, PGC, PFMC, and PGW as originally detailed in the Management Agreement is summarized below. As described later in this report, as of July 1, 2000, the Gas Choice Act confers the responsibility of regulating PGW's rates and services to the PUC *(See "Pennsylvania Public Utility Commission" and "Regulation").*

Organization	Function
City of Philadelphia	Owns PGW property and establishes legislation for the functioning of PGW. City Council approves the capital budget.
The Philadelphia Gas Commission	Responsibilities include: approval of personnel provided by PFMC, review of gas supply contracts for approval by City Council, approval of PGW's operating budget, review of PGW's capital budgets, and regulation of rates.[4]
PFMC	Provides executive management and directs operation of PGW facilities.
PGW	Manages construction, operation and maintenance of the gas system on a day-to-day basis.

The Management Agreement states that for the operation of PGW the PFMC shall provide:

- A Chief Executive Officer,

[4] As of July 1, 2000, the PUC became responsible for regulating rates pursuant to the Gas Choice Act.

- A Chief Operating Officer,
- A Chief Financial Officer, and
- Other personnel as deemed appropriate by PFMC.

All PFMC personnel are subject to the approval of the PGC. The PGC consists of five members: the City Controller, two Mayoral appointees, and two City Council appointees. The PGC has the general responsibility to oversee operation of PGW by PFMC and retains all powers not specifically granted to PFMC. In addition, the Management Agreement specifies certain functions of the PGC, mainly:

- Approval of PFMC personnel,
- Review and make recommendations regarding gas supply contracts for City Council approval,
- Approval of PGW's annual operating budget,
- Review and make recommendations regarding PGW capital budgets for City Council approval,
- Approval of short-term loans,
- Review and approval of all PGW real estate acquisitions, sales, or leases for submittal to City Council for approval by ordinance, and
- Power to establish procurement standards and to fix and regulate rates and charges[5] for supplying gas to customers other than the City and the Board of Education, which will annually produce revenues sufficient to:
  - Pay all operating and maintenance expenses of PGW and the interest and amortization expense of its debt;
  - Maintain debt coverage ratios;
  - Pay $18,000,000 to the City each year; and,
  - Provide such other funds as may be approved by the PGC and City Council for debt reduction or capital additions.

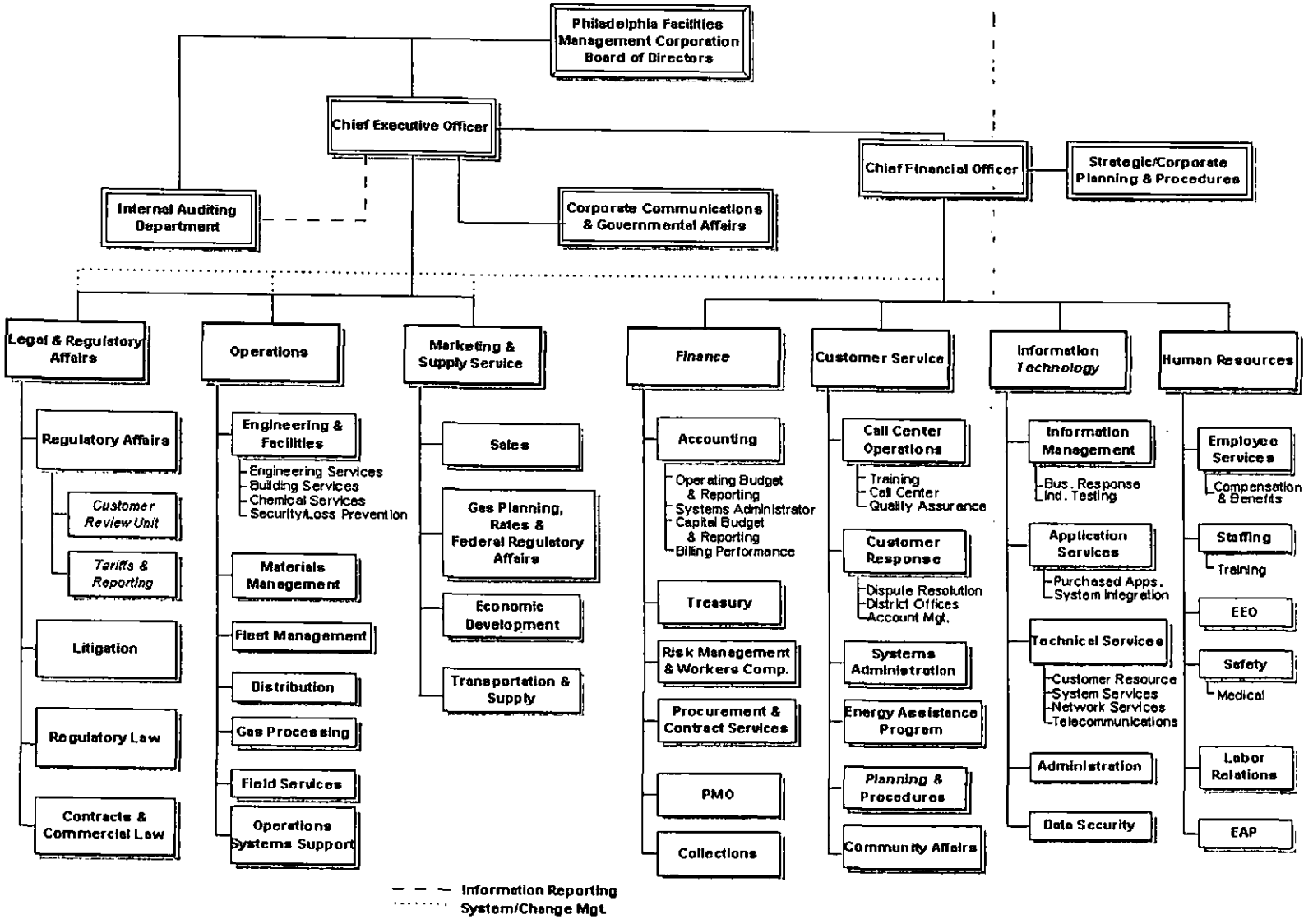
In the late 1990s, PGW experienced a number of changes in its management organization. As a result, PFMC set up an interim management structure for PGW. This interim management organization is shown in Figure 1.

In preparing this report, Black & Veatch interviewed key PGW officers[6] and a number of its managers. The interviews were supplemented with reviews of PGW's policies, practices, procedures and field observations of employees at various facilities performing their daily activities. Based on these interviews, reviews, and observations, it is our opinion that PGW is suitably organized, managed and operated by qualified personnel.

As of February 2001, PGW employed 1,810 people. Of this total, 78 percent are members of the Gas Works Employees' Union of Philadelphia, Local #686, Service Employees' International Union. The current agreement with the Gas Works Employees' Union expires May 15, 2001 and contract talks are presently being conducted.

[5] As of July 1, 2000, the PUC became responsible for regulating rates, pursuant to the Gas Choice Act.
[6] For the purpose of this report, PGW officers and management include individuals provided by PFMC.

Figure 1
Philadelphia Gas Works Interim Organization Chart



The following are brief biographical descriptions of the current PFMC/PGW Senior Officers:

Kumar Kishinchand, Interim President and Chief Executive Officer. Kumar Kishinchand was appointed Interim President and Chief Executive Officer in March 2000. He is responsible for the overall management of PGW and its operations, as well as coordinating with stakeholders. Mr. Kishinchand is a registered professional engineer and holds a B.S. degree in metallurgical engineering from the University of Maryland. Mr. Kishinchand has served in a variety of positions in government and industry encompassing research, development, applications and operations. Prior to his joining PGW, Mr. Kishinchand held the position of Water Commissioner for eight years at the Philadelphia Water Department. He was recruited by the Water Department in 1968 and served in increasingly responsible management positions, including Deputy Water Commissioner of Operations and General Manager of the Planning and Engineering Division at that utility. He is active in various professional organizations and is on the Board of Directors as well as past President of Association of Metropolitan Sewerage Agencies.

Thomas E. Knudsen, Interim Chief Financial Officer. Mr. Knudsen joined PGW as Interim Chief Financial Officer in March 2000. Mr. Knudsen is responsible for formulation of strategic policies and positions, implementation of program changes, coordination of company-wide initiatives, and assisting the Interim Chief Executive Officer in maintaining the financial and operational viability of PGW. Prior to joining PGW, Mr. Knudsen was the founding partner of The Woodside Group, a management consulting firm located in Stamford, Connecticut specializing in utility economics and regulation. For over 25 years, Mr. Knudsen has advised industrial, commercial and residential customers and groups, as well as regulatory commissions, regarding appropriate utility operations, budgeting, pricing and rate design issues. Mr. Knudsen's involvement with PGW dates from 1986, having served as a consultant to the Public Advocate in all rate and budget proceedings of PGW before PGC from 1986 until 1991. His prior experience includes management consulting with Touche Ross & Co., as Assistant to the Finance Administrator of the City of New York and the United States Navy Supply Corps. Mr. Knudsen received his Masters of Business Administration degree in Finance from Columbia University in 1968 and a Bachelor of Arts degree in Economics from Northwestern University in 1964.

Joseph Bogdonavage, Senior Vice President – Finance. Mr. Bogdonavage was appointed Senior Vice President, Finance in November, 2000. He is responsible for Accounting & Budget, Credit & Collection, Treasury, Risk Management, Procurement and the Project Management Office. Mr. Bogdonavage has over 27 years of diverse experience in the finance area of PGW. He previously held the positions of Director Budget & Financial Forecasting, Manager Budget & Financial Forecasting, Supervisor Budget & Financial Forecasting, Accounting Assistant Supervisor & Budget Analyst. Mr. Bogdonavage received his Bachelor of Business Administration in Accounting in 1972 from Temple University.

Abby L. Pozefsky, Esq., Senior Vice President and General Counsel. Ms. Pozefsky was appointed Senior Vice President and General Counsel in July 1998. She serves as General Counsel, managing all legal work of PGW. She previously held the position of Chief Deputy City Solicitor of Regulatory Affairs for the City of Philadelphia Law Department. In her twelve years with the City Law Department she served in various capacities, including general counsel to the Water Department, the Philadelphia Airport and the City Municipal Energy Office. Prior to that she held a variety of positions in public and private practice. She received her Bachelor of Arts degree from the University of Pennsylvania and a Juris Doctor degree from New York University Law School.

Craig E. White, Senior Vice President - Marketing and Supply Services. Mr. White was appointed Senior Vice President, Marketing and Supply Services in November 1999. He is responsible for sales, marketing and business development along with gas acquisition, gas accounting, gas control, energy planning and forecasting, rates and Federal regulatory issues. His previous positions at PGW include: Vice President, Marketing and New Business Development; Manager, Planning & Federal Regulatory Affairs; Administrator, Federal Regulatory Affairs; Federal Regulatory Specialist; Planning

Analyst; Demand Analyst; and Accounting Specialist. Mr. White received his Bachelor of Science degree in Business Administration from Kutztown University and Master of Business Administration degree in Financial Management from Drexel University.

Dennis E. Stinson, Senior Vice President – Operations. Mr. Stinson was appointed Senior Vice President - Operations in November *1999. He is responsible* for PGW's Field Services, Distribution, Gas Processing, Engineering & Facilities, Fleet Operations, Security & Materials Management Departments. He previously held many positions at PGW since commencing employment in June, 1970. Mr. Stinson received his Bachelor of Science degree in Mechanical Engineering from Drexel University and his Master in Business Administration degree from Temple University. He has been a member of the American Gas Association, Gas Research Institute and the Engineers Club of Philadelphia.

Harvey E. Clark, Vice President – Corporate Communications and Governmental Affairs. Mr. Clark was appointed Vice President, Corporate Communications and Governmental Affairs in December 2000. He is responsible for communications programs to inform employees and stakeholders of corporate priorities, corporate mission, events and developments within PGW and energy industry; relations with all print and electronic media, planning company-wide coordination of public relations, branding and tactical advertising campaigns; and, graphic and photographic design and information for releases, publications and advertisements to promote the corporate image. Mr. Clark previously held the position of Manager, Communications and Media Relations at PGW. Mr. Clark received a Bachelor of Science degree in Political Science from Vassar College and had a twenty-year career as a television news correspondent.

Les A. Fyock, Vice President – Regulatory Affairs. Mr. Fyock was appointed Vice President, Regulatory Affairs in February 2000. Mr. Fyock is PGW's liaison for state regulatory interaction between PGW and the PUC. He is responsible for the formal and informal complaint Customer Review Unit, and Tariff and Reporting requirements for PGW. Mr. Fyock has held various positions with two natural gas distribution companies and the American Gas Association over the past twenty-five years. Mr. Fyock received his Bachelor of Science degree in Business Administration from University of Maryland.

Sherry N. Rubin, Vice President – Information Technology and Chief Information Officer. Ms. Rubin has been Vice President, Information Technology and Chief Information Officer since November 1999 and has responsibility for the strategic planning and management of information technology enterprise wide. Ms. Rubin came to PGW from Community Behavioral Health, a managed health care firm created by the former Health Commissioner of the City. She served as the first chief information officer of CBH. Her responsibilities included hiring and organization of the information technology department, replacement of faulty hardware, and disseminating client information available for the enterprise. Before CBH, Ms. Rubin was a program manager at the Mayor's Office of Information Services. She launched several computer and technology projects including the School District of Philadelphia's Wide Area Network, which connects schools to each other and the internet, and the debut of the City's own web site, www.phila.gov. Ms. Rubin has entrepreneurial experience and has worked in information technology in a variety of industries including healthcare, legal, and publishing.

John P. Straub, Vice President - Human Resources. Mr. Straub was appointed Vice President of the Human Resources Department in January 1999. He is responsible for all Human Resources related matters including Labor Relations, Staffing, EEO Compliance, Employee Compensation & Benefits, Training, EAP, and Occupational Health & Safety and also serves as the Drug and Alcohol Program Manager. Previously, Mr. Straub headed the Special Litigation Group for the City of Philadelphia's Law Department where he was responsible for the management and supervision of all employment law related matters and litigation involving the City of Philadelphia. Mr. Straub also worked as an Assistant District Attorney for the Philadelphia District Attorney's office. He holds a Juris Doctor degree from Temple University School of Law and is a graduate of Villanova University.

Joseph F. Golden, Jr., Controller. Mr. *Golden* was appointed Controller in March 2001. He is responsible for the treasury, accounting, budget, and mail receipts and bill preparation functions. Prior

titles held by Mr. Golden at PGW include: Treasurer, Manager - Treasury Department, Senior Staff Accountant, and Staff Accountant. Mr. Golden started his career with PGW in August of 1986. Mr. Golden has prior work experience in public accounting, treasury accounting and cash management, and manufacturing. Mr. Golden holds a Bachelor of Science degree in Accounting from Villanova University, a Master of Business Administration degree from Drexel University, and a Juris Doctor degree, cum laude, from Temple University School of Law.

Philadelphia Gas Commission

The Philadelphia Home Rule Charter contains provisions for the establishment of the PGC with powers and duties as set forth in ordinances and contracts. The Management Agreement grants PGC certain specified powers and duties and all other powers not specifically granted to PFMC. The powers and duties granted to PGC include the fixing of PGW rates and charges (now the jurisdiction of the PUC), approval of personnel provided by PFMC, review of gas supply contracts for approval by City Council, approval of changes in tests and standards of gas quality and pressure, approval of PGW's operating budget, review of PGW's capital budgets and recommendations thereon to City Council, approval of certain loans (but not the issuance of Bonds), access to and review of all books, records and accounts of PGW, prescription of insurance requirements, promulgation of standards for procurement and disposal of material, supplies and services and approval of all real property acquisitions for further approval of City Council.

Pennsylvania Public Utility Commission

The PUC regulates and supervises the rates and service of Pennsylvania's public utilities, including electricity, water, natural gas and telephone. Under current law, all rate regulation authority for PGW is held by the PUC, pursuant to the Gas Choice Act. The Gas Choice Act contains provisions which are designed to (i) preserve the tax-exempt status of bonds or other obligations issued by the City for PGW, including the 2001 Bonds, and (ii) preserve the ability of the City to comply with its covenants, including the City's covenants with respect to the imposition and collection of rates and charges to the holders of such bonds and other obligations, including the 2001 Bonds. The Gas Choice Act provides, among other things:

- Commencing July 1, 2000, PGW is regulated by the PUC and, except as otherwise provided in the Gas Choice Act, the provisions of the Public Utility Code apply to PGW as if it were a public utility. The PUC, instead of the PGC, sets rates for PGW's customers.
- Notwithstanding the initiation of customer choice in gas suppliers, PGW's gas distribution business will remain a regulated monopoly.
- In setting rates and notwithstanding any other provision of the Public Utility Code, the PUC must permit the City to impose, charge and collect rates or charges as necessary to permit the City to comply with its covenants to the holders of any Approved Bonds, as defined in the Gas Choice Act. All bonds issued by the City on behalf of PGW under the Act, including the 2001 Bonds, are Approved Bonds.
- The PUC is barred from requiring the City or PGW to take any action (or omit taking any actions) under the Public Utility Code if such action or omission would have the effect of causing the interest on any tax exempt bonds issued by the City, including the 2001 Bonds, to be includable in the gross income of the holders of such bonds for Federal income tax purposes.

- PGW is required to file an initial tariff and a restructuring filing with the PUC between January 1 and June 30, 2002, unless PGW and the PUC agree to an earlier filing. Since the effective date of the Gas Choice Act, PGW has filed and obtained through settlement an interim adjustment to its base rates. PGW has also filed for a permanent base rate adjustment with the PUC. PGW has also filed and obtained increases in its GCR *(See "Rates and Tariffs").*
- Pending resolution of the restructuring proceeding by the PUC, the tariff that existed prior to July 1, 2000 will remain in place, unless an earlier filing is made by PGW, as described above.
- At the beginning of PGW's fiscal year immediately following the conclusion of its restructuring proceeding, PGW will be required to implement customer choice and to permit licensed natural gas suppliers to deliver gas to their customers in Philadelphia using PGW's distribution system.
- The PUC must continue the existing senior citizen discount for all individuals who are properly receiving the discount at the time PGW's restructuring proceeding is concluded unless City Council modifies the program. The Gas Choice Act permits, but does not require, the PUC to approve a senior citizen discount program in the future for those individuals who are not covered by the existing senior citizen discount program.
- The PUC is required to provide for a management audit of all employees, records, equipment, contracts, assets, liabilities, appropriations and obligations of PGW prior to the commencement of the restructuring proceeding.
- Effective June 30, 2000, the provisions of the Home Rule Charter with respect to the powers and duties of the PGC are abrogated to the extent inconsistent with the Gas Choice Act.
- The City cannot be required to take any action under the Public Utility Code if the effect of the action is to cause a variation in the City's financial plan approved by the Pennsylvania Intergovernmental Cooperation Authority.
- The City's executive or legislative powers to "legislate or otherwise determine the powers, functions, budgets, activities and mission of PGW" are not abrogated or limited.

This report assumes rate regulation will be administered by the PUC to comply with the City's bond covenants.

The PGW Gas System

Philadelphia Gas Works began gas production in February 1836 and has since continuously provided the City of Philadelphia with service. Today, PGW is the largest municipally owned gas utility in the nation, maintaining a distribution system of approximately 3,000 miles of gas mains and 500,000 service lines. In addition to this extensive distribution system, PGW operates facilities for the liquefaction, storage, and vaporization of natural gas to supplement gas supply taken directly from pipeline transmission companies and storage facilities.

Population and Service Area

As shown in Figure 2, the PGW Gas System presently serves the limits of the City of Philadelphia with a customer base of approximately 512,000 accounts. This service area consists of an urban area of 129 square miles located in southeast Pennsylvania along the Delaware River. Philadelphia is the largest incorporated area within the Delaware Valley region, which also consists of Bucks, Chester, Delaware, Montgomery, and Philadelphia counties in Pennsylvania, and Burlington, Camden, Gloucester, and Mercer counties in New Jersey. According to the 2000 United States Census, Philadelphia has a population of 1,517,550 inhabitants, a decrease of 4.3 percent since 1990.[7] With the exception of Philadelphia and Delaware counties, the counties within the Delaware Valley region all reported increases in population over their 1990 census figures.

Supply Facilities

The principal PGW natural gas supply facilities include nine city gate stations owned in large part by the interstate pipelines serving PGW, and two liquefied natural gas ("LNG") plants, Richmond and Passyunk, owned by the City. The supply facilities also include a gas control center, a deactivated propane/air plant, and two gas holders, one of which has been removed from service.

City Gate Stations

Natural gas is received through nine city gate stations from two pipeline transmission companies – Texas Eastern Transmission Corporation ("Texas Eastern") and Transcontinental Gas Pipe Line Corporation ("Transco"). The two pipelines own most of the facilities and land at eight of the nine city gate stations. PGW's facilities at each of the city gate stations perform two basic functions – to odorize gas and to control the pressure delivered to PGW's distribution system. Eight city gate stations are equipped with gas heaters.

Gas Control Center

The gas control center is located at 800 W. Montgomery Avenue, with a backup at the Richmond Plant. The center monitors and controls gas flow and pressure from the nine city gate stations to the high-pressure distribution system. The gas control dispatchers also provide direction to the LNG production plant operators concerning startup, shutdown and gas flow output from the LNG facilities. Operations are facilitated through the use of a computer system that includes a backup unit and an auxiliary power supply.

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[7] The City of Philadelphia and Philadelphia County are coextensive. *United States Census Bureau, Census 2000 Redistricting Data (P.L. 94-171) Summary File, Table PL1 and 1990 Census.*

PROPRIETARY INFORMATION

Docket Number A-125042

Name of Document Map

Date Document Received 5-4-2001

DOCUMENT CONTAINS

PROPRIETARY INFORMATION

LNG Facilities

There are two LNG facilities – the Passyunk Plant and the Richmond Plant. The smaller LNG storage and vaporization facility at the Passyunk Plant receives its liquefied gas supply from the larger Richmond Plant via cryogenic trailer trucks. The Passyunk LNG facility consists of one LNG storage tank of 3,066,000 gallons gross capacity (i.e., the equivalent of 253,300 thousand cubic feet ["Mcf"] of natural gas) and three LNG vaporizers, each having a capacity of 45,000 Mcf per day resulting in 90,000 Mcf per day planned capacity and 45,000 Mcf per day reserve. In December 2000, the plant's exit piping suffered fire damage along with two large diameter (20 inch) intake lines from city gate stations. The piping and intake lines were removed from service for repairs. The intake lines from the city gate stations have been replaced. The vaporization process at the Passyunk Plant is scheduled to return to service during the fall 2001.

The Richmond LNG plant is one of the largest liquefaction facilities in the United States and also includes storage and vaporization. During the non-heating season, PGW uses the Richmond LNG Plant to liquefy and store natural gas delivered from the pipelines. The plant has the capacity to liquefy and store approximately 23,500 Mcf per day, and the two storage tanks have a combined gross capacity of 48,970,000 gallons of LNG (4,045,800 Mcf). Regasification of the liquid is accomplished with six vaporizers having a total output of 450,000 Mcf per day.

Propane/Air Facilities

At the Passyunk location, PGW also has a propane/air plant. The plant has the air compression and propane vaporization capacity to produce 60,000 Dekatherms ("Dth") of propane/air mix per day (45,000 Dth per day planning basis) and has a liquid propane storage capacity of approximately 662,250 gallons. This facility has been idle since 1994 due to PGW removing this capacity from service. Its use is not anticipated in the current six-year gas supply projection.

Gas Holder Storage Facilities

The Richmond Plant has a low pressure gas holder. The Passyunk holder has been removed from service. The Richmond holder has an operating capacity of 1,000 Mcf. It was installed in the manufactured gas era and is in working order. It is used to enhance operational flexibility of the LNG Plant.

Distribution Facilities

The principal gas distribution facilities consist of approximately 3,006 miles of main, 511,453 service lines, 205 regulator stations, 599,189 total meters (of which 520,811 are active) and miscellaneous valves, instruments and other appurtenances. PGW operates five different operating pressure systems; each system is connected to the other by control regulators. The high-pressure systems operate at approximately 110, 60, and 35 pounds per square inch gauge (psig); the intermediate pressure system operates at 5 psig; the low-pressure system operates between 6 and 9 inches of water column (approximately 0.25 pounds per square inch). The majority of customers are served from the low-pressure system.

Approximately 58 percent (by length) of the gas mains are cast iron, 33 percent are steel, 5 percent are ductile iron, and 4 percent are plastic. Of the steel mains, approximately 47 percent are protected. Approximately 51 percent of the service lines are steel (of which 15 percent are protected) and 49 percent are plastic.

Other Facilities

PGW has its executive and operating offices located at 800 W. Montgomery Avenue, which is a 150,000 square foot office building constructed in 1988. The former general office building, located at 1800 N. 9th Street, now houses distribution and field service dispatch centers, a customer information center, operating stations, and warehousing, as well as management information systems, a meter shop, and a metal fabrication shop. Additional facilities include eight district offices and five operating stations for field service and distribution crews. There are also a warehousing facility and an automotive maintenance and repair facility. The automotive maintenance and repair facility is responsible for the upkeep of PGW's fleet of approximately 1,000 vehicles and related equipment. PGW also maintains minor automotive repair facilities, fuel dispensing equipment and materials and supplies at its field offices.

At the present time, the current Supervisory Control and Data Acquisition ("SCADA") control and monitoring equipment is located at the Montgomery complex and was placed in service in 1999. During the implementation period, it operated in parallel with the old SCADA system for approximately three months to ensure a smooth and efficient transition of the system.

Condition of Facilities

In February and March 2001, Black & Veatch conducted site inspections of certain PGW facilities as deemed appropriate. During the inspections, Black & Veatch used three evaluation criteria based on observation categorized as good, adequate and poor as described below:

- *Good*: The facility is in condition to provide reliable operation in accordance with design parameters and requires only routine maintenance.
- *Adequate*: The facility is operating at or near design levels, however, non-routine renovation, upgrading, and repairs are needed to ensure continued reliable operation. Significant expenditures for these improvements may be required.
- *Poor*: The facility cannot be operated within design parameters. Major renovations are required to restore the facility and assure reliable operation. Major expenditures for these improvements may be required.

Construction Sites

Observations at construction sites included the observation of crews, vehicles, power-operated equipment, tools, safety procedures for the crew and public, construction standards, and general quality of work performed.

System maps were also examined and compared to existing facilities. This comparison showed the maps to have adequate detail to describe the system at the site. The maps contain the year the line was placed in service, size and material used, operating pressure, location of valves and bends and where repairs have been performed.

Meter Settings

Meter setting observations include materials and equipment. Observed meter settings conformed to accepted industry standards, accessibility, and safety and security measures.

Field and District Offices

Field and district office sites, including related facilities, such as vehicle and equipment fueling stations, garage and vehicle maintenance supply, structures, driveways, parking, material and equipment storage areas and security features, were observed. Four of the eight district offices are leased to PGW.

Inspections of these leased sites were focused primarily on materials and equipment typically provided by the lessee.

Personnel

During the inspection period, Black & Veatch conducted interviews and was assisted by PGW staff who are experienced, qualified, well trained and knowledgeable in their assigned tasks. In addition to details of the operations, they were knowledgeable in details of routine and preventative maintenance procedures PGW has in place.

The following is a list of key areas discussed in conducting inspections and in the collection of system data.

Construction	System Losses & Meter Maintenance Programs
Corrosion Engineering	Leak Surveys
Field Offices	Operations
District Offices	SCADA System
Treasury	Meter Settings
District Regulators	City Gates and LNG Plants
Field Services	Accounts Receivable
Gas Supply	

Facility Inspections

The following facilities were inspected:

Supply Facilities

Liquefied Natural Gas Facilities

Richmond & Passyunk Plants

City Gate Stations

030
034
Ashmead
Ivy Hill
Penrose
Richmond
Somerton
Whitman
060 - Not inspected due to snow

Distribution Facilities

District Regulator

16th St. & Berks St. - Underground Vaults

Meter Setting

Residential
472 Christian St.
Commercial
PGW - 1800 N. 9th St.
PA Convention Center - 1201 Arch St.
Industrial
United Parcel Service
PA Convention Center - 1201 Arch St. (Interruptible)

Other Facilities

Construction Sites

54th & Market St. - Preparation for installation of Starliner.
55th & Market St. - Replacement of gas main.
5700 block of Market St. - Plastic gas main and replacement of service line.
5800 block of Market St. - Replacement of steel gas service with new, plastic main.
60th & Market St. - Replacement/Lowering of gas main.
Wayne St. near Greene St. - Tie-in to main.

Field Offices/On-Site Facilities

Belfield
Castor
Montgomery
Porter
Tioga

District Offices

Bustleton (Northeast) - Leased
Center City - Leased
Frankford Avenue - Leased
Germantown - Leased
North - Owned
North Central - Owned
South - Owned
West - Owned

SCADA Control Room

PGW - 1800 N. 9th St.

All observed facilities, vehicles, equipment and warehouse stock appeared to be reasonably maintained and in good operating condition. During our inspections, we identified only minor items not in good operating condition as would be expected during the normal course of operation. These items were either in the process of being repaired or were essentially retired in place. Employees appeared to be knowledgeable of their job requirements and well trained.

PGW's highest operating priority is response to emergencies and the maintenance of a safe gas distribution system. PGW maintains maps and other records of the distribution system in good order and has comprehensive written construction, operating and maintenance standards and procedures. Its personnel appeared well trained in the operation and maintenance of the gas distribution system. PGW is actively involved in entering its facility records (Corrosion, Service and Leak Records) into computer databases, thus facilitating and improving the accuracy of accessing information. Reasonable property security measures are maintained at the major facilities visited including the two LNG facilities, the city gate stations, and the headquarters building complex.

Based on the inspections and interviews conducted, it is our opinion that PGW operates and maintains its system prudently and in accordance with current regulatory standards and generally accepted industry practices.

PGW Gas Supply

PGW manages its gas supply through a mix of flowing supplies, off-system underground storage and City-owned and PGW-operated LNG facilities. PGW utilizes this mix to meet its obligation to meet customers' demand on the coldest day (peak day) as well as a customer's annual requirements. PGW's gas distribution facilities are directly connected to Texas Eastern through four city gate stations and to Transco through five city gate stations. All gas purchased by PGW is transported to the City Gates through either one of these pipelines. During predominantly off-peak (summer) periods, a portion of the purchased gas supply is stored in off-system underground storage facilities connected to these two pipelines or in PGW's LNG facilities. Through the effective use of off-system storage and LNG, PGW is able to more efficiently utilize its transportation contracts with Texas Eastern and Transco. Through a gas cost rate ("GCR"), PGW is able to file for a change in its rates in response to changes in the cost of all of these gas supply components, typically on a quarterly basis, although PGW has some limited authority to file on a monthly basis should it so choose. To the extent that gas supply costs differ from the recovery of gas supply costs through rates (including the GCR), the GCR factor is adjusted upward to collect under-recoveries or downward to return over-recoveries in subsequent periods.

Supply Services

PGW purchases gas through a combination of term contracts and spot market purchases. Natural gas supplies are purchased under a portfolio approach intended to secure the lowest price consistent with reliability of supply. Consideration is given to maintaining a diversity of sources and types of supply. During the 2001 fiscal year, purchased gas costs are estimated to account for approximately 88 percent of the total gas supply expenses of $475 million and over 50 percent of total revenues of $764 million. The cost of gas supply is a function of the prices paid and the quantity purchased, both of which are variable. While this price component can be managed by PGW to some extent through the timing of purchases, the prices paid are largely determined in a very competitive and recently volatile marketplace. While the total annual volumes purchased are highly dependent on temperatures during the heating season and are beyond the direct control of PGW, PGW can manage the timing of purchases and hence prices to a limited degree, by utilizing off-system and LNG storage.

Transportation and Storage Services

All of PGW's gas purchases are ultimately transported from the sources of supply to the city gates through either Texas Eastern and/or Transco facilities. Injections and withdrawals of gas from off-system storage also rely on these two pipelines. Table 1 summarizes the existing transportation agreements between PGW and the two pipelines. As shown in this table, PGW's currently available pipeline capacity is almost equally divided between the two pipelines. Of PGW's total contract pipeline capacity of 446,300 Mcf per day, Texas Eastern accounts for 227,277 Mcf per day, or 51 percent, and Transco accounts for 219,023 Mcf per day, or 49 percent. The major contracts for the Texas Eastern transportation service (CDS and FT) expire prior to the 2003-04 winter period and the major contract for the Transco transportation service (FT) expires after the 2004-05 winter period. PGW's current long-term plan assumes that these contracts will be renewed.

Due to the highly seasonal nature of PGW's load (demand), the efficiency of pipeline transportation service can be increased significantly through the use of storage services. During periods when PGW's load is less than contracted transportation service, PGW may utilize the available capacity to deliver gas to off-system storage facilities or liquefy gas and store it in its LNG facilities. The ability to store gas off-system and in LNG facilities provides three significant benefits. First, reduced capacity can

be reserved on interstate pipelines to serve higher seasonal loads to the extent that gas can be stored in off-system storage and local LNG facilities. Second, less volumes need to be actually purchased during the generally higher cost winter period to the extent that gas be can purchased during the lower cost non-winter period, stored and then redelivered from storage during the winter. Third, market area storage provides increased security of supply.

Table 1
Gas Supply, Transportation, and Storage Contracts

Contract	Contract Expiration	2001 - 2006 Transportation Dth	Transportation Mcf	Storage Dth	Storage Mcf
Transco					
FT	03/31/05	165,212	160,400		
PSFT	07/31/11	1,967	1,910		
S-2	04/15/01	4,544	4,412	4,544	4,412
GSS	06/30/01	53,871	52,302	53,871	52,302
WSS[a]	03/31/05			39,246	38,103
ESS[a]	03/31/05			8,446	8,200
Subtotal		225,594	219,023	106,107	103,017
Texas Eastern					
CDS	10/31/03	75,000	72,816		
FT1 - 800233R	10/31/03	23,822	23,128		
FT1 - 800514R	10/31/03	18,000	17,476		
FT1 - 800515R	10/31/06	18,000	17,476		
CNG/GSS/FTS7	03/31/06	6,815	6,617	6,815	6,617
CNG/GSS/FTS8	03/31/06	22,495	21,840	22,495	21,840
Equitable/FTS2	03/31/02	4,998	4,852	4,998	4,852
SS1A		44,118	42,833	44,118	42,833
SS1B		20,847	20,240	20,847	20,240
ANR[b]	10/31/03			9,590	9,311
Subtotal		234,095	227,277	108,863	105,692
Total		459,689	446,300	214,970	208,709

(a) Transportation included in FT.
(b) Transportation included in CDS.

As shown in Table 1, PGW's currently available off-system storage capacity is almost equally divided between facilities connected to Texas Eastern and Transco. Of PGW's total contract storage deliverability of 208,709 Mcf per day, services provided on Texas Eastern account for 105,692 Mcf per day, or 51 percent, and Transco accounts for 103,017 Mcf per day, or 49 percent. All of this deliverability requires transportation to PGW via the respective transportation services obtained from Texas Eastern and Transco. This storage deliverability combined with the total volume of storage available from these services are used primarily to reduce contract demand for long haul transportation services and reduce the quantity of gas that needs to be purchased during the typically higher cost winter period to meet winter peak demand.

During the 2001 fiscal year, transportation and storage costs are estimated to account for approximately 12 percent of the total gas supply expenses of $475 million. The prices paid for these services are determined by long-term contracts and tariff rates regulated by the Federal Energy

Regulatory Commission ("FERC"). Generally, these components of gas supply cost represent the purchase of capacity, are relatively fixed, and do not vary directly with the volumes of gas purchased.

LNG Facilities

The City owns and PGW operates two LNG facilities, the Richmond Plant and the Passyunk Plant. Gas is liquefied, stored, and vaporized at the Richmond Plant, and stored and vaporized at the Passyunk Plant. Total liquefaction (converting natural gas to liquid state for storage) capacity at the Richmond Plant is approximately 23,500 Mcf per day. With the current equipment at the Richmond Plant, liquefaction is limited to the non-winter period. Capital improvements planned over the next two years will provide capability to liquefy gas year round creating additional operational flexibility and thereby the opportunity for increased revenues and reduced costs. The Richmond Plant can store approximately 49 million gallons of LNG (4.05 million Mcf natural gas equivalent) and the Passyunk Plant can store approximately 3 million gallons of LNG (250,000 Mcf natural gas equivalent). The LNG stored at the Passyunk Plant is liquefied at the Richmond Plant and then transported by cryogenic trailer trucks to the Passyunk Plant. Total vaporization (converting the liquid LNG to gas) capacity at the Richmond Plant is 450,000 Mcf per day and 90,000 Mcf per day at the Passyunk Plant. The highest daily vaporization rate from the LNG facilities of approximately 360,000 Mcf occurred at the time of the all time system peak in January 1994.

The LNG facilities are primarily used to minimize pipeline capacity needed to serve peak demand. The LNG facilities displace capacity that would otherwise be needed from flowing gas and off-system storage (i.e. pipeline and storage capacity) to meet peak day demands. The LNG facilities also allow for a nominal reduction in purchases during the higher cost winter period. Based upon current pipeline and storage charges, which have remained relatively constant over the past five years, PGW estimates that utilizing the existing LNG facilities in lieu of additional pipeline and storage capacity saves approximately $75 million per year. The gas liquefied at the Richmond Plant is purchased during the generally lower cost non-winter period.

Supply and Demand Balance

Table 2 summarizes the supply mix that was used to meet historical peak day demand from 1996 through 2000, and the supply mix that would enable PGW to meet future demand assuming design conditions over the 2001 through 2006 fiscal years. A design day on PGW's system is based on the highest actual historical peak day experienced by PGW. This occurred on January 19, 1994 with a peak day total demand (sendout) of 752,707 Mcf. The average temperature on that day was 2°F. For design purposes, PGW projects total demand based on a 65 heating degree-day ("HDD") which translates to an average temperature of 0°F. During the past five years, pipeline supplies (flowing gas plus underground storage) have met between 65 and 97 percent of peak day demand. During the projection period, approximately 55 percent of peak day demand under design conditions would be met from pipeline supply with the remaining 45 percent met from LNG. It should be noted that the projections in Table 2 assume no unbundling of services and further, that all customers are sales customers. Since some firm customers will likely convert to transportation services, actual demand will likely be somewhat less than indicated on Table 2 and some capacity may be available for sale or return to pipelines. Table 2 shows that PGW has sufficient capacity to meet demand requirements.

Table 3 summarizes the supply mix that is projected to meet annual requirements during normal and design years from 2001 through 2006. PGW defines a normal year as one containing 4,600 HDD.[8]

[8] In its 2001 rate filing, PGW's 2001 normal year projection is on based on 4,555 HDD. Projections for 2002 through 2006 are based on 4,600 HDD.

Table 2
Peak Day Supply and Demand

Description	Fiscal Year Ending August 31,										
	Actual					Projected[a]					
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Actual[b]											
Heating Degree-Days	54	53	35	42	49						
Demand - Mcf	620,873	661,715	458,461	541,880	639,903						
Supply - Mcf											
Pipeline/Storage	421,727	434,222	447,080	448,654	434,955						
LNG	199,146	227,493	11,381	93,226	204,948						
Total	620,873	661,715	458,461	541,880	639,903						
Projected - Design											
Heating Degree-Days[c]						65	65	65	65	65	65
Demand - Mcf[c]						783,400	789,700	796,100	803,800	812,800	821,700
Supply - Mcf[d]											
Pipeline/Storage						446,300	446,300	446,300	446,300	446,300	446,300
LNG (net)						337,100	343,400	349,800	357,500	366,500	375,400
Total						783,400	789,700	796,100	803,800	812,800	821,700

(a) Assumes no unbundling of services.
(b) SDS 7, Gas Cost Rate Filing, Volume 1, August 2000.
(c) SDS 6, Page 3 of 9, Gas Cost Rate Filing, Volume 1, August 2000.
(d) SDS 6, Page 4 of 9, Gas Cost Rate Filing, Volume 1, August 2000.

This normal year is based on a 30-year average. PGW defines a design year as one containing 5,280 HDD. A design year is based on the temperatures experienced during the 1977-1978 winter, which was the coldest recorded winter in the last 60 years.

Table 3
Annual Supply and Demand

Description	Fiscal Year Ending August 31, 2001	2002	2003	2004	2005	2006
	dt	dt	dt	dt	dt	dt
Normal Year - 4,600 Heating Degree-days[a]						
Demand - Sales						
Firm Service	63,030,840	62,996,226	63,090,383	62,545,848	61,128,789	60,140,095
Boiler and Power Plant Service	4,960,790	4,829,262	5,121,858	4,982,011	4,597,310	4,350,436
Load Balancing Service	5,481,405	5,474,910	5,529,407	4,834,809	3,981,032	3,531,670
Cogeneration Service	180,023	178,466	177,891	129,545	83,877	68,281
Gas Transportation Service	0	121,200	121,967	122,122	121,967	121,967
Natural Gas Vehicle Service	3,062	3,054	3,062	3,073	3,065	3,065
Trigen	71,894	71,894	71,894	71,894	71,894	71,894
Grays Ferry	179,735	179,735	179,735	179,735	179,735	179,735
Subtotal Sales	73,907,749	73,854,747	74,296,197	72,869,037	70,167,669	68,467,143
Plant Use	1,530,358	1,588,228	1,573,461	1,538,996	1,514,632	1,507,898
Storage Return	16,751,296	17,099,767	17,194,981	16,992,702	15,447,075	15,087,804
Liquefaction	3,976,774	5,028,195	4,968,055	4,732,310	4,692,434	4,549,024
Total Demand	96,166,177	97,570,937	98,032,694	96,133,045	91,821,810	89,611,869
Supply						
Texas Eastern	23,373,425	24,580,345	24,141,653	23,892,690	21,975,817	19,834,235
Transco	49,512,649	52,005,758	52,006,267	51,697,368	50,347,094	48,736,000
Pipeline Subtotal	72,886,074	76,586,103	76,147,920	75,590,058	72,322,911	68,570,235
Texas Eastern	10,896,751	9,573,585	9,603,845	8,776,268	8,179,584	8,642,219
Transco	7,689,191	6,712,633	7,549,724	7,075,364	6,636,863	7,714,828
Storage Subtotal	18,585,942	16,286,218	17,153,569	15,851,632	14,816,447	16,357,047
LNG	4,694,161	4,698,616	4,731,205	4,691,355	4,682,452	4,684,587
Total Supply	96,166,177	97,570,937	98,032,694	96,133,045	91,821,810	89,611,869
Design Year - 5,280 Heating Degree-days						
Demand - Sales						
Firm Service	69,901,136	69,860,888	69,966,556	69,365,736	67,806,757	66,712,778
Boiler and Power Plant Service	5,032,908	4,609,237	5,070,089	5,446,695	5,042,527	4,779,954
Load Balancing Service	2,845,569	3,110,969	2,994,831	2,647,453	2,350,399	2,167,682
Cogeneration Service	113,879	120,565	114,494	80,416	55,241	47,102
Gas Transportation Service	49,083	54,267	49,803	49,760	53,883	56,776
Natural Gas Vehicle Service	1,938	2,055	1,963	1,965	2,057	2,082
Trigen	20,370	28,487	28,487	29,647	29,647	33,241
Grays Ferry	76,687	88,128	73,820	74,870	88,051	98,949
Subtotal Sales	78,041,570	77,874,596	78,300,043	77,696,542	75,428,562	73,898,564
Plant Use	1,550,768	1,599,168	1,605,828	1,603,089	1,582,875	1,484,601
Storage Return	18,032,864	17,067,191	17,268,447	17,658,270	16,073,998	14,917,450
Liquefaction	3,979,322	5,088,326	4,976,003	4,735,278	4,694,323	4,531,048
Total Demand	101,604,524	101,629,281	102,150,321	101,693,179	97,779,758	94,831,663
Supply						
Texas Eastern	29,622,755	27,714,934	27,740,442	27,512,401	26,392,718	25,304,875
Transco	49,925,344	52,381,544	52,156,884	51,862,738	50,386,757	49,512,520
Pipeline Subtotal	79,548,099	80,096,478	79,897,326	79,375,139	76,779,475	74,817,395
Texas Eastern	9,620,571	9,470,063	9,743,893	10,134,495	9,938,074	8,784,403
Transco	7,761,025	7,755,514	7,865,651	7,608,194	7,353,767	7,776,380
Storage Subtotal	17,381,596	17,225,577	17,609,544	17,742,689	17,291,841	16,560,783
LNG	4,674,829	4,307,226	4,643,451	4,575,351	3,708,442	3,453,485
Total Supply	101,604,524	101,629,281	102,150,321	101,693,179	97,779,758	94,831,663

Reference: SDS4 A, Gas Cost Rate Filing, Volume 1, August 2000.

(a) In PGW's January 2001 Rate filing, PGW uses a normal year of 4,555 HDD for 2001. Projected years are based on 4,600 HDD.

Even though 100 percent of PGW's supply is originally transported through one of the two interstate pipelines, the supply components shown in Table 3 are based on the source of gas used when the gas is delivered to the end user. As shown, approximately 65 percent of PGW's total gas supply during a normal year flows through the Transco pipeline system. On a projected normal annual basis, approximately 95 percent of volume is delivered to end users through the interstate pipeline systems (75 to 80 percent flowing gas[9] and 15 to 20 percent off-system storage), and 5 percent is delivered from the LNG facilities.

The declining volumes shown in Table 3 reflect the anticipated migration of customers from a fully bundled service from PGW towards the customer's option to purchase natural gas from a third party beginning in the 2003-04 time frame *(See also Table 9, Historical and Projected Sales and Throughput)*. A comparable decline is not shown in contract pipeline and storage capacity *(See Table 1)* or in peak day supply and demand *(See Table 2)*. As is discussed more fully in the section on *"Unbundled Services"*, any potential negative impact of excess capacity can be mitigated if PGW's unbundled rate tariff provides for assigning or releasing capacity to customers who choose an alternate gas supplier and/or if PGW is allowed to reduce the amount of contract transportation or storage to reflect customers who choose an alternate gas supply.

Gas Cost Recovery

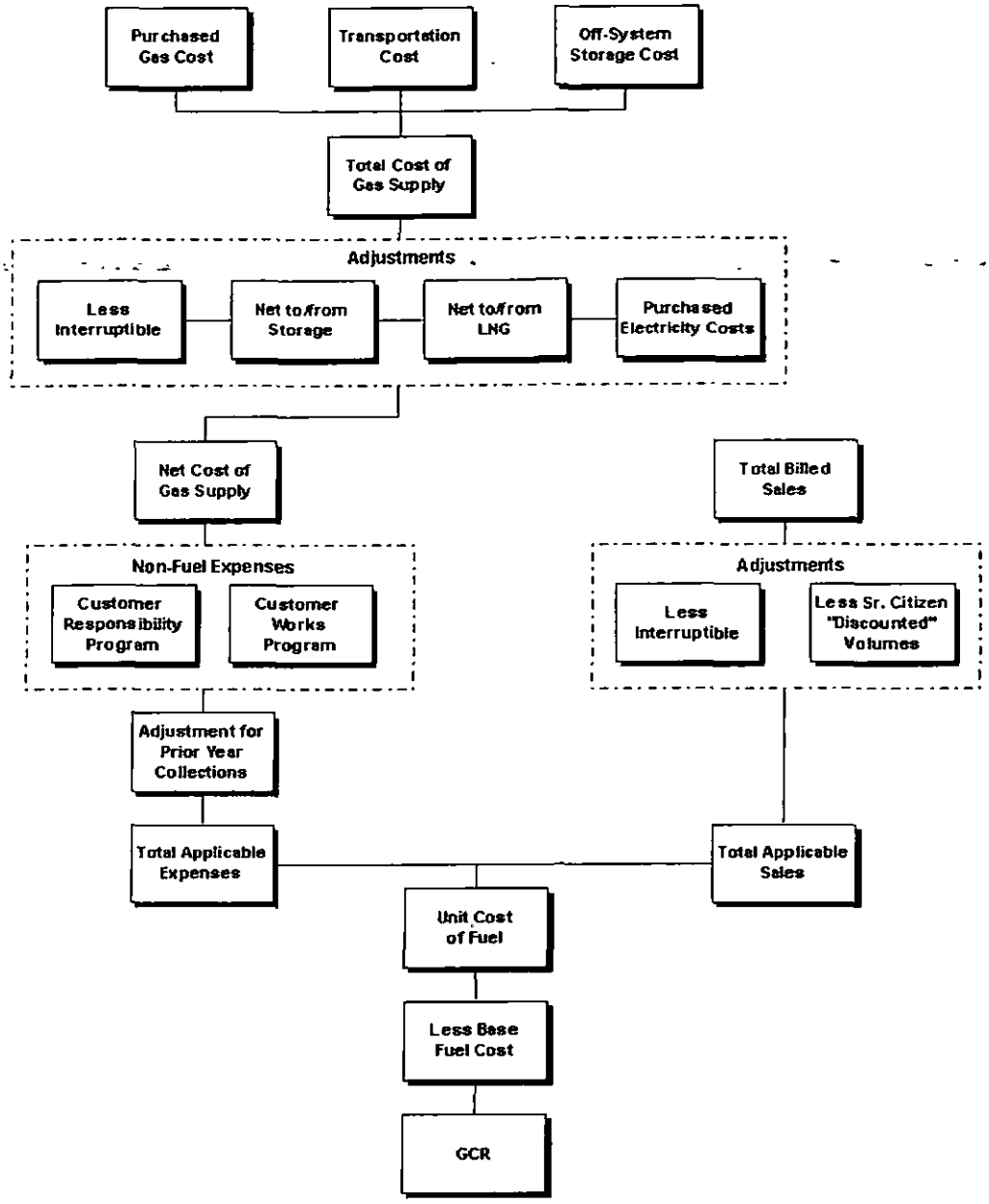
As previously discussed, all changes in gas supply related costs are passed through to customers through the gas cost rate (GCR). The specific components of PGW's GCR are depicted in Figure 3. PGW's gas supply costs consist of purchased gas costs, transportation costs, and off-system storage costs. This cost is reduced by the cost directly paid by interruptible customers (specifically, load balancing service customers). Sales are made to these interruptible customers based on prices quoted monthly by PGW. The prices quoted are based on the highest prices paid by PGW during the month with some consideration given to the customer's cost of alternative fuel oil. Natural gas service is competing against the price of alternative fuel; however, PGW only incurs gas supply cost attributable to these customers to the extent that sales are made (and gas is purchased to meet load). Total gas supply costs are also adjusted to reflect changes in the inventory cost of off-system and LNG storage and the cost of power purchased for the LNG facilities. The change in inventory cost is attributable to changes in volume as well as the price paid for the gas put into storage.

In addition to gas supply costs, certain non-fuel expenses are also recovered through the GCR. These include discounts given to low income customers through the Customer Responsibility Program and funds provided to weatherize the homes for low-income customers through the Conservation Works Program. The net cost of gas supply plus these non-fuel expenses constitute the costs recovered through PGW's GCR.

These costs are divided by the total sales volumes less the volumes attributable to direct billed interruptible customers and less the "discounted" volumes (20 percent of the total volumes delivered to senior citizens) attributable to the Senior Citizen Discount program to determine the unit cost of fuel. A portion of the fuel cost (currently, $3.18 per Mcf) is included in PGW's base rates, so the actual GCR factor represents the difference between the unit cost of fuel and the portion included in base rates. PGW tracks the revenues recovered by the GCR factor and the base fuel cost. To the extent that these revenues differ from costs over the course of a fiscal year, the difference is collected or returned in the subsequent year's GCR.

[9] Flowing gas represents gas that is purchased at the same time as delivered to customers.

Figure 3
Components of PGW Gas Cost Rate



Capital Improvement Program

PGW uses a formal process for evaluating capital needs and funding programs to meet those needs. This annual capital planning process is used to formally review the Capital Improvement Program ("CIP") and incorporates revisions into the five-year capital program projection using certain specified economic parameters to prepare the capital requirement estimates that form the basis for departmental budgets. Department budgets and projections are based on meeting PGW's design hour and design day projections as prepared by the Gas Management Department.[10] Under the terms of the Management Agreement, PGW submits the annual CIP for review by the PGC and approval of the current fiscal year budget, by City Council.

In keeping with PGW's philosophy of maintaining a safe gas distribution system, all capital projects are assigned a priority. The highest priority projects (1 and 2) relate to expenditures required for maintaining the safety and reliability of PGW's System. Priority 3 expenditures relate to facility relocations that are based on City, State, or Federal mandated projects. Priority 4 expenditures relate to projects that will result in additional revenues from load growth, and the lowest priority projects (Priority 5) are for those expenditures associated with improving operational efficiencies and/or discretionary items.

Table 4 presents a summary of PGW's historical and budgeted capital improvement program. Capital expenditures for the major PGW departments are shown in the table. Historically, capital expenditures for all departments other than Gas Processing, Distribution, Field Services, and Transportation, have been grouped together under the miscellaneous category "Other Departments". The figures presented in the table are net of reimbursements, contributions, and salvage costs. In addition, a line item for capital expenditures related to customer growth has been added to address costs associated with PGW's plan to increase its customer base. These projected costs are not in the current PGW six-year capital improvement program.

Proposed capital expenditures over the six-year projection period total $342.4 million. For fiscal year 2001, PGW's projected capital budget of $64.5 million represents a 33.9 percent increase over 2000 actual capital expenditures but only an 8.1 percent increase over fiscal year 2000's planned capital budget. The bulk of the 2001 capital budget, 57.6 percent, is committed to Distribution department projects. The second largest commitment of funds, $12.9 million or 20.0 percent is allocated to the Gas Processing department; primarily, for the Richmond LNG Liquefaction Plant Replacement project. Over the projection period, Distribution department projects have planned expenditures of $203.3 million, which represents 59.4 percent of the total capital budget. The majority of the Distribution department capital projects involve the replacement of gas services and ongoing and required main replacements for intermediate and low-pressure mains of small diameter (8 inches or less).

Based on our inspection of existing facilities and under normal conditions, the proposed capital expenditures should be sufficient to maintain the system in good condition.

A listing of projects approved for fiscal year 2001, by major department, is shown in Table 5. This table also shows the priority assigned to each project.

[10] Operating department budgets are based on assessing capital requirements for maintaining a safe and reliable system calculated for a design day of 0°F average temperature, a -5°F design hour, and a normal annual weather pattern resulting in 4,600 annual degree-days.

Table 4
Historical and Proposed Capital Improvement Program[a]
(Thousands of Dollars)

Category	Fiscal Year Ending August 31,											
	Actual					Budget[b]	Projected					Total
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2001 - 2006
	$	$	$	$	$	$	$	$	$	$	$	$
Gas Processing	126	858	978	744	926	12,878	11,417	10,788	5,060	922	679	41,744
Distribution	31,205	37,719	32,452	24,945	31,194	37,125	33,246	32,743	33,858	33,666	32,657	203,295
Field Services	13,159	8,132	12,157	9,141	8,097	6,542	6,614	4,162	4,312	6,632	6,783	35,045
Transportation	31	182	2,033	5,048	761	1,715	3,860	2,595	3,097	3,108	3,115	17,490
Other Departments	588	5,611	22,877	28,213	7,161	6,193	9,419	14,788	5,096	3,766	5,588	44,850
Subtotal	45,109	52,502	70,497	68,091	48,139	64,453	64,556	65,076	51,423	48,094	48,822	342,424
Customer Growth-Related Projects									558	546	543	1,647
Total Program	45,109	52,502	70,497	68,091	48,139	64,453	64,556	65,076	51,981	48,640	49,365	344,071

(a) All figures are net of reimbursements, contributions, and salvage costs.

(b) Figures from proposed capital budget recommended to City Council and the Director of Finance by the PGC. Awaiting approval by Ordinance.

Table 5
Proposed Capital Projects for FY2001
(Thousands of Dollars)

Category	Priority 1 Safety	Priority 2 Reliability	Priority 3 Enforced	Priority 4 New Rev	Priority 5 Efficiency	Total
	$	$	$	$	$	$
Gas Processing						
Additions - Measurement	0	26	0	0	0	26
Replace Odorizers	199	0	0	0	0	199
Replacement - Measurement	0	51	0	0	0	51
Additions - Supplemental	0	86	0	0	0	86
LNG Replacement	0	11,890	0	0	0	11,890
Replace Fire Gates	0	158	0	0	0	158
Replacement - Supplemental	0	187	0	0	0	187
Additions - Buildings	0	92	0	0	0	92
Building Improvements	0	79	0	0	0	79
Replacements - Building	0	111	0	0	0	111
	199	12,679	0	0	0	12,878
Distribution						
High Pressure Additions	0	0	0	314	0	314
High Pressure Enforced	0	0	1,298	0	0	1,298
LP/ Intermediate Small - Add	0	0	0	1,402	0	1,402
LP/ Intermediate Small - Enfor	0	0	5,554	0	0	5,554
Prudent Main	5,005	0	0	0	0	5,005
LP/ Intermediate Small -Clamp	500	0	0	0	0	500
LP/ Intermediate Small -Encap	800	0	0	0	0	800
Lp/Inter Large - Addition	0	0	0	75	0	75
LP/Inter Large - Enforced	0	0	3,233	0	0	3,233
LP/Interm - Encapsulation	902	0	0	0	0	902
LP/Interm - Clamping	250	0	0	0	0	250
Cathodic Protection	0	218	0	0	0	218
High Pressure Valves	76	0	0	0	0	76
Presure Regulating	0	76	0	0	0	76
Small Service Additions	0	0	0	2,737	0	2,737
Large Service Additions	0	0	0	2,118	0	2,118
Small Service Replacements	12,040	0	0	0	0	12,040
Large Service Replacements	852	0	0	0	0	852
Addition Tools	0	0	0	0	219	219
Reimbursement	0	0	0	0	(750)	(750)
Replacement Tools	0	203	0	0	0	203
	20,425	498	10,086	6,647	(531)	37,125
Field Services						
Meter Installation Addition	0	0	0	1,842	0	1,842
Meter Replacements	1,196	0	0	0	0	1,196
Regulator Installations	0	0	0	80	0	80
Regulator Replacements	28	0	0	0	0	28
Telemetering Installation	0	0	0	0	600	600
Telemetering Replacements	49	0	0	0	0	49
Training Equipment - Addition	0	0	0	0	25	25
Training Equip. - Replacements	0	25	0	0	0	25
AMR Installations	0	0	0	0	2,372	2,372
AMR Replacements	0	0	0	0	325	325
	1,273	25	0	1,922	3,322	6,542
Transportation						
Shop Equipment - Additions	0	42	0	0	0	42
Vehicle Replacement	0	1,117	0	0	0	1,117
Mobile Equipment Additions	0	34	0	0	0	34
Mobile Equipment Replacements	0	465	0	0	0	465
Shop Equipment Replacements	0	56	0	0	0	56
	0	1,715	0	0	0	1,715
All Other Departments	100	1,360	0	0	4,733	6,193
Total FY2001 Program	**21,997**	**16,277**	**10,086**	**8,569**	**7,524**	**64,453**

Gas Processing

As noted earlier, the proposed capital budget for the Gas Processing department is $12.9 million in fiscal year 2001. This represents a $11.95 million increase over actual 2000 expenditure levels. The Replacement project for the Richmond LNG Liquefaction Plant is a Priority 2 project, budgeted at $11.9 million in 2001. The remainder of the budget is distributed among several smaller projects ranging from fire gate replacements to miscellaneous building improvements.

The LNG Replacement project is primarily related to the replacement of the existing liquefaction equipment at the Richmond LNG Plant. This replacement project will be conducted in phases over the 2001 through 2003 fiscal years. The existing liquefaction equipment was installed in the late 1960's and is more expensive to operate and maintain relative to newer technologies now available. In addition, the existing equipment is nearing the end of its expected life. The new equipment utilizes technology with fewer moving parts, will be significantly less expensive to operate and maintain and will allow for year-round liquefaction operation. During the initial phases of the project, PGW plans to operate the existing and new equipment in parallel until the new equipment has been successfully tested.

Distribution

Unlike Gas Processing Department projects, planned capital projects for the Distribution Department follow a recurring pattern which require generally equal capital outlays each year. The largest capital costs for the distribution system relate to the replacement of small diameter (1.25 inches or less) services. This ongoing multi-year project is budgeted at $12.0 million for 2001. These expenditures are scheduled for the renewal of services based on customer complaints, leak surveys, and City and State work. The next largest planned expenditures are for ongoing main replacements ($5.0 million) and replacement of intermediate and low-pressure mains of small diameter ($5.6 million) due to anticipated City and State construction activities.

The ongoing mains replacement capital program follows recommendations made by Navigant Consulting Inc. ("Navigant") in a February 2000 report entitled "Philadelphia Gas Works Mains Replacement Study." The study recommended an 18-mile annual replacement program for cast iron mains, about one percent of current inventory, which was projected by Navigant to eliminate most of PGW's trouble-prone cast iron pipe in five years. A one percent annual replacement program was found by Navigant to be typical for gas distribution utilities, like PGW, with greater than 500 miles of cast iron mains.

Field Services

Over the past few years, PGW has embarked on an aggressive program to retrofit customer meters with electronic devices to maximize the effectiveness of its automated meter reading system. The fiscal year 2001 budget for field service activities is markedly less than previous years due to the near completion of the retrofitting program. PGW continues to realize benefits from the implementation of an automated meter reading system, including fewer estimated readings, increased reading accuracy, reduction in meter reading personnel and reduced customer complaints.

Transportation

The majority of the planned capital expenditures for this department are associated with vehicle replacements (65.1 percent). The remainder of the Transportation budget is distributed between additions and replacements for mobile equipment and shop equipment.

Other Departments

The "Other Departments" category includes budgeted capital expenditures for Building Services, Information Technology, and Customer Affairs. For fiscal year 2001, the majority of the planned capital expenditures is divided between Building Services (30.0 percent of the budget or $1.9 million) and Information Technology (38.4 percent or $2.4 million). Among the approved Building Services projects for 2001 is work on a compressed natural gas ("CNG") Station and miscellaneous building additions throughout the PGW system. Major Information Technology expenditures are slated for server hardware upgrades, data servers, and software testing.

Rates and Tariffs

The past fiscal year has been one of transition for PGW due to changes in regulatory jurisdiction as the result of the passage of the Gas Choice Act. The following sections present a discussion of existing rate programs and some of the ongoing issues facing PGW due to the changes in legislation and regulation and the impact on rates and rate-making methodology.

Regulation

Prior to July 1, 2000, PGW's rates were regulated by the PGC. After July 1, 2000, PGW became subject to regulation by the PUC. Although the PGC continues to approve PGW's operating budget, which has the effect of setting PGW's revenue requirement, the PUC has the authority to approve the rates charged by PGW. Further, PGW is required to file unbundled rates with the PUC by July 1, 2002 with these rates to be implemented by September 1, 2003. The unbundled rates are required so customers may choose from which supplier to purchase natural gas.

To date, PGW's experience with the PUC is limited. PGW filed its annual GCR filing with the PUC in August 2000 and has filed for revisions to its GCR twice since that time in order to pass along increases in gas supply costs. The PUC has approved all of the GCRs filed by PGW. In our opinion, PGW has requested and received timely changes in its GCR.

On August 8, 2000, PGW filed for interim base rate relief of $52 million (annually) with the PUC. In its order dated November 22, 2000, the PUC granted $11 million of this interim increase but attached certain conditions precedent to the increase that were not acceptable to PGW. PGW and the City filed an appeal of the PUC Order with the Commonwealth Court. On February 22, 2001, the PUC issued an order adopting a settlement between the PUC Law Bureau and PGW that included the following:

1. PGW would be allowed to increase rates to provide an additional $11 million in base rate revenues by August 31, 2001.
2. PGW would be permitted to recover an additional $7 million through its GCR to account for higher than anticipated bad debt expense. PGW would be allowed to reserve any overcollection of GCR up to $25 million.
3. PGW agreed to implement all of the recommendations of the PUC Management Audit (the "Audit") or explain why it believes it cannot or should not.
4. The PUC is obligated to establish rates that permit PGW to meet all of its Bond Ordinance covenants.
5. PUC and the City agreed on a timetable and process to replace interim management with permanent management.

The appeal was withdrawn following the February 22, 2001 Order approving the settlement. PGW implemented rates consistent with the order on March 1, 2001.

On January 5, 2001, PGW filed for a $65 million permanent increase in base rates. In order to mitigate PGW's weather related risk, the rate design proposed by PGW in this filing is heavily weighted towards increasing the fixed monthly customer charges that are not impacted directly by changes in consumption due to weather. The PUC's Office of Trial Staff, Office of Consumer Affairs ("OCA"), and intervenor testimony have been filed in this matter. These parties are advocating different base rate increases (as low as $21.5 million) and different rate design methodologies from those proposed by PGW. Since this is the first permanent base rate filing PGW has submitted to the PUC for approval, there is no

history or precedent available upon which to assess the likely outcome of this rate filing. The Gas Choice Act requires, and the PUC has acknowledged, that the PUC establish rates that will permit PGW to meet all of its Bond Ordinance covenants, and that the PUC use the prior rate-making methodology in setting overall rates. Black & Veatch has determined that the prior rate-making methodology is the cash-flow method. It cannot be predicted how the PUC will interpret and actually implement this in the form of a base rate increase and what rate-making and rate design methodology the PUC will ultimately approve. In addition, based on the typical PUC procedural schedule, any increase in base rates would not become effective until the beginning of the 2002 fiscal year unless there is a settlement in the rate case. If there is a settlement during the 2001 fiscal year, 2001 operating results could improve slightly above the levels contained in this report. The base rate increases and rate design assumptions utilized in this report are discussed in the sections of the report titled *"Proposed Rates"* and *"Financial Feasibility for the 2001 Bonds – Projected Revenues – Sales and Transportation Revenues"*.

Existing Rates

PGW's existing Gas Service Tariff became effective on March 1, 2001 when rates were changed on an interim basis pursuant to the PUC Order entered February 22, 2001. On January 5, 2001, PGW filed for a permanent change in base rates of $65 million annually. A PUC rate proceeding is now ongoing, as described above. The PUC's decision in this proceeding will determine new rates which will replace those set on an interim basis pursuant to the February 22, 2001 Order.

The current tariff sets forth the rules and regulations for gas service and the rates PGW is allowed to charge for various types of service. Changes to this tariff must be approved by the PUC. PGW primarily provides service under three broad classifications: firm, interruptible and transportation service. Table 6 summarizes the existing, interim and proposed PGW rates.

Table 6
Comparison of Existing, Interim, and Proposed Tariff Rates

Tariff	Tariff Charges Existing[a]	Interim[b]	Proposed[c]
Firm Service			
General Service - Rate GS			
Customer Charge - $/meter per month			
Residential Customers	8.00	11.66	15.00
Commercial Customers	10.00	14.57	25.00
Industrial Customers	20.00	29.14	50.00
Commodity Charge (exclusive of gas cost) - $/Mcf			
Residential Customers	3.4330		3.7250
Commercial Customers	3.9400		4.5060
Industrial Customers	3.9400		4.6370
Base Cost of Gas - $/Mcf[d]	3.1800		3.1800
Total Commodity Charge - $/Mcf			
Residential Customers	6.6130		6.9050
Commercial Customers	7.1200		7.6860
Industrial Customers	7.1200		7.8170
Municipal Service - Rate MS			
Customer Charge - $/meter per month	0.00		25.00
Commodity Charge (exclusive of gas cost) - $/Mcf	3.2330[e]		3.8881
Base Cost of Gas - $/Mcf	3.1800		3.1800
Total Commodity Charge - $/Mcf	6.4130		7.0681[f]

Table 6 (continued)
Comparison of Existing, Interim, and Proposed Tariff Rates

Tariff	Tariff Charges Existing[a]	Interim[b]	Proposed[c]
Firm Service Continued			
Philadelphia Housing Authority Service - Rate PHA			
Customer Charge - $/meter per month	0.00		25.00
Commodity Charge (exclusive of gas cost) - $/Mcf	3.9460		4.0680
Base Cost of Gas - $/Mcf	3.1800		3.1800
Total Commodity Charge - $/Mcf	7.1260		7.2480
Interruptible Service			
Boiler and Power Plant Service-Small Volume - Rate BPS-S			
Customer Charge - $/meter per month			
Annual consumption less than 10,000 Mcf.	35.00		35.00
Annual consumption between 10,000 and 100,000 Mcf, inclusive.	75.00		
Annual consumption greater than 100,000 Mcf.	150.00		
Commodity Charge[g] - $/Mcf	7.2120		7.2120
Boiler and Power Plant Service - Large Volume - Rate BPS-L			
Customer Charge - $/meter per month			
Annual consumption less than 10,000 Mcf.	35.00		50.00
Annual consumption between 10,000 and 100,000 Mcf, inclusive.	75.00		
Annual consumption greater than 100,000 Mcf.	150.00		
Commodity Charge[g] - $/Mcf	6.7758		6.7758
Load Balancing Service - Extra-Large Volume - Rate LBS-XL			
Customer Charge - $/meter per month	250.00		250.00
Commodity Charge[g] - $/Mcf	5.2635		5.2635
Load Balancing Service - Large Volume - Rate LBS-L			
Customer Charge - $/meter per month	175.00		175.00
Commodity Charge[g] - $/Mcf			
Indirect	5.3215		5.3215
Direct	5.4221		5.4221
Load Balancing Service - Small Volume - Rate LBS-S			
Customer Charge - $/meter per month	100.00		100.00
Commodity Charge[g] - $/Mcf	5.6773		5.6773
Gas Transportation Service - Rate GTS			
Customer Charge - $/meter per month	*250.00*		*250.00*
Commodity Charge[h] - $/Mcf	6.5613		6.5613
Cogeneration Service - Rate CG			
Customer Charge - $/meter per month	250.00		250.00
Commodity Charge[i] - $/Mcf	5.4508		5.4508
Developmental Natural Gas Vehicle Service - Rate NGVS			
Customer Charge - $/meter per month	35.00		30.00
Commodity Charge[j] - $/Mcf	5.4949		5.4949

(a) Reference: Philadelphia Gas Works, Gas Service Tariff, Number 1, issued July 3, 2000.
(b) Reference: Documents from interim filing dated February 23, 2001. Interim filing only increases residential, commercial, and industrial customer charges, no other charges are affected.
(c) Reference: Rate Case Exhibit HSG-1 Schedule 4A.
(d) The Gas Cost Rate Clause applies in addition to these charges.
(e) Rate Case Exhibit HSG-1, Schedule 5A indicates Municipal, Non-Heat customer charge of $9.74 & Municipal, Heat customer charge of $9.95.
(f) Rate Case Exhibit HSG-1, Schedule 4A indicated Municipal, Non-Heat commodity charge of $7.0681 and Municipal, Heat commodity charge of $7.1075.
(g) Competitively priced based on cost of alternative fuel.
(h) Commodity charge includes Delivery Charge, Transportation charge, and Standby Service Charge, if applicable.
(i) Commodity charge based on cost of gas purchased and delivered to PGW gate stations.
(j) Commodity charge based on schedule of charges related to Maximum Daily Quantity.

Firm Service

PGW provides firm service under three rate schedules: General Service, Municipal Service, and Philadelphia Housing Authority ("PHA") Service. The vast majority of PGW's customers are served under the General Service Rate. During the 2001 fiscal year, over 98 percent of PGW's customers are served under this rate and these customers account for over 80 percent of sales volumes (and over 67 percent of total throughput). This rate is available to any residential, commercial, or industrial customer. Monthly customer charges differ depending on whether the customer is classified as residential, commercial, or industrial. A different commodity rate applies to residential customers versus commercial and industrial customers. The General Service Rate contains special provisions for separately metered summer air conditioning and CNG vehicle service. Residential senior citizens may qualify for a discount under this rate. The commodity rate is subject to adjustment under the GCR clause.

Table 7 presents a comparison of a typical peak winter month's residential gas bill for PGW and the other principal gas distribution utilities in Pennsylvania. Based on rates currently in effect and on annualized cost of gas, PGW's typical winter residential bill is near the group average of $233.64. PGW's GCR includes the recovery of costs related to the Customer Responsibility Program, the Conservation Works Program, and the Senior Citizen Discount Program. We understand costs of comparable programs at other utilities in Pennsylvania are not as substantial.

Table 7
Comparison of Residential Gas Bills – Pennsylvania Utilities
For Customers Using 20 Mcf per Month

Utility	Monthly Bill[a, b]
Philadelphia Gas Works	$ 239.32
Columbia Gas of Pennsylvania	$ 227.62
UGI Corporation	$ 253.00
Peoples Natural Gas	$ 221.76
PECO Energy	$ 236.22
Penn Fuel Gas	$ 239.52
T. W. Phillips Gas and Oil Company	$ 218.05

(a) Based on annualized cost of gas.
(b) Table assumes 1 cubic foot equals 1,000 Btu.

PGW's current rates include approximately $1.18 per Mcf related to the Customer Responsibility Program, the Conservation Works Program, and the Senior Citizen Discount. For the typical peak winter month's residential bill for 20 Mcf of consumption, these costs equate to $23.60.

Interruptible Service

PGW provides interruptible service under several rate schedules. Over 98 percent of the interruptible customers take service under the Boiler and Power Plant Service ("BPS") or Load Balancing Service ("LBS"). The BPS rates are set within a range based on the price of No. 2 fuel oil with a ceiling based on the total price (including GCR) for commercial and industrial firm service. The LBS service is priced similarly except that No. 6 fuel oil is used rather than No. 2 fuel oil. Because their service is

interruptible, customers taking BPS or LBS service must have an alternate energy source. Under normal operating conditions, interruption may be requested if the temperature is at or below 18 degrees Fahrenheit. Service to these customers is a competitive service. If the price of No. 2 or No. 6 fuel oil is less expensive than the equivalent price that PGW offers in any given month, the customer may choose to switch to alternate fuel rather than burn natural gas.

Transportation Service

PGW currently provides transportation service to eight customers. The majority of the throughput and revenues from transportation service is attributable to one customer, the Grays Ferry Cogeneration Facility. Service to this customer is provided through essentially dedicated facilities under a long-term negotiated contract. Under this contract, PGW receives approximately 8 cents per Mcf for each unit transported plus a service charge intended to cover PGW's cost of operating and maintaining the facilities required to serve this customer. The other seven customers are served under individually negotiated contracts. PGW negotiates the rates charged under these contracts so that the margin realized is equal to the margin that PGW would realize from these customers under the applicable sales rate schedule. In most cases, transportation customers also take some service under the sales rate schedule (Gas Transportation Service or "GTS") for a portion of their load.

Interim Rates

On February 22, 2001, PGW received approval from the PUC to increase certain rates on an interim basis. These interim rates are designed to increase revenues by $18 million from the effective date until the end of the 2001 fiscal year. These interim rate changes are shown in Table 6. Eleven million of the $18 million interim rate change was made to the existing customer charges for general service. Therefore, recovery of this portion of the interim rate increase will not be susceptible to variations in the volume of gas used. The remaining portion, $7 million, is being recovered through the GCR as a non-gas cost. The interim rates are temporary and may expire on August 31, 2001 unless they are extended by the PUC or replaced by a permanent rate change resulting from PGW's January 2001 base rate filing.

Proposed Rates

The rates proposed by PGW in its January 2001 base rate filing are also summarized in Table 6. These rates are based on producing an overall increase in revenues from base rates of $65 million per year. The proposed rate design is heavily weighted towards increasing the customer charges for all services and implementing a customer charge for services that currently do not have a customer charge (*municipal and public housing authority services*). *PGW has proposed this rate design methodology in* order to reduce the risks of changes in weather on its contribution margin. The proposed rate design results in a higher percentage of margin revenues (total revenues less GCR revenues) that are derived from a fixed customer charge that does not vary with changes in weather.

Customer Responsibility Program

In November 1993 the Philadelphia Gas Commission adopted a low-income program known as the Customer Responsibility Program ("CRP"). This program became effective in February 1994. The purpose of CRP is to increase the collection of revenues, provide an affordable payment plan for low-income customers, impress payment responsibility on the customer, reinforce the importance of conservation and increase grant assignment. The goal of the program is to increase cash flow to PGW and decrease accounts receivable.

The CRP is open to any customer who is at or below 150 percent of the Federal poverty level ("FPL"). New CRP customers are asked to pay 5 percent of their arrearage as a down payment, although exceptions are provided if warranted. CRP customers are also required to accept conservation measures offered to them in the Conservation Works Program. CRP customers are required to recertify for the program each year and are considered in default when they are two full payments past due. A formula is developed to forgive past arrearages after successful completion of five years on the program.

CRP agreements are divided into two primary categories based on participant household income. Discount Agreements apply if a participant's gross monthly household income is at or below 135 percent of the FPL. The CRP budget amount is 7.35 percent of the gross household income; however, a $30 minimum is the lowest monthly payment allowed to eligible CRP customers. Non-Discounted Agreements apply if the household income is greater than 135 percent but less than 150 percent of FPL. A monthly budget amount, plus two percent of arrears is established with the participants. If customers are tenants of the PHA, the CRP budget amount is the utility allowance they receive from PHA.

Approximately 56,000 customers or about 11 percent of PGW's total residential customer base are enrolled in the CRP. The level of participation has generally increased in recent years, primarily due to PGW's improved eligibility verification and account processing initiatives. Upgrading of PGW's Customer Information System has also provided improvements in the CRP administration.

The CRP revenue shortfall is recovered in the GCR. In the past three fiscal years, these amounts were $11,970,272 in 1998, $9,312,172 in 1999, and $14,783,518 in 2000.

Conservation Works Program

The Conservation Works Program ("CWP") is designed to provide cost-effective energy savings to PGW's low-income customers who participate in the CRP. CWP is intended to reduce the overall long-term costs of CRP.

CWP began in 1990 and was operated by the Energy Coordinating Agency of Philadelphia ("ECA") for the first years of the program. In September 1996, the program was redesigned, a second weatherization contractor was added, and PGW became the program operator. Both contractors have pursued a lower cost program approach designed to install only the most cost-effective measures. Since redesign, the program has continued with some occasional interruptions with an annual budget of approximately $2.2 million. About 3,700 homes have been treated annually in recent years.

Generally, CRP customer consumption levels are approximately 30 percent greater than that of the average residential customer. Most CRP customers live in row houses more than 100 years old that are in poor condition. Abandoned and vacant neighboring properties are also factors inducing high-energy usage. Average gas used among Philadelphia's low-income population (qualifying customers) when calculated on a per square foot per degree-day basis is far above national levels.

The basic characteristics of the targeted CWP population are customers with household income at or below 150 percent of the FPL and gas usage levels that are at or above their usage limit. CRP customers whose actual usage is above their usage limit are charged with an excess usage charge.

The goals of the CWP program include:

- Reducing gas usage of low-income households in a cost-effective manner
- Lowering gas bills and improving the payment practices of participant customers

The CWP focuses on this population of low-income customers by addressing the main factors that influence their energy usage, such as, mechanical and structural systems, as well as, behavior issues. The principal program treatments are:

- Energy education and basic health and safety checks provided to all houses
- Set back thermostats installed in about two-thirds of all houses
- Roof insulation installed by subcontractors in about 15 percent of houses
- Blower-door guided air sealing performed in about 25 percent of the houses

PGW commissioned an independent evaluation of the CWP that was completed in August 2000. Overall, the CWP was found to produce impressive energy savings for a modest cost. The report recommended that the measures should be applied to a greater proportion of houses.

Senior Citizen Discount Program

PGW offers a senior citizen discount program to residential customers at age 65 or older. Currently, there is no means or income test for eligibility in this program. The discount amounts to approximately 20 percent of the total gas bill for the residence. Approximately 85,600 PGW customers are taking advantage of this discount program.

Other Programs and Grants

In addition to the programs described above, PGW also maintains several other assistance programs that are intended to increase cash flow and reduce accounts receivable.

LIHEAP Program

The Federally funded Low Income Home Energy Assistance Program ("LIHEAP") provides funds to households in order to ensure continued utility service. The City's low-income residential gas consumers may apply for assistance through PGW's neighborhood offices, the Department of Public Welfare, or at one of many community sites. The LIHEAP program consists of two grant components: "Cash" and CRISIS grants. The main difference between the two grant types is that CRISIS is only offered to eligible customers whose utility service is off or in danger of having services terminated. Funds obtained are paid directly to PGW for crediting to the customer's account.

LIHEAP is an important source of low income assistance funding for PGW and has ranged over the last five years from $7.6 million in 1996 to $13.8 million in 2000. PGW's share of LIHEAP funds allocated to the Commonwealth of Pennsylvania has ranged from approximately 17 to 20 percent since 1996. These levels have been achieved through a vigorous educational and outreach program by PGW to enroll its low-income residential population.

In 1996, the Commonwealth of Pennsylvania changed the customer eligibility criteria for LIHEAP participation from 150 percent of the FPL to 110 percent of the FPL. Consequently, the number of PGW customers that are eligible for LIHEAP was reduced. In fiscal year 2001, the LIHEAP Cash eligibility criteria increased to 135 percent of the FPL while CRISIS eligibility was increased to 150 percent of FPL. Therefore, PGW expects an increase in the number of grants and funds received this year as compared to last year.

Vendor Payment Program

PGW continues to support a Vendor Payment Program for a group of customers known as Scattered Site Tenants of the PHA. The customers occupy dwellings, usually single family homes, owned by the PHA and for which the Federal Government provides rent subsidies. Under agreement with the

PHA and the Scattered Site Tenants, the Federal Government's Department of Housing and Urban Development provides a utility allowance to PHA, on behalf of the tenant. There are basically two groups of PHA tenants: one for which utility payments are received by PGW directly from PHA, and another group that is responsible for paying their own utility bills.

Utility Emergency Services Fund

PGW also participates in the Utility Emergency Services Fund ("UESF") which is a private fuel fund set up with the assistance of the City of Philadelphia Water Department and PECO Energy. Under this program, customers at or below 150 percent of the FPL may make application for an energy assistance grant (LIHEAP) which together with their own payment, a grant from UESF, and a matching contribution from the utility involved, may enable the customers to zero-out any arrearages they may have. The maximum allowance that a customer may receive is $500; $250 from UESF and a matching grant of $250 from the utility.

Dollar Plus Program

PGW also continues to support a program called "Dollar Plus" wherein PGW's customers are asked to add $1.00 or more to their gas bill payments as a donation to the Utility Emergency Services Fund.

Payment Plans

PGW maintains a number of residential customer payment plans that are tailored to the customer's ability to pay in order to allow the customer the opportunity to pay down past arrearages and budget future usage and payments.

Billing and Collections

To strengthen its financial condition, PGW has focused on improving its billing and collections programs. The principal components to this effort are improving the functionality of the new billing system (installed in 1999); improving customer service in the Call Center and in the field; and creating the Accounts Receivable Task Force. PGW created the Project Management Office ("PMO") for the sole purpose of achieving these goals. While the immediate impact of these programs is encouraging and appears sustainable, the actual results have been muted by the recent effects of higher gas costs, a colder than normal heating season, and the related account delinquencies and uncollectibles expense.

The primary mission of the PMO since its inception in June 2000 has been to increase the functionality of the new Billing, Collections and Customer Service ("BCCS") system. The BCCS went on-line in July 1999. Start-up of the BCCS revealed a number of serious problems compounded by the fact that the prior billing and collection system was shut down when BCCS went on-line. The PMO has systematically attacked an initial backlog of 55,000 billing exceptions to a current level of less than 300 per day, which are being addressed on an ongoing basis. Estimated and unbilled accounts was an additional billing system transition problem, and the PMO identified and corrected over 70,000 accounts which were estimated in error and which were billed zero usage. The billing uploading error was identified and corrected, requiring a manual meter reading effort, which resulted in additional billings of $2.9 million in October 2000. PGW plans to continue PMO to effectively increase the functionality of the billing system, to provide necessary management reports, and to provide timely support to the customer service and collections operations, until such time as the system fully meets PGW's needs.

Call center operations were strengthened with ongoing employee training, expanded service hours weekdays and Saturday, and retaining the services of professional call center management to serve on an interim basis. These actions have resulted in better utilization of the information capability of the BCCS, a staff productivity gain of nearly 20 percent, and improvement in other call center metrics. These measures support the overall field service and collections operations.

In January 2001, PGW created the Accounts Receivable Task Force to improve collection activity and to create ongoing programs to improve collections yield. Four categories of receivables were identified for targeted response.

- Certain Residential Accounts - This effort concentrated on those areas of the City where average household incomes are above average, suggesting a greater probability of collection. Field collections are made on Saturdays when customers are more likely to be home.
- Commercial and Industrial Accounts –The Task Force concentrates its personnel on making dunning calls and field visits for accounts more than 90 days overdue and subject to shutoff. This effort generated over $3 million in collections, or 46 percent of receivables due, in January and February of 2001.
- Written-Off Accounts - PGW has assigned nearly all of its written-off accounts to six outside collection agencies. Accounts assigned do not include those that are assigned to the Lien/Judgment Program, which is handled by the City Law Department. The City Law Department and PGW have worked together for several years on this program, which realizes recoveries as properties in the City are sold.
- Slow Paying Accounts – These accounts represent Residential and Commercial and Industrial Accounts which are overdue less than 60 days. Collection evidence suggests that, without PGW monitoring or intervention, a large number of these accounts will tend to become non-paying over time. As of March 28, 2001, approximately 41,000 residential accounts and 4,600 non-residential accounts are considered "slow paying accounts". PGW intervention includes increased bill collection efforts coordinated with the Call Center and field operations.

Competition

PGW's customer, volume, and revenue mix is heavily weighted towards the residential and smaller commercial markets. PGW currently holds in excess of 85 percent of the home heating market in the City with fuel oil constituting most of the remaining market. This high market share combined with a service territory that is not growing limits PGW's ability to increase its customer base. For residential and small commercial customers, the short run cost of changing energy sources is generally prohibitive without some kind of incentive to switch appliance (rebates or financing of appliances, for example). While not totally immune from competition, the residential and small to medium-sized commercial markets are quite stable. Further, opportunities for PGW to increase market share are limited without investment in marketing or incentive programs.

Generally, competition in the larger commercial and industrial markets is common. PGW's BPS and LBS customers (interruptible customers) have the ability to burn alternate fuels (generally fuel oil). If the equivalent price of natural gas is higher than fuel oil, many customers will opt to burn oil. Further, these interruptible customers may be curtailed during peak periods in the winter. PGW's largest customer accounts for approximately 15 percent of total throughput but less than ½ of one percent of contribution

margin. While large commercial and industrial loads are an important part of PGW's base, PGW's risk to competition is lower than most natural gas utilities with a relatively higher industrial load.

Unbundled Services

To comply with the Gas Choice Act, PGW is required to file unbundled rates with the PUC on or before July 1, 2002 that will be implemented by September 1, 2003. Currently, all but a handful of PGW's customers receive fully bundled service from PGW. A fully bundled service is a service where the customer deals with one provider and pays for all services through a single charge. All of the separate services currently performed by PGW are packaged into one full-service rate. PGW's current rates reflect differences in the level and quality of service, but the same basic service is provided to all sales customers. When PGW (or any natural gas utility) unbundles its rates, separate charges are developed for each service provided. With customer choice, the customer may choose to repackage all or some of these services. While the actual format of these rates and services is not known at this time, the general framework exists in utilities that currently offer unbundled services. The general services that PGW is likely to offer include gas supply (likely similar to the service provided now and reflected in the GCR), distribution (a portion of the current non-gas commodity charge pays for this service now), balancing and storage (the gas supply portion of this is currently in the GCR and the investment cost is currently reflected in the non-gas commodity charge), and customer (currently unbundled in a customer charge but may not be reflective of the total cost).

The only portions of unbundled rates that will be subject to customer choice are the gas supply and storage elements. Even though some customers may purchase the natural gas commodity from a third party, PGW will still charge for the distribution service and will likely charge for additional services required by transportation customers as well. If PGW's unbundled rates are designed properly, offering unbundled rates and customer choice of supply should not adversely impact PGW's contribution margin and PGW should be largely indifferent as to whether the customer buys gas from PGW or some third party. PGW does not earn margin on the commodity cost of gas.

Certain costs within PGW's gas supply portfolio are fixed - transportation and storage contracts and PGW's investment in LNG facilities. If PGW's unbundled rate tariff provides provision for assigning or releasing capacity to customers who chose alternate gas supply and/or if PGW is allowed to reduce the amount of transportation and storage service under contract to reflect customers who choose alternate gas supply, any negative impact can be mitigated. Further, if PGW is allowed to structure services to transportation customers based on market prices, PGW may be able to unlock value to the benefit of its core market customers. To the extent that PGW has investment in facilities or commitments to gas supply that are stranded due to customers choosing an alternate gas supplier, PGW may be able to recover stranded costs. Finally, PGW is likely to incur additional costs (administrative, accounting, balancing, etc.) associated with serving transportation customers on a broader scale. If rates are designed properly, PGW should be able to charge transportation customers for the additional costs required to serve them.

Regardless of the ultimate rate design approved by the PUC, this report assumes that the PUC will adhere to its statutory obligation to provide PGW with revenues adequate to meet its bond covenants.

Financial Feasibility for the 2001 Bonds

The financial data used in the analyses presented herein were obtained from the historical financial records of PGW, the latest available estimates for fiscal year 2001, PUC GCR filings, and proposed operating and capital budgets for fiscal years 2001 through 2006. PGW's financial statements are audited annually. The most recently available audited financial statements are for fiscal year 2000. According to that audit, PGW's financial statements are maintained in conformity with generally accepted accounting principles for gas utilities.

Projected Revenues

Operating revenues for PGW consist principally of revenues from the sale of natural gas to residents of the City of Philadelphia. Non-operating revenues include interest income and other miscellaneous non-operating sources.

Historical and Projected Number of Customers

Consistent with the trend in a declining population base, the number of customers served by PGW is projected to decline slightly during the period 2001 through 2006. Table 8 summarizes historical and projected number of customers. The total number of customers served is projected to decline from approximately 513,000 in fiscal year 2001 to about 504,250 in fiscal year 2006, a total decline of about 2 percent over five years. Most of this decline is in residential customers served.

Recognizing that proactive steps should be taken to offset the recent trend in declining numbers of customers served, PGW plans to initiate steps that are intended to add approximately 900 new customers per year during the 2004 through 2006 period as shown in footnote (c) in Table 8. Recognizing that the underlying trend will not change without additional marketing efforts, we include an allowance for the capital investment required to add these customers in our financial projection. This capital investment includes an allowance for the physical facilities required to connect new customers and an allowance to recognize additional marketing investment.

Coincident with PGW's anticipated unbundled rate filing in the fiscal year 2002 to 2003 time frame, customers are projected to begin migrating from sales to transportation service. The principal difference between customers taking sales versus transportation service is that PGW will not be the buyer of the natural gas commodity for the transportation customers. However, PGW will continue to charge for the transportation of gas through its distribution system. This charge for distribution service will not likely differ appreciably from the charge (less gas cost) that would apply to sales service customers. Therefore, PGW is unlikely to experience a material reduction in contribution margin (gross revenues less cost of gas) due to customers migrating to transportation service. So long as PGW's existing GCR provision remains in effect, the contribution margin will be unaffected as long as the number of customers who opt for other suppliers is relatively modest. While it is difficult to predict with certainty the actual number of customers who will migrate and the timing of such a migration, PGW's projection appears to be reasonable. If the rates for transportation service are properly designed, the net revenues realized by PGW will not be materially sensitive to whether customers take sales or transportation service.

Table 8
Historical and Projected Number of Customers

Description	Actual[a] 1996	1997	1998	1999	2000	Estimated[b] 2001	Projected[b] 2002	2003	2004	2005	2006
Total Number of Customers	513,000	511,000	512,000	510,000	512,000	512,894	510,542	508,213	506,916	505,788	504,258
Gas Customers											
Non-heating											
Firm											
Residential						65,648	64,465	63,153	61,203	58,787	56,725
CRP Residential						2,332	2,199	2,199	2,199	2,199	2,199
Commercial						5,823	5,487	5,144	4,823	4,536	4,274
Industrial						388	388	388	388	388	388
Municipal						352	352	352	352	352	352
Housing Authority						8	8	8	8	8	8
Total Firm Non-heating						74,551	72,898	71,243	68,973	66,270	63,945
Interruptible											
BPS - Small						149	149	149	137	121	111
BPS - Large						261	275	288	276	254	241
BPS - A/C						9	10	11	12	12	12
LBS - L Direct						3	2	2	1	0	0
LBS - L Indirect						13	14	15	15	13	12
LBS - S Indirect						54	55	56	51	43	38
LBS - XL Direct						3	3	3	2	1	0
LBS - XL Indirect						3	3	3	3	3	3
Cogeneration - Direct						1	1	1	1	1	1
Cogeneration - Indirect						3	3	3	2	1	1
LNG - Direct						0	0	0	0	0	0
Grays Ferry						1	1	1	1	1	1
GTS - Sales						1	1	1	1	1	1
NGV Indirect						2	2	2	2	2	2
Off-System Sales						0	0	0	0	0	0
Total Interruptible						504	520	536	503	453	423
Total Non-Heating						75,055	73,418	71,779	69,476	66,722	64,369
Heating											
Residential[c]						363,244	364,824	363,536	358,828	350,919	344,920
CRP Residential						49,666	46,801	46,801	46,801	46,801	46,801
Commercial[c]						19,061	19,603	20,157	20,259	19,995	19,926
Industrial[c]						785	843	901	960	1,002	1,049
Municipal						552	552	552	535	511	494
Housing Authority						4,523	4,494	4,465	4,171	3,767	3,479
Total Heating						437,831	437,116	436,412	431,555	422,994	416,669
Total Sales Customers						512,886	510,534	508,191	501,030	489,717	481,037
Transportation Customers											
Residential						0	0	0	4,784	13,543	19,442
Commercial						0	0	0	724	1,665	2,503
Industrial						0	0	0	24	55	84
Municipal						0	0	0	17	39	59
Housing Authority						0	0	0	270	614	915
BPS						0	0	13	48	122	177
LBS						0	0	1	9	22	32
Other - Large[c]						8	8	8	9	10	10
Total Transportation Customers						8	8	22	5,885	16,072	23,221

(a) Breakdown of customer totals not available.

(b) 2001 figures are based on 6 months actuals and 6 months projected. Projected figures are based on budgeted department figures.

(c) Include following growth increases:

Residential	650	1,288	1,926
Commercial	248	494	737
Industrial	28	56	84
Transportation	1	1	1

Historical and Projected Gas Sales and Throughput

Historical throughput (sales plus transportation volumes) for the 1996 through 2000 fiscal years and projected throughput for the 2001 through 2006 fiscal years are summarized in Table 9. The throughput volumes for fiscal year 2001 are based on 4,555 HDD and for the subsequent five years are based on 4,600 HDD.

The decline in total residential throughput is consistent with the projected decline in the number of residential customers. An additional reduction to residential and commercial throughput is included in the projection to reflect a gradual decline in the use per customer due to the conservation effects of weatherization programs, increased efficiencies of replacement natural gas appliances (primarily higher efficiency furnaces and hot water heaters), and increased efficiencies of replacement housing stock. Consistent with the underlying trend, throughput to other customer classes (primarily industrial customers) is projected to increase such that the overall throughput is projected to increase through the 2001 to 2006 period.

Consistent with the customer growth initiative discussed above, PGW projects increased throughput associated with these new customers. The total increase in throughput is approximately 6 billion cubic feet ("Bcf"). Most of this increase in volume (5.8 Bcf) is associated with adding a large cogeneration facility customer.

As with the number of customers projection, customers are projected to begin migrating from sales to transportation service. Therefore, sales volumes are reduced since customers now opt for transportation service. As stated previously, if transportation rates are designed properly, this migration should not translate into a material reduction in net contribution margin.

Sales and Transportation Revenues

Historical revenues (sales plus transportation service) for the 1996 through 2000 fiscal years and projected revenues for the 2001 through 2006 fiscal years are summarized in Table 10. The revenue figures shown in Table 10 are based on application of PGW's existing rates (the rates in effect prior to the interim rate increase that went into effect March 1, 2001) to the projected number of customer and the projected normal sales and transported volume. The revenue projections reflect the same adjustments made to sales and throughput (the declining use per customer adjustment and customer growth adjustment). However, the revenue impact of the declining use per customer reflects only the decline in net contribution margin. We assume consistent with PGW's existing GCR, that changes in the gas cost recovery portion of revenues will equal changes in gas costs.

PGW's revenue and gas cost projection for 2001 through 2006 was prepared prior to the beginning of the current fiscal year. Thus, these projections do not reflect the recent significant escalation in the cost of purchased gas. As an alternative to PGW rerunning their revenue model to determine the impact by customer class, this increase in the cost of purchased gas is shown as a separate line item in Table 10 (Lines 25 and 35). The impact of the interim rate increase for fiscal year 2001 of $18 million and the assumed levelized base rate increase of $53 million expected to become effective beginning in fiscal year 2002 are shown on Line 50 in Table 10.

To reflect the slightly colder than normal weather actually experienced by PGW during the 2001 fiscal year, we have included the additional marginal revenue PGW expects to realize above the level contained in the 2001 base estimates. This $5.4 million increase is shown on Line 49 of Table 10.

Table 9
Historical and Projected Sales and Throughput

Description	Actual[a] 1996 MMcf	1997 MMcf	1998 MMcf	1999 MMcf	2000 MMcf	Estimated[b] 2001 MMcf	Projected[b] 2002 MMcf	2003 MMcf	2004 MMcf	2005 MMcf	2006 MMcf
Gas Sales Volumes											
Non-heating											
Firm											
Residential	2,413	2,253	2,115	2,038	1,940	2,124	2,081	2,038	1,981	1,898	1,830
CRP Residential	NA	NA	NA	NA	NA	184	181	181	182	182	182
Commercial	1,889	1,878	1,832	1,777	1,920	1,892	1,820	1,746	1,679	1,617	1,560
Industrial	743	651	540	612	456	551	551	551	551	551	551
Municipal	263	234	234	214	261	231	231	231	231	231	231
Housing Authority	46	51	34	30	17	37	37	37	37	37	37
Total Firm Non-heating	5,353	5,066	4,755	4,670	4,594	5,019	4,901	4,784	4,661	4,516	4,391
Interruptible											
BPS - Small	313	347	253	246	177	304	303	302	281	247	197
BPS - Large	3,235	3,596	3,741	3,447	3,769	4,148	3,996	4,241	4,123	3,789	3,593
BPS - A/C	0	0	0	115	0[c]	239	272	309	322	330	345
LBS - L Direct	653	655	308	219	177	337	337	271	97	0	0
LBS - L Indirect	1,133	1,299	1,429	1,102	1,114	1,293	1,293	1,369	1,348	1,231	1,104
LBS - S Indirect	1,791	1,405	1,759	1,607	1,649	1,813	1,813	1,857	1,691	1,432	1,256
LBS - XL Direct	1,095	760	663	529	312	672	666	660	348	59	0
LBS - XL Indirect	135	259	284	268	1,063	1,067	1,067	1,067	1,070	1,018	956
Cogeneration - Direct	0	0	0	0	0	70	70	70	70	70	70
Cogeneration - Indirect	392	279	177	169	208	169	168	167	122	79	64
LNG - Direct	201	0	3	5	0	0	0	0	0	0	0
Grays Ferry	0	0	0	0	0	175	175	175	175	175	175
GTS - Sales	1,398	1,210	1,008	733	134	114	114	115	115	115	115
NGV Indirect	8	6	3	2	3	3	3	3	3	3	3
Off-System Sales	0	250	250	0	0	0	0	0	0	0	0
Total Interruptible	10,354	10,066	9,879	8,441	8,604	10,404	10,277	10,606	9,765	8,548	7,878
Total Non-Heating	**15,707**	**15,132**	**14,633**	**13,112**	**13,198**	**15,423**	**15,178**	**15,390**	**14,426**	**13,064**	**12,269**
Heating											
Residential[c,d]	48,819	44,412	39,664	39,617	39,048	35,562	34,982	34,606	34,035	32,939	32,313
CRP Residential	NA	NA	NA	NA	NA	6,492	6,370	6,375	6,391	6,389	6,389
Commercial[c,d]	7,345	6,794	6,117	6,404	8,192	8,547	8,815	8,924	9,007	8,897	8,869
Industrial[c]	1,000	867	766	794	844	938	992	1,048	1,100	1,142	1,191
Municipal	1,253	1,114	1,035	1,033	978	1,141	1,141	1,141	1,114	1,063	1,032
Housing Authority	1,602	1,417	1,224	1,166	871	1,273	1,269	1,265	1,230	1,172	1,133
Total Heating	**60,018**	**54,605**	**48,805**	**49,015**	**49,932**	**53,953**	**53,569**	**53,359**	**52,877**	**51,602**	**50,927**
Total Sales Volumes	**75,725**	**69,737**	**63,439**	**62,127**	**63,129**	**69,376**	**68,747**	**68,749**	**67,303**	**64,666**	**63,196**
Transportation											
Residential	0	0	0	0	0	0	0	0	491	1,245	1,782
Commercial	0	0	0	0	0	0	0	0	336	728	1,023
Industrial	0	0	0	0	0	0	0	0	27	61	86
Municipal	0	0	0	0	0	0	0	0	35	80	112
Housing Authority	0	0	0	0	0	0	0	0	42	91	126
BPS	0	0	0	0	0	0	0	308	926	1,775	2,438
LBS	0	0	0	0	0	0	0	106	884	1,801	2,404
Other - Large[c]	4,484	2,310	8,266	13,619	14,092	14,440	14,440	14,440	20,821	20,864	20,878
Total Transportation	**4,484**	**2,310**	**8,266**	**13,619**	**14,092**	**14,440**	**14,440**	**14,854**	**23,563**	**26,643**	**28,850**
Total Throughput	**80,210**	**72,047**	**71,705**	**75,746**	**77,221**	**83,816**	**83,187**	**83,603**	**90,866**	**91,309**	**92,047**

(a) PGW Historical data. CRP volumes are included in appropriate residential figure.
(b) 2001 figures are based on 6 months actuals and 6 months projected. Projected figures are based on budgeted department figures.
(c) Include following growth increases:

Residential			57	113	169
Commercial			114	230	345
Industrial			29	57	86
Transportation			5,840	5,840	5,840

(d) Marginal Revenue Loss Customer Utilization (Conservation)

Residential	(466)	(699)	(932)	(1,165)	(1,398)
Commercial	(117)	(175)	(233)	(291)	(350)

(e) Included in BPS - Large during fiscal year 2000.

Table 10
Historical and Projected Revenues
(Thousands of Dollars)

Line No.		Historical[a] 1996	1997	1998	1999	2000	Estimated[b] 2001	Projected[b] 2002	2003	2004	2005	2006
	Gas Sales Revenues											
	Non-heating											
	Firm											
1	Residential	21,753	22,112	20,944	20,201	21,039	27,754	23,011	22,488	21,847	21,049	20,323
2	CRP Residential	NA	NA	NA	NA	NA	1,308	1,291	1,291	1,298	1,300	1,301
3	Commercial	15,417	16,723	16,344	15,436	16,424	21,212	16,676	15,951	15,334	14,858	14,363
4	Industrial	5,885	5,599	4,699	5,168	4,111	6,068	4,944	4,933	4,942	4,975	4,987
5	Municipal	1,871	1,838	1,831	1,623	1,978	2,338	1,869	1,864	1,868	1,881	1,886
6	Housing Authority	357	429	289	246	139	399	324	323	323	326	326
7	Total Firm Non-heating	45,283	46,702	44,107	42,673	43,690	59,079	48,114	46,850	45,613	44,389	43,187
	Interruptible											
8	BPS - Small	1,930	2,449	1,511	1,576	1,737	2,238	2,038	2,051	1,902	1,674	1,345
9	BPS - Large	15,722	18,553	15,785	12,317	19,662	28,078	21,959	21,925	20,567	17,999	16,361
10	BPS - A/C	0	0	0	451	0[e]	1,305	1,169	1,307	1,354	1,373	1,422
11	LBS - L Direct	2,306	2,491	1,088	660	798	1,825	1,552	1,181	414	0	0
12	LBS - L Indirect	4,040	4,686	4,860	3,325	4,944	6,894	5,931	5,947	5,641	4,954	4,293
13	LBS - S Indirect	6,832	5,472	6,217	4,787	7,358	10,324	9,180	8,903	7,817	6,359	5,381
14	LBS - XL Direct	3,766	2,757	2,188	1,572	1,334	3,563	2,906	2,723	1,403	234	0
15	LBS - XL Indirect	380	843	1,010	802	4,578	5,587	4,631	4,388	4,233	3,866	3,515
16	Cogeneration - Direct	0	0	0	0	0	352	259	259	259	261	262
17	Cogeneration - Indirect	1,296	909	586	552	848	927	642	639	469	304	248
18	LNG - Direct	573	0	18	31	0	0	0	0	0	0	0
19	Grays Ferry	0	0	0	0	0	868	620	619	619	622	624
20	GTS - Sales	4,649	4,051	3,262	2,386	694	766	523	496	478	459	442
21	NGV Indirect	24	19	9	7	53	16	11	11	11	11	11
22	Off-System Sales	1,747	2,017	1,500	0	0	0	0	0	0	0	0
23	Total Interruptible	43,266	44,247	38,034	28,465	42,006	62,743	51,420	50,450	45,167	38,116	33,904
24	**Subtotal Non-Heating**	88,549	90,948	82,141	71,137	85,696	121,822	99,534	97,301	90,780	82,504	77,091
25	Cost of Gas Increase	NA	NA	NA	NA	NA	14,591	19,772	17,078	10,023	8,350	7,405
26	Prior Year's Gas Cost Recovery	2,596	(497)	(628)	(1,762)	2,134	(700)	0	0	0	0	0
27	**Total Non-Heating**	91,146	90,452	81,513	69,375	87,830	135,713	119,306	114,379	100,803	90,854	84,496
	Heating											
28	Residential[c,d]	360,820	367,114	333,557	328,135	315,227	380,524	313,041	310,282	306,578	300,497	297,614
29	CRP Residential	NA	NA	NA	NA	NA	38,265	37,476	37,468	37,508	37,613	37,658
30	Commercial[c,d]	59,067	60,139	54,373	55,381	69,435	94,894	79,503	81,700	82,846	83,777	86,139
31	Industrial[c]	7,951	7,585	6,710	6,764	7,140	10,349	8,934	9,415	9,894	10,615	11,602
32	Municipal	8,983	8,796	8,167	7,921	7,459	11,606	9,285	9,263	9,061	8,717	8,485
33	Housing Authority	12,640	12,432	10,780	9,987	7,275	13,546	10,925	10,868	10,563	10,122	9,789
34	**Subtotal Heating**	449,462	456,066	413,586	408,187	406,536	549,185	459,164	458,997	456,449	451,341	451,287
35	Cost of Gas Increase	NA	NA	NA	NA	NA	65,778	91,210	80,563	50,398	45,680	43,346
36	Prior Year's Gas Cost Recovery	26,494	(5,826)	(6,760)	(17,946)	28,009	(13,348)	0	0	0	0	0
37	**Total Heating**	475,956	450,240	406,826	390,241	434,544	601,615	550,374	539,560	506,847	497,021	494,634
38	**Total Sales Revenues**	567,101	540,691	488,339	459,616	522,374	737,328	669,680	653,938	607,650	587,875	579,130
	Transportation											
39	Residential	0	0	0	0	0	0	0	0	2,289	5,754	8,212
40	Commercial	0	0	0	0	0	0	0	0	1,470	3,168	4,451
41	Industrial	0	0	0	0	0	0	0	0	118	260	368
42	Municipal	0	0	0	0	0	0	0	0	117	266	373
43	Housing Authority	0	0	0	0	0	0	0	0	179	385	535
44	BPS	0	0	0	0	0	0	0	685	1,679	2,848	3,301
45	LBS	0	0	0	0	0	0	0	152	1,047	1,819	1,970
46	Other - Large[c]	1,108	1,441	2,258	3,376	3,313	3,656	3,503	3,570	5,169	5,184	5,196
47	**Total Transportation**	1,108	1,441	2,258	3,376	3,313	3,656	3,503	4,407	12,069	19,684	24,406
48	**Total Revenues**	568,210	542,133	490,597	462,992	525,687	740,984	673,183	658,346	619,719	607,559	603,535
49	Marginal Rev. Increase - Weather	0	0	0	0	0	5,376	0	0	0	0	0
50	Rate Increase	0	0	0	0	0	18,000	53,000	53,000	53,000	53,000	53,000
51	**Adjusted Total Revenues**	568,210	542,133	490,597	462,992	525,687	764,360	726,183	711,346	672,719	660,559	656,535

(a) PGW Historical data. CRP volumes are included in appropriate residential figure.
(b) 2001 figures are based on 6 months actuals and 6 months projected. Projected figures are based on budgeted department figures.
(c) Include following growth increases:

Residential			535	1,602	3,201
Commercial			1,035	3,128	6,277
Industrial			258	780	1,565
Transportation			1,463	1,463	1,463
(d) Marginal Revenue Loss Customer Utilization (Conservation)	(2,000)	(3,000)	(4,000)	(5,000)	(6,000)
Residential	(1,600)	(2,400)	(3,200)	(4,000)	(4,800)
Commercial	(400)	(600)	(800)	(1,000)	(1,200)

(e) Included in BPS - Large during fiscal year 2000.

The $53 million levelized annual increase in base rates assumed in this report is predicated on balancing several considerations. PGW filed for an annual increase in base rates of $65 million in January 2001. This rate case is currently pending and unless the case is settled in the near future, any rate changes resulting from this filing will not likely take effect until the beginning of fiscal year 2002, at the earliest. Regulated utilities rarely receive from the PUC the level of rate relief for which they file, which is the same as PGW's experience with the PGC. The level of rate relief actually realized by PGW in this filing or future filings will have a direct impact on cash flow, repayment of short-term borrowing, the level of long-term debt financing required by PGW to fund capital improvements, and PGW's ability to fund its financial obligations, including the $18 million payment to the City.

In this report, the revenue projections reflect the interim rate increase already in effect for fiscal year 2001, and a $53 million per year levelized increase in base rates over fiscal years 2002 through 2006. Based on the assumptions contained in this report, this overall level of rate relief is necessary for PGW to comply with its Bond Ordinance covenants, including its covenants to pay operating expenses and debt service in full when due, to continuously operate and maintain the System in good condition, to pay all City Charges, including the annual base payment to the City, and to achieve the coverage required by the Rate Covenants. This level of rate relief will also enable PGW to:

1. Significantly pay down outstanding commercial paper between 2002 and 2004 and pay off all commercial paper by 2005,
2. Fund a significant portion of capital expenditures from internally generated funds beginning in 2004,
3. Establish an adequate level of working capital, and
4. Repay the $45 million City loan by January 25, 2003.

If the overall level of rate relief realized by PGW is less than $53 million per year over the 2002 through 2006 period, PGW's ability to meet its Bond Ordinance covenants may be significantly impaired. If the overall level of rate relief realized by PGW is greater than $53 million per year over the 2002 through 2006 period, the need for future long-term borrowing might be reduced, short-term debt might be retired sooner, a greater portion of capital expenditures might be funded from internally generated funds, and PGW's overall financial health would be improved. This could ultimately be reflected in improved bond ratings, lower borrowing costs, and lower rates.

The level of revenues projected for the 2002 through 2006 period is based on normal weather conditions. To the extent that weather is warmer than normal, PGW will likely realize lower revenues. While most of such a reduction in revenues would be offset by a reduction in purchased gas costs, the contribution margin would also decline, potentially impacting PGW's ability to meet its Bond Ordinance covenants without additional rate relief. If weather is colder than normal over the projection period, PGW's contribution margin would increase, enhancing PGW's ability to meet its Bond Ordinance covenants and reducing the need for future base rate increases. The impact of warmer or colder than normal weather may be affected by the type of rate design approved by the PUC. All other things being equal, the greater the amount of revenues recovered through a customer charge, the lesser the impact of changes in weather.

As with the volume and number of customers projections, as sales volumes and customers migrate to transportation service, so do revenues. As stated previously, if transportation rates are designed properly, this migration should not translate into a material reduction in net contribution margin and hence, net cash flow and income will not be materially affected.

Other Operating Revenues

Other operating revenues are projected to remain at an annual level of approximately $28 million throughout the 2001 through 2006 period. These revenues consist of sales of energy-related appliance services, finance charges realized on overdue accounts, field collection charges, and other miscellaneous sources.

Assistance Programs

Over the past several years, PGW has seen high accounts receivable balances and higher than usual delinquent accounts. As part of PGW's proactive approach to managing this problem, PGW has continued to develop programs targeted at assisting customers with meeting their energy costs. Table 11 details PGW's LIHEAP participation in recent years and provides an estimate for fiscal year 2001. Assistance programs are estimated to contribute $25.3 million in revenues in 2001.

Accounts Receivable

As described previously, PGW has increased its focus on improving its billing and collection practices *(See "Billing and Collections")*. Overall, the corrected implementation of BCCS and increased collections activity is expected to reduce accounts receivables and ultimately, written-off accounts. The programs described in this report represent significant improvements over past practices and are expected to produce systematic, sustainable results. Table 12 summarizes historical and projected accounts receivable and account write-offs. As seen from the table, we assume receivables as a percent of billed gas revenues will remain constant over the projection period at 29.7 percent. Realized bad debt expense as a percent of billed gas revenues are projected to decrease from 9.2 percent in 2001 to 8.3 percent in 2006. Current year results are unfavorably impacted by high gas costs, colder than normal winter temperatures, and less than a full year of PGW's system improvements.

Capital Improvement Program Financing

The Capital Improvement Program described earlier (*See "Capital Improvement Program"*) will be financed by PGW through funds currently available for capital projects, revenue bond issues, investment income, and system revenues.

The CIP expenditures for the six-year period ending August 31, 2006 are shown on Line 9 of Table 13 and total approximately $342 million. Additional capital costs associated with PGW's plan to increase its number of customers that are not in the current CIP projection are presented on Line 10. Within the constraints of the rate covenants and additional bonds tests outlined in the 1975 and 1998 Ordinances, the total par amount of bonds to be issued of approximately $284 million during the projection period is designed to maximize the capital requirements financed with bond proceeds.

Lines 1 through 7 outline the sources available to meet the CIP financing requirements. Line 1 shows the net balance available in the Capital Improvement and Capital Leasing Funds as of August 31, 2000, available to fund the CIP. Lines 2 through 5 presents the net proceeds from bond sales, Line 6 shows the amount projected to be transferred to the Capital Improvement Fund each year from current operating revenues, and Line 7 presents the funds available from capital lease proceeds. The level of cash financing presented on Line 6 of the table has been modified from PGW's projection based on estimated available cash and maximizing PGW's financial position. Planned fund uses are summarized on Lines 9 and 10 of the table.

Table 11
Historical and Budgeted Assistance Programs

	Historical										Estimated	
	1996		1997		1998		1999		2000		2001	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Grant Money Available	$51,267,542		$63,183,961		$62,698,318		$60,840,118		$68,713,000		$145,000,000	
Cash	$34,094,179	66.5%	$50,344,451	79.7%	$49,116,706	78.3%	$52,315,704	86.0%	$50,954,000	74.2%	$78,500,000	54.1%
Crisis	$17,173,363	33.5%	$12,839,510	20.3%	$13,581,612	21.7%	$8,524,414	14.0%	$17,759,000	25.8%	$66,500,000	45.9%
Number of Grants												
State of PA												
Cash	244,461	77.6%	234,521	78.7%	231,694	78.2%	227,873	84.1%	220,000	70.7%	300,000	73.2%
Crisis	70,703	22.4%	63,310	21.3%	64,674	21.8%	43,057	15.9%	91,000	29.3%	110,000	26.8%
Total State of PA	315,164	100.0%	297,831	100.0%	296,368	100.0%	270,930	100.0%	311,000	100.0%	410,000	100.0%
PGW												
Cash	46,606	19.1%	47,966	20.5%	49,105	21.2%	43,035	18.9%	41,085	18.7%	56,000	18.7%
Crisis	6,361	9.0%	7,600	12.0%	12,140	18.8%	4,770	11.1%	16,786	18.4%	22,000	20.0%
Total PGW	52,967	16.8%	55,566	18.7%	61,245	20.7%	47,805	17.6%	57,871	18.6%	78,000	19.0%
CRP vs. Non-CRP												
Cash - CRP	27,184	58.3%	28,780	60.0%	28,934	58.9%	22,809	53.0%	23,622	57.5%	32,480	58.0%
Cash - Non-CRP	19,422	41.7%	19,186	40.0%	20,171	41.1%	20,226	47.0%	17,463	42.5%	23,520	42.0%
Crisis - CRP	3,356	52.8%	4,010	52.8%	6,545	53.9%	2,572	53.9%	12,106	72.1%	15,866	72.1%
Crisis - Non-CRP	3,005	47.2%	3,590	47.2%	5,595	46.1%	2,198	46.1%	4,680	27.9%	6,134	27.9%
Value of Grants												
State of PA												
Cash	$140		$215		$201		$230		$232		$255	
Crisis	$243		$278		$250		$198		$196		$550	
PGW												
Cash	$121		$209		$199		$212		$215		$216	
Crisis	$302		$250		$249		$249		$297		$600	
Total Funding - Final												
State of PA												
Cash	$34,124,311		$50,422,015		$46,570,494		$52,315,083		$50,952,000		$76,500,000	
Crisis	$17,173,052		$17,629,303		$16,168,500		$8,524,425		$17,836,000		$60,500,000	
Total State of PA	$51,297,363		$68,051,318		$62,738,994		$60,839,508		$68,788,000		$137,000,000	
PGW												
PGW - Cash	$5,639,326	16.5%	$10,000,911	19.8%	$9,778,573	21.0%	$9,123,420	17.4%	$8,812,733	17.3%	$12,096,000	15.8%
PGW - Crisis	$1,921,022	11.2%	$1,900,000	10.8%	$3,027,837	18.7%	$1,189,638	14.0%	$4,985,442	28.0%	$13,200,000	21.8%
Total PGW	$7,560,348	14.7%	$11,900,911	17.5%	$12,806,410	20.4%	$10,313,058	17.0%	$13,798,175	20.1%	$25,296,000	18.5%

Table 12
Historical and Projected Accounts Receivable and Write-offs

	Fiscal Year Ending August 31,										
	Historical[a]					Estimated	Forecast				
	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Billed Gas Revenues ($000)	539,119	548,455	497,985	482,700	525,687	764,360	726,183	711,346	672,719	660,559	656,535
Accounts Receivable ($000)	143,303	132,560	110,790	116,094	156,080	226,940	215,610	211,200	199,730	196,120	194,930
Less: Reserve for Bad Debt	(83,214)	(77,100)	(64,724)	(67,070)	(102,000)	(137,185)	(115,088)	(115,327)	(115,891)	(114,577)	(113,489)
Net Accounts Receivable	60,089	55,460	46,066	49,024	54,080	89,755	100,522	95,873	83,839	81,543	81,441
Bad Debt Reserve/Accounts Receivable	58.1%	58.2%	58.4%	57.8%	65.4%	60.4%	53.4%	54.6%	58.0%	58.4%	58.2%
Net Write-Offs ($000)	33,975	39,149	45,873	36,806	37,807	64,497	52,000	53,000	55,000	57,000	59,000
Receivable/Billed Gas Revenues	26.6%	24.2%	22.2%	24.1%	29.7%	29.7%	29.7%	29.7%	29.7%	29.7%	29.7%
Delinquent Customer (Annual Average)	119,806	120,901	117,394								
Delinquent Customer (End of Year)	115,618	118,925	107,750								
Bad Debt ($000)	38,340	33,474	34,130	39,000	54,000	72,688	63,088	62,327	60,891	57,577	54,489
Bad Debt/Billed Gas Revenues	7.1%	6.1%	6.9%	8.1%	10.3%	9.5%	8.7%	8.8%	9.1%	8.7%	8.3%
Bad Debt/Accounts Receivable	26.8%	25.3%	30.8%	33.6%	34.6%	32.0%	29.3%	29.5%	30.5%	29.4%	28.0%

(a) Historical data from Schedule 9 of Gas Recovery Rate File, January 2001.

Table 13
Capital Improvement Fund
(Thousands of Dollars)

Line No.		Fiscal Year Ending August 31, 2001 $	2002 $	2003 $	2004 $	2005 $	2006 $
1	Balance from Previous Year	44,300	95,847	35,434	81,022	34,041	41,901
2	Bond Proceeds @ Par[a]	119,280	0	120,000	0	45,000	0
3	Less Discount & Issuance Costs	(5,560)	0	(5,594)	0	(2,098)	0
4	Less Deposit to Sinking Fund Reserve	(3,720)	0	(3,742)	0	(1,403)	0
5	Net Bond Proceeds	110,000	0	110,664	0	41,499	0
6	Transfer from Operating Fund[b]	0	0	0	5,000	15,000	48,822
7	Proceeds from Capital Leases[c]	6,000	4,142	0	0	0	0
8	Total Sources of Funds	160,300	99,989	146,098	86,022	90,540	90,723
9	Capital Expenditures	64,453	64,556	65,076	51,423	48,094	48,822
10	Customer Growth-Related Projects	0	0	0	558	546	543
11	Total Uses of Funds	64,453	64,556	65,076	51,981	48,640	49,365
12	Net Balance - End of Year	95,847	35,434	81,022	34,041	41,901	41,358

(a) Assumes no capitalized interest.
(b) PGW internally generated funds.
(c) From a prior PMA $23 million bond sale. Restricted for use to purchase plant equipment.

As presented in Table 13, a total of three bond sales totaling $284.28 million are proposed for the six-year projection period. Coupled with a beginning available balance of $44.3 million and a total of $68.82 million of internally generated funds, sufficient funds will be available for PGW to complete its planned capital improvement program.

Projected Revenue Requirements

PGW's rates are developed to provide sufficient levels of revenue to meet cost of gas, all operation and maintenance expenses of the System, debt service requirements on obligations issued for the System, capital improvement expenditures to be funded from current revenues, and other specific bond ordinance and revenue requirements. This section provides a discussion of the components that make up PGW's revenue requirements.

Gas Costs

As discussed earlier, as a result of the GCR, changes in the cost of gas result in equal changes in revenues. Assumptions concerning gas costs over the six-year projection period may be found under "*Sales and Transportation Revenues*" section of this report.

Operation and Maintenance Expenses

Table 14 presents PGW's historical and projected operation and maintenance expense. The estimated 2001 expenses serve as a base for the remaining years and have been based on PGW's latest 2001 estimates. The projections for 2001 through 2006 incorporate planned savings totaling $124 million based on implementation of PGW's Transition to Excellence Program.

Table 14
Historical and Projected Operation and Maintenance Expenses
(Thousands of Dollars)

Line No.	Description	Historical[a] 1996	1997	1998	1999	2000	Estimated[b] 2001	Projected[b] 2002	2003	2004	2005	2006
		Fiscal Year Ending August 31,										
		$	$	$	$	$	$	$	$	$	$	$
	Operating Expenses											
1	Natural Gas	276,574	271,627	246,699	219,081	266,350	474,945	400,299	387,548	345,694	332,249	324,340
2	Other Raw Materials	282	4	0	9	4	10	10	10	10	10	10
3	Subtotal Fuel	276,856	271,631	246,699	219,090	266,354	474,955	400,309	387,558	345,704	332,259	324,350
4	Gas Processing	14,846	14,238	13,582	13,881	14,033	13,968	13,738	14,071	14,402	14,683	15,091
5	Field Services	18,492	18,883	16,032	21,701	22,720	33,061	33,176	33,840	34,517	35,207	35,911
6	Distribution	22,817	20,454	16,500	15,527	14,246	13,601	13,782	14,058	14,339	14,625	14,918
7	Collection	10,131	9,460	7,477	7,980	12,609	13,740	14,014	14,295	14,581	14,872	15,169
8	Customer Services	17,747	17,049	16,711	9,860	10,759	13,287	13,553	13,825	14,101	14,383	14,671
9	Customer Accounting	3,357	5,898	6,577	7,960	3,669	4,181	4,265	4,351	4,438	4,527	4,617
10	Bad Debt Expense	38,340	33,474	34,130	38,999	54,642	72,688	63,088	62,327	60,891	57,577	54,489
11	Marketing & Point-of-Sale Expenses	3,454	3,841	6,698	5,253	3,041	6,713	6,874	7,039	7,209	7,384	7,562
12	Administrative & General	40,282	40,485	36,748	34,681	37,676	45,407	41,157	41,496	41,834	42,405	43,286
13	Health Insurance	0	0	18,690	23,432	24,241	26,290	28,188	30,227	32,420	34,777	37,331
14	Capitalized Fringe Benefits	0	0	(5,057)	(4,896)	(4,654)	(5,333)	(5,642)	(5,933)	(6,340)	(6,779)	(7,247)
15	Capitalized Admin. Charges	0	0	(7,002)	(7,242)	(4,858)	(6,815)	(7,630)	(7,369)	(6,067)	(5,881)	(6,153)
16	Regulatory Asset Amortization	3,750	3,750	(2,076)	3,155	1,984	3,750	3,750	3,750	3,750	0	0
17	Amortization of Restructuring Costs	965	965	965	1,847	965	965	965	965	0	0	0
18	Year 2000 & Deregulation Amortization	0	0	0	0	882	888	0	0	0	0	0
19	Pensions	7,337	4,591	3,334	787	1,096	1,376	1,645	1,905	2,158	2,414	2,563
20	Taxes	6,532	6,517	6,235	6,091	6,512	6,548	6,575	6,600	6,640	6,651	6,677
21	Additional Realized Cost Savings	0	0	0	0	0	(3,181)	0	0	0	0	0
22	Personnel Reductions/Retirements	0	0	0	0	0	(2,500)	(2,500)	(2,500)	(2,500)	(2,500)	(2,500)
23	Cost Savings/Productivity Improvements	0	0	0	0	0	(10,000)	(15,000)	(21,000)	(21,000)	(21,000)	(21,000)
24	**Total Other Operating Expenses**	188,050	179,605	169,544	179,016	199,563	228,634	213,998	211,947	215,373	213,345	215,385
25	**Total Operating Expenses**	464,906	451,236	416,243	398,106	465,917	703,589	614,307	599,505	561,077	545,604	539,735
26	Depreciation	39,062	36,652	41,019	33,777	32,614	33,381	34,704	36,046	37,297	38,525	38,544
27	Cost of Removal	0	0	0	0	2,519	2,500	2,500	2,500	2,500	2,500	2,500
28	Less: Clearing Account Depreciation	(5,293)	(4,804)	(5,628)	(4,702)	(4,328)	(3,344)	(2,921)	(2,499)	(2,243)	(2,111)	(2,059)
29	Net Depreciation	33,769	31,848	35,391	29,075	30,805	32,537	34,283	36,047	37,554	38,914	38,985
30	**Total Operating Expense & Dep'n.**	498,675	483,084	451,634	427,181	496,722	736,126	648,590	635,552	598,631	584,518	578,720

(a) Source: Philadelphia Gas Works Base Rate Proceeding, Volume II - Supporting Financial Information, Part III, Schedule 1.
(b) 2001 figures are based on 6 months actuals and 6 months projected. Projected figures are based on budgeted department figures.

As part of an overall plan which encompasses the proposed rate increase to restore PGW to financial stability, PGW has developed the "Transition to Excellence" Program. In the recently submitted base rate filing, PGW identified several areas of specific savings. These areas include: lowering employee health care premiums by $3.0 million; achieving an additional $2.5 million of savings through attrition of the workforce via the 30-years of service retirement program; and recognizing $10.0 million of imputed savings from all company-wide activities.

Some of the programs or expense categories that have been identified in connection with company-wide activities include:

- Reducing budgeted overtime
- Reducing general materials, purchased services, contracted maintenance and other expenses
- Delaying filling of personnel vacancies
- Eliminating PGW's payment for legal services plans
- Eliminating PGW's Perfect Attendance Incentive
- Eliminating PGW's Deferred Compensation Contribution
- Restructuring the Workers' Compensation Program
- Outsourcing specific activities subsequent to the May 15, 2001 Union contract expiration
- Restructuring PGW's Absence and Sick Pay Policies
- Restructuring vacation and holiday policies
- Identifying reductions to PGW's vehicle fleet and associated cost savings

A review of the available, unaudited year-to-date financial information indicates that PGW is on course to achieve the projected $12.5 million of savings outlined in the Transition to Excellence Program for 2001 as indicated on Table 14. In addition to these savings, year-to-date operation and maintenance expenditures are about $3.2 million (annualized) below original estimated levels.

Debt Service Requirements

Table 15 presents a summary of the existing and proposed debt service requirements for the six-year projection period. Included on the table are provisions for the repayment of PGW's commercial paper obligations ($97 million) and repayment of the City loan ($45 million). Both of these debt payments are subordinate to the debt service on any outstanding bonds issued under the General Bond Ordinances.

The proposed 2001 Bonds are assumed to be issued in June 2001. Debt service on this issue assumes a 30-year amortization schedule, a 5.5 percent interest rate, and level annual debt service payments. Issuance costs, including bond insurance, underwriters fees and original issue discount, have been assumed to be approximately 4.6 percent of the par value. Future bond issues are projected for June 2003 and June 2005 and debt service on these bonds is based on the same assumptions as those for the 2001 Bonds.

Table 15
Existing and Projected Debt Service Requirements
(Thousands of Dollars)

	Fiscal Year Ending August 31,					
	Scheduled	Projected				
Description	2001	2002	2003	2004	2005	2006
	$	$	$	$	$	$
Revenue Bonds under 1975 Ordinance						
Series 11C	7,240	7,240	7,240	7,235	0	0
Series 12A	1,745	1,745	4,660	4,655	4,655	4,655
Series 13	1,467	0	0	0	0	0
Series 14	21,223	30,309	23,011	25,999	19,831	21,105
Series 15	16,031	12,324	8,473	8,470	8,474	5,640
Series 16	3,905	3,909	3,908	3,908	10,887	10,866
Total 1975 Ordinance Debt	51,611	55,527	47,292	50,267	43,847	42,266
Revenue Bonds under 1998 Ordinance						
Senior Debt						
First Series A	16,857	11,522	17,456	12,181	16,306	13,338
First Series B	5,190	5,190	5,190	5,190	5,190	5,190
Second Series	7,402	7,400	7,401	7,404	7,405	7,404
Third Series[a]		7,162	6,139	6,139	8,264	8,262
Fourth Series[a]				2,064	8,257	8,257
Fifth Series[a]						0
Senior Debt	29,449	31,274	36,186	32,978	45,422	42,451
Subordinate Debt						
First Series C	1,990	1,986	1,988	1,988	1,987	1,986
Total Subordinate Debt	1,990	1,986	1,988	1,988	1,987	1,986
Total 1998 Ordinance Debt	31,439	33,260	38,174	34,966	47,409	44,437
Capital Leases						
$20.1M Capital Lease	3,980	1,957	0	0	0	0
$23M Capital Lease	3,913	3,908	3,997	3,997	1,999	0
Capital Leases	7,893	5,865	3,997	3,997	1,999	0
Total Long-Term Debt	90,943	94,652	89,463	89,230	93,255	86,703
Commercial Paper[b]	0	25,000	20,000	32,500	19,500	0
CNG Note & City Loan[b]	59	0	45,000	0	0	0
Total Debt Service	91,002	119,652	154,463	121,730	112,755	86,703

(a) Projected debt service.
(b) Assumed debt service schedule.

Payments to City

In accordance with the Management Agreement and the Gas Choice Act, PGW makes an annual base payment of $18 million to the City. The payment to the City is subordinate to all outstanding debt.

Adequacy of Projected Revenues to Meet Projected Revenue Requirements Under Ordinance Requirements

Table 16 presents a pro forma statement developed from the revenue and expense projections for 2001 through 2006. This table in conjunction with Table 17, which presents a statement of cash flows, provides an indication of the adequacy of PGW's revenues and the financial feasibility of the currently proposed and future anticipated revenue bond sales.

The operating revenue projections presented earlier in Table 10 are summarized in Lines 1 through 4 of Table 16. These projected revenues are based on PGW's currently effective rate schedules (rate schedules in effect prior to the interim rate increase). Revenues from Other Sales, primarily unbilled gas adjustments, are shown on Line 5 of Table 16. Since the Gas Choice Act mandates that the PUC approve and the PUC has acknowledged it has to approve for PGW rates sufficient to meet PGW's bond covenants, we reasonably assume the PUC will approve rate increases required to meet those requirements in a timely manner. A levelized base rate increase of $53 million is presented on Line 7 (Line 50 on Table 10) and represents in our opinion, the minimum level of increase needed to satisfy PGW's bond covenants and to meet the objectives shown in Table 15. Other operating revenues presented on Line 9 include revenues from sales of energy-related appliance services and field collection charges. Projected Other Income for the System (Line 30) includes interest earnings from the different reserve funds.

The projected operation and maintenance expenses shown on Lines 11 through 23 are from Table 14. PGW's projected net operating income before interest is summarized on Line 31 of Table 16. Interest expense on existing bonds, proposed bonds, and capital leases is presented on Line 32. Other interest costs including loss from refunded debt and the allowance for funds used during construction ("AFUDC") are shown on Lines 33 through 35. PGW's projected net income is shown on Line 37 of the table and ranges from $9.3 million in 2001 to $58.2 million in 2006.

On Table 17, Line 1 presents PGW's cash balance as of September 1 for each fiscal year. To this starting point, the net income line from Table 16 is added as are non-cash adjustments (such as depreciation and amortization) expensed on the Income Statement. External sources of funds are summarized on Lines 6 through 9 and include revenue bond proceeds, drawdowns on the capital improvement fund, and temporary borrowings. The total for all sources of funds is shown on Line 11 of Table 17.

Uses of funds are summarized on Lines 12 through 21 of the table. Lines 12 through 15 present the principal payments made on long-term debt, CIP requirements are shown on Line 16 and payments to the City and short-term debt obligations are shown on Lines 17 through 20. Changes in non-cash working capital items, including changes in accounts payable and accounts receivable, are shown in Line 21.

The net increase or decrease in available cash for each fiscal year is shown on Line 23. The ending cash balance for the year, which is the sum of Lines 1 and 23, is shown on Line 24. The variation in ending cash balances for the projection period reflects PGW's intent to repay its short-term debt obligations by 2005. The ending cash balance for 2002 represents approximately 9 weeks of operations and maintenance expenses (excluding the cost of fuel), the ending cash balances for 2003 through 2005 represent approximately 3 to 4 weeks of operations and maintenance expense, and the ending cash balance for 2006 represents approximately 7 weeks' worth of operations and maintenance expense. These projected year-end cash balances should be sufficient for PGW to accommodate normal fluctuations in expenditures for utility operations.

Table 16
Statement of Income
(Thousands of Dollars)

Line No.		Fiscal Year Ending August 31, 2001 $	2002 $	2003 $	2004 $	2005 $	2006 $
	Projected Revenues						
1	Non-Heating	135,713	119,306	114,379	100,803	90,854	84,496
2	Gas Transport Service	3,656	3,503	4,407	12,069	19,684	24,406
3	Heating	601,615	550,374	539,560	506,847	497,021	494,634
4	Marginal Revenue Increase - Weather	5,376	0	0	0	0	0
5	Other Sales	4,844	50	(200)	(1,050)	150	500
6	*Total Gas Revenues - Existing Rates*	751,204	673,233	658,146	618,669	607,709	604,035
7	Base Rate Increase	18,000	53,000	53,000	53,000	53,000	53,000
8	Total Gas Revenues	769,204	726,233	711,146	671,669	660,709	657,035
9	Other Operating Revenues	28,731	28,363	28,420	27,609	27,736	28,036
10	**Total Operating Revenues**	797,935	754,596	739,566	699,278	688,445	685,071
	Operating Expenses						
11	Natural Gas	474,945	400,299	387,548	345,693	332,247	324,336
12	Other Raw Materials	10	10	10	10	10	10
13	Total Fuel	474,955	400,309	387,558	345,703	332,257	324,346
14	Gas Processing	13,968	13,738	14,071	14,402	14,683	15,091
15	Field Services	33,061	33,176	33,840	34,517	35,207	35,911
16	Distribution	13,601	13,782	14,058	14,339	14,625	14,918
17	Collection	13,740	14,014	14,295	14,581	14,872	15,169
18	Customer Services	13,287	13,553	13,825	14,101	14,383	14,671
19	Customer Accounting	4,181	4,265	4,351	4,438	4,527	4,617
20	Bad Debt Expense	72,688	63,088	62,327	60,891	57,577	54,489
21	Cost Savings Program	(12,500)	(17,500)	(23,500)	(23,500)	(23,500)	(23,500)
22	G&A and Other Expenses[a]	76,608	75,882	78,680	81,604	80,971	84,019
23	Total Non-Fuel O&M	228,634	213,998	211,947	215,373	213,345	215,385
24	Depreciation	33,381	34,704	36,046	37,297	38,525	38,544
25	Cost of Removal	2,500	2,500	2,500	2,500	2,500	2,500
26	Less: Clearing Accounts	(3,344)	(2,921)	(2,499)	(2,243)	(2,111)	(2,059)
27	**Net Depreciation**	32,537	34,283	36,047	37,554	38,914	38,985
28	**Total Operating Expenses**	736,126	648,590	635,552	598,630	584,516	578,716
29	**Net Operating Income**	**61,809**	**106,006**	**104,014**	**100,647**	**103,929**	**106,355**
30	Other Income[b]	6,106	8,189	8,800	8,200	7,500	8,200
31	**Net Income Before Interest Charges**	**67,915**	**114,195**	**112,814**	**108,847**	**111,429**	**114,555**
	Interest						
32	Long Term Debt	48,784	54,296	53,280	53,657	52,424	51,109
33	Other	6,102	4,480	3,047	2,617	2,353	2,104
34	Loss From Refunded Debt	4,162	3,976	3,789	3,591	3,414	3,137
35	AFUDC	(413)	(457)	(235)	(101)	(98)	0
36	Total Interest	58,635	62,295	59,881	59,764	58,093	56,350
37	**Net Income**	**9,280**	**51,900**	**52,933**	**49,083**	**53,336**	**58,205**

(a) For 2001, also includes O&M cost savings realized through February 2001, above and beyond those identified in the Cost Savings Program.
(b) Includes other operating and non-operating income, such as interest income on funds and accounts transferrable to the Operating Fund.

Table 17
Statement of Cash Flows
(Thousands of Dollars)

Line No.		Fiscal Year Ending August 31, 2001	2002	2003	2004	2005	2006
		$	$	$	$	$	$
1	**Beginning Cash Balance**	8,425	425	37,498	13,732	14,345	18,358
	Sources of Funds						
	Internal Sources						
2	Net Income	9,280	51,900	52,933	49,083	53,336	58,205
3	Depreciation	33,381	34,704	36,046	37,297	38,525	38,544
4	Amortized Costs[a]	9,446	10,149	9,880	9,603	4,695	4,356
5	Total Internal Sources	52,107	96,753	98,859	95,983	96,556	101,105
	External Sources						
6	Revenue Bond Proceeds	110,000	0	110,664	0	41,499	0
7	Capital Improvement Fund Drawdown	58,453	60,413	65,077	46,981	33,638	545
8	Capital Lease Proceeds	6,000	4,142	0	0	0	0
9	Temporary Borrowings	45,000	0	0	0	0	0
10	Total External Sources	219,453	64,555	175,741	46,981	75,137	545
11	**Total Sources of Funds**	**271,560**	**161,308**	**274,600**	**142,964**	**171,693**	**101,650**
	Uses of Funds						
12	Principal on 1975 Ordinance Bonds	23,878	28,517	19,829	23,269	22,422	21,886
13	PMA Bond Principal	1,065	1,105	1,155	1,205	1,255	1,310
14	Principal on 1998 Ordinance Bonds	10,315	5,460	11,645	7,354	15,204	13,172
15	Capital Lease Principal	6,901	5,273	3,554	3,745	1,947	0
16	Repayment of Commercial Paper	0	25,000	20,000	32,500	19,500	0
17	*CIP Requirements*	*64,453*	*64,556*	*65,076*	*51,981*	*48,640*	*49,365*
18	Payment to City	18,000	18,000	18,000	18,000	18,000	18,000
19	Deposit to CIP Fund	110,000	0	110,664	0	41,499	0
20	Repayment of City Loan & CNG Note	59	0	45,000	0	0	0
21	Change in Non-Cash Working Capital[b]	44,889	(23,676)	3,442	4,297	(788)	(12,516)
22	**Total Uses of Funds**	**279,560**	**124,235**	**298,366**	**142,352**	**167,679**	**91,217**
23	Increase/(Decrease) in Cash	(8,000)	37,073	(23,766)	613	4,013	10,433
24	**Ending Cash Balance**	**425**	**37,498**	**13,732**	**14,345**	**18,358**	**28,791**

(a) Includes amortization on capital leases, bond issuance costs, and extraordinary losses.
(b) Includes changes in Accounts Payable, Accounts Receivable, and Materials and Supplies.

A detailed calculation of debt service coverage requirements under the 1975 and 1998 Ordinances is presented in Table 18. The results of the table indicate that provided the assumptions made herein concerning level and timing of the base rate increase received and effectiveness of the Transition to Excellence Program are realized, PGW will meet the requirements of the 1975 and 1998 General Ordinances for all years in the projection period.

Table 18
Projected Debt Service Coverage
(Thousands of Dollars)

Line No.		Fiscal Year Ending August 31, 2001	2002	2003	2004	2005	2006
		$	$	$	$	$	$
	SOURCES OF FUNDS						
1	Total Gas Revenues	769,204	726,233	711,146	671,669	660,709	657,035
2	Other Operating Revenues	28,731	28,363	28,420	27,609	27,736	28,036
3	Total Operating Revenues	797,935	754,596	739,566	699,278	688,445	685,071
4	Other Income	6,106	8,189	8,800	8,200	7,500	8,200
5	**Total Sources of Funds**	804,041	762,785	748,366	707,478	695,945	693,271
	USES OF FUNDS						
6	Fuel Costs	474,955	400,309	387,558	345,703	332,257	324,346
7	Other Operating Costs	261,171	248,281	247,994	252,927	252,259	254,370
8	Total Operating Expenses	736,126	648,590	635,552	598,630	584,516	578,716
9	Less: Non-Cash Expenses	(37,272)	(38,747)	(40,243)	(41,598)	(42,894)	(42,958)
10	**Total Uses of Funds**	698,854	609,843	595,309	557,032	541,622	535,758
11	**Funds Available for Debt Service**	105,187	152,942	153,057	150,445	154,323	157,513
12	1975 Ordinance Bonds Debt Service	51,611	55,527	47,292	50,267	43,847	42,266
13	**Debt Service Coverage - 1975 Ordinance**	**2.04**	**2.75**	**3.24**	**2.99**	**3.52**	**3.73**
14	Net Available after Prior Debt Service	53,576	97,415	105,765	100,178	110,476	115,247
15	Less Capital Lease Costs	(7,893)	(5,865)	(3,997)	(3,997)	(1,999)	0
16	Net Available after Prior Capital Leases	45,683	91,550	101,768	96,181	108,477	115,247
17	1998 Ordinance Bonds Debt Service	29,449	31,274	36,186	32,978	45,422	43,225
18	**Debt Service Coverage - 1998 Ordinance**	**1.55**	**2.93**	**2.81**	**2.92**	**2.39**	**2.67**
19	Net Available after Prior Debt Service	16,234	60,276	65,582	63,203	63,055	72,022
20	1998 Ordinance Subordinate Debt[a]	1,990	1,986	1,988	1,988	1,987	1,986
21	**Debt Service Coverage on Subordinate Debt**	**8.16**	**30.35**	**32.99**	**31.79**	**31.73**	**36.26**

(a) Debt service shown does not include commercial paper which is payable on a parity with 1998 Ordinance Subordinate Debt.

Assumptions and Opinions

In developing the information which Black & Veatch utilized for preparing the projections presented herein, Black & Veatch relied on PGW's financial planning model and PGW's assumptions in that model with several exceptions as noted in the report. The analyses summarized in this report are based on assumptions that have been provided by or reviewed by PGW and others and relied on currently available information and present circumstances. Black & Veatch has not conducted detailed verification tests of this information. While we believe that these assumptions are reasonable, actual results may differ from those projected, as influenced by the conditions, events and circumstances that actually occur.

Considerations and Assumptions

The following is a list of critical assumptions used in the development of the projections presented herein:

Revenues

1. As set forth by the PUC in its order dated February 22, 2001, the PUC will comply with its statutory obligations under the Public Utility Code, including the section of the Gas Choice Act (66 Pa C.S.A. §2212(b)) requiring that the PUC, in determining PGW's revenue requirement and approving overall rates and charges, "follow the same rate-making methodology and requirements that were applicable to [PGW] prior to the assumption of jurisdiction by the [PUC]" and permit PGW to "impose, charge or collect rates or charges as necessary to permit...PGW to comply with its covenants to the holders of any approved bonds." "Approved Bonds" include the 2001 Bonds and the commercial paper.
2. The throughput and revenue figures are based on the assumption of normal weather (4,555 HDD per year for 2001 and 4,600 HDD per year for 2002 through 2006). To the extent that weather is warmer than normal, the resulting contribution margin (gross revenues less cost of gas supply) will be less than the amounts projected in this report.
3. Projected revenue figures are based on the assumption that PGW will recover, in a timely manner, 100 percent of all gas supply costs and 100 percent of the costs (or discounted revenues) attributed to the Customer Responsibility Program, Customer Works Program, and Senior Citizen Discount Program.
4. PGW will receive a $53 million per year in permanent base rate increase on a levelized basis (compared to rate levels existing prior to the implementation of the interim rate increase in March 2001) over the 2002 through 2006 period. If the overall approved rate relief over the 2002 through 2006 period is significantly lower than the level assumed herein, PGW's ability to meet Bond Ordinance covenants will be significantly impaired, including its covenants to pay operating expenses and debt service in full when due, to continuously operate and maintain the System, and to pay all City Charges, including the annual base payment to the City, and to achieve the coverage required by the Rate Covenants. If PGW receives a higher level than assumed herein, the need for future long-term borrowing might be reduced and short-term debt might be retired sooner than what is projected in our analysis. Potentially, this would result in further funding of working capital reserves and the deferring of

the need for future rate increases; and PGW's overall financial health would be improved.

5. Rates implemented in 2003 to comply with PUC requirements to unbundle rates and permit customer choice will be designed such that PGW's contribution margin is not materially impacted regardless of whether a customer purchases gas from PGW or only transports gas on PGW's system. It is further assumed that PGW will be allowed to assign any excess capacity and associated costs that may result from customer choice or collect any stranded costs.
6. PGW will initiate a program by fiscal year 2003 to mitigate the trend of a declining number of customers.

Operating Expenses

1. The Transition to Excellence Program initiatives currently in place will meet PGW's projections and will produce at least as much cost savings as are likely to be realized from implementation of the PUC Management Audit.
2. PGW's annual accounts receivable write-offs will continue to follow historical patterns and track with revenues. If gas supply costs do not moderate in future fiscal years, accounts receivable write-offs will likely exceed the levels assumed in this report.
3. Gas supply costs will moderate slightly from the levels experienced during fiscal year 2001.

Capital Improvement Program

1. The planned capital improvements are assumed to be sufficient to maintain the System and meet regulatory requirements.
2. Projected levels of cash-financed capital improvements are assumed to comply with PGW's internal policies for financing capital improvements with internally generated funds.
3. Budgeted capital costs associated with PGW's plan to increase its customer base as of fiscal year 2003 are assumed to be sufficient.

Debt Service and Outstanding Obligations

1. The short-term loan from the City in the amount of $45 million will be paid back by January 25, 2003.
2. The commercial paper obligations in the amount of $97 million will be paid off by August 31, 2005.

Organization and Management

1. The current labor negotiations will result in a collective bargaining agreement that will not have a material adverse impact on operating expenses.
2. Permanent management with qualifications and experience comparable to existing interim management will be in place by December 31, 2001.

Opinions

Based on the engineering studies conducted, we offer the following statements and conclusions to indicate the City's conformance with specific requirements which must be met for the issuance of the 2001 Bonds as provided in The First Class City Revenue Bond Act and the 1975 and 1998 General Ordinances:

1. PGW is a competently managed and operated gas distribution utility. PGW and its facilities are organized, operated and maintained at a level equal to, or in excess of, regulatory requirements and generally accepted industry practices. PGW's facilities are in good operating condition.

2. Based on our evaluation of financial projections covering the period September 1, 2000 through August 31, 2006, and on the basis of actual and estimated future annual financial operations of PGW's facilities and certain assumptions with respect thereto over the amortization period of the 2001 Bonds, which Black & Veatch believes to be reasonable, current and future project revenues, which are pledged under the 1975 General Ordinance and the 1998 General Ordinance, comply with the requirements of the definition of Project Revenues in Section 2 of the Act, and over the amortization period of the 2001 Bonds and the Prior Bonds, such Project Revenues will be adequate to meet all expenses of operation and maintenance, repair and replacement, reserve fund deposits, debt service on the bonds issued under the 1975 General Ordinance and debt service on the Bonds issued under the 1998 General Ordinance, as the same shall become due and payable, and the surplus requirements of the rate covenants contained in Section 4.03(b) of the 1975 General Ordinance and Section 4.03(b) of the 1998 General Ordinance.

3. The Project Revenues and Gas Works Revenues which are pledged as security for the bonds issued under the 1975 General Ordinance and the 1998 General Ordinance, respectively, are currently and are projected to be sufficient to comply with the Rate Covenants set forth in Section 4.03(b) of the 1975 General Ordinance and Section 4.03(b) of the 1998 General Ordinance.

4. The capital improvements proposed during the projection period, September 1, 2000 through August 31, 2006, will, along with continued good operation and maintenance practices, enable PGW to maintain its system in good condition. Review of present management practices indicates that good operation and maintenance is likely to continue.

5. Contracted PGW gas supplies plus (a) spot market purchases, (b) anticipated additional contracted supplies plus supplemental gas capacities, as well as (c) the pipeline transport capacity to move these supplies to PGW, are adequate to meet PGW's projected demand on a day of maximum demand (a "design peak day"), or an hour of maximum demand (a "design peak hour"), and during a year of maximum demand (a "design peak year").

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 HAND DELIVERY

Johnnie Simms, Esq.
Office of Trial Staff
PA Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17105-3265
E-mail: Simmsj@puc.state.pa.us

David M. Kleppinger, Esquire
McNEES, WALLACE, NURICK
100 Pine Street
P.O. Box 1166
Harrisburg, PA 17108-1166
E-mail: Dkleppinger@mwn.com

Charis M. Burak, Esquire
McNEES, WALLACE, NURICK
100 Pine Street
P.O. Box 1166
Harrisburg, PA 17108-1166
E-mail: Cburak@mwn.com

Angela Jones, Esq.
Office of Small Business Advocate
Commerce Building, Suite 1102
300 North 2nd Street
Harrisburg, PA 17101
E-mail: Anjones@state.pa.us

Craig A. Doll, Esq.
25 North Front St., 2nd Floor
Harrisburg, PA 17101-1606
E-mail: Cdoll76342@aol.com

Tanya McCloskey, Esq.
Steve Keene, Esq.
Office of Consumer Advocate
5th Floor, Forum Place Bldg.
555 Walnut Street
Harrisburg, PA 17101-1921
E-mail: TmcCloskey@paoca.org

Stanley E. Brown, Esq.
Pa. Public Utility Commission
Commonwealth Keystone Bldg.
400 North Street
P.O. Box 3265
Harrisburg, PA 17105-3265

VIA FIRST CLASS MAIL

Richard Lelash
Financial and Regulatory Consultant
18 Seventy Acre Road
Redding, CT 06896
(OCA)
E-mail: Lelash@sprintmail.com

Jackie Sparkman, Esquire
School District of Philadelphia
Office of General Counsel
2130 Arch Street, 5th Floor
Philadelphia, PA 19103
Fax: (215) 988-0579

Lance Haver
6048 Ogontz Avenue
Philadelphia, PA 19141
(CEPA)

Brian Kalcic
Excel Consulting
Suite 720-T
225 S. Meramec Avenue
St. Louis, MO 63105
(OSBA)
Fax: (314) 725-2022

Richard A. Baudino
J. Kennedy and Associates
570 Colonial Park Dr., Suite 305
Roswell, GA 30075
E-mail: Rbaudino@jkenn.com

Larry Speilvogel
203 Hughes Road
King of Prussia, PA 19406
(PICGUG)

Wendell F. Holland, Esq.
Obermayer, Rebmann Maxwell
& Hippel LLP
One Penn Center, 19th Fl.
1617 John F. Kennedy Blvd.
Philadelphia, PA 19103-1895
E-mail: wfh@oberymayer.com

VIA FEDERAL EXPRESS
Philip Bertocci, Esq.
Community Legal Services
1424 Chestnut Street
Philadelphia, PA 19102
Fax: (215) 981-0434

Daniel Clearfield, Esquire

Dated: May 4, 2001

Philadelphia Gas Works

800 W. Montgomery Avenue, Philadelphia, PA 19122
Telephone: (215) 236-0500

PGW

ORIGINAL DOCUMENT FOLDER

January 5, 2001

A-125042

Mr. James J. McNulty
Commonwealth of Pennsylvania
Pennsylvania Public Utility Commission
P.O. Box 3265
Harrisburg, PA 17105-3265

Dear Mr. McNulty:

Please change the name of the contact person you have on record for the Philadelphia Gas Works from Randall Gyory to the following.

DOCKETED
JAN 18 2001

Michael H. Jones
Manager, Engineering Design
Philadelphia Gas Works
Distribution Department
800 W. Montgomery Avenue
Philadelphia, PA 19122

Mr. Jones' office number is (215) 684-6691 and his fax number is (215) 684-6273.

Thank you.

Sincerely,

71358 6

Debbi Schroeck

DEBBI SCHROECK
Secretary

/dls

RECEIVED
SECRETARY'S BUREAU
01 JAN -8 AM 10:36

Philadelphia Gas Works
Les A. Fyock
Vice President–Regulatory Affairs

PGW

800 W. Montgomery Avenue, Philadelphia, PA 19122
Telephone: 215-684-6858
E-mail: les.fyock@pgworks.com

KJR

September 5, 2001

02-1104

Mr. Robert Rosenthal
Director, Bureau of Fixed Utility Services
Pennsylvania Public Utility Commission
P.O. Box 3265
Room 200, North Office Building
North Street & Commonwealth Avenue
Harrisburg, PA 17105

DOCUMENT FOLDER

A

Re: Philadelphia Gas Works, Company Code 125042

Dear Mr. Rosenthal:

Enclosed please find the Philadelphia Gas Works' updated Company Contact List for insertion into the Pennsylvania Public Utility Commission's database.

If you have any questions regarding this response, please direct them to Les Fyock, V.P.-Regulatory Affairs at 215-684-6858, or by e-mail at les.fyock@pgworks.com.

Very truly yours,

Les Fyock

LAF/lmm
Enclosure
cc: Abby Pozefsky, Esq., PGW
Daniel Clearfield, Esq., Wolf, Block, Schorr & Solis-Cohen

COMPANY CONTACTS

Company Name: Philadelphia Gas Works

Date Submitted: June 28, 2001

Company d/b/a: 800 W. Montgomery Ave. Philadelphia, PA 19122

Company Code Number: A-125042

		M.	First Name	Last Name	Prof. Title	Street	City	State	Zip	Phone	FAX	E-Mail
	EXAMPLE:	Mr.	Robert	Bennett	Manager	P.O. Box 3265	Harrisburg	PA	17105-3265	(717) 787-5553	(717) 772-1933	bennettr@puc.state.pa.us
[redacted]	atutory Agent:	Ms.	Abby	Pozefsky	Sr. VP and Gen. Counsel	800 W. Montgomery Ave	Philadelphia	PA	19122-2898	(215) 684-6957	(215) 684-6934	abby.pozefsky@pgworks.com
2	CEO/President:	Mr.	Thomas	Knudsen	CEO	800 W. Montgomery Ave	Philadelphia	PA	19122-2898	(215) 684-6051	(215) 684-6997	thomas.knudsen@pgworks.com
3	Regulatory Contact:	Mr.	Les	Fyock	VP	800 W. Montgomery Ave	Philadelphia	PA	19122-2898	(215) 684-6858	(215) 684-6602	les.fyock@pgworks.com
4	Tariff Contact:	Mr.	Les	Fyock	VP	800 W. Montgomery Ave	Philadelphia	PA	19122-2898	(215) 685-6858	(215) 684-6602	les.fyock@pgworks.com
5	Annual Reports:	Mr.	Joseph	Golden, Jr.	Controller	800 W. Montgomery Ave	Philadelphia	PA	19122-2898	(215) 684-6464	(215) 684-6628	joseph.golden@pgworks.com
6	Assessments:	Mr.	Joseph	Bogdonavage	Sr. VP	800 W. Montgomery Ave	Philadelphia	PA	19122-2898	(215) 684-6444	(215) 684-6243	joseph.bogdonavage@pgworks.com
7	PEMA Contact:	Mr.	Dennis	Stinson	Sr. VP	800 W. Montgomery Ave	Philadelphia	PA	19122-2898	(215) 684-6314	(215) 684-6629	dennis.stinson@pgworks.com
8	Customer Service:	Mr.	Randy	Gyory	VP	800 W. Montgomery Ave	Philadelphia	PA	19122-2898	(215) 684-6364	(215) 684-6974	randy.gyory@pgworks.com
9	Legal Counsel:	Ms.	Abby	Pozefsky	Sr. VP and Gen. Counsel	800 W. Montgomery Ave	Philadelphia	PA	19122-2898	(215) 684-6957	(215) 684-6934	abby.pozefsky@pgworks.com
10	Informal Complaints Contact:	Mr.	Joseph	Welte	Manager	800 W. Montgomery Ave	Philadelphia	PA	19122-2898	(215) 684-6688	(215) 684-6670	joseph.welte@pgworks.com
[redacted]	ormal Complaints Contact:	Mr.	Laureto	Farinas	Sr. Regulatory Analyst	800 W. Montgomery Ave	Philadelphia	PA	19122-2898	(215) 684-6982	(215) 684-6602	laureto.farinas@pgworks.com
12	EDI Transactions:	N/A										

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION
P.O BOX 3265, HARRISBURG, PA 17105-3265

February 1, 2006

Philadelphia Gas Works
Att: Thomas Knudsen Sr VP & CFO
800 West Montgomery Avenue
Philadelphia, PA 19122

DOCKETED
FEB 14 2006

DOCUMENT FOLDER

In Re: F-01559449 & A-125042
Darlene O. Doe
v.
Philadelphia Gas Works

Dear Respondent:

After a survey of the Commission's accounts receivable, it was found that your payment has not been submitted for a Commission ordered fine.

An Order, adopted by the Commission and entered into the record on December 13, 2005, orders Philadelphia Gas Works to pay (**by certified check or money order**) the Pennsylvania Public Utility Commission a penalty of $1,000.00 for violation of the Pennsylvania Public Utility Code.

The records of the Commission indicate that this fine has not been paid as of the date of this correspondence. It will be necessary for the Commission to take further action if such fine is not paid promptly. Questions concerning this matter may be directed to the Commission's Fiscal Office at (717) 783-9860.

Very truly yours,

James J. McNulty
Secretary

pc: Bureau of Fixed Utility Services
Law Bureau
Docket Room