

PGW- St. 5.0
Revised
February 2, 2001

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY
COMMISSION

5/23/01

Phila PA

RS

DIRECT TESTIMONY OF

HOWARD S. GORMAN

RECEIVED
01 JUN -6 PM 3:45
PA P.U.C.
SECRETARY'S BUREAU

ON BEHALF OF
PHILADELPHIA GAS WORKS

DOCUMENT
FOLDER

Docket No. R-00006042

RE: PHILADELPHIA GAS WORKS
BASE RATE PROCEEDING

JANUARY, 2001

DOCKETED
JUN 8 2001

1
2 **Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS**
3 **ADDRESS.**

4
5 A. My name is Howard Gorman. I am a Managing Consultant with R. J. Rudden
6 Associates, Inc. ("Rudden"). I also serve as Rudden's Chief Financial Officer.
7 My business address is 898 Veterans Highway, Hauppauge, NY 11788.

8 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND**
9 **PROFESSIONAL EXPERIENCE.**

10
11 A. My educational background and professional experience are outlined in my
12 curriculum vitae that is attached as Attachment A. A description of the
13 experience and expertise of R. J. Rudden Associates, Inc. is attached as
14 Attachment B.

15 **Q. PLEASE BRIEFLY DESCRIBE THE SCOPE OF YOUR ENGAGEMENT**
16 **WITH PGW AND THE PURPOSE OF YOUR TESTIMONY.**

17
18 A. Rudden was retained by Philadelphia Gas Works ("PGW" or "Company") to
19 perform an unbundled, fully allocated cost of service study (generally, a "COSS"
20 and this particular COSS, the "PGW COSS"), which was completed in December,
21 2000. One of the purposes of a COSS is to assign the total costs incurred by the
22 utility to each Customer Class, and to compare the costs assigned to each
23 Customer Class to the revenue produced by the rates proposed by the utility. The
24 costs assigned, in the PGW COSS, to each Customer Class, have been compared
25 to the revenue produced by the rates in the Company's proposed Gas Rate Tariff
26 ("Tariff"), as presented in its Base Rate Case filing of January, 2001 ("Filing").
27 The PGW COSS was performed using widely accepted practices. The costs and
28 other information used in the PGW COSS and in developing the Tariff were for

1 PGW's Fiscal Year 2001 Budget. All years discussed in this testimony refer to
2 PGW's Fiscal Years, September 1 through August 31; Fiscal Year 2001 ends
3 August 31, 2001.

4 My testimony first describes the methodology used to perform the PGW COSS,
5 which was based on the Fiscal Year 2001 Budget ("Test Year"). Then, the costs
6 assigned to each Customer Class are compared to the revenue produced by the
7 Tariff rates proposed by PGW.

8 **Q. PLEASE STATE PGW'S TOTAL REVENUE REQUIREMENT AND**
9 **TARIFF REQUIREMENT FOR THE TEST YEAR.**

10
11 A. Based on the Test Year Budget, PGW's total Revenue Requirement is \$754

12 million and its Tariff Requirement is \$800 million. Please note that in this
13 testimony, most amounts are rounded to the nearest million dollars. Also, "sales"
14 refers to volumes and "revenues" refers to dollars.

15 **Q. PLEASE EXPLAIN THE DIFFERENCE BETWEEN THE REVENUE**
16 **REQUIREMENT AND THE TARIFF REQUIREMENT.**

17
18 A. As I use the term in my testimony, the "Revenue Requirement" is PGW's total
19 cost of providing service, which is \$754 million under the Test Year Budget. By
20 the term "Tariff Requirement," I mean the total amount PGW would collect
21 under the proposed Tariff before discounts and other revenue adjustments. The
22 Tariff Requirement is \$800 million. However, PGW will not collect this amount
23 because the Test Year Budget shows discounts of \$58 million for the Customer
24 Responsibility Program ("CRP") and Senior Citizens programs. In addition, the
25 Test Year Budget shows finance charge revenue, other operating and non-
26 operating revenue, and adjustments, the net effect of which is \$12 million in

1 additional revenue. Therefore, if PGW sets its Tariff rates at \$800 million, has
2 discounts of \$58 million, and has other revenue and adjustments of \$12 million, it
3 will realize its Revenue Requirement of \$754 million.

4 **Q. DOES PGW EXPECT TO REALIZE THE TOTAL TARIFF**
5 **REQUIREMENT?**

6
7 **A.** No, PGW only expects to realize the Revenue Requirement, because discounts
8 and other adjustments will be applied to the Tariff Requirement. The term
9 "realize" is used because the Budget is based on accrual accounting, and the term
10 "collect" might imply an amount actually collected in cash.

11 **Q. PLEASE IDENTIFY THE EXHIBITS' THAT ARE INCLUDED WITH**
12 **YOUR TESTIMONY.**

13
14 **A.** *Exhibit HSG - 1* summarizes the results of the PGW COSS.

- 15 • Schedule 1 – Revenue Requirement and Tariff Requirement by Customer
16 Class for the Test Year.
- 17 • Schedule 2 – Unitized Tariff Requirement.
- 18 • Schedule 3 – Over (Under) Collection by Customer Class – Proposed Tariff.
- 19 • Schedule 4 – Test Year Projected Surplus (Deficit) by Customer Class -
20 Proposed Tariff.
- 21 • Schedule 5 – Test Year Projected Surplus (Deficit) by Customer Class -
22 Present Tariff.

23 *Exhibit HSG - 2* provides the following information from the PGW COSS:

- 24 • Schedule 1 – Test Year Budget data by account.
- 25 • Schedule 2 – Details of external allocation factors used in the PGW COSS.

1 • Schedule 3 – Names of allocators used in the PGW COSS.

2 *Exhibit HSG – 3* provides the following information:

3 • Schedule 1 – Comparison of Proposed Tariff and Existing Tariff

4 *Exhibit HSG – 4* presents additional information provided by PGW:

5 • Schedule 1 – Cash flow projections for Fiscal Years 2001 - 2006.

6 • Schedule 2 – Debt coverage projections for Fiscal Years 2001 - 2005.

7 *Exhibit HSG – 5* presents information about external allocators and special studies
8 developed for the PGW COSS:

9 *Exhibit HSG – 6* is a printout of the PGW Cost of Service study.

10 **Q. PLEASE SUMMARIZE THE RESULTS OF YOUR WORK AS THEY**
11 **APPLY TO THE CHANGES TO THE TARIFF PROPOSED BY PGW IN**
12 **THIS FILING.**

13
14 **A.** I have reached the following conclusions based on my work:

15 1. The proposed Tariff rates result in the under and over-recoveries of cost-
16 causation based Tariff Requirements as shown in Exhibit HSG-1, Schedule 3,
17 line 12 (dollars) and line 14 (percentages). After re-assigning Customer
18 Responsibility Program (“CRP”) and Senior discounts and Conservation Works
19 Program (“CWP”) (together “Social Costs”) on a volumetric basis, the proposed
20 Tariff rates result in the under and over-recoveries of Tariff Requirements as
21 shown on line 19 (dollars) and line 21 (percentages).

22 2. The monthly Customer Charges being proposed by PGW are significantly lower
23 than the customer related costs on a per customer-month basis in the Test Year
24 Budget, as shown on Exhibit HSG – 1, Schedule 2, line 40.

¹ These exhibits are located in the Cost Service Study which is Volume III of this filing.

1 utility can establish rates that ensure, subject to assumptions such as sales
2 volumes and customer counts, that it recovers all of its costs.

3 **Q. PLEASE EXPLAIN THE TERM "UNBUNDLED" WITH RESPECT TO**
4 **THE COSTS OF PROVIDING NATURAL GAS SERVICE.**

5
6 **A.** Unbundling is the separation of the costs of gas supply and gas purchasing
7 requirements and the delivery of gas service into its various product and service
8 components. In the simplest sense, it means separating the gas merchant function
9 costs and the gas distribution delivery function costs. The merchant service
10 typically includes acquisition, management and delivery of gas supply to the
11 distribution system at the City Gate including production; production and market
12 area storage management; upstream pipeline capacity and transportation
13 arrangements; procurement of gas commodity; and gas contract management.
14 The delivery service includes transmission and/or distribution pipelines services
15 down stream of the city gates; gas dispatch and management services; metering,
16 billing and accounting services; marketing and advertising services related to
17 service connections and safety; and customer information and call center
18 activities.

19 **Q. PLEASE SUMMARIZE THE COST OF SERVICE APPROACH THAT**
20 **YOU FOLLOWED IN PERFORMING THE PGW COSS.**

21
22 **A.** The most critical task in performing a COSS is establishing relationships between
23 customer requirements, load profiles and usage characteristics on the one hand,
24 and the costs incurred to serve those requirements on the other hand.

25 PGW's gas distribution system is designed to meet three primary objectives:

26 1. to extend distribution services to all customers;

- 1 2. to meet the aggregate peak design day capacity requirements of all
- 2 customers entitled to service on the peak design day, and
- 3 3. to deliver volumes of natural gas to those customers either on a
- 4 sales or transportation service basis.

5 It is important that the allocation methods used within the COSS recognize these

6 *cost causative* characteristics of the company's plant investments and operating

7 expenses. The COSS should objectively reflect cost causation factors attributable

8 to the utility's customers, their gas usage requirements, and system operations, and

9 to the extent possible, should not be influenced by desired end-results, customer

10 equity, or other rate design considerations.

11 The COSS was performed using R.J. Rudden Associates' proprietary, EXCEL

12 based spreadsheet computer model ("Model"). The study uses a basic three-step

13 process of cost analysis: 1) *functionalization* of rate base, purchased gas supply

14 costs and expenses among the following functions – production, storage,

15 distribution and onsite (or customer, representing services at or downstream from

16 customers' meters); 2) *classification* of functionalized costs into demand,

17 commodity and customer cost categories; and 3) *allocation* of functionalized,

18 classified costs among the Customer Classes. The Model provides unbundled,

19 functionalized and classified cost information by service class, develops

20 unbundled Revenue Requirements by functional classification and in total for

21 each service class, and calculates unit costs by function for customer, commodity

22 and demand categories.

1 **Q. WHAT IS THE SOURCE OF THE DATA UTILIZED IN THE PGW**
2 **COSS?**

3
4 **A.** All data for the PGW COSS and the proposed revenue increase were provided by
5 PGW. Costs and other data were for the Test Year (the Budget for the Fiscal Year
6 ending August 31, 2001). These data included forecasted test year total system
7 costs of service, forecasted sales and transportation volumes, forecasted customer
8 information and forecasted revenues. In addition, other operating and plant
9 information was supplied by PGW for the purpose of cost classification and the
10 development of direct cost assignments and allocation factors that are required to
11 perform the cost allocation study. The budget was prepared by PGW on the
12 assumption of normal weather.

13 Exhibit HSG - 2, Schedule 1 shows the account specific data for the Test Year.

14 Exhibit HSG - 2, Schedule 2 shows the main external allocators that were
15 developed based on data provided by PGW.

16 **Q. WHY DID YOU USE BUDGETED DATA FOR THE TEST YEAR IN THE**
17 **PGW COSS?**

18
19 **A.** The purpose of using budgeted data is to avoid any effect of weather in the COSS
20 results and the ensuing rate design. The PGW budget assumes that weather will
21 be normal, and that weather related revenues and costs will be consistent with
22 average weather assumptions. If PGW were to base its cost of service on actual
23 historical data, we would have to normalize the data to remove the effects of
24 weather. It is more reliable to use budget data based on a weather-normal year,
25 than to normalize historical data.

26 **Q. PLEASE DESCRIBE THE FUNCTIONALIZATION STEP OF A COSS.**

1 A. In the **functionalization** step, costs are separated by the utility's basic service
2 characteristics, i.e., production, storage, distribution and on-site. For the most
3 part, this procedure is straight-forward and follows costs as recorded in the
4 Uniform System of Accounts. However, certain common costs (e.g.,
5 administrative and general expenses) can not be directly related to the primary
6 functions. These costs are analyzed and assigned among the primary functions
7 using a meaningful basis of assignment, so that every item of the utility's total
8 cost of service is assigned among the primary functions.

9 **Q. PLEASE DESCRIBE THE CLASSIFICATION STEP OF A COSS.**

10 A. In the **classification** step, the previously functionalized costs are separated
11 according to the system design or operating characteristics which cause those
12 costs to be incurred. In this step, each cost is determined to be incurred to serve
13 **customers**, to supply the natural gas commodity or to meet various capacity
14 **demands** including coincident and non-coincident peaks.
15 **Customer** related costs are the costs incurred to attach a customer to the
16 distribution system, to meter gas usage and to maintain the customer's account.
17 **Customer** costs are a function of the number of customers served and continue to
18 be incurred whether or not the particular customer uses any gas. They include
19 **capital costs** associated with distribution mains, services and meters, and
20 operating costs such as customer service, field service, billing and accounting
21 expenses.

1 Commodity related costs are those costs that vary with the natural gas throughput
2 sold to, or transported for, customers. These costs include the cost of the
3 commodity, lost and unaccounted for gas, as well as related procurement and
4 supply management costs.

5 Demand, or capacity, related costs are associated with plant that is designed,
6 installed and operated to meet maximum hourly or daily gas flow requirements,
7 such as distribution mains. Contracts for gas supply, transportation (from supply
8 source to City Gate) and storage also have a capacity related component, related
9 to meeting peak design day demand and the duration of demand during the peak
10 season. For PGW the peak season is the three months from December through
11 February. Demand-related costs associated with serving the *system design day* are
12 allocated among the Customer Classes based upon contribution to the *system*
13 *design day* requirements. Demand-related costs associated with managing supply
14 throughout the *peak season* are allocated among the Customer Classes based upon
15 contribution to the *peak season* requirements.

16 Q. DO ALL EXPENSES FIT NEATLY INTO ONE OF THESE THREE
17 CLASSIFICATIONS?
18

19 A. Most costs do fit neatly into one of the three classifications, but it may be
20 necessary to assign some costs among two or three classifications based upon
21 special external studies or based upon how related costs have been classified
22 through the use of internal classification allocation factors. For example, Account
23 807, Natural Gas Operating Expenses, was classified as both commodity and

1 demand related based upon relationships found in the classification of PGW's cost
2 of purchased gas and its on-system gas production and storage facilities.

3 **Q. PLEASE DESCRIBE THE ALLOCATION STEP OF A COSS.**

4 A. In the allocation step, the functionalized, classified costs are allocated among the
5 Customer Classes, based on relationships as determined by the analyst. To
6 determine these relationships, the analyst must analyze the Company's gas system
7 design and operations, its accounting records and its system and customer load
8 data (e.g., annual and peak period gas consumption levels). From the results of
9 those analyses, direct assignments of costs, as well as cost allocation
10 methodologies, can be chosen for each of the utility's plant and expense elements.

11 **Q. PLEASE EXPLAIN WHAT YOU MEAN BY THE TERM "DIRECT**
12 **ASSIGNMENT."**

13
14 A. The term "direct assignment" means identifying plant investments or costs
15 incurred exclusively to serve a specific customer or group of customers. Direct
16 assignments best reflect the cost causation of serving individual customers or
17 groups of customers. Therefore, in performing a COSS, the analyst seeks
18 whenever possible to directly assign costs, and to reduce the use of generalized
19 cost allocation methods. Where necessary data are available, special studies can
20 directly assign plant and expenses to particular customers or groups of customers.

21 **Q. IS IT REALISTIC TO ASSUME THAT A LARGE PORTION OF THE**
22 **PLANT AND EXPENSES OF A UTILITY CAN BE DIRECTLY**
23 **ASSIGNED?**

24
25 A. No, it is not. The nature of utility operations is characterized by common or joint
26 use facilities. In addition, direct assignments require detailed analyses of maps,

1 work orders, property records and customer accounting records, which may be
2 unavailable or may require a great deal of time to obtain and use. Therefore, to
3 the extent that a utility's plant and expense cannot be directly assigned to customer
4 groups, common allocation methods must be derived to assign the remaining costs
5 to the customer classes. The analyses discussed above facilitate the derivation of
6 reasonable allocation bases for cost assignment purposes.

7 **Q. PLEASE EXPLAIN HOW ALLOCATION BASES ARE DERIVED.**

8 A. There are two types of allocation bases, or allocators. *External allocators* are
9 based on special studies derived from data in the utility's accounting and other
10 records. For example, gas sales, the volume of gas consumed by each Customer
11 Class, is an external allocator that is used to allocate some of the gas commodity
12 costs. Other examples of external allocators are number of customers, estimated
13 design day sales and historical bad debt experience. Exhibit HSG - 2, Schedule 2
14 shows the main external allocators that were developed based on data provided by
15 PGW.

16 *Internal allocators* are based on some combination of external allocators,
17 previously directly assigned costs and other internal allocators. For example, the
18 allocators for property insurance costs are based on plant investment amounts
19 assigned to components of the rate base; it is necessary to compute the rate base
20 before property insurance costs can be assigned. Both external and internal
21 allocators are used in each of the functionalization, classification and allocation
22 steps.

1 Q. ARE THERE CERTAIN GUIDING PRINCIPLES THAT SHOULD BE
2 FOLLOWED WHEN PERFORMING A FULLY ALLOCATED COSS?
3

4 A. Yes, there are. The essential element in the selection and development of a COSS
5 allocation methodology is the establishment of relationships between customer
6 requirements, load profiles and usage characteristics on the one hand and the costs
7 incurred by the Company in serving those requirements on the other hand. The
8 primary objectives in selecting a cost allocation methodology are:

- 9 1. recognition of **cost causality** as opposed to **value of service**;
- 10 2. **stability** of results over time;
- 11 3. **logical consistency and completeness**; and
- 12 4. **ease of implementation**.

13 Q. HOW DOES THE RUDDEN COMPUTERIZED MODEL OPERATE?

14 A. The Model is a tool that speeds up computations and eases documentation. The
15 results of the COSS are completely determined by the inputs to the Model, which
16 are listed below:

- 17 • *Rate base*; each account in the utility's rate base is input to the Model.
- 18 • *Cost of service*; each account in the utility's cost of service (e.g.,
19 purchased gas costs, O&M expenses, metering, billing and customer
20 accounting expenses, customer sales and information expenses, taxes,
21 administrative and general expenses, interest expense, contribution to
22 the City) is input to the Model.
- 23 • *External allocators*; the data derived as a result of special studies.

- 1 • *Internal allocation formulas*; these formulas specify which previously
- 2 allocated cost or costs are to be the basis for each internal allocator.
- 3 • *Direct assignment dollars*.
- 4 • *Allocator names*; the name of the external or internal allocator on
- 5 which each cost will be functionalized, classified and allocated.

6 Exhibit HSG - 2, Schedule 3 lists the names of all the allocators assigned in
7 performing the PGW COSS.

8 Once these data are input, the Model computes the results of the COSS and
9 presents them in the specified report formats. Due to the large number of accounts
10 and allocators in a typical COSS, and to the use of internal allocators which
11 require iterative computations, use of a computerized model greatly reduces the
12 time and cost to complete a COSS.

13 **Q. WHAT IS THE RATE BASE AND HOW DOES IT AFFECT THE PGW**
14 **COSS?**

15 A. The rate base is the cost, net of accumulated depreciation, of PGW's investment
16 in plant and other assets used to serve customers. In a typical investor-owned
17 utility, the size of the rate base is important because the utility is allowed to earn a
18 return on its investment in rate base. This is not the case for PGW, because
19 PGW's rates allow it to collect the dollar amount needed to meet its financial
20 obligations, including maintaining debt service coverage as required by certain
21 financing documents and bond ordinance covenants. Therefore, PGW's Revenue
22 Requirement is not directly affected by the size of the rate base. However the rate
23 base is an important allocator, because many costs are functionalized, classified or
24

1 allocated among Customer Classes in the same ratio as the rate base or a portion
2 of the rate base.

3 --For example, interest expense on long-term debt is functionalized, classified and
4 allocated among Customer Classes using the rate base, because interest expense is
5 incurred to finance the purchase of the assets in the rate base.

6 **Q. WHAT ARE THE MAJOR COMPONENTS OF PGW'S RATE BASE?**

7 A. For purposes of discussing how I functionalized, classified and allocated PGW's
8 rate base in the PGW COSS, I will refer to the following groupings of rate base
9 items. After presenting the list, I will describe how I treated each of these major
10 rate base categories:

- 11 • Production plant.
- 12 • Storage plant.
- 13 • Distribution plant.
- 14 • General plant.
- 15 • Depreciation reserve.
- 16 • Construction in Process and Unclassified.
- 17 • Leased Equipment.
- 18 • Working capital.

19 **Q. WHAT IS THE TOTAL RATE BASE?**

20 A. The total rate base is \$1,027 million, net of accumulated depreciation, for the
21 Test Year.

22

1 Q. WHAT ARE THE PRINCIPAL ALLOCATORS FOR EACH
2 COMPONENT OF THE RATE BASE?
3

4 A. The principal allocators for each component of the rate base are:

5 *Production plant*, net of depreciation, is 3.3% of the rate base. This item, PGW's
6 investment in natural gas production assets, is used to meet demand during the
7 peak season, and the investment cost has been classified to demand, and allocated
8 among Customer Classes based on forecasted design day sales.

9 *Storage plant*, net of depreciation, is 4.4% of the rate base. This item, PGW's
10 investment in liquefied natural gas ("LNG") facilities, is maintained in order to
11 meet demand during the peak season, and especially during the design day of the
12 system. Therefore, the investment cost has been classified to demand, and
13 allocated among Customer Classes based on the forecasted design day sales.

14 *Distribution plant*, net of depreciation, is 58.0% of the rate base, and includes:

- 15 • Mains, 27.2% of the rate base has been classified as a combination of
16 demand and customer. This reflects the dual purpose of mains: (1) to
17 attach a customer and enable the customer to receive a minimal level
18 of service, and (2) to provide adequate capacity for the maximum
19 demand level by the customer. The former purpose is customer related,
20 while the latter is demand related.

21 . Ideally, to determine the customer component of the investment in
22 mains, we would perform a zero-intercept study. A zero intercept study
23 estimates the investment that would be required, if instead of the
24 existing mains, minimum-diameter pipes were installed. The estimated

1 cost of the minimum-diameter system is the customer component of
2 mains, and the balance of the total investment in mains is the demand
3 component, because the costs above the minimum are deemed to be
4 incurred to serve peak design day demands.

5 The data to do a Zero Intercept study were not available. However,
6 Rudden's experience shows that the customer component of mains
7 typically ranges from 25% to 50% of the total investment. In addition,
8 zero-intercept studies for three Northeast gas utilities (Niagara
9 Mohawk, PG Energy and Southern Connecticut Gas) showed customer
10 components from 30% to 33%. For PGW, an estimate of 25% was
11 used to take into account the density of the PGW system. Therefore,
12 25% of the investment in mains was classified as customer-related and
13 allocated among Customer Classes based on customer counts.

14 The remaining 75% of the investment in mains was classified as
15 demand-related, and was allocated among Customer Classes based on
16 the design-day sendout subject to maximum distribution system
17 constraints but not to supply constraints.

- 18 • Services, 24.3% of the rate base, has been classified to customer
19 related costs, and allocated among Customer Classes based on the
20 estimated total replacement cost for each Customer Class. Total
21 replacement cost for a Customer Class was estimated by multiplying

1 x) replacement cost of a service line with typical diameter for the
2 Customer Class by y) number of customers in the Customer Class.
3 • Meters and Meter Installation, 5.0% of the rate base, have been re-
4 functionalized to onsite, classified to customer related costs, and
5 allocated among Customer Classes based on the estimated total
6 replacement cost for each Customer Class. Total replacement cost for
7 a Customer Class was estimated by multiplying x) replacement cost of
8 a meter with typical size for the Customer Class by y) number of
9 customers in the Customer Class.

10 • Other Distribution plant, 1.5% of the rate base, includes a) House
11 Regulators and House Regulator Installation, which were classified as
12 customer-related and assigned among the residential Customer Classes
13 based on customer counts; b) Industrial Measuring Equipment, which
14 was classified as customer-related and assigned among the non-
15 residential Customer Classes based on customer counts; and c) Other
16 Equipment, which was classified and allocated among Customer
17 Classes based on the averages for Distribution plant.

18 *General plant, net of depreciation, is 6.2% of the rate base, and includes facilities*
19 *and equipment used in performing more than one function. These items were*
20 *allocated among Customer Classes primarily based on direct labor content of each*
21 *functionalized, classified cost element. Labor was used due to the nature of the*

1 items – e.g., transportation equipment, communications equipment, tools and
2 office-related.

3 *Depreciation reserve*, \$520 million, was provided by PGW broken down to rate
4 base category (production plant, storage plant, etc.); each item has been
5 functionalized, classified and allocated among Customer Classes in the same ratio
6 as the average for the rate base category.

7 *Construction Work in Process* (“CWIP”) and *Unclassified*, net of depreciation,
8 totaled 17.6% of the rate base, and includes projects that have not been
9 completely placed in service. Based on a special study, each project was
10 functionalized to the function to which the completed project will be assigned.

11 The projects were then classified, and allocated among Customer Classes, in the
12 same ratios as related in-service rate base categories or rate base accounts. For
13 example, distribution projects in CWIP and Unclassified were classified and
14 allocated in the same ratio as total Distribution plant in service, a major rate base
15 category; meters in CWIP and Unclassified were classified and allocated in the
16 same ratio as Meters, a single rate base account.

17 *Leased equipment*, net of depreciation, is 0.9% of the rate base, and includes items
18 in various categories; the total has been functionalized, classified and allocated
19 among Customer Classes in the same ratio as total plant in service.

20 *Working capital* is 9.6% of the rate base, and represents PGW’s need for cash to
21 keep the business running until revenues are collected to pay costs. Each item of
22 working capital was functionalized, classified and allocated among Customer
23 Classes in the same ratio as the activity which caused the item to be incurred. For

1 example, components of working capital related to revenue (e.g., accounts
2 receivable) were functionalized, classified and allocated in the same ratio as
3 Revenue Requirements; components of working capital related to gas costs (e.g.,
4 gas inventory, less related accounts payable) were functionalized, classified and
5 allocated in the same ratio as gas costs; items related to operating costs (e.g.,
6 materials and supplies inventories, less related accounts payable) were
7 functionalized, classified and allocated in the same ratio as operating costs
8 (excluding gas costs).

9 **Q. WHAT ARE THE MAJOR CATEGORIES OF COSTS IN PGW'S COST**
10 **OF SERVICE?**

11
12 **A.** For purposes of discussing how I functionalized, classified and allocated PGW's
13 costs, I will refer to the following groupings of rate base items. After presenting
14 the list, I will describe how I treated each of these major cost categories:

- 15 • Production costs, which includes gas commodity costs.
- 16 • Storage costs.
- 17 • Distribution costs.
- 18 • Customer accounts, customer service and sales costs.
- 19 • Administrative and general expenses.
- 20 • Depreciation expense.
- 21 • Tax expense; for PGW this is primarily payroll tax and excludes income tax.
- 22 • Financial requirements.
- 23 • Other revenues and expenses.
- 24 • Discounts and adjustments.

1 **Q. IN DETERMINING HOW YOU WOULD TREAT THESE EXPENSES IN**
2 **THE COSS, WERE THERE ANY OTHER IMPORTANT CATEGORY OF**
3 **COSTS THAT YOU CONSIDERED?**
4

5 **A. Yes,** Labor costs affect most of the cost categories because many costs are
6 assigned based on the direct labor content of other costs. For example, Account
7 870, Operations Supervision and Engineering, is allocated among Customer
8 Classes based on the direct labor content of distribution and onsite costs. To
9 enable these allocations to be performed, the direct labor content of each cost
10 account was obtained, and special allocators were developed so that costs could
11 be assigned based on only the direct labor content of accounts.

12 **Q. HOW DID YOU CHOOSE THE ALLOCATION FACTORS FOR**
13 **PRODUCTION AND STORAGE RELATED COSTS?**
14

15 **A. PGW meets its customers' annual, seasonal and peak day demands for gas by**
16 **buying gas throughout the year. It has entered into supply, transportation and**
17 **storage contracts that permit PGW to acquire, transport, store, and inject or**
18 **withdraw various volumes of natural gas for various periods to manage gas**
19 **pressures within its system to provide reliable service. PGW also maintains**
20 **liquefied natural gas ("LNG") facilities to meet demand of firm customers during**
21 **the peak season. In months when gas purchases exceed send-out, the excess is**
22 **stored as natural gas or liquefied and stored as LNG. In months when sendout**
23 **requirements exceed maximum current supply availability, such as during peak**
24 **season, PGW meets the demand with a combination of current supply,**
25 **withdrawals from storage and LNG vaporization.**

1 PGW manages its storage and seasonal gas supplies throughout the year, and
2 especially the peak season, to ensure that sufficient commodity will be available
3 to meet demand from non-interruptible customers each day of the year including
4 any design day. This means, for example, that PGW may meet demand on a
5 given day from a combination of resources, rather than from current flowing gas
6 supply only, so as not to constrain future daily draws of current supply.

7 Therefore, in choosing allocators for production and storage costs, we considered
8 that PGW purchases commodity throughout the year, and maintains and manages
9 a variety of resources, to meet design day demand and demand throughout the
10 peak season.

11 **Q. WHAT WERE THE PRINCIPAL ALLOCATION FACTORS USED FOR**
12 **PURCHASED GAS SUPPLY AND PRODUCTION COSTS?**

13
14 **A. Purchased gas supply costs and production costs aggregated \$396 million.**

15 Purchased gas commodity costs, totaling \$355 million (net of credits for off
16 system sales), were allocated among Customer Classes based on annual volumes
17 of natural gas sales. This is appropriate because PGW buys natural gas
18 throughout the year. While the cost varies throughout the year, the higher costs
19 during peak season costs caused annual costs to increase by only 6.0%.

20 Of the total purchased gas commodity cost stated above, \$24 million represents an
21 increase in the cost of gas in storage from the beginning of the year to the end.

22 This increase is due to rising gas costs, partially offset by slightly lower volumes.

23 Because this expenditure is not a cost incurred to serve customers in the Test

24 Year, the cost of commodity purchased in the PGW COSS was reduced by this

1 amount; and the reduction was allocated among Customer Classes in the same
2 ratios as the sum of all other purchasing and production costs.

3 Firm transportation contract costs, totaling \$45 million (net of refunds and
4 capacity release credits), were allocated among Customer Classes based on design
5 day sales, because the contract costs are billed to PGW based upon maximum
6 daily demand quantities that are determined using forecasted design day
7 requirements. These costs are incurred in order to ensure service to firm service
8 customers entitled to receive gas on a non-interruptible basis at the time of PGW's
9 anticipated peak demand.

10 Producer demand charges, totaling \$5 million, are incurred to ensure the supply of
11 commodity during the peak season. These costs were allocated among Customer
12 Classes based on design day sales.

13 Storage costs, totaling \$12 million, include charges for capacity (the total volume
14 of gas in storage at any time) and demand (the maximum volume that can be
15 injected or withdrawn on any day). These costs are incurred to ensure the supply
16 of commodity during the peak season, and were re-functionalized to storage, and
17 allocated among Customer Classes based on peak season sales; except that the
18 storage contracts used for daily balancing throughout the year were allocated
19 among Customer Classes based on annual sales and transportation volumes.

20 Storage injection and withdrawal fees, totaling \$1 million, were allocated among
21 Customer Classes based on peak season sales.

1 Natural gas operating costs, aggregating \$1 million, were functionalized,
2 classified and allocated among Customer Classes in the same ratios as the sum of
3 all other purchasing and production costs.

4 Costs to operate PGW's LNG Production facilities, aggregating \$1 million, were
5 allocated among Customer Classes based on design day sales.

6 **Q. HOW DID YOU CHOOSE THE ALLOCATION FACTORS USED FOR**
7 **STORAGE COSTS?**

8
9 A. Storage costs aggregated \$10 million. These are the costs of operating PGW's
10 LNG facilities. PGW maintains these facilities to meet demand during the peak
11 season. Therefore, these costs were functionalized to storage, classified as
12 demand and allocated among Customer Classes based on design day sales.

13 **Q. WHAT IS INCLUDED IN PGW'S DISTRIBUTION COSTS?**

14 A. Distribution costs are the costs of operating and maintaining PGW's City Gate
15 station, mains, services and meters, i.e., the gas delivery system. All costs were
16 analyzed to determine whether they were incurred in order to manage gas supply,
17 maintain equipment or for supervision.

18 **Q. WHAT WERE THE PRINCIPAL ALLOCATION FACTORS USED FOR**
19 **DISTRIBUTION COSTS?**

20
21 A. Distribution costs aggregated \$41 million, of which \$23 million was re-
22 functionalized to onsite and \$18 million functionalized to distribution.

23 Costs relating to managing gas supply, totaling \$2 million, were allocated among
24 Customer Classes based on annual sales. Costs related to the City Gate station and
25 measuring and regulating equipment, totaling \$2 million, were allocated Customer
26 Classes based on design day sales.

1 Costs of maintaining mains and services, totaling \$9 million, were classified and
2 allocated among Customer Classes based on the respective investments in mains
3 and services. Supervision and engineering costs, totaling \$2 million, were
4 allocated among Customer Classes in the same ratios as distribution labor.
5 The costs directly re-functionalized to onsite, totaling \$18 million, were for
6 maintenance of meters and related equipment, and for work performed on
7 customer's premises. These costs were classified to customer and were allocated
8 among Customer Classes primarily based on the investment in meters.
9 The remaining distribution costs, totaling \$8 million, were functionalized in the
10 same ratio as all other distribution costs (i.e., to both distribution and onsite) and
11 classified as customer related costs. The distribution function costs were allocated
12 among Customer Classes based on the investment in distribution plant. The
13 onsite function costs were allocated based on the investment in meters.

14 **Q. WHAT WERE THE PRINCIPAL ALLOCATION FACTORS USED FOR**
15 **CUSTOMER ACCOUNTS, CUSTOMER SERVICE AND SALES COSTS?**
16

17 **A. Customer accounts, customer service and sales costs aggregated \$104 million.**

18 **These costs were functionalized to onsite and classified to customer.**

19 **Uncollectible accounts expense is revenue that is not collected from customers**
20 **due to bad debts. The Test Year budget amount, \$65 million, was allocated**
21 **among Customer Classes in the same ratio as actual uncollectible accounts**
22 **experience for the prior fiscal year. Both the Test Year and the actual experience**
23 **amounts are net of recoveries of amounts previously written off. This expense is a**
24 **substantial increase over prior years, due to higher gas costs and to past problems**

1 with the new billing and collection system. To test the allocation of this expense,
2 the incidence among Customer Classes using the above allocator was compared to
3 the incidence of actual write-offs among Customer Classes for Fiscal Year 1998,
4 and was found to be reasonably similar.

5 Customer records and collection expense, \$28 million, includes telephone service,
6 district offices, bill preparation, collection labor and support, collection
7 processing and other activities. The cost of each activity was allocated among
8 Customer Classes based on special studies which were performed to analyze the
9 cost causation of each activity. The external allocators used or developed in these
10 special studies were number of customers, number of non-large customers and
11 number of delinquent accounts.

12 Customer assistance expenses aggregated \$9 million. This amount includes \$6
13 million for marketing to particular Customer Classes, which was directly assigned
14 to those Customer Classes. The balance includes the cost of providing general
15 informational services to customers and related costs, and was allocated among
16 Customer Classes based on numbers of customers.

17 Meter reading expenses, \$2 million, were allocated among Customer Classes
18 based on special studies. First, for nearly all residential customers, meters are read
19 automatically through drive-by meter reading; this cost, \$1 million, was allocated
20 among the residential Customer Classes based on number of customers. Then, the
21 balance of meter reading costs, \$1 million, was allocated among all other firm-
22 service Customer Classes based on the number of customers. Interruptible
23 customers are telemetered, which has essentially no recurring costs; the higher

1 capital costs of telemetering are reflected in the allocation of meter investment in
2 the rate base.

3 Supervision for customer accounts, customer service and sales costs aggregated
4 less than \$1 million. Supervision for customer service was allocated among
5 Customer Classes based on the number of customers; the same manner as
6 Customer Service costs. Supervision for collections was allocated among
7 Customer Classes using a special study performed using Fiscal Year 1998 data,
8 which computed the number of open collection accounts weighted by time the
9 account is in collections.

10 **Q. WHAT WERE THE PRINCIPAL ALLOCATION FACTORS USED FOR**
11 **ADMINISTRATIVE AND GENERAL EXPENSES?**

12
13 **A. Administrative and general expenses aggregated \$53 million, reflecting \$65**
14 **million in costs incurred less \$12 million capitalized costs.**

15 Costs incurred included \$48 million for employee pensions and benefits; workers
16 compensation insurance and claims; office supplies and expenses; and
17 administrative and general salaries. These costs are directly related to labor costs
18 and therefore were functionalized, classified and allocated among Customer
19 Classes in the same ratios as direct labor content.

20 An additional \$10 million of costs incurred, reflecting miscellaneous general
21 expenses, were functionalized, classified and allocated among Customer Classes
22 in the same ratios as direct labor content for all accounts.

1 Property insurance costs incurred and related claims, \$3 million, were
2 functionalized, classified and allocated among Customer Classes in the same ratio
3 as the rate base.

4 The balance of costs incurred, \$4 million, reflects regulatory expenses, and was
5 functionalized, classified and allocated among Customer Classes in the same
6 ratios as the rate base.

7 Costs capitalized to CWIP, which reduce Revenue Requirements, were
8 functionalized, classified and allocated among Customer Classes in the same
9 ratios as the balances in CWIP.

10 **Q. WERE THERE ANY NOTEWORTHY ITEMS IN ADMINISTRATIVE**
11 **AND GENERAL EXPENSES?**

12
13 **A.** Yes. The expenses stated above reflect cost savings and productivity
14 improvements totaling \$10 million that PGW hopes to achieve, and savings of
15 \$2.5 million due to unspecified personnel reductions and retirements.

16 **Q. WHAT WERE THE PRINCIPAL ALLOCATION FACTORS USED FOR**
17 **DEPRECIATION EXPENSE?**

18
19 **A.** Depreciation expense was \$33 million, reflecting \$34 million in depreciation
20 expense and \$2 million for costs of removal, less \$3 million capitalized.
21 Depreciation expense and costs of removal were functionalized, classified and
22 allocated among Customer Classes in the same ratios as the rate base and
23 components of the rate base. Depreciation expense capitalized to CWIP was
24 functionalized, classified and allocated among Customer Classes in the same
25 ratios as the balances in CWIP. For the purposes of the PGW COSS, Test Year
26 depreciation expense was increased by \$0.5 million to reflect depreciation of a

1 directly assigned asset over the term of the contract with the customer for whom
2 the asset was installed.

3 **Q. WHAT WERE THE PRINCIPAL ALLOCATION FACTORS USED FOR**
4 **TAX EXPENSE?**

5
6 A. Tax expense, which aggregated \$8 million, reflects primarily payroll taxes and
7 was functionalized, classified and allocated among Customer Classes primarily
8 based on direct labor content for all accounts.

9 **Q. WHAT ARE THE COMPONENTS OF PGW'S FINANCIAL**
10 **REQUIREMENTS?**

11
12 A. Financial requirements aggregated \$109 million. The components were interest
13 expense, appropriation for the City of Philadelphia and budgeted surplus.

14 **Q. DO THESE FINANCIAL REQUIREMENTS DIFFER FROM A TYPICAL**
15 **INVESTOR-OWNED UTILITY?**

16
17 A. Yes, they do. In a typical investor-owned utility, an important component of the
18 Revenue Requirement is the return that the utility is allowed to earn on its
19 investment in the rate base. The return is usually stated as a percent, and is
20 designed to include interest on debt capital plus return on equity capital. However
21 PGW includes in Revenue Requirements the dollar amount of its financial
22 requirements, rather than an amount based on returns to investors of debt and
23 equity capital.

24 **Q. ARE THERE OTHER SIGNIFICANT DIFFERENCES FROM A TYPICAL**
25 **INVESTOR-OWNED UTILITY?**

26
27 A. Yes. A typical investor-owned utility will be subject to taxation. This may
28 include income tax, gross receipts tax or others. In order for the utility to recover
29 the net amount of cash it needs, any amounts that it collects must be adjusted to

1 provide for the payment of taxes. For example, if a utility is subject to a gross
2 receipts tax of 2%, then in order to collect and keep \$1,000 with which to pay
3 expenses, it must collect \$1,020.41; it will remit taxes of \$20.41, or 2% of
4 \$1,020.41, and be left with \$1,000.

5 PGW is not subject to an income tax or gross receipts tax and does not have to
6 take them into consideration when computing its Revenue Requirements.

7 **Q. WHAT WERE THE PRINCIPAL ALLOCATION FACTORS USED FOR**
8 **INTEREST EXPENSE?**

9
10 A. Interest expense, \$57 million, represents interest payments on PGW's bonds and
11 leases plus amortization of debt issue costs, less capitalized interest expense.

12 Interest expense was incurred to finance PGW's investment in rate base assets.

13 Therefore, interest expense was functionalized, classified and allocated among

14 Customer Classes in the same ratios as the rate base and components of the rate
15 base.

16 **Q. WHAT WERE THE PRINCIPAL ALLOCATION FACTORS USED FOR**
17 **THE PAYMENT TO THE CITY OF PHILADELPHIA?**

18
19 A. The "Agreement between the City of Philadelphia and the Philadelphia Facilities
20 Management Corporation for the Management and Operation of the Philadelphia
21 Gas Works", Section 7.1 (b) (i), requires that PGW's rates be set at a level to
22 produce revenues sufficient to pay the City \$18 million annually. PGW informed
23 Rudden that this payment has been adjudicated to have the legal status of a return
24 to an equity holder. Therefore, this item was functionalized, classified and
25 allocated among Customer Classes in the same ratios as the rate base and
26 components of the rate base.

1 **Q. WHAT IS THE AMOUNT OF THE BUDGETED SURPLUS?**

2 A. The PGW COSS shows a surplus of \$34 million. The PGW COSS includes three
3 adjustments to the PGW budget. The net effect was an increase to the budget
4 surplus of \$30,000, reflecting one item which reduced the surplus by \$589,000
5 and two which together increased the surplus \$619,000.

6 **Q. HOW DID PGW MANAGEMENT DETERMINE THE AMOUNT OF THE**
7 **REQUIRED BUDGETED SURPLUS?**
8

9 A. The budget surplus is based on **accrual accounting**. However, PGW
10 management is managing the Company to meet its **cash needs**. PGW
11 management set the proposed revenues so as to provide sufficient cash to do all of
12 the following: a) pay PGW's cash operating expenses and other items described
13 above; b) fund increases in working capital which are primarily attributable to
14 higher gas costs; c) meet day-to-day cash needs without exceeding present
15 borrowing arrangements; d) maintain commercial paper borrowings at \$97 million
16 throughout the year; e) meet debt service coverage requirements in all years; f)
17 generate a small cash surplus to provide a margin for variances in Fiscal 2001;
18 and g) generate cash to repay the outstanding commercial paper balances by the
19 end of Fiscal 2006.

20 **Q. DID PGW PREPARE CASH FLOW PROJECTIONS?**

21 A. Yes, PGW prepared cash flow projections for Fiscal Years 2001 – 2006, which
22 are included as Exhibit HSG-4, Schedule 1. The projections show that the rates
23 proposed in the Tariff produce the results described above in the Test Year. The
24 projections also show that the rates produce the results described above in each of

1 Fiscal Years 2001 – 2006, and also sufficient additional cash to repay in full the
2 commercial paper by the end of Fiscal 2006.

3 **Q. DID PGW PREPARE DEBT SERVICE COVERAGE PROJECTIONS?**

4 A. Yes, PGW prepared debt service coverage projections for Fiscal Years 2001 –
5 2006, which are included as Exhibit HSG-4, Schedule 2. The projections show
6 that PGW will exceed its debt service coverage requirement in each year of Fiscal
7 Year 2001 – 2006.

8 **Q. DID PGW MANAGEMENT EXPLAIN WHY IT IS NECESSARY TO SET
9 RATES SO AS TO EXCEED, ON A PROJECTED BASIS, ITS DEBT
10 SERVICE COVERAGE REQUIREMENT?**

11 A. Yes. PGW management believes that the only way to restore PGW's financial
12 condition is to satisfy all the objectives (items a through g) listed above in
13 meeting its cash needs. PGW believes that achieving such a plan will permit it to
14 borrow, on reasonable terms, the long-term debt needed for capital investment,
15 which is critical to providing and improving service, as well as the short term debt
16 needed for daily operations. The debt service coverage requirement is not the
17 most restrictive objective, and if rates were set only to meet the debt service
18 coverage requirement, PGW would not meet some of the other objectives, and, in
19 the view of PGW management, PGW would not be able to borrow either long-
20 term debt or short-term debt.
21

22 **Q. WHAT WERE THE PRINCIPAL ALLOCATION FACTORS USED FOR
23 THE BUDGETED SURPLUS?**

24 A. In choosing allocation factors, the objective is to allocate the amount among the
25 Customer Classes based on cost-causality, and developing appropriate allocation
26

1 factors. As discussed above, typically a surplus represents a return on equity, and
2 is allocated based on rate base.

3 However PGW's budgeted surplus is necessary to rebuild PGW's financial
4 condition. PGW's financial condition has deteriorated because actual revenues did
5 not meet revenue requirements in Fiscal Years 1998, 1999 and 2000. The Gas
6 Cost Rate Clause ensures that PGW recovers its **gas costs** in full. Therefore the
7 budgeted surplus is needed due to under-recovery of **non-gas operating costs** in
8 prior years.

9 Another way of looking at the budgeted surplus is that cash is needed to repay
10 commercial paper which was issued to fund non-gas operating costs; accordingly
11 the budgeted surplus should be allocated based on non-gas operating costs.

12 Therefore, the budgeted surplus was functionalized, classified and allocated
13 among Customer Classes, using special allocators, based on non-gas operating
14 costs. Gas commodity costs were excluded because PGW recovers changes in its
15 actual gas commodity costs through the GCR

16 **Q. MIGHT OTHER ALLOCATION FACTORS BE CONSIDERED FOR THE**
17 **BUDGETED SURPLUS?**

18
19 **A. Yes, but after careful consideration, we determined that there were no allocation**
20 **factors that were more appropriate at this time than the non-gas operating costs**
21 **that we used. As long as the excess cash is used to reduce commercial paper**
22 **balances, it is appropriate to use the special allocators which reflect non-gas**
23 **operating costs.**

1 The question of cost causality should be revisited once PGW's financial condition
2 improves. This improvement might be indicated if a portion of the cash generated
3 were used to fund capital programs instead of repaying commercial paper.

4 However, the use of cash to fund capital programs would not by itself determine
5 causality. If PGW's capital structure were not able at that time to support new
6 long-term debt at reasonable rates, then the surplus would continue to be caused
7 by the need to rebuild financial condition.

8 **Q. ARE THERE ANY REMAINING ITEMS IN DISCUSSING PGW'S**
9 **REVENUE REQUIREMENT?**

10
11 A. No. The above items total \$754 million, which is PGW's Revenue Requirement.
12 PGW will set its Tariff rates at a level to collect this amount, after considering
13 Other revenue and expenses, and Discounts.

14 **Q. WHAT ARE THE COMPONENTS OF OTHER REVENUES AND**
15 **EXPENSES AND WHAT WERE THE PRINCIPAL ALLOCATION**
16 **FACTORS USED?**

17
18 A. Other revenues and expenses, on a net basis, were \$12 million net revenue; this
19 amount was applied to reduce the total Revenue Requirement. This item
20 comprises:

21 Revenue, net of expenses, from *sales of energy-related appliance services* was \$5
22 million. This reduction in Revenue Requirements was functionalized to onsite,
23 classified to customer related costs and allocated among Customer Classes by
24 direct assignment to the classes responsible for this activity. As a result, most of
25 the reduction was allocated to the residential Customer Classes.

1 *Interest and related income* aggregated a \$6 million reduction in Revenue
2 Requirements. This was functionalized, classified and allocated among Customer
3 Classes in the same ratios as the rate base and components of the rate base. These
4 are primarily earnings on cash balances maintained in connection with bonds and
5 leases, and are thus related to the rate base. A small amount due to capitalized
6 interest was functionalized, classified and allocated among Customer Classes in
7 the same ratios as CWIP.

8 Revenue from *Finance Charges* was \$15 million. This reduction in Revenue
9 Requirements was functionalized and classified based on Revenue Requirements,
10 and allocated among Customer Classes based on a special study of overdue
11 amounts performed based on data for Fiscal Year 1998.

12 *GCR Adjustments* due to customers at the start of the Test Year, \$14 million, was
13 functionalized to production, classified to demand and allocated among Customer
14 Classes based on the volumes subject to the GCR under the Tariff. Because
15 customers will receive credits aggregating this amount, this item increased the
16 Revenue Requirement. This item will vary as needed from year to year by
17 operation of the GCR; that is, including it in the Test Year Revenue Requirement
18 does not mean that it is permanently included in the rates.

19 **Q. WHAT DISCOUNTS ARE INCLUDED IN THE PGW COSS, AND WHY**
20 **ARE THEY INCLUDED IN THE TARIFF REQUIREMENT?**

21
22 **A.** PGW has two discount programs, the CRP and the Senior Citizens discounts.
23 Discounts under the two programs aggregated \$58 million. These are not costs
24 incurred by PGW. However, these items must be accounted for when designing

1 the Tariff, so that the tariff rates will provide sufficient revenue after reflecting the
2 items. As discussed above, the "Tariff Requirement" is the amount that would be
3 collected under the Tariff before allowing for these items. The Tariff
4 Requirement minus these discounts, and the other revenue and expense items
5 discussed above, will provide the Revenue Requirement to PGW.

6 **Q. WHAT ARE THE ALLOCATORS FOR THESE DISCOUNTS?**

7 These discounts are functionalized and classified based on Revenue
8 Requirements, and allocated among Customer Classes based on the Customer
9 Class from which they arise. However, PGW policy is to recover the discounts
10 from Customer Classes through its GCR, which is assigned among non-
11 interruptible Customer Classes based on annual sales volumes. Therefore, the
12 results of the PGW COSS are presented on two bases; first, on a cost-causation
13 basis, and then, on the basis of re-assigning responsibility for the discounts among
14 non-interruptible Customer Classes based on annual sales volumes. It should be
15 noted that the results will be the same whether the discounts are recovered
16 through the GCR itself, or through another clause which assigns responsibility
17 among non-interruptible Customer Classes based on annual sales volumes.

18 **Q. ARE THERE ANY OTHER ITEMS THAT PGW TREATS SIMILARLY**
19 **TO THESE DISCOUNTS FOR RATE-MAKING PURPOSES?**

20
21 **A. Yes. PGW policy is to recover the costs of its Conservation Works Program**
22 **("CWP") from non-interruptible Customer Classes based on annual sales**
23 **volumes.**

1 Q. WHAT IS THE MECHANISM THAT PGW USES TO ASSIGN AND
2 RECOVER THE CRP AND SENIOR DISCOUNTS AND CWP COSTS TO
3 THOSE CUSTOMERS?
4

5 A. The costs of the CRP discount, Senior discount and CWP are "Social Costs".

6 PGW presently includes the amount of Social Costs to be recovered in the GCR
7 adjustment. However, even if another **mechanism** is used, the results of the PGW
8 COSS would not change on a projected basis as long as PGW's **policy** is to
9 recover the Social Costs from non-interruptible customers. On an actual basis,
10 using the GCR mechanism to recover Social Costs means that PGW does not gain
11 or lose if actual costs of these programs are different from budget. If a different
12 mechanism were used to recover the Social Costs, this would not necessarily be
13 true.

14 Q. ARE THERE ANY OTHER COMPONENTS TO THE PGW COSS THAT
15 WARRANT DISCUSSION?
16

17 A. No, the above testimony addresses all significant components of the PGW COSS.

18 SECTION 2 - RESULTS OF THE PGW COSS

19 Q. PLEASE DESCRIBE THE INFORMATION ON EXHIBIT HSG - 1,
20 SCHEDULE 1.
21

22 A. Exhibit HSG - 1, Schedule 1, shows the Revenue Requirement and the Tariff
23 Requirement for PGW, in total and for each Customer Class; line 18 is on a cost-
24 **causation** basis and line 22 is after **re-assigning** Social Costs.

25 Q. PLEASE DESCRIBE THE INFORMATION ON EXHIBIT HSG - 1,
26 SCHEDULE 2.
27

28 A. Exhibit HSG - 1, Schedule 2 shows the classified, unitized Revenue
29 Requirements by Customer Class. "Classified" means that each cost element is

classified as one of Customer, Commodity or Demand. "Unitized" means that the classified costs are expressed in terms of a meaningful unit of measurement. For example, commodity related costs are typically expressed in dollars per thousand cubic feet ("mcf") of gas used. Customer related costs are typically expressed in dollars per customer-month. Demand related costs are expressed in dollars per mcf of peak daily demand.

Q. PLEASE EXPLAIN THE CUSTOMER RELATED COSTS IN THE PGW COSS.

A. As previously described, customer related costs are the costs incurred to attach a customer to the distribution system, to meter gas usage and to maintain the customer's account. The total of all customer costs for PGW is a function of the number of customers served. Customer costs continue to be incurred whether or not a particular customer uses any gas. They include capital costs associated with distribution mains, services and meters, and operating costs such as customer service and accounting expenses. Total customer costs by Customer Class for the Test Year are shown on Exhibit HSG - 1, Schedule 1, line 12. These costs are shown on a unit basis, on Exhibit HSG - 1, Schedule 2, line 36. The unit is a customer-month; that is, these are the amounts that PGW should collect from each customer each month to recover fully its customer related costs.

Q. DID YOU COMPARE THE MONTHLY CUSTOMER CHARGES BEING PROPOSED BY PGW TO THE CUSTOMER RELATED COSTS IN THE PGW COSS?

A. Yes. For every Customer Class, the monthly Customer Charges being proposed by PGW are lower than the customer related costs on a per customer-month basis

1 in the PGW COSS for Test Year Budget 2001. The customer related costs for
2 PGW are shown on Exhibit HSG - 1, Schedule 2, line 36; the proposed monthly
3 Customer Charges are shown on line 38; the differences are shown on line 40.

4 **Q. PLEASE DESCRIBE THE INFORMATION ON EXHIBIT HSG - 1,**
5 **SCHEDULE 3.**

6
7 A. Exhibit HSG - 1, Schedule 3 compares the revenue that PGW would realize under
8 the proposed Tariff, to the Tariff Requirements. The under and over-recoveries
9 compared to **cost-causation** based Tariff Requirements are shown on line 12
10 (dollars) and line 14 (percentages). The under and over-recoveries after **re-**
11 **assigning** Social Costs on a volumetric basis are shown on line 19 (dollars) and
12 line 21 (percentages).

13 **Q. PLEASE DESCRIBE THE INFORMATION ON EXHIBIT HSG - 1,**
14 **SCHEDULE 4.**

15
16 A. Exhibit HSG - 1, Schedule 4 shows Projected Surplus (Deficit) for PGW and for
17 each Customer Class, based on the costs and physical quantities in the Test Year
18 Budget, and using the revenues that would be collected under the proposed Tariff.
19 The Projected Surplus for each Customer Class is shown on a **cost-causation**
20 basis on line 34 and after **re-assigning** Social Costs on line 45. Line 37 shows the
21 **Surplus Responsibility** for each Customer Class (the amount of Budgeted Surplus
22 allocated to each Customer Class in the PGW COSS; this item was allocated
23 using a special allocator which reflected non-gas operating costs).
24 Exhibit HSG - 1, Schedule 4, line 38 compares Projected Surplus on a **cost-**
25 **causation** basis to Surplus Responsibility; the resulting under and over amount
26 for each Customer Class is the same as Exhibit HSG - 1, Schedule 3, line 12.

1 Exhibit HSG – 1, Schedule 4, line 49 compares Projected Surplus on a re-
2 **assignment** basis to Surplus Responsibility; the resulting under and over amount
3 for each Customer Class is the same as Exhibit HSG – 1, Schedule 3, line 19.

4 Exhibit HSG – 1, Schedule 4A shows the computation of the \$800 million under
5 the proposed Tariff before discounts, with the result on line 28.

6 **Q. PLEASE DESCRIBE THE INFORMATION ON EXHIBIT HSG – 1,**
7 **SCHEDULE 5.**

8
9 A. Exhibit HSG – 1, Schedule 5 shows Projected Surplus (Deficit) for PGW and for
10 each Customer Class, based on the costs and physical quantities in the Test Year
11 Budget, and using the revenues that would be collected under the proposed Tariff.

12 This assumes that PGW will recover higher gas costs through the GCR, and
13 therefore the GCR volumetric charge remains the same as in the Proposed Tariff.

14 Exhibit HSG – 1, Schedule 5A shows the computation of the revenue under the
15 existing Tariff before discounts, with the result on line 28.

16 **Q. PLEASE DESCRIBE THE INFORMATION ON EXHIBIT HSG – 2.**

17 A. Exhibit HSG – 2, Schedules 1, 2 and 3, present information provided by PGW for
18 use in the PGW COSS. Each schedule has been discussed in this testimony.

19 **Q. PLEASE DESCRIBE THE INFORMATION ON EXHIBIT HSG – 3.**

20 A. Exhibit HSG – 3, Schedule 1 compares the revenue that PGW would realize under
21 the proposed Tariff to the revenue under the existing Tariff. Line 30 shows that
22 the new rates would increase PGW's revenue by approximately \$65 million,
23 assuming the customer counts and volumes in the Test Year Budget. The percent
24 increase for each Customer Class is shown on line 32, and the percent increase in

1 the average monthly customer bill is shown on line 46. It should be noted that the
2 amounts on this schedule have the same gas costs and assume that PGW will
3 collect those gas costs under either the proposed Tariff or the existing Tariff. In
4 addition, some costs such as Uncollectible Accounts Expense could be lower if
5 revenue were lower, but no adjustment was made to attempt to reflect this.

6 **Q. PLEASE DESCRIBE THE INFORMATION ON EXHIBIT HSG – 4.**

7 A. Exhibit HSG – 2, Schedules 1 and 2 present information provided by PGW for
8 use in the PGW COSS. Each schedule has been discussed in this testimony.

9 **Q. PLEASE DESCRIBE THE INFORMATION ON EXHIBIT HSG – 5.**

10 A. Exhibit HSG – 5, Schedules 1 through 22, present the development of each of the
11 main external allocators.

12 **Q. PLEASE DESCRIBE THE INFORMATION ON EXHIBIT HSG – 6.**

13 A. Exhibit HSG – 6 is a printout of the PGW Cost of Service study.

14 **Q. DOES THIS CONCLUDE YOUR TESTIMONY TODAY?**

A. Yes.

Testimony of Howard S. Gorman
On behalf of Philadelphia Gas Works

HOWARD S. GORMAN
MANAGING CONSULTANT

R.J. Rudden Associates, Inc.
898 VETERANS MEMORIAL HIGHWAY
Hauppauge, New York 11788
(631) 348-4090

SUMMARY

Howard S. Gorman has more than 12 years of diversified experience in the energy industry, and a total of 20 years experience covering all areas of finance. He specializes in energy project financing and analysis; energy asset valuations, acquisitions and divestitures; mergers and related management and organizational matters; economic and financial planning; computer modeling and information systems; and accounting and costing including electric and gas costing. He also has extensive experience in budgeting and reporting; procurement and contract negotiation; interest and currency derivatives; and all areas of financial management including treasury, insurance, benefits and taxes. He has worked with independent power plants, combined heat and power facilities and other cogeneration facilities, district heating and cooling systems, and regulated and unregulated entities; other industries include leisure goods and software.

PROFESSIONAL EMPLOYMENT

1997 - Present	R.J. Rudden Associates, Inc. Managing Consultant, Chief Financial Officer
1995 - 1997	Independent Consultant
1987 - 1995	Trigen Energy Corporation 1987-1993 Corporate Controller; Trigen was formed in 1987 1993-1995 Treasurer; Trigen had IPO with NYSE listing in 1994
1982 - 1987	Coleco Industries, Inc. Director, Treasury
1976 - 1979	Touche Ross & Co. Staff Accountant

PROFESSIONAL EXPERIENCE

Energy Project Financing and Analysis

Mr. Gorman has successfully completed numerous energy asset financing transactions as a principal and has also supported the financing of many other energy assets.

He has negotiated and completed transactions including construction and term loans, tax-exempt bonds, taxable bonds, subordinated debt, asset-backed (receivables and inventory) revolving credit facilities and other instruments. The borrowers have included corporations, joint ventures, special purpose entities and partnerships. He has worked successfully with lenders and borrowers to source and structure transactions, and has been instrumental in the negotiation of the loan documents and in the design of power sale contracts and supply procurement contracts to be financable. Among these financings are a \$28 million construction and term loan for the joint venture which constructed the district heating and cooling system for McCormick Place Exposition Center, Chicago; a \$62.5 million corporate acquisition and expansion facility secured by a portfolio of energy assets; a \$40 million tax-exempt financing for the Trenton cogeneration and district energy system; a \$39 million IPO for Trigen Energy Corporation (NYSE- TGN); and over \$150 million in connection with acquisitions.

These projects have included independent power plants, combined heat and power facilities, other cogeneration facilities including plants which were Qualifying Facilities under PURPA, district heating and cooling systems, and regulated and unregulated entities.

Mr. Gorman has performed analysis of several energy projects in connection with due diligence for financing, including contract review, financial modeling, supply analysis, forward price projections, and economic valuation with cash flow forecasting, and the identification, assessment and mitigation of financial and operating risks for the project and its investors.

The clients and entities with which he has worked include Trigen Energy Corporation; The Toronto-Dominion Bank; Societe Generale; Peoples Gas Corporation; Calpine; Bank of Montreal; and Donaldson, Lufkin and Jenrette.

Energy Asset Valuations, Acquisitions and Divestitures

Mr. Gorman has participated both as principal and consultant in the valuation of energy assets, and also in the subsequent acquisition or divestiture. He has performed financial and strategic valuations of power plants, business units, public corporations, private corporations, partnerships and other entities.

These valuations included development and review of assumptions, analysis of data, modeling and forecasting, sensitivity testing under various constraints, and forming and supporting an opinion as to valuation.

These valuations were used to support strategic decisions as to which assets to acquire or divest, and what price to pay or accept, as well as the development of post-acquisition strategic alternatives for the acquiror. In the case of acquisitions, the valuations were often used to support the financing for the assets. Among these activities are valuations of power plants, combined heat and power plants, and energy companies for the purpose of acquisition; valuation and assessment of alternatives for the waste-to-energy assets and other energy assets of a diversified company on behalf of an interested acquiror; valuation of the common stock of a publicly traded multi-jurisdiction utility for the purpose of investment; assessment of strategic fit and valuation for a utility seeking to diversify into energy-related services; and assistance with valuation and preparation for negotiation for a private entity seeking a buyer for energy assets.

The clients and entities with which he has worked include Trigen Energy Corporation; Ameren Corporation; Blavin and Co.; and several confidential assignments.

Mergers and Related Management and Organizational Matters

In connection with his work in asset valuations and acquisitions, Mr. Gorman has extensive experience integrating newly acquired assets into a company. He has successfully completed the financial integration of several acquisitions, including development of accounting, reporting and control systems, consolidation of functions and procurement. In addition, he has advised clients on the operating implications of transactions under consideration, as well as the financial, regulatory and strategic implications. Mr. Gorman has performed these services on behalf of the Midwest ISO, Mappcor, Star Gas MLP, Trigen Energy Corporation, Calpine and several confidential assignments.

Computer Modeling and Decision Support

Mr. Gorman is a highly accomplished modeler with expertise in spreadsheet and database applications, as well as the use of programming tools. He has developed analytical tools to perform valuations, projections and simulations. These models have been applied to financial analysis, cost allocations, rate design and pricing, forecasting revenue requirements, numerous tax and accounting matters, supply modeling and optimizations. Several of these models have contained interactive modules for automated scenario testing and sensitivity analysis.

Mr. Gorman has performed analyses and created applications in Excel, Lotus, Access and VB/VBA. Among these assignments, he specified, designed and programmed the upgraded R.J. Rudden Electric Cost of Service Model and the upgraded R.J. Rudden Gas Cost of Service Model; and internal projects for R.J. Rudden Associates, Inc.

Clients for which Mr. Gorman performed these services include Baltimore Gas & Electric, Philadelphia Gas Works, Niagara Mohawk Power Corporation, Enmax-City of Calgary, Connecticut Natural Gas, Southern Connecticut Gas Corporation, Bank of Montreal, Blavin & Co. and several confidential assignments.

Accounting and Costing Including Electric and Gas Costing

Mr. Gorman has extensive experience in financial accounting as well as cost accounting. As controller of Trigen Energy Corporation, he founded and built the finance and accounting function; developed reports, procedures and management tools; and managed subsidiary controllers across North America.

In addition, he has performed electric and gas costing assignments for clients, including developing the unbundled, fully allocated cost of service for an electric company undergoing deregulation pursuant to FERC Order 888; developing revenue requirements and identifying customer class cross-subsidizations for a gas LDC; designing a rate structure, allocating costs and assisting with a FERC rate filing for an electric regional transmission organization; budgeting and costing for an electric regional transmission organization.

These assignments included development of test year data under the regulatory basis, review and documentation of operations, establishment of cost causality, selection of allocation bases, development of allocators, and implementation of billing determinants for rate design.

The companies for which he has performed these assignments include Baltimore Gas & Electric, Philadelphia Gas Works, PJM Interconnection, LLC, MAPPCOR and Trigen Energy Corporation.

Financial Management and Related Areas

Mr. Gorman has developed, sourced and procured competitive contracts for loans as well as for energy, both as principal and on behalf of clients. This included an RFP for competitive supply of electricity for the State of New Jersey and its agencies.

He has bought and sold derivatives in the course of business transactions for the purposes of managing interest rate risk and currency risk. This included interest rate forwards and options in connection with financings; and currency swaps and forwards in connection with intercompany transfers and international procurement.

He managed the corporate insurance portfolios and the benefit plans for Trigen Energy Corporation and for Coleco Industries.

EDUCATION

New York University, B.S., Accounting, 1976

Harvard Business School, MBA, 1981

Exhibit B

Testimony of Howard S. Gorman
On behalf of Philadelphia Gas Works

R. J. RUDDEN ASSOCIATES, INC.

R.J. Rudden Associates, Inc. (Rudden) provides economic, management and financial consulting services to utilities and their customers throughout North America and internationally. Founded in 1981, we have approximately 70 consultants. Our headquarters office is in Hauppauge, New York with regional offices in Washington, D.C. and San Francisco, California. Rudden's major practice areas include utility pricing; regulatory policy analysis; strategic and market planning; market research, demand forecasting and marketing; merger and acquisition assistance; generation and transmission planning; energy project management, financing and analysis; fuels analysis and acquisition; and litigation support and testimony. Our clients include electric and gas utilities subject to FERC and state regulation, energy producers and consumers, other industrial and commercial organizations, financial institutions and the U.S. and Canadian government.

PGW St. 5.1

5/23/01

Phb, PD

RS

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

REBUTTAL TESTIMONY OF

HOWARD S. GORMAN

ON BEHALF OF
PHILADELPHIA GAS WORKS

RECEIVED
01 JUN -6 PM 3:45
PA.P.U.C.
SECRETARY'S BUREAU

DOCKET NO. R-00006042

PHILADELPHIA GAS WORKS
BASE RATE PROCEEDING

DOCKET NO. R-00006042

MAY 20

DOCUMENT
FOLDER

DOCKETED
JUN 8 2001

1 **Q. PLEASE STATE YOUR NAME, OCCUPATION AND BUSINESS**
2 **ADDRESS.**

3
4 A. My name is Howard Gorman. I am a Managing Consultant with R. J. Rudden
5 Associates, Inc. ("Rudden"). I also serve as Rudden's Chief Financial Officer.
6 My business address is 898 Veterans Highway, Hauppauge, NY 011788.

7 **Q. PLEASE STATE THE PURPOSE OF THIS RESPONSE.**

8 A. The purpose of this Response is to respond to certain matters discussed by Ralph
9 E. Miller in his Direct Testimony in connection with the recent filing by
10 Philadelphia Gas Works ("PGW" or "Company") before the Pennsylvania Public
11 Utility Commission in this Docket. The matters I will address concern the Cost of
12 Service Study ("COSS") performed by R. J. Rudden Associates, Inc. ("Rudden").

13 **Q. DO YOU AGREE WITH MR. MILLER'S STATEMENT THAT THERE**
14 **SHOULD BE NO CUSTOMER COMPONENT OF DISTRIBUTION**
15 **MAINS INVESTMENT?**

16
17 A. No, I do not agree. Mr. Miller provides several reasons for his statement.
18 First, he states "the connection of customers to the distribution system is not a
19 separate product or service provided by PGW, and it has no independent value to
20 PGW's customers." In fact, attachment is a common service for most utilities.
21 PGW needs to have a distribution system to deliver gas from the city gate to each
22 customer regardless of when and how the customer uses gas service. The zero-
23 intercept cost analysis, a common method of identifying that part of the cost,
24 identifies the hypothetical cost of constructing the pipe of zero size from the city
25 gate to the customer and allocates that portion on a per customer basis. This
26 hypothetical method of cost allocation reflects the fact that each customer benefits

1 from having access to the distribution mains system and that some investment is
2 required solely to provide the customer access to service.

3 -2 Second, Mr. Miller argues that because PGW has the fewest feet of main
4 per service among a group of its peers, PGW's system is so unique that other
5 zero-intercept studies can't be used for comparison. While we did rely on a
6 proxy, the proxy data was the best information available. Moreover, the fact that
7 PGW has the lowest value for the ratio cited by Mr. Miller (feet of main per
8 service), does not change the appropriateness of using the zero intercept method.
9 The fact that PGW has the lowest number of feet per service for the group does
10 not appear to be related to the percentage that we are seeking to identify: that is,
11 the percentage of the total cost of mains represented by the cost of hypothetical
12 minimum-diameter pipes. We believe that the 25% component we used is
13 appropriate. Moreover, this number is at the bottom of the range cited in my
14 testimony and below the three companies cited, in order to take into account the
15 density of the PGW system and the proportion of multi-tenant facilities.

16 Finally, Mr. Miller recommends "allocating the entire amount of this
17 investment in accord with the peak and average demand method." Mr. Miller
18 does not state why he believes this method is preferable to the design-day demand
19 allocation used in the COSS. Allocation of the demand component of mains
20 based on design-day demand is appropriate, because mains are sized to provide
21 capacity for the maximum demand level imposed on the system by firm service
22 customers. On the other hand, Peak and Average allocation would not reflect the
23 cost causality of the investment in mains. Under the Peak and Average allocation,

1 high load factor customer classes are assigned more of the cost of the demand
2 component of mains than under the design-day method, even though the mains,
3 and the investment, are sized to meet customers' maximum demands and not their
4 average demands.

5 **Q. DO YOU AGREE WITH MR. MILLER'S STATEMENT REGARDING**
6 **ADMINISTRATIVE AND GENERAL ("A&G") SALARIES (ACCOUNT**
7 **920) AND OFFICE SUPPLIES AND EXPENSES (ACCOUNT 921), "SOME**
8 **OF THESE EXPENSES RELATE MUCH MORE CLOSELY TO PGW'S**
9 **PLANT INVESTMENT, AND THEY SHOULD BE ALLOCATED ON**
10 **THAT BASIS"?**

11
12 A. No, I do not agree. The costs in account 920 include, for example, salaries for:
13 Officers; Internal Auditing; Security; Finance, Treasury and Accounting; Human
14 Resources; Legal; Public Policy; Operations; and Customer Affairs. The costs in
15 account 921 include office supplies and expenses for the above categories.
16 Account 920 is shown net of \$2.5 million budgeted savings due to unspecified
17 personnel reductions and retirements, and account 921 is shown net of \$10.0
18 million budgeted savings due to costs savings and productivity improvements.
19 Allocating A&G on the basis of direct labor is appropriate for these costs.

20 Mr. Miller states that another method would allocate A&G in a manner
21 that better reflects PGW's business. Direct labor costs are incurred in a way that
22 reflects PGW's business, and therefore allocating A&G based on direct labor does
23 in fact reflect PGW's business. It is for this reason that the Federal Energy
24 Regulatory Commission generally accepts allocating A&G based on direct labor
25 costs. For Mr. Miller's contention to be valid, there would have to be A&G costs
26 incurred to manage assets without having direct labor involved; this is not the case

1 with PGW. As a practical matter, a special study to allocate account 920 (which
2 has 33 subaccounts) and account 921 (which has 39 subaccounts) would have
3 been time-consuming and costly without a likely change in the overall allocation.

4 **Q. DO YOU AGREE WITH MR. MILLER'S STATEMENT THAT CREDITS**
5 **FOR DUPLICATE CHARGES SHOULD BE ALLOCATED IN**
6 **ACCORDANCE WITH THE COSTS THEY ARE REVERSING, INSTEAD**
7 **OF IN ACCORDANCE WITH CONSTRUCTION WORK IN PROGRESS?**

8
9 A. Yes, I agree. However, we did not have the detailed data to determine which
10 costs were reversed. Therefore, we assumed that the costs that were reversed are
11 similar to the costs for which the construction is being performed. For example,
12 we assumed that capitalized costs of constructing Production assets were
13 originally incurred in the Production function. We believe this is a reasonable
14 assumption.

15 **Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

16
17 A. Yes.

5/23/01

W/ephs
JPL-1
through
JPL-11

Phd, DR

MS

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

DIRECT TESTIMONY OF

JAY P. LUKENS, PHD

PA.P.U.C.
SECRETARY'S BUREAU

01 JUN -6 PM 3:49

RECEIVED

**ON BEHALF OF
PHILADELPHIA GAS WORKS**

DOCKET NO. R-00006042

DOCKETED

JUN 8 2001

**RE: PHILADELPHIA GAS WORKS
BASE RATE PROCEEDING**

JANUARY 2001

**DOCUMENT
FOLDER**

I. INTRODUCTION OF WITNESS

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

2 A: My name is Jay P. Lukens. I am President of the Lukens Energy Group, Inc.
3 ("LEG"). My business address is 2100 West Loop South, Suite 1300, Houston,
4 Texas 77027. My telephone number is (713) 961-1100 and my E-mail address is
5 jlukens@lukensgroup.com.

6 Q: Please describe the business activities of LEG.

7 A: LEG offers economic analysis, business counsel and litigation support services to
8 buyers and sellers of natural gas, electricity and related products and services.
9 LEG's senior consultants have management experience and market expertise in
10 all phases of the natural gas value chain. LEG also employs technical experts in
11 the fields of finance, economics, econometrics, decision science and applied
12 mathematics.

13 Q: Please describe your background and qualifications.

14 A: I hold B.A. and Ph.D. degrees in economics and have an extensive background
15 in energy economics. My curriculum vitae is attached as an Appendix. I have
16 provided business advice and expert testimony on a wide variety of issues
17 involving natural gas pipelines, local gas distribution companies, energy
18 marketing companies and electric utilities. I have also provided expert opinions
19 in civil litigation and at the Federal Energy Regulatory Commission ("FERC")
20 involving issues of market power and antitrust economics. Prior to becoming a
21 consultant I worked for Transcontinental Gas Pipe Line Corporation ("Transco").
22 At the time of my departure from Transco in 1995 I held the position of Senior

1 Vice President of Planning and Rates. I was responsible for Transco's strategic
2 planning, rates and Federal regulatory affairs from 1987 to 1995.

3 I have provided consulting services to many of the leading natural gas and
4 electric power firms in North America on issues of business strategy, business
5 valuation and regulatory policy. I have published articles on pricing pipeline
6 capacity and I am a regular speaker at industry functions on topics related to the
7 natural gas and electric power industries.

II. PURPOSE OF TESTIMONY

1 Q: What is the primary purpose of your testimony in this proceeding?

2 A: I have been asked by Philadelphia Gas Works (PGW) to review the Cost of
3 Service filed in this case and develop an estimate of cost of service that PGW
4 would require if it were an investor-owned utility (IOU). The hypothetical
5 circumstance that I have in mind in preparing this testimony is that PGW is sold
6 to private investors. The principal differences between PGW's costs as a
7 municipal entity vis-à-vis an IOU structure result from elimination of PGW's tax
8 exempt status and the need to pay investors a competitive return on capital. In
9 the testimony that follows, however, I consider PGW's entire cost of service.

III. IDENTIFICATION OF EXHIBITS

1 Q: What materials and exhibits do you sponsor?

2 A: In addition to this testimony, I sponsor the following materials and exhibits:

3	Curriculum Vitae	Appendix
4	Proforma Cost of Service	Exhibit No. JPL-1
5	Proforma Rate Base	Exhibit No. JPL-2
6	Proforma Capital Structure	Exhibit No. JPL-3
7	Proforma Cost of Debt and Equity	Exhibit No. JPL-4
8	Approved Return on Equity, Debt Costs,	
9	and Capital Structures for Selected Distribution	
10	Companies	Exhibit No. JPL-5
11	Philadelphia Gas Works Proxy Group	
12	Approved Return on Equity and Capital	
13	Structure	Exhibit No. JPL-6
14	Proforma Long Term Debt Cost (Aaa)	Exhibit No. JPL-7, Page1
15	Proforma Long Term Debt Cost (Baa)	Exhibit No. JPL-7, Page2
16	Proforma Taxes Other Than Income	Exhibit No. JPL-8
17	Proforma Public Utility Realty Tax Base	Exhibit No. JPL-9
18	Customer Profiles for Selected Distribution	
19	Companies	Exhibit No. JPL-10
20	Proforma Accumulated DIT	Exhibit No. JPL-11

21

22 Q: Were the testimony and exhibits prepared by you or under your supervision and
23 direction?

24 A: Yes, they were.

IV. PGW AS A MUNICIPALLY-OWNED UTILITY

1 Q: Please discuss PGW's operational characteristics.

2 A: PGW is a natural gas distribution operation that is owned by the City of
3 Philadelphia and managed by a contracted management team. PGW serves
4 over 512,000 customers, of which over 480,000, or 93.8%, are Residential.¹
5 Of PGW's gas sales of 68.9 million Mcf, almost 44.0 million Mcf, or 63.9%,
6 were to Residential customers.² This customer mix and load profile is similar to
7 that of several investor-owned public utilities serving metropolitan areas, such as
8 Baltimore Gas and Electric Company, Washington Gas Light Company, Virginia
9 Natural Gas, and Piedmont Natural Gas Company (see Exhibit No. JPL-10).

10 As a result of 1999 unbundling legislation in Pennsylvania, PGW's rates became
11 subject to regulation by the Pennsylvania Public Utility Commission (PUC) in
12 2000.

13 Q: Please describe PGW's tax status.

14 A: As a municipally owned utility, PGW has no common or preferred shareholders.
15 Therefore, PGW's rates are not designed to recover a return on shareholder
16 equity; only recovery of its operating expenses and debt costs. PGW pays no
17 Federal or state income taxes. Additionally, as a city-owned utility, PGW is not
18 subject to various taxes based on factors other than income that I will discuss
19 later in this testimony.

20 Q: Please discuss PGW's capitalization and debt costs.

¹ Refer to Witness Howard Gorman's Exhibit HSG-1, Schedule 4A, December 2000, Page 1, Line 11.

- 1 A: PGW's net rate base of \$1.027 billion is capitalized by approximately \$860
2 million of tax-exempt revenue bonds and two capital leases. PGW's composite
3 cost of debt is approximately 5.7%, which reflects the tax-exempt status of its
4 bonds.
- 5 Q: What is the credit rating of PGW's Revenue Bonds?
- 6 A: PGW's Revenue Bonds have recently been rated Baa2 by Moody's Investors
7 Service and BBB by Standard & Poor's.^{3 4}
- 8 Q: What consideration does the City of Philadelphia receive from PGW?
- 9 A: PGW pays an annual fee to the city and recovers the cost in its rates. Currently
10 the fee is \$18.0 million per year.⁵

² Refer to Witness Howard Gorman's Exhibit HSG-1, Schedule 4A, December 2000, Page 1, Line 18.

³ August 2000 report of Moody's Investor Service.

⁴ July 2000 report of Standard & Poor's, A Division of The McGraw-Hill Companies

⁵ See Exhibit HSG-2, Schedule 1, Page 4, Line 157.

V. PGW AS AN INVESTOR-OWNED UTILITY

V.A Major Increases to Cost of Service

1 Q: What are the major changes that would affect PGW's cost of service if it were to
2 become an investor-owned utility (IOU)?

3 A: PGW's filed cost of service would increase significantly – in the range of \$40-50
4 million per year, or about 10-13% of PGW's filed non-gas cost of service of
5 \$394.5 million (which includes PGW's requested non-gas rate increase of \$65
6 million), if PGW's rates were set on an IOU basis.⁶ In other words, PGW's
7 requested non-gas rate increase of \$65 million would be in the range of \$105-
8 115 million on an IOU basis. There are several reasons for this estimated cost of
9 service increase:

- 10 • PGW's capital structure would reflect approximately 50% common stock
11 equity (at a cost significantly greater than tax-exempt debt)
- 12 • PGW's debt costs would be higher due to the debt's taxability
- 13 • PGW would be liable for state and Federal income taxes
- 14 • PGW would be liable for various taxes other than income that are not levied
15 on municipal utilities.

16 Q: Are there any other costs to be considered if PGW were to be acquired by an
17 IOU?

⁶ Total filed Cost of Service of \$800.3 million less \$395.9 million Production expenses and \$9.9 million Storage expenses.

1 A: Yes. There are additional one-time costs which we have not quantified. For
2 example, a transfer to a taxable entity would likely require defeasance or the
3 calling of the present debt. The call premium or cost of defeasance could be in
4 the \$50 million range.

V.B Potential cost reductions

5 Q: Would PGW incur any cost reductions if it were to become an IOU?

6 A: Yes. PGW, or its successor, would not incur the current \$18.0 million City
7 Payment, and I have reflected elimination of that payment from the cost of
8 service (see Exhibit No. JPL-1).⁷ Additionally, I have eliminated the pro forma
9 Budgeted Surplus of \$33.9 million from the cost of service, reflecting a change
10 from the "Cash Flow" method of ratemaking currently utilized by PGW to a
11 return on rate base methodology, including a return on equity.⁸

12 Q: Would PGW experience any operational synergies resulting in a reduction of
13 costs if it were to become an IOU?

14 I have not attempted to quantify any such synergies. However, as a stand-alone
15 IOU, PGW would still require a management team, the workforce necessary to
16 operate the system and serve customers, and the physical and contractual assets
17 (such as gas supply) necessary to provide gas service. It is my understanding that
18 PGW has already implemented major budget reductions in its FY 2001 budget

⁷ Elimination of the entire \$18.0 million payment to the City is conservative in my opinion. Many utilities are required to pay municipal franchise fees. In Texas, for example, such fees range up to 2 percent of utility revenue. Imposition of a franchise fee could more than offset elimination of the City Payment.

⁸ See Prepared Direct Testimony of Thomas E. Knudsen, January 2001, Before the Pennsylvania Public Utility Commission, Docket No. R-00006042.

1 and is seeking to further reduce its operating costs.⁹ Thus, PGW may have
2 already achieved efficiencies in its cost structure.

3 Q: Would PGW experience any operational synergies resulting in a reduction of
4 costs if it were to be acquired by an IOU?

5 A: Certain synergies might be achieved if PGW's franchise were acquired by an
6 IOU. For example, elimination of duplicative administrative and general,
7 operational, and customer-related costs might be achieved and there might also
8 be some synergies in gas procurement and pipeline transportation costs.
9 However, it is difficult to quantify such synergies until the specific facts and
10 circumstances of such an acquisition, and the cost structure of the acquirer, are
11 known and can be considered in evaluation of PGW's costs.

V.C Capital Structure

12 Q: Would PGW's capital structure change if it were to become, or be acquired by,
13 an IOU?

14 A: Yes. Most investor-owned utilities have a capital structure that contains a more
15 balanced mixture of both debt and equity financing, rather than PGW's current
16 structure that is virtually all debt. The balanced capital structure allows a utility
17 flexibility in its financing plans and the equity mix provides lenders a comfort
18 level with the credit risk associated with the debt. Therefore, in order to
19 hypothesize PGW as an IOU, it is necessary to impute a capital structure.

⁹ See Prepared Direct Testimony of Thomas E. Knudsen, R-00005654 (PGW IR St. 1.0).

1 Q: Please describe the methodology you used to impute a capital structure for
2 PGW.

3 A: I created a proxy group ("PGW Proxy Group") comprised of major natural gas
4 distribution companies that serve metropolitan areas, including; Baltimore Gas
5 and Electric Company (BGE), Washington Gas Light Company (WGL), Piedmont
6 Natural Gas (PNG), and Virginia Natural Gas (VNG). Besides being similar to
7 PGW in size and scope of operations, the other common characteristic of the
8 PGW Proxy Group is that they have all had rate case proceedings in the past 12
9 months. The average capitalization of these companies, as approved by their
10 state commissions, was 50.26% equity, 41.83% long-term debt, 5.18% short-
11 term debt and 2.73% preferred stock and tax credits (see Exhibit JPL-5).

12 Q: Did you review other data on gas utility capitalization?

13 A: Yes. I also reviewed the American Gas Association's 1997 and 1998 Gas Facts
14 Data and determined that the gas distribution industry average equity mix was
15 52.60% in 1997 and 53.90% in 1998 (see Exhibit No. JPL-6). Additionally, I
16 reviewed Quarterly Earnings reports filed in 2000 by Pennsylvania companies
17 PECO and Peoples Natural Gas, which revealed equity mixes of 43.87% for
18 PECO and 50.13% for Peoples.

19 Q: What is your conclusion about an appropriate capitalization ratio for PGW if it
20 were to become an IOU?

21 A: Based on the information that I have reviewed, and my knowledge of the gas
22 industry in general, I believe that it is reasonable to assume the average capital
23 structure of the PGW Proxy Group for my analysis of PGW's cost of service as
24 an IOU. I have used that mix of debt and equity as a hypothetical capital
25 structure in my analysis. (see Exhibit JPL-3).

V.D Cost of Equity

1 Q: Is it also necessary to impute a cost of common stock equity for PGW?

--

2 A: Yes. If PGW were an IOU, it would have shareholders that demand a return on
3 their investment that is competitive with other gas distribution investment
4 opportunities.

5 Q: How did you impute a cost of common stock equity for PGW?

6 A: Again, I reviewed the equity returns approved by commissions in 2000 for the
7 PGW Proxy Group. The average commission-approved after-tax equity return
8 for the PGW Proxy Group was 11.16% (see Exhibit No. JPL-5).

9 Q: Did you consider any other analysis of equity returns?

10 A: Yes. I also determined that earned and/or approved returns on equity in 2000
11 for selected Pennsylvania companies and for New York's Orange and Rockland
12 Utilities, Inc. ranged from 11.10% to 12.28% (see Exhibit No. JPL-6).

13 Q: What is your conclusion regarding an appropriate equity return for PGW on an
14 IOU basis?

15 A: The 11.16% average after-tax equity return of the PGW Proxy Group appears to
16 be a reasonable surrogate for PGW on an IOU basis and I have utilized that
17 return in my hypothetical capital structure (see Exhibit No. JPL-3). Exhibit No.
18 JPL-4 provides the calculation of the cost of service requirements for debt (\$38.6
19 million) and equity (\$57.3 million) assuming the amount of capitalization,
20 capital structure, and cost rates developed herein for PGW on an IOU basis.

21 Q: Have you examined the sensitivity of your cost of service calculation to a change
22 in the assumed equity return?

1 A: Yes. A 10 basis point change in the assumed rate of return on equity causes a
2 \$983,000 change in the estimated cost of service.

3 Q: Would the cost of equity you are using be appropriate for use with PGW's actual
4 capital structure?

5 A: No. In my opinion the existing capital structure for PGW would not be viable
6 for an IOU in that it would impose extreme financial risk on equity holders. If
7 the PUC were to impose for ratemaking purposes PGW's existing capital
8 structure on a new owner, the allowed return on equity would have to be much
9 higher.

V.E Cost of Debt

10 Q: Would PGW's cost of debt change if it were an IOU?

11 A: Yes. PGW's current tax-exempt debt would most likely be replaced with taxable
12 financing, as IRS regulations would consider the City's sale of PGW's assets to
13 be a "change in use" and the bonds' tax exempt status could be revoked.

14 Q: How did you impute a cost of debt for PGW on an IOU basis?

15 A: I examined three approaches to estimate the cost of debt to a hypothetical IOU
16 owner of PGW. First, I looked at the cost of debt for the PGW Proxy Group. I
17 examined the historic cost of debt for the PGW Proxy Group, as shown on
18 Exhibit No. JPL-5. This exhibit shows an average cost of long-term debt of
19 7.20% for the PGW Proxy Group.

20 Q: What was your second approach to estimating an IOU debt cost for PGW?

1 A: Second, I calculated the cost of taxable long-term bonds issued at the time that
2 PGW's current outstanding notes were issued, utilizing both an Aaa credit rating
3 and a Baa credit rating. This approach assumes that PGW's debt issuances and
4 the taxable cost rates mirror those that might have been made by an acquiring
5 company. I determined that Aaa-rated debt issued at the times of PGW's
6 issuances would have an average cost rate of 7.60% (see Exhibit No. JPL-7, Page
7 1). Debt rated Baa and issued at the times of PGW's issuances were made
8 would have an average cost rate of 8.31% (see Exhibit No. JPL-7, Page 2).

9 Q: Please explain your third approach.

10 A: My third approach was simply to assume that PGW's debt would be entirely
11 defeased and replaced with new debt. Moody's Investors Service reports that
12 Aaa-rated Average Public Utility long-term debt had cost rates of from 7.51% to
13 8.22% over the past twelve months. As of January 5, 2001 the Aaa rate was
14 7.08%. Moody's also reports that Baa issuances had cost rates of from 8.01% to
15 8.86% over the same twelve-month period and, as of January 5, 2001 the Baa
16 rate was 7.91%.¹⁰

17 Q: What is your conclusion regarding an appropriate surrogate debt cost for PGW
18 on an IOU basis?

19 A: The 7.60% cost rate that I developed on Exhibit No. JPL-7, Page 1, is a
20 reasonable surrogate cost rate to use for PGW on an IOU basis. A successor to
21 PGW may not have either an Aaa credit rating or the credit rating of the
22 members PGW Proxy Group which, as shown on Exhibit No. JPL-10, Page 2, is
23 A or better. And, a successor company upon acquisition would probably

1 finance an acquisition with a blend of old and new taxable debt, yielding a
2 slightly higher average cost rate. Thus, a 7.60% cost of debt, which is in the
3 middle of a range of possible debt costs, is a reasonable proxy.

4 Q: Have you examined the sensitivity of your cost of service calculation to a change
5 in the assumed cost of debt?

6 A: Yes. Based on the capital structure assumed here, a 10 basis point change in the
7 assumed cost of debt causes a \$523,000 change in the estimated cost of service.

V.F Income Taxes

8 Q: As an IOU would PGW be liable for Federal and state income taxes?

9 A: Yes.

10 Q: What provisions did you make for income taxes in your cost of service
11 adjustments?

12 A: I have included in the cost of service adjustments for Pennsylvania Corporate
13 Net Income Tax at 9.99% of state taxable income and provision for Federal
14 income taxes at 35% of Federal taxable income (see Exhibit No. JPL-1),
15 consistent with current state and Federal tax rates. I have also provided for
16 deferred income taxes as a credit to rate base as calculated in Exhibit No. JPL-11.

¹⁰ Moody's Investors Service, Long-Term Corporate Bond Yield Averages, Average Public Utility, 1/08/01 at www.moody.com.

VI. TAXES OTHER THAN INCOME

1 Q: Would PGW be liable for other taxes if it were an IOU?

2 A: Yes. PGW would be liable for a City of Philadelphia Business Privilege tax that
3 is based in part on gross receipts and in part on net income. Additionally, PGW
4 would be subject to a Pennsylvania Capital Stock Tax and a Pennsylvania Public
5 Utility Realty Tax (PURTA). The calculation of these taxes is set forth on Exhibit
6 No. JPL-9 and Exhibit No. JPL-10.

7 Q: Please describe the basis for the Business Privilege Tax.

8 A: The 2001 Business Privilege Tax is calculated in part at 2.525 mills (.002525) on
9 gross receipts, adjusted for Business Privilege Tax. Additionally, the second
10 portion of the Business Privilege Tax is calculated at 6.50% on the sum of net
11 income and taxes based on net income. Together, the tax amounts to \$8.95
12 million, as reflected on Exhibit No. JPL-8.

13 Q: Please describe the Capital Stock Tax.

14 A: The Capital Stock tax of 7.49 mills (.00749) is based on a composite base of net
15 income and net worth, less a valuation deduction of \$125,000. This tax
16 amounts to \$5.1 million, as shown on Exhibit No. JPL-8.

17 Q: Please describe the Public Utility Realty Tax.

18 A: The PURTA tax is based on the fair market value of utility realty, including
19 structures thereon. Exhibit No. JPL-9 presents the calculation of the PURTA tax
20 base. The PURTA tax is 6.303% and amounts to \$4.07 million, as shown on
21 Exhibit No. JPL-8.

VII. CONCLUSION

1 Q: In summary, what would be the estimated cost of service impact of PGW
2 converting from a municipal utility to an IOU?

3 A: As reflected in my study, the annual cost of service impact would be between
4 \$40-50 million, primarily due to (1) replacement of lower-cost, tax-exempt, debt
5 with higher-cost taxable debt, (2) provision for capitalization with approximately
6 50% equity at approximately an 11% cost rate, and (3) incurrence of Federal and
7 state income taxes and certain other taxes not currently paid by PGW.

8 Q: Are there other considerations that should be addressed in an analysis of
9 whether or not PGW's operations should become investor-owned?

10 A: Yes. In addition to studying the cost of service, capitalization, and income tax
11 issues associated with moving from a municipally-owned utility to an investor-
12 owned utility, some consideration must also be given to the market ramifications
13 of such a change. An additional increase to PGW's filed cost of service in this
14 case of between \$40-50 million, as illustrated by my analysis, cannot be
15 considered in a vacuum. A study of the rate impact of such an additional cost of
16 service increase must also consider the potential for load loss due to
17 conservation and conversion to alternate fuels, as well as load loss to alternate
18 fuel suppliers under PGW's unbundling program.

19 Q: Does this conclude your prepared direct testimony?

20 A: Yes, it does.

JAY P. LUKENS

Lukens Energy Group, Inc.
2100 West Loop South #1300
Houston, Texas 77027

PROFESSIONAL EXPERIENCE

Lukens Energy Group, Inc., Houston, TX
President, January 1999 – present

Founder of economics/management consulting firm offering economic analysis, business counsel, and litigation support services to buyers and sellers of natural gas, electricity and related products and services. Areas of expertise include economics of deregulation, market power analysis, and energy project evaluation. Provides expert testimony in conjunction with civil litigation and regulatory proceedings.

The Economics Resource Group, Inc., Houston, TX
Managing Director, August 1996 – December 1998

Principal of the firm and head of the Houston office. Lead consultant on variety of assignments regarding business and regulatory strategy for electric utilities, natural gas pipelines and distributors, and energy marketing firms.

Energy Market Economics, Inc., Houston, TX
President, November 1995 - August 1996

Founder of consulting firm offering services to energy firms in the areas of business strategy, project evaluation and development, expert witness, and regulatory support.

Transcontinental Gas Pipe Line Corporation, Houston, TX
Senior Vice President, 1989 - 1995

Principal commercial officer with accountability for operating income performance and direct responsibility for business strategy, rates, and federal regulatory affairs. Served as company's principal negotiator in rate cases, transition cost recovery proceedings, and settlements of major civil lawsuits. Directed Transco's implementation of FERC *Order No. 636*. Represented Transco as a policy witness in FERC proceedings. Had P&L responsibility for Transco's gas marketing business during 1991-92. Initiated and directed two major projects to align internal business processes with new competitive environment.

Vice President, Market Development and Planning, 1986 - 1989

Directed Transco's rates, planning, and business development activities. Served as Transco's principal negotiator in FERC's Northeast Open Season proceeding. Developed, marketed, and obtained regulatory approval for projects to expand Transco's capacity by over 10 percent (over 500 MMCFD) with associated capital investment of almost \$300 million. Negotiated contracts with other pipelines to market gas storage and Canadian gas supply projects on Transco's system. Managed Transco's interests in several joint ventures with other interstate pipelines. Evaluated proposals for Transco to acquire or divest pipeline properties and gas production assets.

Director, Strategic Planning, 1985 - 1986

Developed annual budgets, long-range plans, and special studies to support business development activities. Developed market analysis of Transco system that guided market development efforts over the next five years.

AT&T Communications, Basking Ridge, NJ
Staff Manager, 1981 - 1985

Worked in an internal consulting group known as the Analytical Support Center. Led interdisciplinary teams in analyses of a wide range of strategic and operational issues. Principal work related to the impacts of deregulation and divestiture on AT&T's service structure and pricing strategy. Developed competitor analysis methods and systems. Managed market research and economic modeling to evaluate new network services.

Resources Research Corporation, Bryan, TX
Economist, 1978 - 1981

Analyzed data and provided general research support for consulting projects. Principally responsible for econometric studies of markets for medical and dental services.

EDUCATION

Texas A&M University, College Station, TX
Ph.D., Economics, 1981

Eckerd College, St. Petersburg, FL
B.A., Economics, 1977

REPRESENTATIVE BUSINESS STRATEGY CONSULTING EXPERIENCE

Integrated Gas/Electric Company

Assisted in the evaluation and eventual acquisition of a major integrated natural gas company. Developed financial evaluation models for natural gas pipeline and local distribution companies. Developed probabilistic methods to value future growth opportunities. (Ongoing)

Integrated Gas/Electric Company

Assisted a large integrated natural gas and electric power company develop a comprehensive strategy for its regulated businesses. Developed viewpoint of future market structure to align management team around strategic alternatives. Analyzed earnings potential of regulated businesses relative to long term growth plans of corporation. Recommended strategies that consisted of business unit divestiture, asset acquisition, pipeline project development and wholesale trading and marketing. (Ongoing)

Major Gas Utility

Retained to assess the risk of a proposal to eliminate cost-based rates for utility gas sales service. Project involves assessment of the cost and risk inherent in overall gas supply and pipeline capacity contract portfolio. Developing forecast of pipeline capacity prices in Northeast region through 2005. (1999)

Major Electric Utility

Assisting a major electric utility in developing a natural gas strategy. Project to date has focused on evaluation of potential acquisition of natural gas assets. Assessed regional growth in gas consumption and pipeline capacity driven by growth in gas-fired electric generation. Developed screens for potential acquisition candidates based on financial, operational, and regulatory criteria. Developed financial valuation models for a number of gas assets. Developed preliminary market power analysis to identify potential antitrust issues associated with certain acquisitions. (ongoing)

Atmos Energy Corporation

Assisting in the development of a comprehensive, long-term regulatory strategy for the five operating companies and twelve states in which Atmos operates. Strategic issues being considered include rate case timing, the timing and extent of sales service unbundling, and approaches to incentive regulation. Engagement also encompasses re-engineering of the long-range planning process. (ongoing)

Major Energy Marketing Company

Provide analytical support for development of retail energy marketing strategy in state of Georgia. (1998)

Major Oil Company

Provided analysis of potential market for LNG imports. (1998)

Interstate Natural Gas Association of America

Provided analysis to INGAA staff on the potential for regulation by FERC pursuant to the Outer Continental Shelf Land's Act to supplant cost of service regulation pursuant to the Natural Gas Act for offshore pipelines in the Gulf of Mexico. (1997)

North Atlantic Pipeline Partners, L.P.

Provided analytical support to the sponsors of this offshore Canada pipeline project on a broad range of subjects. Prepared a market analysis report estimating potential demand for pipeline capacity in the Northeast that was filed with FERC and NEB certificate applications. Developed cost allocation and rate design methods, and provided necessary exhibits in FERC and NEB certificate applications. Developed economic models used in project evaluation and risk analysis. (1997-1998)

CNG Transmission Corporation

Prepared analysis of pipeline transportation markets in support of proposal to FERC for market-based rates for interruptible and short-term firm transportation services. (1998)

Major Interstate Pipeline

Conducted a strategic evaluation of production area gas transportation and liquids assets designed to position pipeline to respond to increased gas supplies coming from deep water development in the Gulf of Mexico off the continental shelf. (1997)

Interstate Natural Gas Association of America

Worked with INGAA staff to develop comments on FERC's Proposed Rulemaking on removing price caps for secondary market transactions (*Docket No. RM96-14*). (1996)

Major Gas Gathering Company

Provided advice on regulatory strategy for gathering company seeking refunctionalization of transmission assets owned by major interstate pipeline. (1996)

Interstate Natural Gas Association of America

Wrote a paper comparing electronic transportation information systems in the natural gas and electricity industries. INGAA filed the paper with its comments in *Docket No. RM95-9*. (1995)

TESTIMONY

Texas Gas Transmission Corporation

United States of America before the Federal Energy Regulatory Commission, Texas Gas Transmission Corporation, Docket No. RP00-260-000. Testimony supporting proposal for seasonal and term differentiated rates for short term transportation services. Also addressed analysis of the supply and demand balance and the business risk in the market for pipeline capacity in which Texas Gas participates, April 21st, 2000.

ATCO Gas Company

Before the Alberta Energy and Utilities Board, Nova Gas Transmission Ltd., on behalf of ATCO Gas Company. Testimony for alternative rate design for Nova Gas Transmission Ltd. Written evidence submitted on August 10, 1999.

El Paso Natural Gas Company

United States of America before the Federal Energy Regulatory Commission, El Paso Natural Gas Company, Docket No. RP97-287-010. Expert Report filed to rebut claims by CPUC regarding effect on California gas market of contract between Dynegy Corp. and El Paso Natural Gas, May 6, 1999.

El Paso Natural Gas Company

United States of America before the Federal Energy Regulatory Commission, Docket No. RM98-10, Regulation of Short-Term Natural Gas Transportation Services, Docket No. RM98-12, Regulation of Interstate Natural Gas Transportation Services. Expert Report (with Adam Jaffe) regarding economic impact of FERC's proposed rule, April 12th, 1999.

Transcontinental Gas Pipeline Company

United States of America before the Federal Energy Regulatory Commission, Transcontinental Gas Pipeline Company, Docket No. CP98-74-001. Prepared Answering Testimony on behalf of Transco analyzing competitive effects of refusal to construct interconnect, January 5, 1999.

Northern Natural Gas Company and Dynegy Energy Resources, Limited Partnership,

Bearpaw Gathering Systems, Inc., et al., vs. Northern Natural Gas Company and Dynegy Energy Resources, Limited Partnership, f/k/a NGC Energy Resources, Limited Partnership, vs. Ocean Energy, Inc., in the United States District Court for the District of Harris County, Texas, Cause No. 97-47540. Expert testimony in natural gas contract dispute, December 22, 1998.

Shell Oil Company, Shell Western E&P, Inc., and Mobil Producing Texas and New Mexico, Inc. *CO2 Claims Coalition, et al., vs. Shell Oil Company, et al., in the United States District Court for the District of Colorado, CIV. No. 96-Z-2451.* Expert Report analyzing the economic implications of the Plaintiffs' and their Experts' claims concerning price fixing and anti-competitive behavior in establishing the tariffs charged by Cortez Pipeline Company to move CO₂ from the McElmo Dome Unit in southwestern Colorado to Denver City in the Permian Basin, November 2, 1998. Supplemental Expert Report filed April 30, 1999.

El Paso Natural Gas Company

United States of America before the Federal Energy Regulatory Commission, El Paso Natural Gas Company, Docket No. RP97-287-010. Expert Report (with Adam Jaffe) filed with the Initial Comments of El Paso in the technical conference in this docket analyzing the policy issues raised by the contracts between El Paso and Natural Gas Clearinghouse, February 26, 1998. Expert Report filed with the Reply Comments of El Paso in the technical conference in this docket analyzing the competitive impacts of the contracts between El Paso and Natural Gas Clearinghouse, April 14, 1998.

Texas New Mexico Power Company

State of Texas, State Office of Administrative Hearings, Application for Approval of the TNMP Transition Plan and Statement of Intent to Decrease Rates, and Municipal Rate Appeals, SOAH Docket No. 473-97-1561. Prepared Rebuttal Testimony in Support of Restated Stipulation. Policy testimony on terms of competition and conditions of entry in electric restructuring case, March 2, 1998.

AEC Oil & Gas, a Division of Alberta Energy Company, Ltd., Canadian Forest Oil Ltd., and ProGas Limited

In Arbitration, Alberta Northeast Gas Limited vs. AEC Oil & Gas, a Division of Alberta Energy Company, Ltd., Canadian Forest Oil Ltd., and ProGas Limited. Testimony regarding proper interpretation of long-term gas sales contract. Prepared Direct Testimony, January 26, 1998. Reply Testimony, February 11, 1998.

CNG Transmission Corporation

United States of America before the Federal Energy Regulatory Commission, CNG Transmission Corporation, Docket No. RP97-406-000. Prepared Direct Testimony. Expert testimony on market power in secondary market for pipeline capacity, July 1, 1997.

Leidy Line Roll-in Group

United States of America before the Federal Energy Regulatory Commission, Transcontinental Gas Pipe Line, Docket No. RP95-197 & RP 97-71 (Consolidated). Prepared Answering Testimony, March 25, 1997. Cross-Answering Testimony filed May 12, 1997.

Amoco Production Company

In the Matter of Doris Feerer, et al. vs. Amoco Production Company, et al., Civ. No. 95-0012-JC/WWD in United States District Court for the District of New Mexico. Expert report regarding vertical integration and transfer pricing in a royalty dispute, May 5, 1997.

Oklahoma Gas and Electric Co.

Prepared Rebuttal Testimony before the Corporation Commission of the State of Oklahoma, Cause No. PUD 960000116, on behalf of Oklahoma Gas and Electric Company. Recommended the proper allocation of costs for the Enogex pipeline system between Oklahoma Gas and Electric and third party transportation services, November 6, 1996.

Nashville Gas Company

Prepared Direct Testimony before the Tennessee Public Service Commission, Docket No. 96-00805, on behalf of Nashville Gas Company, A Division of Piedmont Natural Gas Company. Proposed a performance incentive program for Nashville's gas procurement and capacity costs, April 22, 1996.

Leidy Line Roll-in Group

United States of America before the Federal Energy Regulatory Commission, Docket No. RP95-197-000 (Phase II). Expert testimony supporting rolled-in rate treatment for Transco's existing incrementally priced expansion projects. Other Answering and Rebuttal Testimony filed as case progressed, January 24, 1996.

Transcontinental Gas Pipe Line Corporation (Transco)

United States of America before the Federal Energy Regulatory Commission, Docket No. RP95-197-000, Prepared Direct Testimony on behalf of Transco. General policy issues in rate case, March 15, 1995.

United States of America before the Federal Energy Regulatory Commission, Docket No. RP93-100, Prepared Direct Testimony on behalf of Transco, supporting the terms and conditions of Transco's contract settlement with Dakota Gasification. Other Supplemental, Answering, and Rebuttal Testimony filed as case progressed, December 19, 1994.

United States of America before the Federal Energy Regulatory Commission, Docket No. RM94-4, Public Conference on Natural Gas Gathering Issues, testimony and response to questions before the Commission members and their staff, February 24, 1994.

United States of America before the Federal Energy Regulatory Commission, Docket No. RP92-137, Prepared Direct Testimony on Behalf of Transco, addressing general policy issues in rate case; primary issue in litigated phase of the case was the design of rates for production area services. Supplemental, Answering, and Rebuttal testimony filed as case progressed, March 17, 1992.

United States of America before the Federal Energy Regulatory Commission, Docket No. RP92-108, Prepared Direct Testimony on Behalf of Transco, supporting general policy issues in rate case, March 10, 1992.

United States of America before the Federal Energy Regulatory Commission, Docket No. CP92-378, Prepared Direct Testimony on Behalf of Transco, addressing the design of an incentive rate mechanism for gas pipelines, February 28, 1992.

United States of America before the Federal Energy Regulatory Commission, Docket No. RM90-1, Public Conference on Pipeline Construction Rulemaking, testimony and response to questions before the Commission members and their staff, January 28, 1992.

United States of America before the Federal Energy Regulatory Commission, Docket No. RP90-8, Prepared Direct Testimony on Behalf of Transco, supporting proposal for new transportation rate design consistent with unbundled service structure, October 24, 1989.

United States of America before the Federal Energy Regulatory Commission, Docket No. RP87-7, Prepared Direct Testimony on Behalf of Transco, addressing the reserved issues of rate design and the terms and conditions of transportation service; supported proposal for a price deregulated secondary market in pipeline capacity rights, June 21, 1989.

United States of America before the Federal Energy Regulatory Commission, Docket No. TA-3-89, Prepared Answering Testimony on Behalf of Transco in remedies phase of FERC enforcement action, February 13, 1989.

PUBLICATIONS AND RESEARCH

"Pricing and Integrated Energy Transmission Grid: Are FERC's Natural Gas and Electric Power Transmission Pricing Policies on a collision course?" *The Electricity Journal*, March 2000.

"The Pipeline's View: FERC's Proposed Rule Misses the Mark," with Adam Jaffe, *Public Utilities Fortnightly*, July 1, 1999.

"Benefits of Retail Electricity Competition in Low Cost States," with Greg Hopper and Frank Felder, *Electricity Journal*, August/September 1998.

"Should a Marketer Manage Your Supply Assets?" with Greg Hopper, *Hart's Energy Markets*, February 1998.

"Wither the Contract for Pipeline Capacity," *Natural Gas Focus*, January 1996.

"Comparison of Transportation Information Systems in the Gas and Electric Industries," EME Working Paper, December 1995.

SELECTED PRESENTATIONS

"Future Pipeline Contract Trends and Emerging Market Centers," presented at the Southern Gas Association—Gas Supply Marketing Forum VII, October 1998.

"Pricing Pipeline Capacity," presented to the Public Service Electric and Gas Company Annual Supplier Meeting, September 1998.

"LDC Unbundling: Theory and Practice," presented at annual meeting of the Municipal Gas Association of Georgia, April 1997.

"LDC Unbundling: Where's the Beef?" presented at Southern Gas Association Marketing Executive Forum, October 1996.

"Five Lessons Learned in Unbundling Natural Gas Pipelines," presented at Center for Business Intelligence Conference, November 1995.

"Evolving Energy Markets: Open Access, Wheeling, and Restructuring," presented at annual meeting of the American Bar Association, August 1994.

"Transco's Operations Under *Order No. 636*," presented to the Terzic Task Force on Competition, January 1993.

"Straight Fixed Variable Rate Design, Market Centers, and Mitigation," presented at annual meeting of the Institute of Public Utilities, December 1992.

"Service Unbundling: A Primer," presented at the Institute of Gas Technology's conference on Gas Supply for Electric Power, March 1992.

OTHER PROFESSIONAL ACTIVITIES

International Association for Energy Economics (IAEE), 1996 – 1998

Board of Directors, INGAA Foundation, 1989 - 1995, 1997 - 1998

Member, Rate Committee, INGAA, 1986 - 1995

Member, Policy Analysis Committee, INGAA, 1986 - 1995

HONORS AND AWARDS

Recipient of the Alfred Chalk Award to the Outstanding Graduate Student, Department of Economics, Texas A&M University, 1981

Thomas Presidential Scholar, Eckerd College, 1973 – 1977

Philadelphia Gas Works Proforma Cost of Service

Line No.	Description	PGW Actual	Adjustments	Adjusted	
1	Operation and Maintenance Expenses				
2	Production & Storage	\$ 405,836,797	\$ -	\$ 405,836,797	
3	Distribution Expenses	\$ 40,870,899	\$ -	\$ 40,870,899	
4	Customer Accounts, Services, & Sales Expenses	\$ 104,550,403	\$ -	\$ 104,550,403	
5	Administrative & General Expenses	\$ 52,838,000	\$ -	\$ 52,838,000	
6	CRP/Senior Discounts	\$ 58,737,165	\$ -	\$ 58,737,165	
7	Less: Other Miscellaneous Revenue	\$ (11,910,597)	\$ -	\$ (11,910,597)	
8		<u>\$ 650,922,667</u>	<u>\$ -</u>	<u>\$ 650,922,667</u>	
9	Depreciation & Amortization	\$ 33,126,088	\$ -	\$ 33,126,088	
10	Taxes Other than Income	\$ 6,548,000	\$ 18,166,120	\$ 24,714,120	a/
11	City Fee	\$ 18,000,000	\$ (18,000,000)	\$ -	b/
12	Interest Expense	\$ 57,789,000	\$ (19,179,296)	\$ 38,609,704	c/
13	Budgeted Surplus	\$ 33,964,912	\$ (33,964,912)	\$ -	d/
14	Return on Equity	\$ -	\$ 57,328,097	\$ 57,328,097	e/
15	Income Taxes				
16	State	\$ -	\$ 9,788,787	\$ 9,788,787	f/
17	Federal	\$ -	\$ 30,868,975	\$ 30,868,975	g/
18	Total Cost of Service	<u>\$ 800,350,667</u>	<u>\$ 45,007,771</u>	<u>\$ 845,358,438</u>	h/

a/ See Exhibit No. JPL-8.

b/ To eliminate payment of City of Philadelphia fee.

c/ Based on 7.6% Cost of Debt (Aaa Bond Rating) (See Exhibit No. JPL-7).

d/ To eliminate Budgeted Surplus due to change of ratemaking methodology.

e/ Based on 11.16% Cost of Equity (See Exhibit No. JPL-4).

f/ Based on 9.99% State of Pennsylvania Corporate Net Income Tax.

g/ Based on 35% Federal Income Tax Rate.

h/ PGW actual total cost of service is per Exhibit HSG-2, Schedule 1, December 2000, Page 4 of 4, Line 181.

RECEIVED

JUN 6 2001

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

DOCKETED

JUN 8 2001

**DOCUMENT
FOLDER**

Lukens Energy Group
Date Prepared: 01/17/2001

Prepared by Jay P. Lukens

**Philadelphia Gas Works
Proforma Rate Base**

Line No.	Description	PGW Actual	Adjustments	Adjusted
1	Gross Rate Base			
2	Construction Work in Progress	\$ 102,266,453	\$ -	\$ 102,266,453
3	Gas Plant in Service	\$ 1,245,223,658	\$ -	\$ 1,245,223,658
4	Unclassified Rate Base	\$ 86,703,525	\$ -	\$ 86,703,525
5	Materials and Supplies	\$ -	\$ -	\$ -
6	Working Capital	\$ 98,045,000	\$ -	\$ 98,045,000
7	Lease Equipment	\$ 14,000,340	\$ -	\$ 14,000,340
8	Total	\$ 1,546,238,976	\$ -	\$ 1,546,238,976
9	Deductions to Gross Rate Base			
10	Accumulated Depreciation	\$ 519,702,275	\$ -	\$ 519,702,275
11	Accumulated Deferred Income Tax	\$ -	\$ 4,745,953	\$ 4,745,953 a/
12	Net Rate Base	\$ 1,026,536,701	\$ (4,745,953)	\$ 1,021,790,748 b/

a/ See Exhibit No. JPL-11.

b/ PGW actual data is per Exhibit HSG-2, Schedule 3, December 2000, Page 5 of 14, Line 147.

DOCUMENT
FOLDER

RECEIVED

JUN 6 2001

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

DOCKETED

JUN 8 2001

Philadelphia Gas Works Proforma Capital Structure

Line No.	Capitalization	\$ Amount	% of Total	Cost Rate	Weighted Cost
1	Long-Term Debt	\$ 508,213,173 a/	49.74% b/	7.60% c/	3.78%
2	Common Equity	\$ 513,577,575 a/	50.26% d/	11.16% d/	5.61%
3		\$ 1,021,790,748 e/	100.00%		9.39%

a/ Imputed.

b/ Imputed (=100% - 50.26%).

c/ See Exhibit No. JPL-7.

d/ See Exhibit No. JPL-5.

e/ See Exhibit No. JPL-2.

RECEIVED

JUN 6 2001

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

DOCUMENT
FOLDER

DOCKETED

JUN 8 2001

Philadelphia Gas Works Proforma Cost of Debt and Equity

Line No.		Rate Base a/	Weighted Cost b/	Return
1	Debt	\$1,021,790,748	3.78%	\$38,609,704
2	Equity	\$1,021,790,748	5.61%	\$57,328,097
3	Total Return	\$1,021,790,748	9.39%	\$95,937,800

a/ See Exhibit No. JPL-2.

b/ See Exhibit No. JPL-3.

RECEIVED

JUN 6 2001

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

**DOCUMENT
FOLDER**

DOCKETED
JUN 8 2001

Philadelphia Gas Works Proxy Group Approved Return on Equity and Cost of Debt

Return on Equity

Line No.	Company	ROE Granted	Date of Order	Source / Reference
1	Baltimore Gas & Electric	11.05%	08/19/2000	Public Service of Commission of Maryland; Case No. 8829, Order No. 76260
2	Piedmont Natural Gas	11.30%	10/05/2000	State of North Carolina Utilities Commission Raleigh, Docket No. G-9, SUB 428
3	Virginia Natural Gas	10.90%	06/30/2000	Consolidated Natural Gas Company Capital Structure and Cost of Capital Statement, Schedule 3; As filed with the Virginia State Corporation Commission, Test Year Ended June 30, 2000
4	Washington Gas Light	11.40%	01/06/2000	Public Service Commission of Maryland Case No. 8819 Stipulation & Agreement; Appendix C, Page 3. (Initial Decision of Hearing Examiner)
5	Average	11.16%		

Cost of Debt

Line No.	Company	Cost of Short-Term Debt	Cost of Long-Term Debt	Source / Reference
6	Baltimore Gas & Electric		6.90%	Constellation Energy Group, Inc. 1999 10-K a/
7	Piedmont Natural Gas	6.91%	7.98%	State of North Carolina Utilities Commission Raleigh, Docket No. G-9, SUB 428 (10/5/00)
8	Virginia Natural Gas	6.48%	7.11%	Consolidated Natural Gas Company Capital Structure and Cost of Capital Statement, Schedule 3; As filed with the Virginia State Corporation Commission, Test Year Ended June 30, 2000
9	Washington Gas Light		6.80%	Washington Gas Light 1999 10-K405
10	Average	6.70%	7.20%	

a/ BG&E's cost of long-term debt equals the weighted average of average interest rates on long-term variable-rate debt and long-term fixed-rate debt.

DOCUMENT
FOLDER

RECEIVED

JUN 6 2001

DOCKETED

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

JUN 8 2001

Philadelphia Gas Works Proxy Group Approved Capital Structure

Capital Structure

Line No.	Company	Short-Term Debt	Long-Term Debt	Preferred Stock & Other	Common Stock Equity	Source / Reference
1	Baltimore Gas & Electric	1.00%	46.24%	8.28%	44.48%	Baltimore Gas & Electric Company Revenue Requirement; Case No. 8829 for the twelve months ending December 31, 1999
2	Piedmont Natural Gas	3.17%	44.12%	0.00%	52.71%	State of North Carolina Utilities Commission Raleigh, Docket No. G-9, SUB 428 (10/5/00)
3	Virginia Natural Gas ^{a/}	12.80%	37.64%	0.40%	49.16%	Consolidated Natural Gas Company Capital Structure and Cost of Capital Statement, Schedule 3; As filed with the Virginia State Corporation Commission, Test Year Ended June 30, 2000
4	Washington Gas Light	3.73%	39.32%	2.25%	54.70%	Public Service Commission of Maryland Case No. 8819 Stipulation & Agreement; Appendix C, Page 1 (1/6/00). (Initial Decision of Hearing Examiner).
5	Average	5.18%	41.83%	2.73%	50.26%	

^{a/} Virginia Natural Gas' .40% "Preferred Stock & Other" is Investment Tax Credits.

Actual Return on Equity and Capital Structure for Selected Distribution Companies

Proforma Capital Structure - Pennsylvania Distribution Companies and Selected Industry Data (For Reference Purposes)

Line No.	Company	Short-Term Debt	Long-Term Debt	Preferred Stock	Common Stock Equity	Source / Reference
1	PECO		51.98%	4.15%	43.87%	Pennsylvania PUC Quarterly Earnings Reports: PECO Energy Company - Gas Operations, 3/31/00 (Pro Forma Results)
2	The Peoples Natural Gas Company		49.87%		50.13%	Pennsylvania PUC Quarterly Earnings Reports: The Peoples Natural Gas Company, 9/30/00 (Pro Forma Results)
3	UGI Utilities		41.43%	4.79%	53.78%	Pennsylvania PUC Quarterly Earnings Report: UGI Utilities, Inc., 9/30/00 (Pro Forma Results)
4	AGA 1997 Gas Industry Summary		45.50%	1.60%	52.60%	American Gas Association (AGA) Gas Facts 1998 Data - "Gas Utility Analytical Ratios" (Published 12/2/99, Accessed 12/20/00)
5	AGA 1998 Gas Industry Summary		44.70%	1.00%	53.90%	American Gas Association (AGA) Gas Facts 1998 Data - "Gas Utility Analytical Ratios" (Published 12/2/99, Accessed 12/20/00)

Proforma ROE - Pennsylvania Distribution Companies Earned Returns and Orange & Rockland (For Reference Purposes)

Line No.	Company	ROE Granted	Date of Filing	Source / Reference
6	Orange & Rockland	11.10%	09/11/2000	State of New York Public Service Commission Agreement and Settlement: Case 99-G-1695 - Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Orange & Rockland Utilities, for Gas Service
7	PECO	12.28%	03/31/2000	Pennsylvania PUC Quarterly Earnings Reports: PECO Energy Company - Gas Operations, 3/31/00
8	The Peoples Natural Gas Company	11.38%	09/30/2000	Pennsylvania PUC Quarterly Earnings Reports: The Peoples Natural Gas Company, 9/30/00
9	UGI Utilities	11.18%	09/30/2000	Pennsylvania PUC Quarterly Earnings Report: UGI Utilities, Inc., 9/30/00

DOCUMENT DOCKETED

FOLDER

JUN 8 2001

RECEIVED

JUN 6 2001

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

Philadelphia Gas Works
Proforma Long Term Debt Cost
(Based on Imputed Aaa Interest Rates)

Line No.	Bond/Lease Outstanding a/ (1)	Issue Date (2)	Average Yield to Maturity b/ (3)	Original Amount (4)	Interest Requirement (Column 3 Times Column 4) (5)	Average Cost of Long Term Debt (Column 5 Divided by Column 4) (6)
<i>Revenue Bonds Outstanding</i>						
1	11th Series C	02/14/1989	9.65%	\$ 132,520,000	\$ 12,788,180	
2	12th Series A	03/29/1990	9.37%	\$ 50,420,551	\$ 4,724,406	
3	13th Series	06/28/1991	9.02%	\$ 75,220,000	\$ 6,784,844	
4	14th Series	02/18/1993	7.69%	\$ 376,550,000	\$ 28,956,695	
5	15th Series	01/27/1994	6.91%	\$ 183,880,000	\$ 12,706,108	
6	1st Series A-B-C	06/24/1998	6.54%	\$ 287,185,000	\$ 18,781,899	
7	16th & 2nd Series	06/23/1999	7.31%	\$ 176,280,000	\$ 12,886,068	
<i>Capital Leases Outstanding</i>						
8	1996 Capital Lease	Jan-96	6.72%	\$ 20,100,000	\$ 1,350,720	
9	1997 Capital Lease	Jul-97	7.37%	\$ 23,000,000	\$ 1,695,100	
10	Total			\$1,325,155,551	\$ 100,674,020	7.60%

a/ Per PGW Long Term Debt and Capital Leases Outstanding, 12/00.

b/ Imputed interest rates obtained from the Federal Reserve Statistical Release H.15.

Historical Selected Interest Rates released on December 11, 2000:

Aaa Moody's Seasoned Corporate Bonds, Average Yield to Maturity on Selected Long-Term Bonds.

DOCUMENT
FOLDER

DOCKETED
JUN 8 2001

RECEIVED

JUN 6 2001

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

Philadelphia Gas Works
Proforma Long Term Debt Cost
(Based on Imputed Baa Interest Rates)

Line No.	Bond/Lease Outstanding a/ (1)	Issue Date (2)	Average Yield to Maturity b/ (3)	Original Amount (4)	Interest Requirement (Column 3 Times Column 4) (5)	Average Cost of Long Term Debt (Column 5 Divided by Column 4) (6)
<i>Revenue Bonds Outstanding</i>						
1	11th Series C	02/14/1989	10.64%	\$ 132,520,000	\$ 14,100,128	
2	12th Series A	03/29/1990	10.21%	\$ 50,420,551	\$ 5,147,938	
3	13th Series	06/28/1991	9.90%	\$ 75,220,000	\$ 7,446,780	
4	14th Series	02/18/1993	8.32%	\$ 376,550,000	\$ 31,340,257	
5	15th Series	01/27/1994	7.61%	\$ 183,880,000	\$ 13,993,268	
6	1st Series A-B-C	06/24/1998	7.14%	\$ 287,185,000	\$ 20,505,009	
7	16th & 2nd Series	06/23/1999	8.10%	\$ 176,280,000	\$ 14,278,680	
<i>Capital Leases Outstanding</i>						
8	1996 Capital Lease	Jan-96	7.38%	\$ 20,100,000	\$ 1,483,380	
9	1997 Capital Lease	Jul-97	7.96%	\$ 23,000,000	\$ 1,830,800	
10	Total			\$ 1,325,155,551	\$ 110,126,240	8.31%

a/ Per: PGW Long Term Debt and Capital Leases Outstanding, 12/00.

b/ Imputed interest rates obtained from the Federal Reserve Statistical Release H.15.

Historical Selected Interest Rates released on December 11, 2000:

Baa Moody's Seasoned Corporate Bonds, Average Yield to Maturity on Selected Long-Term Bonds.

RECEIVED

JUN 6 2001

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

Philadelphia Gas Works Proforma Taxes Other than Income

Line No.	Tax	Tax Base Description	Tax Base Amount	Tax Rate	Tax Amount
1	Business Privilege (city)				
2	Gross Receipts portion	Gross receipts plus taxes	\$848,141,557	0.2525%	\$2,141,557 a/
3	Net Income portion	Method I (Includes net income and taxes based on net income)	\$104,797,710	6.500%	\$6,811,851 b/
4	Capital Stock (state)	Capital stock valuation	\$686,785,006	0.749%	\$5,144,020 c/
5	Public Utility Realty (state)	Fair market value of utility realty	\$64,551,670	6.303%	\$4,068,692 d/
6	Total				\$18,186,120

a/ Gross Receipts tax based on PGW Adjusted Cost of Service (tax rate is for 2001).

b/ Based on City of Philadelphia Business Privilege Tax Return Instruction Sheet E.

c/ Formula = (.5)(average net income/.095)+(.75)(net worth)-\$125,000.

d/ PURTA varies by year. Rate for both 1999 and 2000 is 6.303% (based on conversation with Pennsylvania Dept. of Revenue).

DOCUMENT
FOLDER

RECEIVED

JUN 6 2001

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

DOCKETED
JUN 8 2001

Philadelphia Gas Works Proforma Public Utility Realty Tax Base (PURTA)

Line No.	Account Description	PURTA Depreciable Plant Balance <i>a/</i>	PURTA Depreciable Plant <i>b/</i>	Total Depreciable Plant	Accumulated Depreciation	Depreciation Factor	PURTA Tax Base
1	Production Plant	\$26,649,274	\$25,196,389	\$121,345,759	\$88,565,040	73.0%	\$8,259,516 <i>c/</i>
2	Land and Land Rights	\$1,452,885					
3	Structures and Improvements	\$25,196,389					
4	Storage Plant	\$58,964,459	\$58,964,459	\$105,839,572	\$60,831,812	57.6%	\$24,161,980
5	Land and Land Rights	\$0					
6	Structures and Improvements	\$22,372,482					
7	Gas Holders	\$34,091,977					
8	Distribution Plant	\$2,913,202	\$2,812,225	\$905,860,320	\$323,511,973	35.7%	\$1,908,866
9	Land and Land Rights	\$100,977					
10	Structures and Improvements	\$2,812,225					
11	General Plant	\$50,767,484	\$47,011,557	\$107,068,218	\$46,793,850	43.7%	\$30,221,309
12	Land and Land Rights	\$3,755,927					
13	Structures and Improvements	\$47,011,557					
14	Total						\$64,551,670

a/ Per Exhibit HSG-2, Schedule 3, December 2000, Page 1 & 3 of 14.

b/ Excludes Land and Land Rights.

c/ Formula = $PURTA\ Depreciable\ Plant \cdot (PURTA\ Depreciable\ Plant \div Depreciation\ Factor) \div (Land\ and\ Land\ Rights)$.

DOCUMENT
FOLDER

RECEIVED

JUN 6 2001

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

DOCKETED

JUN 8 2001

Profiles for Selected Distribution Companies

Line No.	Company	Residential Gas Sales (thousands of Dth)	Total Gas Sales (thousands of Dth)	% of Sales to Residential Customers		# of Residential Gas Customers	Total # of Gas Customers	Residential % of Total Customers	
1	Baltimore Gas & Electric	38,740	120,789	32.07%	a/	543,500	584,700	92.95%	a/
2	Orange & Rockland	13,703	21,567	63.54%	b/		(Data Requested)		c/
3	Piedmont Natural Gas	38,111	135,970	28.03%	d/	549,294	618,783	88.77%	d/
4	Virginia Natural Gas	15,471	34,986	44.22%	e/	213,273	231,798	92.01%	//
5	Washington Gas Light	655,000	1,074,000	60.99%	g/	790,000	851,000	92.83%	g/
							∴		
6	Philadelphia Gas Works	43,988	68,857	63.88%	h/	480,890	512,891	93.76%	h/

a/ Baltimore Gas & Electric 1999 10-K.
 b/ Consolidated Edison 1999 10-K405 (data specific to Orange & Rockland).
 c/ Have not received requested information from Orange & Rockland (as of 1/18/01).
 d/ Piedmont 1999 Annual Report.
 e/ Per VNG Budget Planning Dept., 1/10/01.
 // Dominion/CNG 1999 10-K405 (data specific to Virginia Natural Gas).
 g/ Per Washington Gas Light Energy Acquisition Group, 1/18/01.
 h/ Per Exhibit HSG-1, Schedule 4A, December 2000, Page 1 of 3, Lines 11 & 18.

RECEIVED

JUN 6 2001
 PA PUBLIC UTILITY COMMISSION
 SECRETARY'S BUREAU

DOCUMENT
 FOLDER

DOCKETED
 JUN 8 2001

Profiles for Selected Distribution Companies

Line No.	Company	Moody's Bond Rating		Total Revenue (millions of \$)	Total Assets (millions of \$)	
1	Baltimore Gas & Electric	Secured Debt: A1 Unsecured Debt: A2	a/	\$3,028.3	\$7,272.6	b/
2	Orange & Rockland	Senior Debt: A1	c/	\$617.5	\$1,088.8	d/
3	Piedmont Natural Gas	Medium Term Notes: A2	e/	\$686.5	\$1,288.7	f/
4	Virginia Natural Gas	Senior Unsecured Debt: A3	g/	\$202.8	\$456.1	h/
5	Washington Gas Light	Medium Term Notes: Aa2	i/	\$1,112.2	\$1,766.7	j/
6	Philadelphia Gas Works	Revenue Bonds: Baa	k/	\$800.4	\$1,240.0	l/

a/ AGA's 2000 Handbook of Publicly Traded AGA Member Companies, Constellation Energy Group, May 2000.

b/ Constellation Energy Group, Inc. 1999 10-K (data specific to BG&E).

c/ AGA's 2000 Handbook of Publicly Traded AGA Member Companies, Consolidated Edison, Inc., May 2000.

d/ Consolidated Edison Inc. 1999 10-K405 (data specific to O&R).

e/ AGA's 2000 Handbook of Publicly Traded AGA Member Companies, Piedmont Natural Gas, May 2000.

f/ Piedmont 1999 Annual Report.

g/ Data is Atlanta Gas Light rating because of recent acquisition of VNG by AGL;

Per AGL Resources Investor Relations, 1/11/01.

h/ AGL Resources 12/20/00 8-K/A Amended Current Report (Virginia Natural Gas, Inc. Statement of Income and Balance Sheet).

i/ AGA's 2000 Handbook of Publicly Traded AGA Member Companies, Washington Gas Light, May 2000.

j/ Washington Gas Light 1999 Annual Report (Consolidated value, from WGL 1999 10-K405).

k/ August 2000 report of Moody's Investor Service.

l/ Revenue: See Exhibit No. JPL-1; Assets: 8/31/00 Actual Total Assets

Philadelphia Gas Works Proforma Accumulated Deferred Income Tax

Depreciable Assets	Gross Plant	Less: Land	Depreciable Plant	Add: CWIP	Total Depreciable Plant
Production	\$ 122,798,644	\$ 1,452,885	\$ 121,345,759		a/
Storage	\$ 105,639,572	\$ -	\$ 105,639,572		a/
Transmission	\$ -	\$ -	\$ -		a/
Distribution	\$ 905,961,297	\$ 100,977	\$ 905,860,320		b/
General	\$ 110,824,145	\$ 3,755,927	\$ 107,068,218		c/
	<u>\$ 1,245,223,658</u>	<u>\$ 5,309,789</u>	<u>\$ 1,239,913,869</u>	\$ 102,266,453 d/	<u>\$ 1,342,180,322</u>
Depreciation Expense			\$ 33,970,088 e/	\$ 2,801,808	\$ 36,771,896
Composite Rate			2.74% f/	\$ 0	
MACRS Rate - Half Year Convention - Year 1			3.75% g/		
MACRS Depreciation					\$ 50,331,762
Tax Depreciation in Excess of Book Depreciation					\$ 13,559,866
Statutory Tax Rate			35%		
Accumulated Deferred Income Taxes Generated					<u>\$ 4,745,953</u>

a/ Per Exhibit HSG-2, Schedule 3, December 2000, Page 1.
 b/ Per Exhibit HSG-2, Schedule 3, December 2000, Page 2-3.
 c/ Per Exhibit HSG-2, Schedule 3, December 2000, Page 3.
 d/ Per Exhibit HSG-6, Schedule 1, December 2000, Page 16.
 e/ Per Exhibit HSG-2, Schedule 1, December 2000, Page 3, Line 134.
 f/ Imputed.
 g/ Table A-1, Half-Year Convention, 20-Year Life, IRS Publication 946, Page 64.

RECEIVED

JUN 6 2001

PA PUBLIC UTILITY COMMISSION
SECRETARY'S BUREAU

DOCUMENT
FOLDER DOCKETED
JUN 8 2001

Administrative Counsel
Attachment No. 1

R-00006042

5/23/01

Phila PD

eks

**A Stratified Management
and Operations Audit of
Philadelphia Gas Works**

For the Pennsylvania Public
Utility Commission

DOCUMENT
FOLDER

PA P.U.C.
SECRETARY'S BUREAU

01 JUN -6 PM 3:49

RECEIVED



DOCKETED
JUN 8 2001

**A Stratified Management
and Operations Audit of
Philadelphia Gas Works**

For the Pennsylvania Public
Utility Commission

January 2001

Barrington-Wellesley Group, Inc.

New London, New Hampshire

TABLE OF CONTENTS

<i>Chapter</i>	<i>Page</i>
I. INTRODUCTION	I-1
A. Background	I-1
B. Audit Objectives	I-2
C. Audit Scope.....	I-3
D. Approach.....	I-4
II. EVALUATION AND RECOMMENDATIONS	II-1
A. Performance Evaluation.....	II-1
B. Summary of Recommendations.....	II-3
C. Implementation Costs and Benefits.....	II-9
III. CORPORATE PLANNING	III-1
A. Background.....	III-1
B. Objective.....	III-2
C. Evaluative Criteria	III-2
D. Work Steps	III-2
E. Findings and Conclusions	III-3
F. Recommendations	III-10
IV. STAFFING LEVELS	IV-1
A. Background.....	IV-1
B. Objective.....	IV-4
C. Evaluative Criteria	IV-5
D. Work Steps	IV-5
E. Findings and Conclusions.....	IV-6
F. Recommendations	IV-12
V. SUPPORT SERVICES	V-1
A. Background.....	V-1
B. Objective.....	V-2
C. Evaluative Criteria	V-2
D. Work Steps	V-2
E. Findings and Conclusions.....	V-3
F. Recommendation.....	V-7
VI. ONGOING OR PLANNED EFFORTS	VI-1
A. Background.....	VI-1
B. RFP Objectives.....	VI-1
C. Evaluative Criteria	VI-2
D. Work Steps	VI-2
E. Findings and Conclusions.....	VI-2
F. Recommendation.....	VI-4

TABLE OF CONTENTS (Continued)

<i>Chapter</i>	<i>Page</i>
VII.	CORPORATE GOVERNANCE VII-1
	A. Background VII-1
	B. RFP Objectives VII-2
	C. Evaluative Criteria..... VII-2
	D. Work Steps..... VII-3
	E. Findings and Conclusions..... VII-4
	F. Recommendations..... VII-11
VIII.	CUSTOMER SERVICE, BILLING AND COLLECTION VIII-1
	A. Background VIII-1
	B. RFP Objectives VIII-3
	C. Evaluative Criteria..... VIII-3
	D. Work Steps..... VIII-4
	E. Findings and Conclusions..... VIII-7
	F. Recommendations..... VIII-36
IX.	GAS DISTRIBUTION AND SUPPLY MANAGEMENT IX-1
	A. Background IX-1
	B. RFP Objectives IX-5
	C. Evaluative Criteria..... IX-6
	D. Work Steps..... IX-7
	E. Findings and Conclusions..... IX-11
	F. Recommendations..... IX-32
X.	FINANCIAL MANAGEMENT X-1
	A. Background X-1
	B. RFP Objective X-2
	C. Evaluative Criteria..... X-2
	D. Work Steps..... X-3
	E. Findings and Conclusions..... X-4
	F. Recommendations..... X-20
XI.	INFORMATION TECHNOLOGY XI-1
	A. Background XI-1
	B. RFP Objectives XI-2
	C. Evaluative Criteria..... XI-2
	D. Work Steps..... XI-3
	E. Findings and Conclusions..... XI-4
	F. Recommendations..... XI-15

TABLE OF CONTENTS
(Continued)

<i>Chapter</i>		<i>Page</i>
XII.	READINESS FOR INDUSTRY RESTRUCTURING AND RETAIL COMPETITION.....	XII-1
	A. Background.....	XII-1
	B. RFP Objective.....	XII-1
	C. Evaluative Criteria	XII-2
	D. Work Steps	XII-2
	E. Findings and Conclusions	XII-3
	F. Recommendations	XII-5
XIII.	HUMAN RESOURCE MANAGEMENT.....	XIII-1
	A. Background.....	XIII-1
	B. RFP Objectives.....	XIII-2
	C. Evaluative Criteria	XIII-2
	D. Work Steps	XIII-2
	E. Findings and Conclusions	XIII-4
	F. Recommendations	XIII-14
XIV.	DIVERSITY AND EQUAL EMPLOYMENT OPPORTUNITY.....	XIV-1
	A. Background.....	XIV-1
	B. RFP Objective.....	XIV-9
	C. Evaluative Criteria	XIV-9
	D. Work Steps	XIV-10
	E. Findings and Conclusions	XIV-12
	F. Recommendations	XIV-22
XV.	PROPOSED WORK MANAGEMENT AND MANPOWER PLANNING PROGRAM.....	XV-1
	A. Background.....	XV-1
	B. Objective	XV-1
	C. Work Steps	XV-2
	D. Proposed Implementation Plan.....	XV-3
	E. Manpower Planning Model.....	XV-7
	F. Cost and Benefit Analysis	XV-9
	APPENDIX A	
	1. Philadelphia Gas Works Data	A-1
	2. Panel Characteristics - Year Ending 1999.....	A-7
	3. Panel Comparison Data	A-9
	4. Panel Company Data	A-15
	5. Document Sources.....	A-36

LIST OF EXHIBITS

<i>Exhibit</i>		<i>Page</i>
II-1	Evaluation Summary	II-2
II-2	Recommendation Cost / Benefits Estimates	II-10
III-1	Status of Interim Management Plan	III-4
III-2	Preferred Practices Checklist: Corporate Planning	III-6
III-3	Assessment of Draft Strategic Plan 2000	III-8
IV-1	Employee Distribution	IV-1
IV-2	Ratio of Management to Non-Management Employees	IV-2
IV-3	Employee Tenure	IV-2
IV-4	Contractor Utilization	IV-3
IV-5	Grievance Resolution Summary	IV-4
IV-6	Full-Time Employees by Department	IV-6
IV-7	Employee Turnover Analysis	IV-7
IV-8	Overtime Hours as a Percentage of Total Paid Hours	IV-8
IV-9	Span of Control Analysis	IV-10
IV-10	Comparative Analysis of Staffing Levels	IV-11
V-1	Property and Liability Insurance Premium Comparison	V-4
V-2	Workers' Compensation Costs	V-4
V-3	Legal Costs	V-7
VII-1	Responsibilities for Oversight	VII-5

LIST OF EXHIBITS
(Continued)

<i>Exhibit</i>		<i>Page</i>
VII-2	Organization as of 12/1/00.....	VII-9
VIII-1	Customer Affairs Department Objectives.....	VIII-2
VIII-2	Abandoned Calls.....	VIII-8
VIII-3	Call Center Performance.....	VIII-8
VIII-4	Staffing Level Required to Meet Call Center Service Levels.....	VIII-10
VIII-5	Call Center Staffing.....	VIII-11
VIII-6	Timeline for Filling CSR Positions.....	VIII-12
VIII-7	Field Collection Efforts.....	VIII-16
VIII-8	Manual Reads Statistics.....	VIII-18
VIII-9	Aged Accounts Receivable.....	VIII-19
VIII-10	Customer Deposits.....	VIII-19
VIII-11	Bad Debt Writeoffs.....	VIII-20
VIII-12	Steps for Terminating Residential Service.....	VIII-21
VIII-13	District Office Statistical Comparison.....	VIII-23
VIII-14	Customer Complaints Aging.....	VIII-24
VIII-15	Effectiveness of Revenue Recovery Efforts.....	VIII-25
VIII-16	CRP and CAP Policy Statement Comparison.....	VIII-28
VIII-17	CRP Cost to Customers.....	VIII-30
VIII-18	LIHEAP and CRISIS Grants Received.....	VIII-31
VIII-19	1998 CWP Evaluation.....	VIII-32
VIII-20	RURP and LIURP Comparison.....	VIII-33

**LIST OF EXHIBITS
(Continued)**

<i>Exhibit</i>		<i>Page</i>
VIII-21	Cost of Senior Citizens Program.....	VIII-35
IX-1	Distribution System Age.....	IX-2
IX-2	Problem System Components.....	IX-3
IX-3	Leaks and Reportable Incidents.....	IX-3
IX-4	Long-Term Supply Contracts.....	IX-4
IX-5	Annual Capital Budget for Distribution Plant.....	IX-14
IX-6	Unaccounted-For Gas.....	IX-15
IX-7	Historical Cast Iron Replacements.....	IX-16
IX-8	Budgeted Cast Iron Replacements.....	IX-17
IX-9	Coated-But-Not-Cathodically-Protected Steel Main.....	IX-18
IX-10	Bare Steel Services.....	IX-19
IX-11	Third-Party Damages Per Markout Request.....	IX-21
IX-12	Purchased Gas Cost Per Mcf Sold.....	IX-22
IX-13	Revenue Per Residential Mcf Comparison.....	IX-23
IX-14	Buildings and Facilities.....	IX-26
IX-15	Janitorial Services Costs.....	IX-27
IX-16	Purchase Orders.....	IX-29
IX-17	Vehicle Inventory.....	IX-30
IX-18	Vehicle Maintenance Costs.....	IX-31
IX-19	Fleet Availability.....	IX-32
X-1	Comparative Balance Sheets.....	X-5

**LIST OF EXHIBITS
(Continued)**

<i>Exhibit</i>		<i>Page</i>
X-2	Comparative Income Statements	X-6
X-3	Comparative Cash Flow Indicators	X-7
X-4	Debt Service Coverage Test as of August 31, 1999	X-10
X-5	Principal Maturities and Scheduled Interest Payments for Revenue Bonds	X-11
X-6	External Auditor Observations	X-15
X-7	FY 2001 Capital Budget Priorities	X-17
X-8	Revisions to Controller's Department Procedural Manual	X-19
XI-1	BCCS Budget and Costs	XI-6
XI-2	IT Costs Per Customer	XI-13
XIII-1	Comparative Salaries Examples	XIII-5
XIII-2	Compensation Increases	XIII-6
XIII-3	Tuition Program Costs	XIII-7
XIII-4	Safety Record	XIII-8
XIII-5	LTA Comparison - 1998	XIII-9
XIII-6	Attendance Policy Approaches	XIII-11
XIII-7	Fringe Benefit Costs	XIII-12
XIII-8	Overtime as a Percentage of Payroll and Average Per Employee	XIII-13
XIV-1	Work Force by Job Category	XIV-2
XIV-2	Males in Work Force by Job Category and Ethnic Background	XIV-3

**LIST OF EXHIBITS
(Continued)**

<i>Exhibit</i>		<i>Page</i>
XIV-3	Females in Work Force by Job Category and Ethnic Background.....	XIV-5
XIV-4	Percentages of Minorities in Various Job Categories....	XIV-8
XIV-5	Percentages of Females in Various Job Categories.....	XIV-8
XIV-6	New Hires by Calendar Year.....	XIV-14
XIV-7	Recruitment Sources.....	XIV-15
XIV-8	Open EEO Complaints as of 8/31/00.....	XIV-20
XIV-9	Minority/Women Materials Purchasing Activity.....	XIV-20
XV-1	Proposed Project Schedule.....	XV-4

Introduction

A. BACKGROUND

This report contains the findings, conclusions, and recommendations of the stratified management and operations audit of the Philadelphia Gas Works (PGW) conducted by the Barrington-Wellesley Group, Inc. (BWG) on behalf of the Pennsylvania Public Utility Commission (PUC or Commission). The findings, conclusions and recommendations contained in this report are the findings and recommendations of BWG, and, as such, are not necessarily agreed to by PGW or the PUC. No information was omitted from this report because it was deemed privileged or confidential. This chapter provides an introduction to the report, provides a brief profile of PGW, and describes the objectives and scope of the audit and our approach.

PGW is owned by the people of the City of Philadelphia and has many stakeholders with multiple, often competing, goals. The City has provided for the oversight of PGW's operations through a non-profit corporation, the Philadelphia Facilities Management Corporation (PFMC), and rate setting by the Philadelphia Gas Commission (PGC). The City Council, the Mayor and the City Controller all have the opportunity to have significant input into key management issues. PGW is required to make a \$18 million transfer, that is, a dividend payment, to the City each year.

This audit of PGW, which started in May 2000, took place in the midst of a major restructuring of the gas industry in Pennsylvania. In the spring of 1999, the Pennsylvania General Assembly included PGW in legislation that provides customers a choice of suppliers in the natural gas industry. As a result of the legislation, PGW is now regulated by the PUC, instead of by the PGC. While choice of suppliers came to Pennsylvania gas customers in the fall of 1999, choice will not come to PGW customers until September 1, 2003. The law requires PGW to file a restructuring plan and new tariff with the PUC no earlier than December 31, 2001, and no later than July 1, 2002. It is expected that PGW's restructuring plan will propose a tariff and rate structure that charges customers for the use of facilities such as pipes, storage, billing and meter reading.

PGW has struggled to meet its debt coverage ratio of 1.5 as determined in its indentures without raising its rates due to its unhealthy financial condition. Its debt-to-equity ratio increased from 3.25 in FY1996 to 4.34 (estimated) in FY2000, compared to the 2.00 mark typical of "AA" rated utilities. PGW has also experienced declining profit margins.

PGW provides gas services to about 512,000 residential, commercial and industrial customers throughout the City of Philadelphia. PGW's work force has fallen sharply during the 1990s, even as its customer base has stayed relatively steady. In 2000, PGW had 1794 employees, compared to 2,475 in 1990, a 27.5 percent reduction. Almost 80 percent of PGW's employees are members of the Gas Work Employees' Union of Philadelphia, Local 686.

In recent years, PGW has received a great deal of publicity due to what may be perceived as poor management. PGW's attempt to implement a new Billing, Credit and Collection System (BCCS) in July 1999 was a "bust." When PGW issued inaccurate bills due to the BCCS conversion, it received about 12,000 customer complaint calls a day. BCCS, which was originally budgeted for \$9.7 million, cost about \$33 million, and is still not fully operational.

B. AUDIT OBJECTIVES

The audit was conducted pursuant to the PUC's statutory authority at 66 Pa. C.S. § 516(a) and (c). Section 2204(i) of the Natural Gas Choice and Competition Act of 1999 (Gas Act) amending Title 66 of the Public Utility Code provided that an independent management audit be conducted of PGW prior to the commencement of the PGW's restructuring proceedings with the PUC. This audit will be used by the PUC to determine the extent to which PGW's management has contained costs, developed reasonable long- and short-range plans for its continued operations, provided proper service to the customers it serves, and provided proper management and organizational structure.

The objective of this audit, as outlined in Section 2204(i), was to provide for an independent management audit of PGW's employees, records, equipment, contracts, assets, liabilities, appropriations, and obligations. This included the determination of what improvements, if any, can be accomplished in the management and operations of PGW pursuant to Public Utility Code 66 Pa. C.S. §522(b). Specifically, it was intended that the audit encourage economies, efficiencies or improvements which benefit PGW and its ratepayers and identify which, if any, cost saving measures can be instituted. The ultimate purpose was to explore economically practical opportunities for giving ratepayers lower rates and/or better service.

To determine if the management practices, operating procedures, and other internal workings of PGW were efficient and reasonable and to identify improvements which could lead to lower rates and better service, BWG:

- Reviewed the management, operations, and organizational structure of PGW.
- Documented the relative strengths and weaknesses of PGW's organization, policies, procedures, and practices.
- Assessed whether service is safe, reliable, efficient, and responsive to customer needs.
- Made recommendations which will reduce costs or improve operating performance, service, and reliability.
- Quantified the costs and benefits of recommendations, as appropriate.

C. AUDIT SCOPE

The audit consisted of three phases: a diagnostic review (Phase I), an in-depth analysis of pre-identified areas or issues (Phase II), and a focused analysis resulting from the diagnostic review (Phase III). Each phase is described below.

Phase I -- Diagnostic Review. The first phase assessed the condition of each functional area or business unit not included in Phase II against evaluative criteria or expected business practices. The review determined if the appropriate management controls, systems and processes were in place to identify significant problems, if any, requiring additional focused analysis. Findings and recommendations were developed based on data requests, analysis, interviews and assessments. Interviews were conducted with PGW personnel, a representative of PGW's labor union and other relevant external parties, to obtain their input into the identification of the appropriate areas for detailed analysis.

Phase I covered the following areas:

- Corporate Planning (see Chapter III)
- Staffing Levels (see Chapter IV)
- Support Services (see Chapter V)
- Statistical Comparison (see Appendix A).

Phase II - Pre-Identified Areas or Issues. The second phase of the audit consisted of an in-depth analysis of the pre-identified areas or issues listed below. The work in Phase II was sufficient to make specific recommendations for change and included projected costs and benefits resulting from the proposed changes, as appropriate.

The PUC identified nine areas for in-depth review:

- Ongoing or Planned Efforts (see Chapter VI)
- Corporate Governance (see Chapter VII)
- Customer Service, Billing and Collection (see Chapter VIII)
- Gas Distribution and Supply Management (see Chapter IX)
- Financial Management (see Chapter X)
- Information Technology (see Chapter XI)
- Readiness for Restructuring and Retail Competition (see Chapter XII)
- Human Resource Management (see Chapter XIII)
- Diversity and Equal Employment Opportunity (see Chapter XIV).

Phase III - Focused Analysis. The third phase of the audit was an in-depth analysis of a specific issue resulting from Phase I. Prior to initiating this phase, BWG demonstrated to the PUC's Project Officer that the focused analysis would lead to a cost beneficial recommendation for providing better service and improving operations. (See Chapter XV - Proposed Work Management and Manpower Planning Program.)

D. APPROACH

Our approach was designed to promote:

- A focus on the specific need of the PUC and PGW and its ratepayers
- Full participation by the PUC staff and PGW in the study
- Reliance on quantitative data to support findings
- Commitment to timely implementation of recommended changes
- Open communication among the parties
- Adherence to generally accepted auditing standards
- Thorough documentation of audit findings and working papers.

As discussed previously, the audit was performed in three phases: Phase I--Diagnostic Review; Phase II--Pre-Identified Areas; and Phase III--Focused Analysis. Each of the three phases is described below.

To develop the final report, BWG first sent a draft of each chapter and the appendix to the PUC for review upon completion. The PUC staff then approved the release of the chapters and the appendix by BWG to PGW for its review. This process ensured that material facts having an effect on the findings were not omitted. PGW then submitted written comments to both BWG and the PUC within ten working days of receipt of the draft of each chapter. BWG prepared a final draft report after PGW had submitted all its written comments on the individual chapters. BWG then submitted the final draft report to the PUC and PGW for review. PGW then submitted comments to the PUC and BWG within ten days of receipt of the consolidated final draft report.

PHASE I -- DIAGNOSTIC REVIEW

In Phase I, we:

- Established administrative procedures and computer systems for the audit,
- Conducted interviews and attended a management presentation,
- Performed preliminary data gathering and analysis, and
- Completed the technical analysis and recommended a Phase III study.

We first established administrative procedures, with PGW and the PUC, for requesting interviews and documents. Throughout the audit, BWG notified the PUC and PGW in

advance of any planned interviews. When scheduling interviews, we prepared and distributed discussion outlines to the prospective interviewees to allow them to prepare for the interview. We also arranged for a reasonable turn-around time on all document requests.

To develop a broad understanding of PGW, PGW's senior executives made a presentation describing their areas of responsibility, organizational structure, management procedures, performance measures, and challenges facing PGW. This presentation was followed up with interviews of all officers. During these interviews we:

- Explored PGW's recent history, management's goals, and projects and programs for achieving those goals.
- Identified the activities and operational goals of each department.
- Identified procedures for dealing with customers, regulators, and employees.
- Reviewed recent performance, current or planned changes, and potentially critical issues.
- Reviewed our approach to the audit and responded to management's concerns.

We then reviewed material supplied by PGW in response to our Initial Data Request. Depending on the area being diagnosed, the preliminary data included financial reports, budgets, performance measures, departmental operating statistics, and plans and forecasts.

At this time, we also began preparation of the statistical comparison of data on utilities similar to PGW (See Appendix A). Throughout the audit, our analysis of PGW data was both historical and comparative. Comparative data was used primarily to identify areas for further investigation and not as the sole means of evaluating PGW's performance.

Our technical analysis focused on both performance results and the management process. Our objectives were to (1) determine if appropriate management controls and processes were in place, (2) identify opportunities to improve performance, and (3) identify areas where further analysis was necessary. Wherever possible, we employed quantitative measures of performance. We first ascertained what performance measures were being utilized by PGW. As appropriate, we then supplemented PGW measures with additional measures of work output, quality, or cost. We judged PGW's management processes against sound, generally accepted business practices. In many cases, we made comparisons with similar utilities. However, this type of comparison was applied selectively, since it may not recognize the character of individual utilities and be indicative of superior performance.

The audit team then integrated and summarized information gained and developed preliminary conclusions and recommended changes. Specific activities for each audit area included the following:

- Performed an extensive review of PGW reports and documentation including:
 - Policy and procedure manuals, including technical standards, to evaluate

- completeness, suitability, and similarities and differences from industry norms.
- Strategic and operational plans, including departmental mission statements and objectives, to evaluate completeness and support of critical business requirements.
 - Performance reports, both financial and operational, to ascertain PGW's level of current performance, identify anomalies, and analyze the adequacy of financial operation, monitoring and reporting procedures and systems.
 - Previous studies, both internally and externally generated, to determine areas of concern and degree of progress in addressing critical concerns.
- Conducted interviews with a broad cross section of PGW's officers, managers, and supervisors. The topics covered in the interviews included:
 - The scope of functions and activities under their authority
 - Goals, objectives, and procedures related to their area of responsibility.
 - Adherence to internal procedures and standards, and similarities and differences from established industry procedures
 - The understanding of roles in the achievement of strategic goals and objectives
 - Staffing levels and capabilities
 - Organizational approaches and responsibility placement
 - Use of planning and control techniques and processes
 - Types of technology employed
 - Financial and operational performance, including budget trends and work backlogs
 - Outstanding problems and concerns
 - Performed analysis of each subject area.
 - Summarized interview notes, documentation reviews, and field visit reports, and developed a set of preliminary findings.
 - Used preferred business practices checklists and compared findings where possible with industry norms.
 - Analyzed results for performance levels, frequency of unsatisfactory service

levels, and variances from accepted industry norms.

- Identified areas of strengths and opportunities for improvement.
- Developed preliminary findings and conclusions for each audit area.

In formulating our conclusions, we focused on substantive management, service, and cost issues. Our conclusions reflected areas where PGW has made positive accomplishments as well as areas where improvement is needed.

After we prepared our conclusions, we developed a series of recommendations that, in our professional judgment, will help management improve PGW's performance and reduce costs to its customers. Our recommendations take a variety of forms. For example, they point to changes in organizational structure, policies, processes, or information to improve the effectiveness of PGW management. Or they specify changes in operating practices, manpower utilization, staffing levels, and equipment utilization to improve productivity or to provide improved levels of service to customers. Some recommendations require additional studies to identify more specific opportunities.

PHASE II--IN-DEPTH REVIEW OF PRE-IDENTIFIED AREAS

Our in-depth review of the nine pre-identified areas included the same basic activities outlined in the Phase I-Diagnostic Review above, but was more detailed. Specific recommendations were developed and cost-justified, as appropriate.

PHASE III--FOCUSED ANALYSIS

Upon approval of the PUC project officer, BWG conducted an in-depth focused analysis of work management and manpower planning as identified in Phase I. The focused analysis included the same basic activities outlined in the Diagnostic Review above. (See Chapter XV - Proposed Work Management and Manpower Planning Program.)

CHAPTER II

Evaluation and Recommendations

A. PERFORMANCE EVALUATION

Our evaluation of PGW's performance took into consideration its size, resources, requirements, constraints, and operating environment. For some activities, performance trends and comparisons with other utilities were employed. For other activities that could not be measured quantitatively, such as corporate planning and human resource management, PGW's performance was measured relative to what would be expected of soundly managed organizations. Throughout the audit, we focused on current and future performance, not past performance. Historical information was used only to add perspective to current performance.

Exhibit II-1 summarizes our evaluation of each functional area of the audit. The following criteria were used in our evaluations:

- Optimum -- The area is functioning more than adequately and there are no recommendations.
- Minor improvement necessary -- The area is generally functioning adequately, but minor improvements are recommended. These improvements are of low or medium priority and will result in modest benefits.
- Moderate improvement necessary -- The area is generally functioning adequately, but some significant improvement opportunities are recommended. A few of the recommendations are high priority and will require significant effort or time to implement.
- Significant improvement necessary -- The area is not functioning adequately and many high priority recommendations, requiring considerable effort, need to be implemented to achieve adequate performance.
- Major Improvement Necessary -- The area is not functioning effectively or efficiently and many significant and high priority recommendations need to be implemented to achieve adequate performance. Implementation of the recommendations will have a major effect on PGW's cost levels and performance.

Exhibit II-1

Evaluation Summary

Chapter / Functional Area	Improvement Necessary				
	Optimum	Minor	Moderate	Significant	Major
III. Corporate Planning			X		
IV. Staffing Levels					X
V. Support Services		X			
VI. Ongoing or Planned Efforts			X		
VII. Corporate Governance					X
VIII. Customer Service, Billing and Collection					X
IX. • Gas Distribution • Supply Management			X	X	
X. Financial Management					X
XI. Information Technology				X	
XII. Readiness for Industry Restructuring and Retail Competition			X		
XIII. Human Resource Management					X
XIV. Diversity and Equal Employment Opportunity			X		

B. SUMMARY OF RECOMMENDATIONS

This report contains a total of 76 recommendations which BWG has prioritized using the following criteria:

- **High Priority** -- implementation would result in significant cost savings and/or major improvements in service, management practice, or performance. These recommendations should be implemented as soon as possible.
- **Medium Priority** -- implementation would result in meaningful cost savings and/or improvements in service, management practice, or performance. Implementation should begin within 12 months of approval of PGW's implementation plan.
- **Low Priority** -- implementation would enhance service, management practices, or performance. Benefits are modest or difficult to measure. Since many of these recommendations require little effort to implement, implementation should begin as soon as possible, but not more than 18 months after approval of PGW's implementation plan.

Each recommendation and its priority is listed below, by chapter.

Chapter III - Corporate Planning

- III-1 Ensure that the planning process incorporates bottom-up input from individual departments, is linked to the budgeting process, and reflects the realities of PGW's operating environment. (Medium Priority)
- III-2 Focus the current corporate planning process on establishing goals for the next six months. (High Priority)

Chapter IV - Staffing Levels

- IV-1 Undertake a Phase III project to develop specifications and procedures for a comprehensive work management and manpower planning program for PGW as part of this management and operations audit. (High Priority. See Chapter XV-Proposed Work Management and Manpower Planning Program.)
- IV-2 Reduce the number of positions that have high or low spans of control. (Medium Priority)
- IV-3 Develop and implement a labor relations strategy that will promote improved productivity and lower labor costs. (High Priority)

Chapter V - Support Services

- V-1 Take steps to reduce workers' compensation claims costs. (Medium Priority)

Chapter VI - Ongoing or Planned Efforts

- VI-1 Develop and implement a status reporting system that will provide timely and specific information regarding improvement initiatives to the PUC, the Philadelphia Facilities Management Corporation Board of Directors, the City Council, and the Mayor. (High Priority)

Chapter VII - Corporate Governance

- VII-1 Revise the governance structure of PGW to make it more accountable and to eliminate overlapping responsibilities. (High Priority)
- VII-2 Complete implementation of the new organization structure, and take steps to encourage managers to set and communicate consistent policies to employees in all PGW departments. (Medium Priority)
- VII-3 Take steps to improve PGW's interfaces with outside parties. (Medium Priority)
- VII-4 Establish an ethics "hotline" reporting directly to PGW's manager of internal audit or its chief legal counsel. (Medium Priority)

Chapter VIII - Customer Service, Billing and Collection

- VIII-1 Improve the overall performance and cost-effectiveness of the customer call center. (High Priority)
- VIII-2 Correct all billing, credit and collection system (BCCS) inaccuracies. (High Priority)
- VIII-3 Complete the customer satisfaction survey. (Low Priority)
- VIII-4 Conduct a study to determine if field collections personnel should be transferred to other areas of customer contact, and if collections should be outsourced to private vendors. (Medium Priority)
- VIII-5 Take steps to reduce the number of estimated bills and ensure that no customer goes over six months without a meter read. (Medium Priority)
- VIII-6 Continue the installation of Automated Meter Reading (AMR) devices on commercial / industrial accounts to improve the cost effectiveness of reading their meters. (Medium Priority)
- VIII-7 Take steps to improve delinquent payments and uncollectible accounts. (High Priority)
- VIII-8 Revise policies so that PGW can shut off customers after 32 days compared to its current 48-day termination practice. (Medium Priority)
- VIII-9 Review the feasibility of reducing the meter-read-to-billing cycle lag to one day. (High Priority)

- VIII-10 Measure appointments kept for field service work from the standpoint of the customer, that is, actually accomplishing the work desired, and not on whether the employee says he or she was at the job site at a specific time. (Medium Priority)
- VIII-11 Conduct a study to determine which district offices should be closed and the timing of their closing. (Medium Priority)
- VIII-12 Increase the effectiveness of the Customer Review Unit (CRU) and periodically measure and report its compliance with the Memorandum of Understanding (MOU). (Medium Priority)
- VIII-13 Complete efforts to reinstitute a revenue recovery unit. (Medium Priority)
- VIII-14 Develop an effective marketing and sales function and increase focus on major accounts, based on revenues received. (Low Priority)
- VIII-15 Improve the cost-effectiveness of the Customer Responsibility Program (CRP). (Low Priority)
- VIII-16 Eliminate the Senior Citizens Assistance Program and base any future bill reductions on an assessment of need. (High Priority)
- VIII-17 Appeal to the City administration to tighten eligibility rules for PGW's social programs and/or transfer the cost of the social programs from PGW to the City general fund. (Medium Priority)

Chapter IX - Gas Distribution and Supply Management

- IX-1 Make a final decision with respect to operating or disposing of the Gas Management System (GMS). (Low Priority)
- IX-2 Accelerate the cast iron main replacement program. (High Priority)
- IX-3 Accelerate the replacement or cathodic protection programs for coated-but-not-cathodically-protected steel main, and continue to replace bare steel services. (High Priority)
- IX-4 Evaluate engineering staffing levels and trends to determine the most cost-effective way to obtain engineering services. (Medium Priority)
- IX-5 Reduce PGW crews' wages and/or increase their productivity to make them more cost-effective, or contract out more construction work. (Medium Priority)
- IX-6 Avoid dispatching gas in an uneconomical manner. (Medium Priority)
- IX-7 Prepare a new gas supply strategic plan that addresses deregulation and the evolving natural gas market. (Medium Priority)
- IX-8 Solicit bids to perform janitorial services from union and non-union contractors as well as from PGW's building services department, and select the most cost-effective bid. (Medium Priority)

- IX-9 Take steps to increase the inventory turnover rate from 2.7 to 3.0 or greater. (Medium Priority)
- IX-10 Undertake a comprehensive fleet operations improvement program. (Medium Priority)

Chapter X - Financial Management

- X-1 Take the necessary steps to mitigate the current financial crisis and implement appropriate measures to ensure that PGW is not allowed to make the types of questionable transactions that have compromised its financial position and impaired its credibility with lenders, the rating agencies, and others in the financial community. (High Priority)
- X-2 Evaluate periodically, that is, every four to five years, whether or not the City should sell PGW. (Low Priority)
- X-3 Establish a functioning audit committee on the PFMC Board of Directors, and restore a viable internal audit function either internally or by outsourcing it. (Medium Priority)
- X-4 Require the external auditing firm to adhere to SEC guidelines that require the rotation off the assignment if the partner-in-charge has served in that capacity for seven or more years. (Medium Priority)
- X-5 Establish responsibility accounting centers at the lowest practical level of management, and set performance objectives for managers and supervisors that include specific budget performance targets that are linked to the strategic planning process. (Medium Priority)
- X-6 Establish a finance committee on the PFMC Board of Directors with specific responsibilities to monitor PGW's capital and operating budget processes and budget variances. (High Priority)
- X-7 Assign responsibility to the treasurer's department for establishing and enforcing cash management policies including accounts receivable collection policies and procedures. (High Priority)
- X-8 Update accounting procedures manuals and implement procedures for the inventory and tracking of capital assets. (Low Priority)
- X-9 Take steps to implement all appropriate recommendations from the forensic audit currently being performed by an external accounting firm. (Medium Priority)
- X-10 Establish a statement of financial policy which includes parameters against which PGW senior management and the PFMC Board of Directors can evaluate financial alternatives and performance. (Medium Priority)

Chapter XI - Information Technology

- XI-1 Develop and implement a formal IT planning process. (Medium Priority)

- XI-2 Strengthen the IT steering committee. (Medium Priority)
- XI-3 Reorganize the IT department to strengthen new project development and ongoing operation of applications. (Medium Priority)
- XI-4 Emphasize outsourcing as a means for developing and implementing new IT applications to the extent possible. (Medium Priority)
- XI-5 Restructure the Project Management Office (PMO) after the BCCS problems are resolved. (Low Priority)
- XI-6 Continue efforts to select and implement a new Human Resource Information System (HRIS). (High Priority)
- XI-7 Take steps to strengthen IT internal operating practices. (Medium Priority)
- XI-8 Take steps to reduce and control IT costs, and make the IT and user departments accountable for IT costs. (High Priority)

Chapter XII - Readiness for Industry Restructuring and Retail Competition

- XII-1 Complete a review of applicable PUC regulatory and reporting requirements and develop a comprehensive implementation plan to ensure compliance. (High Priority)
- XII-2 Implement procedures to obtain the customer information needed on an ongoing basis, and develop a detailed marketing plan to compete effectively in the restructured natural gas industry. (Low Priority)

Chapter XIII - Human Resource Management

- XIII-1 Develop an ongoing plan to manage the wage and salary levels in an effective manner. (Medium Priority)
- XIII-2 Develop and implement an incentive compensation program that rewards personnel for high-level achievements that are specifically tied to supporting PGW's strategy. (Medium Priority)
- XIII-3 Limit future compensation increases to a level no greater than the consumer price index (CPI). (High Priority)
- XIII-4 Develop and implement a cost-effective training strategy that promotes those attributes in employees that would allow PGW to succeed in a deregulated and competitive environment. (Low Priority)
- XIII-5 Take steps to ensure that the Code of Ethics and conflict of interest policy are understood by all employees, and obtain proof that each employee has a copy of the policies. (Medium Priority)
- XIII-6 Enhance union-management safety training efforts and develop specific annual goals for achieving improved safety levels. (Medium Priority)

- XIII-7 Work within the union contract to ensure that a consistent approach is taken for disciplinary issues throughout PGW, and hold the human resource department responsible for reviewing disciplinary issues company-wide. (Medium Priority)
- XIII-8 Reduce absenteeism through consistent treatment and increased focus on “back to work” programs. (High Priority)
- XIII-9 Take steps to reduce fringe benefit costs. (High Priority)
- XIII-10 Develop a company-wide policy on performance evaluations and ensure its consistent application. (Medium Priority)
- XIII-11 Update the personnel policy manual. (Low Priority)
- XIII-12 Work with the City Council to determine the long-term effect of continuing the City residency requirement, and, if possible, eliminate it. (Low Priority)
- XIII-13 Implement all relevant recommendations from the June 2000 external consultant’s report which provided a comprehensive assessment of the human resource function. (Medium Priority)

Chapter XIV - Diversity and Equal Employment Opportunity

- XIV-1 Ensure that the PFMC Board of Directors requires that PGW file an Affirmative Action Plan (AAP) on an annual basis. (Medium Priority)
- XIV-2 Identify the employment areas that are below “parity” in the year 2000 AAP and develop feasible approaches for reaching parity. (Medium Priority)
- XIV-3 Hold senior management accountable for implementing the diversity policy approved by the PFMC Board of Directors. (Medium Priority)
- XIV-4 Develop and implement a meaningful Minority Business Enterprise / Woman Business Enterprise / Disabled Business Enterprise (MBE/WBE/DBE) program for making purchases outside the normal procurement process. (Medium Priority)

Chapter XV - Proposed Work Management and Manpower Planning Program.

- XV-1 Implement the proposed work management and manpower planning program. (High Priority)

C. IMPLEMENTATION COSTS AND BENEFITS

Where possible, BWG has quantified the expected dollar costs and benefits associated with implementing its recommendations. These estimated costs and benefits are provided in **Exhibit II-2**. In many cases the recommendations call for further study by PGW to determine the exact potential for cost reduction. In some other cases the benefits from implementing the recommendations are qualitative in nature (for example, improved customer service and safety), and cannot be quantified in dollar amounts.

Exhibit II-2

**Recommendation Cost/Benefit Estimates
(\$ million)**

Number	Recommendation	Estimated Costs		Estimated Benefits	
		One-Time	Annual	One-Time	Annual
V-1	Take steps to reduce workers' compensation costs.				\$1.0 ⁽¹⁾
VII-1	Revise the governance structure of PGW to make it more responsible and eliminate overlapping responsibilities.				\$1.3 ⁽²⁾
VIII-7	Take steps to reduce delinquent payments and uncollectible accounts.				\$28.0 ⁽¹⁾
VIII-9	Review the feasibility of reducing the meter-read-to-billing-cycle lag to one day.				\$1.3
VIII-16	Eliminate the Senior Citizen Assistance Program and base any future bill reductions on an assessment of need.				\$13.5 ⁽²⁾
IX-2	Accelerate the cast iron main replacement program.		\$11.2 ⁽³⁾		\$0.1
IX-5	Reduce PGW crews' wages and/or increase their productivity to make them more cost-effective, or contract out more construction work.				\$1.5 ⁽⁴⁾
IX-8	Solicit bids to perform janitorial services from contractors as well as from PGW's building services department, and select the most cost-effective bid.				\$0.4
IX-9	Take steps to increase the inventory turnover rate from 2.7 to 3.0 or greater.			1.3	\$0.3
IX-10	Undertake a comprehensive fleet operations improvement program.				\$0.6 to \$0.7
XI-6	Continue efforts to select and implement a new Human Resource Management System (HRIS).				\$0.4
XI-8	Take steps to reduce and control IT costs, and make IT and user departments accountable for IT costs.				\$0.4 to \$0.8

01-II

Exhibit II-2 (continued)

**Recommendation Cost/Benefit Estimates
(\$ million)**

Number	Recommendation	Estimated Costs		Estimated Benefits	
		One-Time	Annual	One-Time	Annual
XIII-3	Limit future compensation increases to a level no greater than the consumer price index (CPI).				\$0.6
XIII-8	Reduce absenteeism through consistent treatment and increased focus on "back to work" programs.				\$2.0 ⁽¹⁾
XIII-9	Take steps to reduce fringe benefit costs.				\$6.1 ⁽¹⁾
XV-1	Implement the proposed work management and manpower planning program.	\$0.6 to \$0.8			\$10.0 ⁽⁵⁾
	Totals	\$0.6 to \$0.8	\$11.2	\$1.3	\$67.5 to \$68.0

- (1) These annual savings will be achieved over a three-year period.
- (2) Full annual savings will be achieved starting in the second year of implementation.
- (3) Costs required for six years.
- (4) \$1.5 million annual reduction in capital costs.
- (5) Annual savings will begin to be achieved during the second year of implementation; full benefits will not be realized until the program has been in place for three to five years.

CHAPTER III

Corporate Planning

A. BACKGROUND

Since November 1996, PGW has undertaken three significant corporate planning initiatives, and the first two efforts, which both took place under previous managements, failed. There is a current strategic planning initiative in progress and it is too early to tell whether it will be successful. Effective corporate planning is important to ensure that PGW has a competitive strategy and the decision-making capability that is needed to achieve success for PGW's ratepayers and the City of Philadelphia in a competitive natural gas industry in Pennsylvania.

In November 1996, PGW issued a very detailed strategic plan. Although executive management at the time was actively pursuing business diversification, including entry into the electric business, this document did not set forth the diversification strategy. Instead, the focus of the plan was its Implementation Plans by Accountability which were contained in two volumes. Although development of the plans required a considerable amount of effort, the plans themselves were never implemented to any appreciable degree. This was in part due to the subsequent resignation or termination of nine of the eleven officers who participated in the development of the plan, including the former Chief Executive Officer (CEO).

In a February 16, 1999 order, the Philadelphia Gas Commission (PGC) requested that PGW develop two plans, one for the next twelve-months and the second to be a more comprehensive five-year plan to be used to evaluate time lines for program implementation as part of the budget approval process. In response, PGW prepared and issued a Five-Year Financial & Management Plan (Five-Year Plan) dated September 10, 1999. The Five-Year Plan was a comprehensive document that described the plans of the functional units throughout the PGW organization. However, the functional area plans were not well integrated and the current interim Chief Financial Officer (CFO) says the plan was a "compendium of departmental ideas unresponsive to the mandate of the PGC."

The current strategic planning effort is sponsored by the interim CEO is being directed and coordinated by the interim CFO, and involves about seventeen key management employees. It is a "start from scratch" activity following a traditional corporate planning process. This process included holding off-site meetings to review the implications of deregulation; developing lists of strengths, weaknesses, threats and opportunities; preparing vision and mission statements; and identifying a number of goals and objectives. Some of the planning documents prepared in the current planning cycle were made available in draft form for BWG's review.

B. OBJECTIVE

In this task area, we performed a diagnostic review of PGW's corporate planning activities.

C. EVALUATIVE CRITERIA

To assess PGW's corporate planning efforts, we used the following evaluative criteria:

- Is the long-range goal setting and corporate planning process sufficiently robust and responsive to meet the challenges of competition and deregulation?
- Does the corporate plan specifically address key issues affecting PGW and its ratepayers' future?

D. WORK STEPS

To complete the review, we performed the following tasks:

- Reviewed the planning cycle, processes and techniques used to develop the strategic plan.
- Identified the process used for converting strategic business plans into specific action plans and the linkages of the plans to the budgeting system.
- Analyzed the completeness and suitability of PGW's goals in light of its economic environment, workload and financial condition, as well as PUC and other regulatory requirements.
- Examined the process used to develop various planning assumptions and determine the historical validity of these assumptions for prior years.
- Assessed the plan's treatment of key restructuring issues and the practicality and attainability of the plan.
- Compared PGW's corporate planning process to BWG Preferred Practices.
- Assessed the effectiveness of leadership and participation in the strategic planning process.

E. FINDINGS AND CONCLUSIONS

1. In the past, PGW's planning activities have not produced meaningful plans that were used to guide decision-making and establish strategic and operational direction.
 - PGW was substantively devoid of a strategic plan for at least a decade prior to completion of the 1996 plan.
 - The 1996 plan was based on failed assumptions and was not implemented. For example, the plan assumed flexibility in the work force that PGW had not negotiated, and was unrealistic in its anticipation of required political support. Further, the management structure required to implement the plan was not in place.
 - The 1999 Five-Year Plan was prepared in response to a PGC directive, but was not in conformance with the PGC's order. This planning effort resulted in a compendium of individual departmental initiatives with inadequate context and cohesion.
 - PGW's governance structure has limited its ability to develop and implement an effective strategic plan.
2. Upon their appointment in March 2000, interim management developed and issued an ambitious six-month, six-point implementation plan which provided a necessary focus for dealing with major issues confronting PGW.
 - **Exhibit III-1** provides an outline of the interim plan and the current status of implementation. In general, issues under management control and authority are being addressed in the manner contemplated, but progress is not as great as expected.
 - This delay is principally due to issues outside of management control and authority including: consideration of a new governance structure; the selection of permanent management and jurisdictional issues between the City of Philadelphia and the PUC; and the financial crisis facing PGW.
3. While interim senior management has taken steps to implement an effective corporate planning process, the current process does not yet meet all of BWG's preferred practices.
 - As indicated in **Exhibit III-2**, the current PGW corporate planning process meets certain of BWG's preferred practices for corporate planning.

Exhibit III-1

Status of Interim Management Plan

Outline of Interim Plan - March 2000	Status - October 2000
<p>Stabilize Financial Condition:</p> <ul style="list-style-type: none"> • Book all revenues and determine uncollectibles expense. • Significantly improve credit and collection. • Determine necessary Information Technology (IT) system investment. • Identify cost cutting opportunities. • Produce reliable financial statements. • Review Letters of Credit with banks. • Develop FY 2001 budgets and determine rate relief requirements. 	<p>Stabilize Financial Condition:</p> <ul style="list-style-type: none"> • Newly-formed Project Management Office (PMO) is addressing BCCS problems affecting collection of receivables. However, there is no significant improvement in cash flow being realized to date. • \$10 million place holder for reduced expenses included in FY 2001 budget. • Independent auditor has determined that financial statements as of August 31, 2000 are auditable. • Lead bank has deferred consideration of renewal of line of credit. One participating bank advised PGW of its decision not to renew. • City of Philadelphia is granting PGW \$45 million of working capital loans. • FY 2001 budget includes \$52 million rate increase request. PGC decision pending.
<p>Stabilize Operating Condition:</p> <ul style="list-style-type: none"> • Initiate business planning effort with management and employee participation. • Refocus IT efforts. • Refocus customer relations efforts with call center training and staffing improvements, and accurate billing process. • Improve work order control in field services and distribution. • Initiate performance and productivity measures. 	<p>Stabilize Operating Condition:</p> <ul style="list-style-type: none"> • Strategic planning effort nearing completion as discussed in this chapter. • IT steering committee and PMO have focused IT efforts. • Fundamental problems remain in customer relations area. PGW has retained a temporary executive to direct the customer affairs department. • A manpower planning system is being designed as Phase III of this audit. • Strategic planning effort is setting performance standards for departments.

**Exhibit III-1
(continued)
Status of Interim Management Plan**

Outline of Interim Plan - March 2000	Status - October 2000
<p>Target Capital Spending:</p> <ul style="list-style-type: none"> • Obtain FY 2000 budget approval. • Prepare FY 2001 capital budget with focus on LNG investment, prudent main replacement, and IT investment. • Prepare FY 2001 - 2002 finance plan. 	<p>Target Capital Spending:</p> <ul style="list-style-type: none"> • Budget for FY 2000 (beginning September 1, 1999) was approved by PGC in June 2000. • Capital budget and finance plan prepared and submitted to PGC. Hearings completed. Recommendation to City Council still pending.
<p>Human Resource Department:</p> <ul style="list-style-type: none"> • Begin work on modifying corporate culture. • Conduct HR department evaluation. • Undertake special initiatives including skills inventory, succession planning, and training requirements. • Involve union more directly in change efforts. • Evaluate retiree relations. • Update pension ordinance. 	<p>Human Resource Department:</p> <ul style="list-style-type: none"> • HR department was evaluated by an external consultant and PGW in implementing study recommendations. • PGW is defining specifications for a new HR information system. • Union is participating in PGW's strategic planning process. • PGW is negotiating with retirees with respect to health care options to reduce costs. • PGW is preparing a pension ordinance to present to the City Council.
<p>PGC to PUC Transition:</p> <ul style="list-style-type: none"> • Monitor actions of the City Council contesting PUC jurisdiction. • Delay initiation of PUC management audit mandated by the Act. • Reduce inventory of customer complaints. • Determine venue for gas cost rate (GCR) and base rate case. 	<p>PGC to PUC Transition:</p> <ul style="list-style-type: none"> • The management audit proceeded as scheduled. • A customer review unit was established to address customer complaints. • PGW has filed GCR and base rate cases with the PUC.

**Exhibit III-1
(continued)
Status of Interim Management Plan**

Outline of Interim Plan - March 2000	Status - October 2000
<p>Permanent Management:</p> <ul style="list-style-type: none"> • Determine new governance structure. • Determine selection committee. • Initiate and complete selection process. 	<p>Permanent Management:</p> <ul style="list-style-type: none"> • Consideration of governance structure is not within the purview of PGW management. • Interim senior management extended beyond initial six-month term pending resolution of other management and governance issues, including completion of the selection process.

Source: DR 1.2.0013 and BWG Analysis

**Exhibit III-2
Preferred Practices Checklist: Corporate Planning**

BWG Preferred Practices	Yes	No
• Directed by the CEO and approved by the Board of Directors	X	
• Includes well-documented and understood processes and responsibilities	X	
• Significant senior management involvement	X	
• Uses dedicated resources	X	
• Address a wide range of issues	X	
• Includes detailed functional and departmental performance goals		X
• Reflects realities of the operating environment		X
• Includes appropriate bottom-up input		X
• Linked to the budgeting system used for allocating and committing operating and capital resources.		X

Source: BWG analysis

- The planning effort is sanctioned by the interim CEO and is being prepared under the direction of the interim CFO. A draft of the strategic plan was submitted to the PFMC Board of Directors for its input and approval.
 - The process for preparing the plan is well-understood by the participants and has significant involvement of key members of the management team.
 - A dedicated team has coordinated the planning process which has addressed a wide range of issues.
- Since the process is not yet complete, it cannot and does not meet all of BWG's preferred practices.
 - At this time, PGW has submitted the draft plan to the individual departments for them to prepare functional and performance goals which will either support or negate the top level goals identified in the draft plan.
 - The plan at this time is not adequately linked to the budgeting system which allocates and commits operating and capital resources.
 - It is not clear that the planning process has sufficiently reflected the realities of PGW's financial, operating and regulatory environment. (See Chapters VII-Corporate Governance and Chapter X-Financial Management.)
4. The current planning effort has produced a draft strategic plan that may not be realistic.
- The plan identifies too many issues, rather than those that are truly critical to PGW's short-term survival and long-term success, and does not yet adequately address implementation through the development of action plans and linkage to the budgeting process.
 - A summary of the draft strategic plan is shown in **Exhibit III-3**. With its "sole focus on the customer," the mission statement and related corporate objectives and goals do not adequately reflect PGW's grave financial condition. PGW believes that it is addressing its financial condition through a short-term survival plan.
 - It is unclear whether or not PGW has the information tools it needs to monitor actual performance against many of the goals stated in the plan, and whether or not the goals were established in consideration of current performance.

Exhibit III-3

Assessment of Draft Strategic Plan 2000

Plan Element	Draft Plan	BWG Assessment
Vision	PGW, Philadelphia's choice for quality energy solutions.	There is a large gap between this perception and current reality. Vision does not address safety issues.
Mission	PGW's sole focus is the customer. Building on our tradition of safe and reliable service, we deliver competitive energy options to Philadelphia. The quality of service provided by our diverse and professional staff reflects our commitment to our customer.	<p>With the proposed rate increase, PGW is expected to have the highest gas rates in Pennsylvania.</p> <p>Service quality requires significant improvement.</p> <p>Importance of safety needs to be articulated.</p>
Corporate Objectives and Goals	<p>Provide continuously improving customer service.</p> <p>Goals address emergency response and service turn-ons within specified time frames, billing accuracy, and response to customer telephone inquiry.</p>	<p>In general, goals cover applicable subject matter and provide for improvement over time. Although the goals may be aggressive for PGW, they are well short of industry standards in the areas addressed.</p>
	<p>Operate efficiently, reliably and in a legally and fiscally sound manner.</p> <p>Financial goals call for an improved capitalization ratio, a one grade improvement in the bond rating, improved cash flow and reduced expenses. Other goals address least-cost gas purchases, cast iron main replacement and development of performance indicators.</p>	<p>Some of the financial improvement goals have timeframes extending to the end of FY 2004, without specific milestones needed to monitor performance improvement.</p> <p>Action plans are needed saying "who, must do what, by when" to ensure that goals are accomplished.</p> <p>Does not specifically address safety issues.</p>
	<p>Increase the core business and foster new business opportunity.</p> <p>Goals relating to this objective provide for increasing load by one billion cubic feet annually, implementing rate structures needed for industry restructuring, implementing an economic development strategy in cooperation with city and state organizations, expanding markets for LNG services and development of a PGW website.</p>	<p>Goals need to be prioritized and should not be confused with action plans needed for their accomplishment. For example, development of a website may be a means of achieving an increase in annual send out and other worthy accomplishments, but it is not an appropriate goal unto itself.</p>

Exhibit III-3

Assessment of Draft Strategic Plan 2000 (Continued)

Plan Element	Draft Plan	BWG Assessment
Corporate Objectives and Goals (continued)	<p>Develop a workforce that is diverse, skilled, professional and appropriately rewarded.</p> <p>Goals address affirmative action, succession planning, safety training and compensation and benefits.</p>	While these are worthy goals, they will be difficult to attain in view of PGW's financial position.
	<p>Be a socially responsible partner in the community.</p> <p>Goals are designed to ensure that 100% of eligible customers are informed about low income and other assistance programs, and to provide for 20% participation of minority and women business enterprises in the PGW goods and services contracts.</p>	While these are worthy goals, they will be difficult to attain in the near future.

Source: DR 1.2.0012 and BWG analysis

- Although many assumptions are documented in the annual budgeting process, there are no specific assumptions articulated in the draft strategic plan.
- Many of the goals included in the strategic plan are scheduled for attainment over a three-year time horizon with annual milestones relating to improvement. However, not all long-term goals, and especially those relating to financial improvement, have milestone schedules.
- PGW expects to involve functional organizations in the development of operational plans that support the strategic plan objectives. This effort is not yet complete.
- One essential element of a public entity's success in a competitive market is the flexibility to react to market opportunities. Another is the rapidity of its decision-making process. Currently, PGW cannot implement its plans without the funding approvals that are required during the budgeting process. Using last year as an indication, if the PGC is delayed in approving the FY 2001 budget, many of the marketing programs designed for implementation before the rapidly approaching heating season will not have the effect expected.

F. RECOMMENDATIONS

1. Ensure that the planning process incorporates bottom-up input from individual departments, is linked to the budgeting process, and reflects the realities of PGW's operating environment. (Refers to Conclusion 3.)
2. Focus the current corporate planning process on establishing goals for the next six months.
 - The interim senior management's first six-month plan issued in March 2000 provided a needed focus for PGW. A similar effort would build on the progress made to date.
 - The new plan should place its emphasis on safety, customer service and restoring financial stability, and should be the basis for completing the overall plan.

(Refers to Conclusion 4.)

CHAPTER IV
Staffing Levels

A. BACKGROUND

This chapter reviews the reasonableness of PGW's staffing plans and staffing levels. Annual totals on tables in this chapter may vary due to method of calculation or source data. This chapter should be read in conjunction with Chapter XIII-Human Resource Management; Chapter VIII-Customer Service, Billing and Collection; and Chapter IX-Gas Management and Distribution.

As of August 31, 2000, PGW employed 1,794 people. Exhibit IV-1 illustrates the PGW employee population, which can be divided into four basic categories: management; union-exempt; union-craft and service; and union-office and allied.

Exhibit IV-1

Employee Distribution ⁽¹⁾

Category	1996	1997	1998	1999	2000	% Change 1996-2000
Management	377	397	405	362	359	- 4.8%
Union-exempt	34	32	34	30	25	- 26.5%
Union-craft & service	1,103	1,094	1,073	1,042	1,011	- 8.3%
Union-office & allied	472	467	456	439	399	- 15.5%
Totals	1,986	1,990	1,968	1,873	1,794	- 9.7%

Source: DR 2.8.25

(1) As of 8/31

Craft and service employees tend to work in the field or in PGW's plants. Office and allied personnel work in administrative positions in PGW's offices. Union-exempt employees hold administrative support responsibilities and do not belong to the union. The remainder of PGW's employees are considered management.

As shown in Exhibit IV-1, Craft and service employees represented approximately 55 percent of the total employee population during the five-year period. Office and allied employees were the next largest portion, at about 22 to 24 percent. Management accounted for approximately 19 to 20 percent. Union-exempt employees represented less than two

percent. As the exhibit indicates, the proportionate number of employees in these groups did not vary significantly during the period.

The ratio of management to non-management employees is indicated in **Exhibit IV-2**. This ratio did not vary substantially during the period from 1996 through 2000.

Exhibit IV-2

Ratio of Management to Non-Management Employees ⁽¹⁾

Category	1996	1997	1998	1999	2000
Management	377	397	405	362	359
Non-management	1,609	1,593	1,563	1,511	1,435
Totals	1,986	1,990	1,968	1,873	1,794
Ratio	1:4.3	1:4.0	1:3.9	1:4.2	1:4.0

Source: DR 2.8.25

(1) As of 8/31/00

As shown in **Exhibit IV-3**, about a third of PGW's employees have more than twenty years of service. Approximately 44 percent of management employees and about 31 percent of the bargaining unit members have more than twenty years tenure.

Exhibit IV-3

Employee Tenure ⁽¹⁾

	1-5 Yrs	6-10 Yrs	11-20 Yrs	21-30 Yrs	30+ Yrs	Totals
Management	53	24	120	141	16	354
Union - exempt	5	8	10	3	0	26
GWEU - craft & service	21	184	518	272	28	1023
GWEU - office & allied	3	29	224	116	26	398
Totals	82	245	872	532	70	1,801

Source: DR 2.8.0025

(1) As of 7/31/00

PGW's current agreement with its labor union, the Gas Works Employees' Union of Philadelphia, Local No. 686 (GWEU or Union), became effective in late May 1998. The agreement with the GWEU is effective until May 15, 2001. Article III, Section 3 of the

agreement states that it is mutually recognized and agreed to that PGW management has the right and responsibility to manage the activities and operations of the company and supervise its workers. Management responsibilities specifically include, among other things: determining the size of the work force; fixing the hours and days of work; and hiring, transferring and laying off employees.

Article III, Section 4 of the agreement notes that subcontracting may be necessary from time to time and states that it is the sole responsibility of PGW to determine when and where contractors will be used. According to the agreement, when the workload is beyond the capacity of the established work force and it becomes necessary to use contractors, management must notify a local union representative to discuss the reason for and the nature of the work to be contracted. When possible, this notice must be provided before the work is contracted.

Exhibit IV-4 indicates the amount PGW spent each year from 1996 to 2000 on contractors. As the exhibit indicates, PGW's use of these outside employees increased substantially in 1997, but then decreased gradually to its low point in 2000.

Exhibit IV-4

Contractor Utilization ⁽¹⁾
(\$ million)

Year	Amount
1996	\$ 6.7
1997	9.5
1998	7.0
1999	4.8
2000	4.4 ⁽²⁾

Source: DR 1.4.10

(1) For fiscal year ending 8/31

(2) For 11.5 months

Article XI of PGW's current agreement with its labor union describes a four-level grievance process:

- Informal disputes are presented to the union member's immediate supervisor either personally or with the aid of the union representative. If the GWEU member is unable to settle the matter with his or her immediate supervisor, the employee may file a written grievance at Step One of the grievance procedure.
- Step One grievances must be submitted to the GWEU member's department head or an authorized representative. The department head then has ten days to offer a written response or otherwise settle the grievance. If no satisfactory answer or settlement is reached during that time, the union may appeal the grievance to Step Two. Step Two grievances must be presented within 30 days of when the Step One answer was due.

- Step Two grievances are submitted to PGW's designated senior officer or an authorized representative. If necessary, the senior officer will discuss the grievance with the Union Grievance Committee, which consists of five GWEU officers or elected representatives and one representative of the department from which the grievance emerged. The designated senior officer has 30 days to provide a written answer or otherwise settle the grievance. If no satisfactory answer or settlement is reached during that time, the union has 45 days to submit the grievance for arbitration.
- Arbitration is the third level in the grievance process and requires that an impartial arbitrator be selected from a permanent panel of seven arbitrators agreed to by PGW and the union. The decision of the arbitrator is final and binding to both parties.

Exhibit IV-5 shows the number of grievances reaching each level of the grievance process during the last five years. In 1997 and 1999, there were more grievances at the third level than at the preceding level. This can be attributed to class action grievances and grievances related to terminations that proceeded directly to the third step.

Exhibit IV-5
Grievance Resolution Summary ⁽¹⁾

Level	1996	1997	1998	1999	2000
1st Level	347	306	265	234	189
2nd Level	309	265	(2)	(2)	(2)
3rd Level	287	274	182	279	121
Totals	943	845	447	506	310

Source: DR 2.8.64

(1) For the fiscal years ending 8/31

(2) In 1998, Levels One and Two were combined into Level One

Prior to March 1999, PGW had no system in place to track arbitrations. However, available data indicate that, since 1996, a very small percentage of grievances has gone to arbitration. A total of ten grievances went to arbitration in 1996, thirteen in 1997, and five in 1998. Since March of 1999, the union has filed eight arbitrations. One of these was resolved and the other seven are still pending.

B. OBJECTIVE

In this task area, we performed a diagnostic review of PGW's staffing levels.

C. EVALUATIVE CRITERIA

We used the following criteria to evaluate PGW's staffing levels:

- Are PGW's staffing levels appropriate?
- Does PGW have the manpower planning and work force management programs in place to ensure a high level of productivity and utilization of its work force?
- Is the labor relations strategy sound and has it resulted in a cooperative and productive work environment?

D. WORK STEPS

To complete the review in this area, we performed the following tasks:

- Tabulated the following staffing and personnel statistics for the 1996 to 2000 period:
 - Staffing levels by major function, compared to levels and trends in the utility industry and "best practices"
 - Ratio of management to non-management employees
 - Turn-over rates, by cause, by division or functional area
 - Ratio of employees to customers, compared with other utilities
- Determined number of management layers and the current span of control at each management layer, by division or functional area.
- Reviewed PGW's methods for measuring the productivity and performance of the work force.
- Reviewed procedures for scheduling, staffing, and estimating jobs.
- Determined how staffing levels are established (e.g., to attain established service level targets, historic levels).
- Determined if service level goals are established and whether they are attainable at reasonable cost.
- Reviewed the process and results of PGW's efforts to eliminate unnecessary staff and managerial positions. Determined if controls are in place to maintain appropriate staff levels.
- Met with representatives of Local 686.
- Reviewed the effectiveness of management / union communications.

- Reviewed PGW's labor contract.
- Determined if the labor negotiation process is carried out in such a way that PGW and rate payer interests are adequately served.
- Assessed the level of grievances and the procedures used to resolve them.
- Determined how management compares union contracts provisions with those of similar utilities.

E. FINDINGS AND CONCLUSIONS

1. PGW's staffing has declined about eight percent from its 1996 levels, which is similar to what other gas utilities have experienced.
 - **Exhibit IV-6** shows that the overall staffing decrease from 1996 to 2000 amounted to 192 employees, which represents about 9.7 percent of 1996 staffing levels. This rate of decline is typical of other gas distribution companies, which did most of their downsizing in the 1980s.

Exhibit IV-6

Full-Time Employees by Department ⁽¹⁾

Department /Function	1996	1997	1998	1999	2000
Office of President & CEO	2	2	2	1	1
Operations	1,236	1,217	1,197	1,228	1,177
Customer Affairs	411	410	387	309	288
Materials Management	87	87	85	78	74
Transportation	53	54	55	53	53
Legal	10	9	6	10	12
Marketing & New Business Development	28	41	61	36	34
Communication and Public Policy	11	13	11	13	12
Gas Planning and Supply	23	26	28	22	24
Human Resources	20	20	22	22	17
Internal Auditing	5	3	7	7	7
Corporate Planning	7	2	3	2	2
Finance	46	45	48	47	49
Systems and Technology	47	48	40	43	41
Security and Loss Prevention	na	13	14	2	3
Sr VP - Deregulation	0	0	2	0	0
Total	1,986	1,990	1,968	1,873	1,794

Source: DR 1.3.3

(1) For fiscal years ending 8/31

- The greatest change at PGW was in customer affairs, where total staffing dropped about 30 percent, from 411 to 288. Most of this decrease came in 1,999, when 58 meter readers were transferred to operations.
 - Operations, which accounted for almost two-thirds of total staffing during the period, declined only about 4.8 percent, while absorbing the meter readers in its field services department. Materials management, which made up less than five percent of PGW, declined about 15 percent.
2. PGW has experienced relatively low turnover in the last five years.
- As indicated in **Exhibit IV-7**, the number of employees leaving the company each year ranged from approximately one to four percent during the period. Turnover as high as ten percent per year is not uncommon in the utility industry.

Exhibit IV-7

Employee Turnover Analysis

Reason for Turnover	1996	1997	1998	1999	2000	Totals	% of Total
Retired	39	5	13	24	37	118	47%
Resigned	10	9	11	16	15	61	24
Terminated	4	5	7	7	6	29	11
Layoff	0	2	4	9	8	23	9
Medical	1	0	2	3	4	10	4
Job Eliminated	0	1	0	6	0	7	3
Deceased	0	0	0	0	4	4	2
Military Leave	0	0	0	0	1	1	-
Family Leave	1	0	0	0	0	1	-
Totals	55	22	37	65	75	254	100%
% Turnover for the Year	2.8%	1.1%	1.9%	3.4%	4.1%		

Source: DR 2.8.25

- About 47 percent of personnel who left PGW from 1996 through 2000 retired. Resignations accounted for approximately another 24 percent. Terminations and layoffs represented about 20 percent, and the remaining 9 to 10 percent were spread among the remaining reasons, that is, medical, job elimination and others.
3. Overtime has declined from 1996 levels and is relatively low compared to other utilities.

- The level of overtime in each of the three basic work groups at PGW is depicted in **Exhibit IV-8**, which indicates that total overtime was relatively low for all employee groups. Overtime percentages as high as ten percent are not uncommon in the utility industry, especially for bargaining unit workers.
- While staffing levels decreased, PGW's overtime did not increase.

Exhibit IV-8

Overtime Hours as a Percentage of Total Paid Hours ⁽¹⁾

	1996	1997	1998	1999	2000 ⁽²⁾
Management	0.83%	0.58%	0.35%	0.77%	1.04%
Union - Exempt	0.01	0.01	0.01	0.01	0.01
GWEU (all)	7.01	5.65	2.33	3.68	4.88

Source: DR 2.8.25

(1) For fiscal years ending 8/31

(2) For ten months ending 6/30/00

4. PGW staffing levels are not adequately based upon quantified data.

- PGW does not have a comprehensive work management and manpower planning program. In some cases managers have productivity and performance systems available that collect data that are useful in projecting future workload. Many of these systems also collect actual hours versus targets or estimates for some work functions. Forecast workload can then be translated into man-hours and eventually converted to resource requirements. However, most managers use these indicators only to measure and monitor day-to-day business, and not for long-range planning. Moreover, none of these systems includes a planning tool that is actually used to size the work force. Thus, none of the systems truly represents a comprehensive work management and manpower planning system.
- Work management systems, although somewhat rudimentary, exist for PGW's bargaining unit personnel in the operations department, the staff of which accounts for approximately eighty percent of PGW's total employees and about three-quarters of all union personnel. Work management programs in operations provide varying amounts of time reporting data and productivity information, depending upon the type of work performed. *Many of the reports used to evaluate performance are manually generated.*
- A formal work management program is not in effect for customer affairs employees, although information regarding group and individual utilization and productivity is available. Thus, the bulk of the non-operations portion of PGW's union employees are not covered by any work management program.

- All employees report time; however, for employees other than those mentioned above, time reporting is done only for accounting purposes. For many of the bargaining unit employees, time cards capture only the number of hours worked and/or not worked, that is, sick or otherwise absent, and do not collect any data regarding what was accomplished. Very little of this data is useful for manpower planning processes.
 - BWG found no systems that cover management employees in functions commonly referred to as “white collar work.” As a result, there is little or no data available to forecast white collar work and determine those staffing needs. Thus, manpower planning for white collar workers is based on tight control of increases to existing staffing levels. This control is exercised during the annual budgeting process, as well as during the year when employees retire, transfer, or otherwise leave PGW.
 - In the absence of a formal manpower planning process, staffing levels are determined arbitrarily by top management or merely trended using historical staffing levels. Changes to staffing levels are usually granted based on qualitative criteria, rather than objective analysis.
5. PGW’s organizational structure has an inordinate number of positions with high or low spans of control.
- **Exhibit IV-9** indicates the results of an analysis of PGW’s organizational span of control. The analysis was performed using organization charts approved in mid-2000.
 - As indicated in Exhibit IV-9, reporting ratios of 1:3 or less account for more than one-third of the organization’s reporting relationships.
 - Approximately another quarter have reporting ratios of 1:10 or greater.
 - Organizations attempting to minimize layers of management, streamline communications, and, at the same time, promote managerial effectiveness seek spans of control in the middle range, between these two extremes. About 38 percent of PGW’s reporting relationships fall into this range between 1:4 and 1:9.
6. A comparison of staffing levels between PGW and other gas distribution companies (LDCs) indicates that PGW is overstaffed.
- Staffing levels at PGW were compared with other similarly sized LDCs, four other gas companies in the state of Pennsylvania, and three urban gas utilities in the northeast. The results of this analysis are shown in **Exhibit IV-10**.

Exhibit IV-9

Span of Control Analysis

Reporting Ratio	Relationships	
	Number	Percentage
1:1	24	13.0%
1:2	25	13.6
1:3	20	10.9
1:4	21	11.4
1:5	14	7.6
1:6	20	10.9
1:7	8	4.3
1:8	5	2.7
1:9	2	1.1
1:10	2	1.1
1:11 to 15	16	8.7
1:16 to 20	6	3.3
1:21 to 25	5	2.7
1: >25	16	8.7
Totals	184	100.0%

Source: DR 2.8.58

- Based on the number of customers per mile of transmission and distribution (T&D) mains, PGW has the second highest concentration of customers in the comparison group. Nevertheless, PGW has the lowest number of customers per employee.
- PGW's volume of gas delivered per employee, 0.04 billion cubic feet (Bcf), is the lowest in the group and is about 69 percent lower than the panel average of 0.13 Bcf.
- PGW's ratio of 0.622 employees per mile of T&D main is the second highest ratio, and is 2.4 times the 0.258 ratio of the panel average.
- Its relatively high amount of O&M expenditures per customer indicates that PGW does spend a significant amount of money operating its distribution system and providing service to its customers. However, PGW's ratio of O&M expenditures per employee is third lowest amount the group, apparently due to the relatively high number of employees.
- BWG has no basis for determining definitely whether PGW is over- or understaffed on a company-wide basis, beyond the broad general measures contained in this comparative analysis. The lack of appropriate manpower planning tools makes this difficult for PGW as well. Further, while the comparative analysis appears to indicate that PGW is overstaffed in

comparison to other gas LDCs, it is possible that PGW's workload requires a larger number of employees in certain areas. Therefore, it would not be appropriate for PGW to reduce overall headcount until the proper approach is used to determine staffing levels.

Exhibit IV-10

**Comparative Analysis of Staffing Levels
(1999)**

Category	PGW	PECO	EGC	PNG	UGI	BUG	BG	WGL
Employees	1,873	800	770	890	1,068	2,607	1,353	1,831
Customers	512,423	383,856	225,023	351,339	331,127	1,144,181	531,878	755,187
Bcf Delivered	75.7	93.4	30.2	71.0	77.9	179.7	128.6	940.5
O&M Expenses (million)	\$453.5	\$270.9	\$211.1	\$201.5	\$227.8	\$707.2	\$441.0	\$688.7
Miles of T&D Main	3,010	6,007	3,048	6,693	4,467	4,043	5,984	10,380
Customers per Employee	273.6	479.8	292.2	394.8	310.0	438.9	393.1	412.5
Bcf Delivered per Employee	.04	.12	.04	.08	.07	.07	.10	.51
Employees per Mile of T&D Main	0.622	0.133	0.252	0.133	0.239	0.645	0.226	0.176
Customer per Mile of T&D Main	170	64	74	56	62	283	89	73
O&M Expense per Employee (thousand)	\$242.1	\$338.6	\$274.2	\$226.4	\$213.3	\$271.3	\$325.9	\$376.1
O&M Expense per Customer	\$885.01	\$705.73	\$938.12	\$573.52	\$688.16	\$618.10	\$829.14	\$911.96

Source: Statistical Comparison

7. PGW has very poor relations with its union and has not executed an effective strategy to take advantage of the various opportunities afforded within the existing union agreement or to negotiate more favorable terms in its contract negotiations.
 - There are numerous "local agreements" (departmental) that, while reportedly in agreement with the union contract, provide for work methods that are not consistent with management objectives.
 - PGW has insufficient documentation on the reasons for or the applications of local agreements. Since 1998, PGW's human resources department has started to collect and maintain existing written local agreements. In this regard, the union wins virtually all arbitrations due to its superior documentation regarding local agreements.

- A variety of areas within PGW suffer substantially from poor union/management relationships, including areas of direct customer contact.
- In the past, PGW has proven unsuccessful in executing a strategy which would improve its ability to contain and reduce labor costs through its labor contract negotiations.

F. RECOMMENDATIONS

1. Undertake a Phase III project to develop specifications and procedures for a comprehensive work management and manpower planning program for PGW as part of this management and operations audit. The project should include the following tasks:
 - Prepare detailed plans for developing and implementing a comprehensive time reporting system for each department within PGW.
 - Verify with management our understanding of PGW's current time reporting systems and procedures within each department.
 - Evaluate the work and activity codes used to capture employee time. Ensure that all of PGW's employees report their time against work and function codes that adequately define the tasks and activities they perform. Where necessary, select alternate work and function codes based on the availability of drivers that can be used to forecast workload, as well as track progress against targets and goals.
 - Design time reporting procedures that will capture 100 percent of each employee's hours, including holidays, sick time, vacations and administrative tasks.
 - Prepare specifications for any systems and tools needed to support the time reporting process.
 - Prepare detailed plans for developing and implementing procedures for appropriate work management systems in each department at PGW.
 - Verify with management our understanding of work management systems currently used at PGW within each department.
 - Evaluate the effectiveness of these systems in measuring and monitoring work force productivity and performance. Where necessary, develop recommendations for modifying current systems and procedures or implementing new tools where none currently exist (for example, in "white collar" areas).

- Ensure that all systems (existing, new and modified) will provide information that can be used to monitor employee utilization, compare actual work volumes and accomplishments against targets and goals, and generate other management reports as required.
- Develop specifications for any systems and tools needed to support the work management systems.
- Prepare detailed plans for developing and implementing a comprehensive manpower planning process.
 - Develop specifications for manpower planning models that use data collected by the time reporting systems and are required for the work management systems. Ensure that all of this information can be used to facilitate manpower planning, that is, forecast workload and determine the optimum staffing for each organization.
 - Develop procedures for a bottom-up manpower planning process to provide the basis for comparison against, or verification of, top-down staffing directives. This process and its associated tools should be based on the needs of first and second level managers, in order to provide them with a means of determining resource needs to meet forecast workloads.
 - Develop specifications for the software and hardware needed to support the process.
- Prepare a task report that provides a detailed work plan for the implementation of the comprehensive work management and manpower planning program.

(Refers to Conclusions 4 and 6.) This recommendation was completed in Phase III of the audit. The results are included in Chapter XV-Proposed Work Management and Manpower Planning Program.

2. Reduce the number of positions that have high or low spans of control.

- Each of the positions that has a reporting ratio of 1:3 or less should be evaluated. Some of these, such as the reporting relationships in the regulatory affairs department and the legal department are understandable, and likely could not be changed without rendering the work function ineffective. The others should be examined to determine whether or not there are alternatives that might provide a more efficient management structure.
- Using the same procedure, the positions that have reporting ratios of 1:10 or greater should be studied to determine if additional managers or management layers need to be applied, or if work groups reporting to these

managers should be assigned to managers having less supervisory responsibility.

- PGW can perform this study for a nominal costs. A savings may be generated if sufficient supervisory positions can be eliminated. At the same time, increased supervision, if its need is determined, could enhance productivity and performance.

(Refers to Conclusion 5.)

3. Develop and implement a labor relations strategy that will promote improved productivity and lower labor costs.

- Avoid making local agreements with the union in the future.
- When it is necessary to enter into local agreements with the union, require that all such agreements be thoroughly reviewed by managers in all other departments of PGW, in order to ensure a consistent approach. The results of any local agreements should be widely disseminated throughout PGW, along with a clear explanation of the reasons for the agreement and its intended effect. Local agreements should be formally documented and tracked at the company level. Files containing pertinent documents should be maintained so that information is available if questions or concerns arise after the agreement is in effect.
- Develop a means of amending the union contract to accommodate any significant local agreements that are made in the future.

(Refers to Conclusion 7.)

CHAPTER V

Support Services

A. BACKGROUND

This chapter provides our diagnostic assessments of the risk management and legal services functions.

PGW's risk management department, which has seven employees including a manager and a secretary, performs three primary functions.

- Three employees are responsible for managing, adjusting and settling all claims against PGW for which there are no insurance policies.
- One employee manages PGW's insurance policies, and interacts with all levels of management, as well as insurers and brokers, regarding insurance matters.
- One employee works with an outside vendor to manage workers' compensation.

By the late 1990s, the legal services department staff had fewer than three attorneys. Obtaining legal assistance outside PGW was common, and managers sometimes proceeded in situations requiring legal support without obtaining the necessary legal advice. On many important matters, such as labor disputes, workers' compensation, regulatory matters, and litigation, non-attorneys were retaining and supervising outside counsel.

As of mid-year 2000, the department's staffing level had increased to 6.5 full-time equivalent attorneys. All of the attorneys, who had an average of almost ten years of legal experience, have worked outside PGW, coming from small law firms, corporate legal departments, and the City of Philadelphia law department. The legal services department now supervises all of PGW's legal work, and performs more work in-house.

The Senior Vice President and General Counsel serves as the chief legal officer and oversees legal representation provided by PGW's attorneys and outside counsel. The commercial law function consists of three attorneys who handle all of PGW's commercial transactions. They review and approve all requests for proposals sent out and advise PGW employees regarding business and financial matters. The department has an open position for an attorney to handle governmental matters and represent PGW concerning regulatory matters and proceedings before the PGC, the PUC, the City Council, and the Federal Energy Regulatory Commission (FERC). Two full-time attorneys and one part-time attorney have responsibility for tort matters involving PGW and manage outside counsel for these matters. These attorneys oversee litigation to which PGW is a party and represent PGW in related trials, arbitration and appeals. An administrative staff consisting of four legal assistants and one paralegal support the legal department.

B. OBJECTIVE

In this task area we performed a diagnostic review of PGW's risk management and legal services functions.

C. EVALUATIVE CRITERIA

To assess PGW's risk management and legal services functions, we evaluated whether or not PGW has a reasonable insurance strategy to deal with risk and potential liability, and whether or not PGW is provided with reasonable and cost-effective legal counsel.

D. WORK STEPS

To complete the diagnostic review of risk management and legal services functions, we performed the following tasks:

- Evaluated programs that address various risks, including:
 - Facilities damage
 - Theft
 - Liability
- Evaluated PGW's decision rules for deciding which claims will be settled out of court.
- Reviewed PGW's efforts to minimize insurance costs.
- Reviewed the type and cost of policies in force.
- Compared the cost of current policies with industry averages.
- Identified areas of uncovered liability, if any.
- Reviewed the experience of the members of the legal staff.
- Profiled the work being done by in-house attorneys and by outside law firms.
- Appraised the process for assigning legal tasks to in-house attorneys and external law firms.
- Determined the basis by which external law firms are selected and how costs are monitored and controlled.

- To the extent that external legal resources are used, evaluated their cost-effectiveness, performance and availability.

E. FINDINGS AND CONCLUSIONS

1. PGW has established a reasonable risk management strategy to deal with risk and potential liabilities.
 - The risk management department manages an integrated insurance program which addresses risks affecting PGW and its employees including facilities damage, theft, and liability. Programs cover employee life insurance. PGW self-insures for workers' compensation and uses a third-party administrator for the program and to contract for the provision of medical care.
 - PGW's risk management policy sets parameters for whether PGW will settle claims in or out of court. In its settlement process, PGW looks at potential liabilities in terms of bodily injury and the seriousness of the case. The risk management and legal departments develop liability cost ranges for each case and determine the likelihood of winning the case should it be litigated. Claims that PGW has a low probability of winning are settled before litigated cases reach trial.
 - The risk management department is working to lower insurance costs by actively shopping for the lowest cost coverage. Costs for individual coverage categories were reduced during the 1997 to 2000 period for the large cost insurance areas such as blanket, property and excess liability. Except for workers' compensation, the cost of PGW's current insurance programs are in line with the industry averages.
 - The insurance programs in place generally address the full range of risks that PGW faces. **Exhibit V-1** provides PGW insurance premiums for 1998 to 2000. Since 1998, PGW has maintained and in most cases reduced insurance costs. The decision to provide PGW with weather insurance for \$950,000 increased fiscal year 2000 insurance costs by \$509,000 over the 1999 costs. This increase occurred during a period when PGW had otherwise reduced the balance of its insurance costs by \$441,000.
2. Recognizing that its workers' compensation costs are high, PGW is installing a program to reduce them.
 - Reducing workers' compensation expenses is a main objective of the risk management department, due to the high costs PGW has experienced in recent years.

- As shown on **Exhibit V-2**, workers' compensation costs increased by 13.4 percent from 1998 to 1999. The year 2000 projected costs are expected to exceed 1999 costs by five percent based on PGW's mid-year experience.

Exhibit V-1

**Property and Liability Insurance
Premium Comparison ⁽¹⁾
(\$ thousand)**

Coverage	1998	1999	2000
Blanket Property	\$324	\$270	\$265
Workers' Compensation	87	93	59
Excess Liability	1,279	1,147	690
Crime/Fidelity	31	31	25
Fiduciary & Employee Benefits	9	10	10
Boiler & Machinery	39	50	39
Business Travel	1	1	1
Directors and Officers	N/A	N/A	72
EDP and Electric Supply	11	N/A	N/A
Subtotals	\$1,781	\$1,602	\$1,161
Weather	N/A	N/A	950
Total	\$1,781	\$1,602	\$2,111

Source: DR 1.4.0009

(1) For fiscal years ending 8/31

Exhibit V-2

**Workers' Compensation Costs ⁽¹⁾
(\$ thousands)**

Costs	1998	1999
Medical	\$ 496	\$ 572
Indemnity	1,472	1,651
Expenses	21	33
Legal	--	--
Rehabilitation	--	1
Totals	\$ 1,989	\$ 2,256

Source: DR 2.8.48

(1) For calendar year

- In calendar year 1999, PGW filed ten percent fewer claims than the Water Department filed. However, the Water Department's costs were about \$900,000 less than PGW's. Reducing PGW's costs to the level attained by the Water Department would provide over \$1 million per year in savings.
 - PGW is installing a new program developed by the City for controlling workers' compensation costs, and hopes that the new program will be successful. The risk management department works with CompServices, Inc. (CSI) to manage PGW's indemnity and medical claims regarding workers' compensation. CSI was designated in 1998 as PGW's third party administrator for workers' compensation, based on a practice introduced by the City of Philadelphia in 1993. The practice was successful in reducing workers' compensation costs for the City prior to being adopted by PGW.
3. The risk management department is installing a risk management information system (RMIS) database which will improve PGW's ability to manage tort-related cases.
- RMIS will give the risk management, human resources, and legal departments the information needed to develop least cost settlement strategies for resolving liability issues.
 - The system will capture and quantify loss data, and, when fully operational, it should provide management with an effective tool to collect loss information and manage tort-related cases.
4. The PGW legal department has taken steps to provide PGW with more cost-effective legal services.
- PGW has assembled a legal staff that has an average of approximately ten years related experience. The majority of the staff's prior legal experience comes from working with the city government and addressing issues similar to those faced by PGW. The PGW legal department is responsible for tort, labor and workers' compensation issues, regulatory matters, and contract, transactional and commercial matters.
 - Throughout most of the 1990s, personnel within PGW did not perceive that the legal department provided valuable service and tended to regard the attorneys as "deal breakers" rather than "deal makers." Starting in 1998, the legal department started a process to improve its capabilities and assume responsibility for legal functions from all other PGW departments.
 - The legal department has two full-time attorneys and one part-time attorney to specifically handle litigation. The department assumed responsibility from the risk management department for supervising outside counsel on tort matters in September 1999.

5. The PGW legal department is responsible for managing PGW's relations with outside law firms.
 - The legal department has an established method for selecting outside law firms. In consultation with the City administration, the department identifies a list of outside legal firms which are then interviewed and asked if they will accept PGW's financial terms. Following the preliminary evaluation, the legal department selects, in consultation with the City administration, the firms PGW wants to engage for outside legal support.
 - The legal department is reducing the amount of legal work assigned to outside law firms. Each case is evaluated to determine if it is feasible to perform the work internally before it is assigned to outside counsel. The default for a case is to keep the case in-house. Outside legal counsel is retained to address special tort issues and labor matters.
 - PGW retains outside legal counsel at less than market price. PGW established a guideline for paying outside counsel that allows billings up to \$150 dollars per hour. A review of the billings from outside law firms indicated PGW is receiving a significant amount of service from senior partners associated with the outside law firms at the \$150 per hour rate. The \$150 rate is considerably below current market rates for senior partners.

6. While PGW has reduced its overall legal costs by 12.6 percent since 1998, it does not have a work management and manpower planning system for its internal staff to determine if its staffing levels are appropriate.
 - Since 1998, PGW has shifted a significant amount of its legal costs from outside counsel fees to internal legal costs. As indicated in **Exhibit V-3**, outside counsel fees, which represented 84.5 percent of PGW's legal fees in 1998, were reduced to 60.9 percent in 2000.
 - At the same time, PGW has reduced its overall legal costs by over \$500 thousand from 1998 to 2000, a decrease of 12.6 percent.
 - The legal department does not have an effective work management and manpower planning system. As PGW undertakes more legal work in-house, it needs to have management tools to determine appropriate staffing levels. This need was addressed in Phase III of this audit. See Chapter IV - Staffing Levels, and Chapter XV - Proposed Work Management and Manpower Planning Program.

Exhibit V-3

**Legal Costs ⁽¹⁾
(\$ thousands)**

Year	Internal Legal Costs	Percent of Total Legal Costs	Outside Counsel Fees	Percent of Total Legal Costs	Total Legal Costs
1996	\$474	16.8%	\$2,348	83.2%	\$2,822
1997	607	17.1	2,934	82.9	3,541
1998	656	15.5	3,582	84.5	4,238
1999	1,432	34.5	2,722	65.5	4,154
2000	1,448	39.1	2,257	60.9	3,705

Source: DR 2.2.0015

(1) For fiscal years ending 8/31

E. RECOMMENDATION

1. Take steps to reduce workers' compensation claims costs. Attaining the cost per claim level experienced by the City's Water Department will provide PGW with savings of about one million dollars per year. (Refers to Conclusion 2.)

CHAPTER VI

Ongoing or Planned Efforts

A. BACKGROUND

In 1990, Schumaker and Company (Schumaker) issued a report for the management audit of PGW which it had performed for the Philadelphia Gas Commission (PGC). The report included 149 recommendations of which 61 were classified as "high priority." The report identified a cumulative total of \$13.6 million in potential savings including reduced operations and maintenance expenses, deferred capital expenses, and decreased working capital requirements.

In its Five-Year Plan issued in September 1999, PGW identified revenue increases, cost cutting, and productivity enhancing initiatives to raise revenues for a consolidated benefit to ratepayers of over \$143 million from fiscal years 2000 through 2004, not including the effects of initiatives previously budgeted. Of these benefits, PGW's senior management expected that over \$27 million could occur in fiscal year 2000, growing to over \$31 million by fiscal year 2004. At the time of the plan's issuance, the senior management in place believed that these amounts would be more than enough to achieve the annual \$22 million target savings and additional revenue target necessary for PGW to meet its financial goals and avoid a rate increase. In March 2000, a new interim senior management team was put in place and is developing its own corporate plan.. The interim senior management determined that the Five-Year Plan had little relevance to the existing situation at PGW because the plan:

- Did not address changes in processes and procedures attendant to the implementation of BCCS
- Varied widely in the quality of analysis and presentation of programs for future actions
- Provided no cost benefits analysis or real basis for cost saving estimates
- Was a compendium of targets by individual managers
- Did not address the cross-functional and cross-departmental changes needed to effect change, and improvements in efficiency
- Was not a cohesive plan that allowed PGW to work towards common goals and objectives and, as such, made achievement of the financial goals established unrealistic.

B. RFP OBJECTIVES

In this task area, we addressed the following objectives which were identified in the PUC's RFP.

- Assess any ongoing or planned efforts by PGW to implement recommendations contained in the 1990 Schumaker management audit, and all actions taken or planned to meet objectives in the Five-Year financial and management plan prepared by Public Financial Management, Inc. (Five-Year Plan).
- To the extent that significant recommendations and objectives remain viable, but have not yet been implemented or completed, update the associated potential savings and benefits as necessary to reflect current operating data.

C. EVALUATIVE CRITERIA

In this task, we evaluated whether PGW had an effective process for planning, implementing, monitoring and taking corrective actions on improvement initiatives.

D. WORK STEPS

To complete the review in this area, we performed the following tasks:

- Reviewed the status of Schumaker audit recommendations.
- Reviewed the management process which PGW is using to manage initiatives identified in the Five-Year Plan.
- Assessed how progress made with respect to implementing initiatives can effectively be integrated in other tasks in this audit.

E. FINDINGS AND CONCLUSIONS

1. A review of the 1990 Schumaker report, interviews with senior management and an assessment of PGW's current operating environment indicated that the status of the Schumaker management audit recommendations has no relevance at this time.
 - The Schumaker report was issued in 1990, and management indicates that it has either implemented the recommendations or determined that the recommendations were not appropriate.
 - The operating environment has changed significantly in the ten years since the issuance of Schumaker audit report, and major issues facing PGW, such as recovering from the BCCS conversion, preparing for deregulation, and restoring financial viability, did not exist at the time of the audit.
2. As a result of changes in senior management, the lack of direction from PGW's various overseers, and interim management's preoccupation with customer billing

and financial issues, PGW did not attempt to implement all the improvement initiatives identified in the Five-Year Plan. (See Chapter III - Corporate Planning.)

- The Five-Year Plan, which was issued on September 10, 1999, was prepared under the direction of the former chief executive officer (CEO) of PGW. This individual was replaced by a new senior management team consisting of an interim CEO and an interim chief financial officer (CFO) in March 2000.
 - The new interim senior management team determined that the Five-Year Plan did not adequately address PGW's needs, and proceeded to develop its own interim management plan that was issued in March 2000. (See Chapter III - Corporate Planning.)
3. Since March 2000, interim management has taken a number of steps which indicate that it has the ability to set priorities for implementing initiatives that will improve the cost-effectiveness of PGW operations.
- PGW has made reasonable progress in implementing initiatives identified in interim management's plan which was issued in March 2000. (See Chapter III - Corporate Planning.)
 - PGW has made substantial progress in developing a new strategic plan. (See Chapter III - Corporate Planning.)
 - By establishing a project management office (PMO) in July 2000, interim management has focused attention on resolving open issues created by the dismal implementation of the billing, credit and collection system (BCCS) on July 1, 1999. Improvements to the operability of BCCS continue to be made. (See Chapter VIII - Customer Service, Billing and Collection, and Chapter XI - Information Technology.)
 - On December 1, 2000, interim management announced a significant reorganization which should streamline reporting relationships throughout PGW. (See Chapter VII - Corporate Governance.)
 - On December 1, 2000, interim management announced a new compensation plan which should start to address inequities and weaknesses that existed in PGW's compensation practices. (See Chapter XIII - Human Resource Management.)
 - PGW is actively participating in and has made a commitment to the success of Phase III of this audit, which is addressing PGW's needs to develop and implement a work management and manpower planning system. (See Chapter XV - Proposed Work Management and Manpower Planning Program.)
4. The PUC, in its November 21, 2000 order, outlined three tasks that will require

PGW to implement needed improvement initiatives.

- In Docket No. R-00005654 regarding a petition for the establishment of interim rates, the PUC first ordered PGW to convene a best-practices working group to solicit cost cutting steps from other entities such as natural gas distribution companies (NGDCs), industry associations, and comparable municipal organizations.
- Second, the PUC ordered PGW to “commit to address and implement the management, operational service and other improvement measures ultimately recommended in [this] management audit, unless otherwise directed by the Commission.”
- Third, the PUC ordered PGW to “commit” to correct the problems identified with its BCCS, particularly with respect to the need to rectify budget billing problems, providing quarterly reports to the PUC’s Bureau of Consumer Services on the progress it is making correcting its BCCS problems.
- To respond to these three tasks, PGW will need to prepare an implementation plan which will assign responsibilities and establish target dates for completion for each initiative within each task. The plan, when approved by the PUC, will provide PGW and the PUC with an appropriate process to monitor implementation efforts.

F. RECOMMENDATION

1. Develop and implement a status reporting system that will provide timely and specific information regarding improvement initiatives to the PUC, the Philadelphia Facilities Management Corporation Board of Directors, the City Council and the Mayor. (Refers to Conclusions 2 and 4.)

CHAPTER VII

Corporate Governance

A. BACKGROUND

PGW is a collection of assets owned by the City of Philadelphia (City). Since its origin in 1835, PGW's governance structure has taken a variety of forms. The current era of governance began January 1, 1973, the effective date of the "Management Agreement" between the City and the Philadelphia Facilities Management Corporation (PFMC), whereby PFMC manages and operates PGW pursuant to ordinances of City Council and resolutions of the PFMC Board of Directors (BOD). PFMC is a Pennsylvania nonprofit corporation incorporated by the City for the stated purpose of operating PGW. The mayor appoints all seven members of PFMC's BOD, whose terms are for two years. The current agreement calls for PFMC to provide PGW a senior management team consisting of a chief executive officer (CEO), a chief operating officer (COO), and a chief financial officer (CFO).

The City Council is responsible for approving PGW's management agreement and its capital budgets. It also appoints two members of the Philadelphia Gas Commission (PGC). The City Controller is a third member of the PGC and the mayor appoints two additional members of the PGC. In total, the PGC has five members. Historically, the PGC was PGW's economic regulator and was responsible for approving its rates and changes to its tariffs. As of July 1, 2000, the PUC assumed responsibility for approving PGW's rates and tariffs as a result of the passage of the 1999 Gas Act by the Pennsylvania legislature. The PGC retains responsibility for approving PGW's operating budget and forecast and reviewing PGW's capital budget.

The poor public perception of PGW's recent dismal performance, deregulation of the gas industry in Pennsylvania, and the transfer of regulatory oversight from the PGC to the PUC have focused attention on the governance of PGW. In March 2000, the new Mayor's transition team characterized PGW's governance structure as "highly fragmented." It further noted that "this fragmentation has caused a breakdown in ensuring accountability for oversight of PGW. Diffusion of responsibility has contributed to inaction in the face of poor decision making at PGW and an obvious need for changes in PGW management." Subsequently, the Mayor appointed seven new members of the PFMC BOD, and a senior management team consisting of an interim chief executive officer (CEO) and an interim chief financial officer (CFO), and a lawyer to provide advice and counsel to the senior management team. The salary of the interim CEO and the lawyer's fees were paid for by The City, and the interim CFO's salary was paid by PGW. The COO position was not filled.

In the corporate governance task, we reviewed the structure, function and interrelationships of PGW's senior management, the PFMC, its BOD, the City of Philadelphia, the Mayor, the City Council, and the PGC. We explored how effective executives and public officials are at identifying opportunities and problems and bringing the appropriate resources to bear on these issues.

B. RFP OBJECTIVES

In this area, we addressed the following objectives, which were identified in the PUC's RFP:

- Review the effectiveness and efficiency of PGW's current corporate governance structure.
- Thoroughly explore and analyze the relationships between PGW management and the City of Philadelphia government, City Council, the PGC, and the PFMC's BOD.
- Document and evaluate specific levels of responsibility and decision-making authority, as well as direct and indirect reporting/communication lines among all the governing organizations.
- Assess the effect of recent legislative and regulatory changes (for example, regulation by the PUC) on the existing corporate governance structure and PGW's top management structure.

C. EVALUATIVE CRITERIA

In conducting the review in this area, we used the following criteria:

- Are the parties who oversee PGW properly organized and informed to provide sufficient direction and oversight of senior management?
- Do overseers have the requisite skills to provide effective oversight over PGW's officers' activities?
- Is PGW's organization structure effective in meeting the goals of management and the needs of its customers? Are PGW's officers effectively supervised?
- Are PGW's affairs effectively supervised?
- Do PGW officers have the appropriate skills and training for their positions?
- Is PGW responsive to the needs of government agencies which influence its operations?
- How effectively does PGW deal with outside parties?
- Does management communicate effectively with employees?

D. WORK STEPS

To complete the review in this area, we performed the following tasks:

- Analyzed the historical relationship among PGW management, the City Council, the PGC, the City of Philadelphia government, and the PFMC BOD concerning rate filings and overall interactions.
- Reviewed the formal authority and responsibilities of the various parties.
- Evaluated specific levels of responsibility and decision-making authority, as well as direct and indirect reporting/communication lines among all the governing organizations.
- Assessed the effect of recent legislative and regulatory changes on the existing corporate governance structure and PGW's top management structure.
- Appraised the quality and timeliness of the information supplied to the overseers.
- Reviewed the oversight parties' involvement in a representative sample of recent PGW decisions.
- Interviewed members of the various parties involved in overseeing PGW.
- Determined if the overseers have an appropriate mix of skills and expertise.
- Assessed the process by which overseers are selected.
- Determined how the overseers deal with issues which may present the appearance of conflicts of interest.
- Analyzed reporting relationships, functional groupings, and reporting responsibilities within PGW to determine whether they are consistent, efficient and appropriate.
- Examined the responsibilities and reporting relationships of officers, and the approval levels of managerial decision making.
- Assessed the appropriateness of the number of officers and each officer's respective span of control
- Evaluated the skills and experience of the officers.
- Reviewed types and frequency of information provided to external groups such as media, financial community, investors, legislators, regulatory agencies, auditors, community groups, industry groups, and major suppliers.
- Evaluated the extent to which the organization structure promotes or inhibits

communications, overall effectiveness and compliance with policies.

- Assessed the quality of financial, market and operating information reviewed by senior management to evaluate PGW's progress toward meeting its goals.

E. FINDINGS AND CONCLUSIONS

1. The governance structure of the PGW needs to be revised.
 - The Mayor's transition team's finding clearly states the issue: "Diffusion of responsibility has contributed to inaction in the face of poor decision making at PGW and an obvious need for changes in PGW management."
 - PGW has a fragmented governance structure which does not clearly identify responsibilities and accountability for overseeing the utility's finances and operations. **Exhibit VII-1** identifies the various parties and the responsibilities of each with respect to the current governance of PGW.
 - While the PGC, the City Council, the Mayor, the City Controller, the City's Director of Finance and the PFMC BOD all have audit or oversight responsibilities with respect to PGW's finance and operations, none have performed their responsibilities effectively in the past few years.
 - A new governance structure should meet the following tests:
 - Provide the senior management team with sufficient independence from the political process to enable it to manage PGW in a businesslike, cost-effective manner.
 - Provide sufficient checks and balances to protect the interests of the various stakeholders: the customers; the owners, that is, the taxpayers and electorate of Philadelphia; the Mayor and his administration; the City Council; the City Controller; senior management; PGW employees and the PUC.
2. The various stakeholders in PGW have different positions as to how the governance structure of PGW should be revised.
 - On September 28, 2000, a bill was introduced in the City Council to abolish the PFMC BOD and shift authority for PGW to the PGC. This bill was opposed by the Mayor and his administration.
 - The PFMC BOD, the Mayor, and the existing interim senior management team favor a continuation of PFMC as the governing board, albeit with refinements to correct certain deficiencies.

Exhibit VII-1

Responsibilities for Oversight

Party	Responsibilities ⁽¹⁾
The City of Philadelphia	<ul style="list-style-type: none"> • Owns PGW assets.
Philadelphia Facilities Management Corporation (PFMC)	<ul style="list-style-type: none"> • Manages and operates PGW and its assets. • Responsible for having PGW pay the City \$18 million annually.
Mayor	<ul style="list-style-type: none"> • Appoints all members of PFMC BOD. • Appoints two members of the PGC.
City's Director of Finance	<ul style="list-style-type: none"> • Serves on PFMC BOD. • May audit PGW's books. • Approves PGW short-term loans and commercial paper financing.
City Solicitor	<ul style="list-style-type: none"> • Legal advisor for both PGW and the PGC.
City Council	<ul style="list-style-type: none"> • Approves management agreement. • Approves PGW capital budgets. • Appoints two members of the Gas Commission. • Approves PGW short-term loans and commercial paper financing.
City Controller	<ul style="list-style-type: none"> • Member of the PGC. • May audit PGW's books.
Philadelphia Gas Commission (PGC)	<ul style="list-style-type: none"> • Approves PGW's operating budget and forecast. • Reviews PGW's capital budget and makes recommendations to City Council. • Approves PGW short-term loans and commercial paper financing. • May audit PGW's books.
Pennsylvania Public Utilities Commission (PUC)	<ul style="list-style-type: none"> • Reviews and approves rates. • Resolves customer service disputes. • Approves changes to tariff. • Conducts financial and operations audits of PGW. • Oversees PGW adherence to federal pipeline safety regulations.

Source: BWG analysis

(1) As defined by state and/or city ordinance

- The City Controller has not played an active role in the current governance structure of PGW. While he or his designee serves on the PGC, he or his designee indicated that they would vote against any rate increases. The City Controller has elected to have external auditors perform audits of PGW.
- In Docket No. R-00005654, which was issued on November 21, 2000 with respect to PGW's request for an interim rate increase, the PUC addressed the future of PGW's governance structure status when it required PGW to:

“...commit to take any and all actions necessary, by September 30, 2001, to retain independent, professional and experienced management for the Gas Works, pursuant to a long-term (5 to 10 years) management agreement whereunder the manager shall have full managerial and control over all the facilities, service, personnel, operating and maintenance expenses and all other expenditures of the Gas Works....The management agreement described above shall be subject to Commission review and approval. The selection process shall be open, objective and fair.”

3. The PGC's responsibilities for overseeing PGW have declined significantly as a result of the legislation that transferred regulatory oversight responsibility to the PUC, and it is difficult to identify a need for its continued existence.
 - For the fiscal year ended August 31, 2000, the PGC incurred costs of about \$1.3 million and had eight employees. The employees are all on PGW's payroll and PGW pays all expenses of the PGC.
 - While the PGC is still responsible for approving PGW's operating budget and forecast, it is no longer responsible for approving PGW rates and tariffs. Unfortunately, PGW submitted Gas Cost Rate (GCR) filings to both the PGC and the PUC during the summer of 2000. This was a clear duplication of effort at a time when the 1999 Gas Act had transferred responsibility for evaluating GCR filings to the PUC.
 - The City Council and/or the PFMC BOD could assume the responsibilities for approving the operating budget of the PGC, thereby eliminating the need for the PGC and reducing PGW expenses by \$1.3 million per year. The City Council already approves PGW's capital budget and could be assigned responsibility for approving the operating budget, after both were approved by the PFMC BOD.
4. While the PFMC and its BOD would seem to be the logical candidate to solidify the PGW governance structure, the Mayor and the BOD have yet to take appropriate steps to convince the public, the PUC and the City Council that they can provide the necessary leadership.
 - Since all members of the PFMC BOD were designated by the Mayor, they presumably have his support to execute policies that will solidify the governance of PGW. Since the Mayor's term of office is four years, Philadelphia voters can change the governance of PGW every four years by electing a mayor who can designate a majority of the BOD reflecting his views. Based on the long-term problems that have existed at PGW, it appears that elected officials have not given management of PGW sufficient priority, nor has the Philadelphia electorate.
 - The Mayor and the PFMC BOD have failed to designate a new permanent senior management for PGW, as the interim chief executive officer (CEO), the interim chief financial officer (CFO), and the legal advisor to the City are

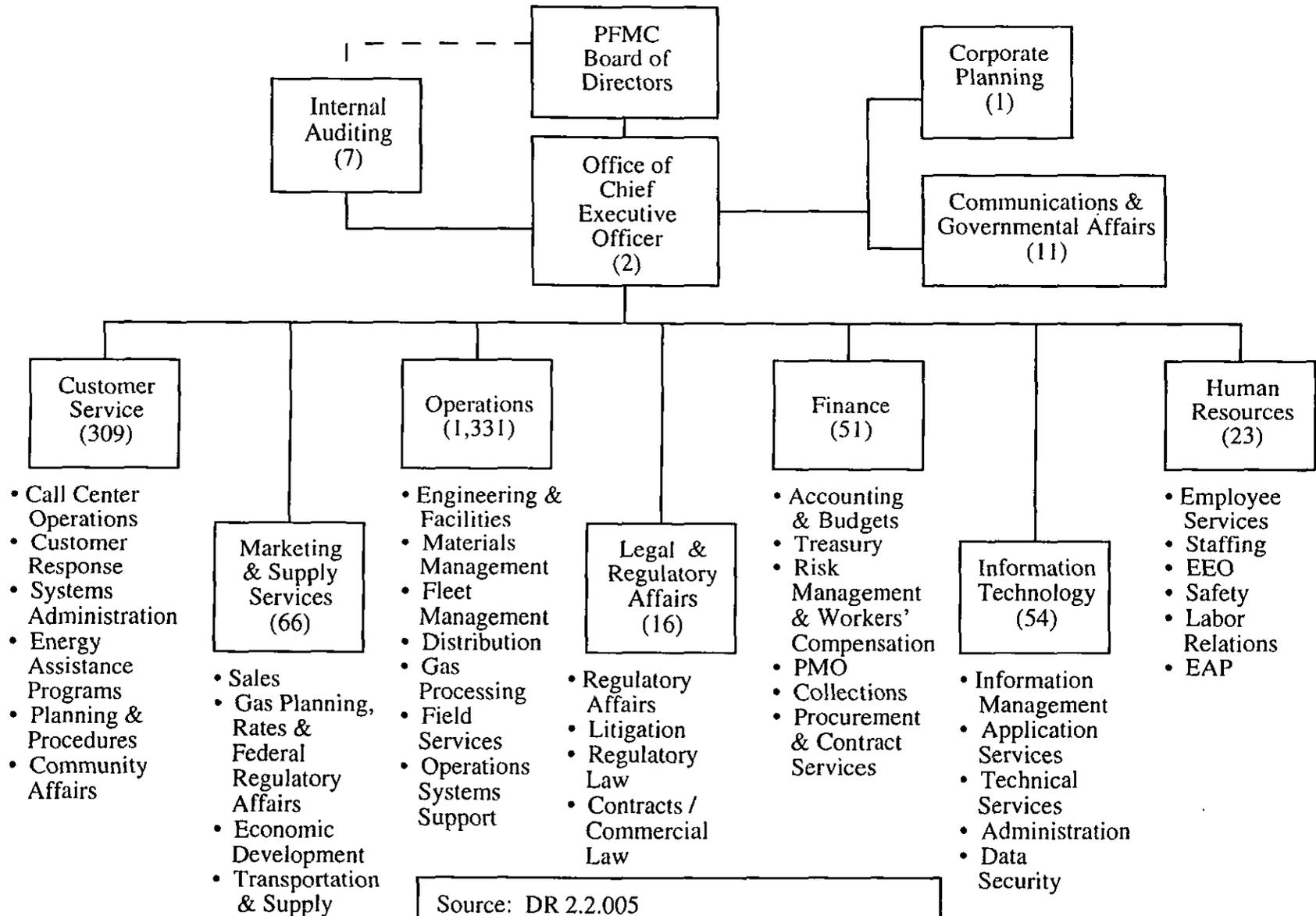
now serving in their tenth month, hardly interim appointments. The Mayor or the PFMC BOD still have not clarified the role of the legal advisor.

- The PFMC would be a logical candidate “to retain independent, professional and experienced management for the Gas Works” as required by the PUC. In this regard, the PFMC would be strengthened if it:
 - Compensated its board members in a reasonable manner. Currently, PFMC BOD members receive no compensation.
 - Included at least one member who had past experience as an executive of an energy utility. The current board does not have anyone with appropriate energy utility experience.
 - Ensured that all members of the board are independent, and cannot be perceived to have conflicts of interest. Some members of the current PFMC BOD have other responsibilities which could be perceived to create “conflicts of interest” with their roles as directors. For example, the City’s Director of Finance is also responsible for separately approving PGW short-term loans and commercial paper financing.
 - Instituted a staggered term for directors to provide continuity through each mayoral election. For example, three directors might be named in the off-year for a four-year term and the other four directors named to a four-year term coterminous with the Mayor. To provide appropriate checks and balances, the appointees could be subject to approval by the City Council. Past PFMC boards have suffered from a lack of continuity when a new mayor was elected.
 - Established BOD standing committees, such as executive, finance, audit and compensation, with specific responsibilities. For example, as indicated in Chapter X - Financial Management, PFMC does not yet have an effective audit committee.
5. The current senior PGW management team has an appropriate level of experience in managing a gas utility.
- While neither PGW’s interim CEO nor its interim CFO had prior executive experience in managing a gas distribution or energy utility when they assumed their responsibilities in March 2000, they have now served in their positions for ten months, and have gained an understanding of the requirements for running a gas utility as well as PGW’s strengths and weaknesses. Prior to their appointments, the interim CEO had served as Water Commissioner and worked for the City water department for a number of years. The interim CFO had over twenty-five years of experience consulting to the utility industry, including a number of years supporting the consumer advocate in PGW’s proceedings before the PGC.

- The senior vice president operations, who has direct responsibility for safety sensitive operations, the delivery of gas, and operation and maintenance, has about 30 years of operational and management experience at PGW.
6. PGW has not had an effective organization structure, and its senior management has not communicated effectively with its employees.
- Historically, PGW senior management has not communicated effectively with management or union employees. As indicated in Chapter XIII-Human Resource Management, the PGW department managers have not consistently followed company-wide policies on issues such as employee absenteeism, employee discipline and relations with the union. Senior management has permitted the existence of local agreements with the union, which has resulted in an inconsistent treatment of union employees from department to department. In large part, these situations reflect senior management's inability to set clear policies and communicate them in an effective manner.
 - On December 1, PGW adopted a new organizational structure which, when fully implemented, should improve accountability of individual officers and improve communication with management and union employees.
 - The revised organizational structure is functional and is similar to that used by effectively managed gas utilities. It simplifies reporting relationships and groups logical activities together. In general, the new organization has appropriate spans of control for senior management and their direct reports, and reduces the layers of management from the prior organizational structures. (See **Exhibit VII-2**.)
 - In Exhibit VII-2, the chief executive officer position is currently shared by two individuals, that is, the interim CEO and the interim CFO. While this arrangement is relatively unconventional, both individuals have skills that have complemented each other during the last ten months. The new organization does not include a COO, and that position is not necessary.
7. Interim PGW senior management is making a concerted effort to respond to the needs of government agencies which influence its operations.
- In July 2000, PGW and the PUC signed a memorandum of understanding (MOU) as to the steps PGW would take to ensure that its customer service activities would be operated in a manner consistent with PUC requirements. (See Chapter VIII-Customer Service, Billing and Collection.)
 - In response to a PUC directive, PGW submitted a plan outlining the steps it is taking to mitigate potential safety problems in the 2000 to 2001 winter heating season. (See Chapter IX - Gas Distribution and Supply Management.)

Exhibit VII-2

Organization as of 12/1/00



Source: DR 2.2.005
 () -- indicates staffing levels as of July 31, 2000

- PGW has undertaken efforts to articulate its financial needs to the PUC, the City Council, and the PGC in its Gas Case Rate (GCR) and request for interim base rate relief from the PUC. (See Chapter X - Financial Management.)
8. Historically, PGW has had poor interfaces with outside parties.
- The dismal billing, credit and collection system (BCCS) conversion on July 4, 1999 and the poor performance of its customer call center have made for bad relationships with customers. (See Chapter VIII - Customer Service, Billing and Collection , and Chapter XI - Information Technology.)
 - Allegedly, certain PGW management, who are no longer with the company, submitted inaccurate and false information to the PGC and the City Council with respect to cost overruns on BCCS.
 - Management/union relations are contentious. (See Chapter XIII - Human Resource Management, and Chapter VIII - Customer Service, Billing and Collection.)
 - PGW's recent requests for increases in base rates and its gas cost rates (GCR) have incurred the heated opposition of customers and community groups, and a stern rate order from the PUC.
 - A review of the PUC's orders with respect to PGW's requests for its GCR and interim base rate increases indicates that PGW was unsuccessful in articulating its needs for financial relief to the PUC.
9. PGW does not have an "ethics hotline" to provide anonymity to employees who wish to disclose potential ethics violations by other employees.
- Over the past few years, PGW has suffered from a number of alleged ethics violations, by certain former executives, which have resulted in their indictment by a grand jury. In this connection, a public perception exists that PGW is fraught with ethical deficiencies.
 - Many utilities have successfully established a culture which places a premium on a high level of ethics. A key component of that culture is having an ethics hotline. Employees are provided a separate and private telephone number which they can call and disclose ethics violations. Typically, the "hotline" is the responsibility of either the company's internal audit department head or its chief legal counsel. In this capacity, the individual responsible has direct access to the utility's board of directors and is also responsible for investigating and resolving any reported violations.

F. RECOMMENDATIONS

1. Revise the governance structure of PGW to make it more accountable and to eliminate overlapping responsibilities.
 - Eliminate the PGC and assign its remaining responsibilities to the City Council or the PFMC Board of Directors. This would reduce PGW's costs by \$1.3 million per year and eliminate overlapping responsibilities in the governance structure.
 - Assign sufficient authority and responsibility to the PFMC Board of Directors to ensure that it can effectively operate PGW.
 - To comply with the PUC's order of November 21, 2000, conduct a formal process to select management with the appropriate independence, professionalism and experience to operate PGW cost-effectively.

(Refers to Conclusion 1 to 4.)

2. Complete implementation of the new organization structure, and take steps to encourage managers to set and communicate consistent policies to employees in all PGW departments. (Refers to Conclusion 6.)
3. Take steps to improve PGW's interfaces with outside parties. Continue efforts to improve the operability of BCCS and the call center. (See Chapter VIII - Customer Service, Billing and Collection.) Continue efforts to improve relationships with the PUC and the City Council. (Refers to Conclusions 7 and 8.)
4. Establish an ethics "hotline" reporting directly to PGW's manager of internal audit or its chief legal counsel. (Refers to Conclusion 9.)

Customer Service, Billing and Collection

A. BACKGROUND

State and federal regulatory changes designed to increase competition and customer choice have heightened the value of effective customer service programs. Many customers' opinion of their local utility is based upon the response they receive when calling with a service or billing inquiry. Excellent customer service, including prompt and effective response to customer inquiries, is vital to the long-term success of a utility.

In this area, BWG reviewed activities involved with providing service to customers. Because these activities affect the quality of service and PGW's revenue stream, we evaluated their efficiency, cost, quality, and effectiveness.

The customer affairs department, which is responsible for customer service, customer accounting and energy assistance programs at PGW, reports to the Vice President of Customer Affairs who, in turn, reports to the interim CEO. PGW's fiscal year 2001 budget includes 318 employees in the customer affairs department including 105 in collections and recovery, 25 in customer accounting, 175 in customer service, four in the customer review unit, and nine others.

Exhibit VIII-1 provides the objectives of sections within the customer affairs department.

PGW's customer affairs department was severely affected by the flawed implementation of the billing, credit and collection system (BCCS) on July 1, 1999. Detailed explanations for the flawed conversion are provided in Chapter XI-Information Technology. The failure of the conversion directly affected the operations of PGW's call center and resulted in PGW's inability to bill all customers accurately and to provide answers to customer inquiries in a reasonable timeframe.

On March 31, 1999, the PUC adopted a policy to encourage the major gas and electric utilities in Pennsylvania to implement pilot customer assistance programs (CAPs) which provide alternatives to traditional collection methods for low income customers. The policy provides guidelines for those utilities that voluntarily implement CAPs. Generally, customers enrolled in a CAP agree to make monthly payments based on household family size and gross income. The guidelines encourage CAP funding that makes maximum use of existing low-income energy assistance programs, most notably LIHEAP, a federally funded program that provides financial assistance grants to needy households for home energy bills. The guidelines also recommend that utilities incorporate a series of control features to limit program costs.

The Gas Act, enacted on June 22, 1999, provides that the PUC shall, at a minimum, continue the level and nature of the consumer protections, policies and services that now assist low-income customers to afford natural gas service. The Gas Act requires the PUC to ensure that universal service and energy conservation policies, activities and services are appropriately funded and available in each natural gas distribution company (NGDC) territory. The Gas Act also requires NGDCs to establish uniform reporting requirements for universal service and energy conservation policies, programs and protections and to report this information to the PUC.

Exhibit VIII-1

Customer Affairs Department Objectives

Section	Objectives
Call center	<ul style="list-style-type: none"> • Answer 97 percent of all emergency calls within 30 seconds • Answer 85 percent of all service calls within 15 minutes • Answer 85 percent of all billing calls within 25 minutes
District offices	<ul style="list-style-type: none"> • Maintain an average customer wait time of six minutes • Complete each customer's transaction within twelve minutes
Customer accounting	<ul style="list-style-type: none"> • Resolve all customer inquiries received within three business days • Complete exceptions each day
Energy assistance programs	<ul style="list-style-type: none"> • Streamline programs • Propose changes in regulation
Customer responsibility program (CRP)	<ul style="list-style-type: none"> • Streamline program design • Ensure 100 percent recertification • Improve process and implement credit checking mechanism • Provide better program training • Educate community partners
Conservation works program (CWP)	<ul style="list-style-type: none"> • Reduce gas usage • Lower gas bills • Maximize the number of participants • Increase cost-effectiveness • Promote educational component
Senior citizen program	<ul style="list-style-type: none"> • Phase out or change eligibility criteria to a means testing basis

Source: DR 1.1.001 and BWG analysis

B. RFP OBJECTIVES

In this area, as indicated in the PUC's RFP, we examined PGW's customer service, billing, and collection function in detail, including:

- The capabilities and effectiveness of PGW's new customer information/billing system compared to systems used by other gas utilities, the process employed and costs incurred to implement the new system, and the training of customer service personnel in the system's use
- The reasonableness of staffing levels and overall performance of PGW's call center, including validation of telephone access statistics, and appropriate use of IVR equipment and telecommunications technology in general
- The adequacy of PGW's practices for measuring customer satisfaction and plans for improving it as necessary
- PGW's Customer Responsibility Program (CRP) for conformity with §2203(8) of the Natural Gas Choice and Competition Act (Gas Act), as well as for conformity with the PA PUC's Policy Statement on Customer Assistance Programs (52 Pa. Code §69.261-§69.267)
- PGW's Residential Usage Reduction Program (RURP) and Conservation Works Program (CWP) for conformity to §2203(8) of the Act and conformity to 52 Pa. Code, Chapter 58 Residential Low Income Usage Reduction Programs
- The cost/benefits of, and adequacy of controls over, the senior citizen discount programs
- PGW's collection policies and processes to determine ways to reduce delinquent accounts and increase recovery of written-off amounts
- PGW's process for terminating non-paying customers, and the process and criteria for returning them to service, compared to other Pennsylvania utilities.

C. EVALUATIVE CRITERIA

In conducting the review in this area, we used the following criteria:

- Does PGW have a functioning, accurate customer system?
- Do the billing, credit, and collection procedures meet the needs of customers?
- Does PGW operate its telephone service center in an effective manner?

- Do customer service representatives (CSR) and supervisors have sufficient authority to deal with customer requests at the time of the initial call?
- Are the CSRs in close communication with operations regarding scheduling and crew availability? How does PGW ensure that CSRs do not promise service dates which cannot be kept?
- Are CSRs well-trained and is their performance carefully monitored to ensure a high level of service?
- Does PGW process customer complaints in an appropriate manner?
- Does PGW have effective procedures for measuring the quality of service it provides to customers?
- Is PGW effective in minimizing service theft?
- Are PGW's usage reduction programs effective in influencing customer behavior?
- Are marketing and sales promotion programs effective in increasing the efficiency of gas use and do they balance the interests of existing customers with the interests of potential new customers?
- Has PGW optimized the productivity and accuracy of its meter readers?

D. WORK STEPS

To complete the review in this area, we performed the following tasks:

- Determined if the BCCS is operating as originally designed.
- Determined if the BCCS has the necessary functionality to meet the needs of serving PGW's customers and complying with various PUC customer regulations.
- Reviewed the "to do" list outstanding with respect to the BCCS implementation.
- Reviewed the status and quality of CSR training in the new system.
- Evaluated efforts to reduce bad debt write-offs.
- Evaluated efforts to reduce the number of estimated bills.
- Reviewed credit and collection activities, including procedures for account opening, deposits, collections, turn-offs, write-offs, and theft-of-service prevention.

- Compared PGW's delinquency rates and accounts receivable aging with those of similar utilities.
- Determined if the best use is made of new technologies in estimating bills.
- Reviewed PGW's CRP for conformity with §2203(8) of the Act, as well as for conformity with the PA PUC's Policy Statement on Customer Assistance Programs (52 Pa. Code §69.261 - §69.267).
- Assessed the cost/benefits of, and the adequacy of controls over, the senior citizen discount program.
- Reviewed PGW's collection policies and processes to determine ways to reduce delinquent accounts and increase recovery of written-off amounts.
- Assessed PGW's process for terminating non-paying customers, and the process and criteria for returning them to service.
- Reviewed daily, weekly, monthly, and annual statistics collected by PGW relative to the operating performance of its call center. Determined if these statistics are sufficient to measure the overall performance of the call center.
- Determined if managers use call center statistics to identify effective strategies for improving service or lowering cost.
- Reviewed the organizational structure of the call center and compared staffing levels per call handled with other similar utilities.
- Reviewed the effectiveness of call volume forecasting tools. Determined how accurately PGW is able to forecast call volumes.
- Assessed the effectiveness of PGW's efforts to translate call volumes to personnel levels.
- Determined if PGW has modified its work rules to help it better adjust staffing levels to work load.
- Reviewed overtime and average answer response times to assess the overall effectiveness of PGW's efforts to match workload and staffing.
- Reviewed the authority given to CSRs at PGW compared to that given to their counterparts in "best practices" companies.
- Determined how effective PGW is in providing specific service appointment times to customers and how effective they are in meeting their appointments.
- Examined CSR training practices, both classroom and on the job.

- Reviewed the procedures used by supervisors and managers to monitor the quality of the work of each CSR and to identify specific training needs.
- Elicited comments from the PUC about the timeliness and effectiveness of PGW responses to customer complaints.
- Reviewed procedures followed by district office personnel to handle call and walk-in inquiries, requests, and complaints. Determined responsiveness of district offices to customer needs.
- Identified major causes of customer complaints by customer class and analyzed procedures for measuring, investigating, handling and reducing customer complaints.
- Reviewed recent customer surveys to determine the level of customer satisfaction and identified potential problem areas.
- Examined the depth and breadth of service quality measures.
- Determined the extent to which PGW relies on polls of customers who have recently called the call center as opposed to more general customer survey techniques.
- Determined if PGW regularly compares its service levels with other utilities and if a “best practices” approach is used to continually review and update service practices.
- Assessed the management program for detecting, correcting and prosecuting theft of service cases when appropriate.
- Determined the extent to which management has implemented an overall conservation program, and measured its effectiveness.
- Reviewed PGW’s CWP for conformity to §2203(8) of the Act and conformity to 52 Pa. Code, Chapter 58 Residential Low Income Usage Reduction Programs (LIURP).
- Reviewed marketing and sales promotion programs by customer class and market segment.
- Examined the performance of the marketing and sales function including:
 - Emphasis on industrial and large commercial customers
 - Assignment of marketing representatives to specific accounts
 - Programs targeted at customer retention and new construction
- Assessed how effectively PGW has adapted its marketing and sales practices to the deregulated business environment. Assessed how PGW identifies marketing opportunities, how the potential value of these opportunities is

calculated, and how specific marketing programs evolve to take advantage of these opportunities.

- Reviewed the extent and effectiveness of PGW's market research efforts.
- Determined if PGW makes the best use of new technologies to reduce meter reading expenses, increase cash flow, improve productivity, and provide better supervisory control.
- Assessed procedures for planning, scheduling, and reporting meter readings, and for measuring productivity and error rates.
- Determined how creative and effective PGW is in adjusting its meter reading schedules to reduce "can't get ins" and estimated reads.
- Assessed performance in reducing estimated reads.

E. FINDINGS AND CONCLUSIONS

1. PGW's level of service, as measured by abandonment phone rates and response time of the call center, is one of the worst in the industry.
 - PGW has had numerous reviews of its call center operations and understands the steps required to improve its effectiveness. An external consultant draft report dated June 5, 2000 gave a comprehensive assessment of all aspects of customer service at PGW, including the call center. The report identified and prioritized needed improvements including implementation of "call waiting," "call back manager," upgrades to the telephone switch, and the use of automated customer survey forms. PGW has yet to implement most of these recommendations.
 - **Exhibit VIII-2** provides the number of abandoned calls from 1997 to 2000. An abandoned call is one that is terminated by a caller before the CSR answers. Anytime a caller hangs up before being served probably results in that customer not being happy with the level of service. Due to the flawed BCCS conversion on July 1, 1999, PGW is unable to provide the number of abandoned billing calls in fiscal years 1999 and 2000, which is believed to be significantly higher.
 - **Exhibit VIII-3** shows PGW's lack of effectiveness in responding to customer calls, and compares its performance with industry standards. PGW's utilization rate may be skewed as CSRs may resort to logging out or making themselves unavailable while there are still callers in the queue. The call center does not provide an adequate level of service to customers, except for responding to emergency calls.

Exhibit VIII-2

Abandoned Calls

Ended 8/31	Number of Abandoned Calls			
	Emergency	Service	Billing	Total
1997	4,791	64,564	189,945	259,300
1998	6,758	125,485	232,913	365,156
1999	12,665	216,422	N/A	N/A
2000 (through June)	5,074	114,830	N/A	N/A

Source: DR 2.3.0063

Exhibit VIII-3

Call Center Performance ⁽¹⁾

Activity	Emergency Calls	Service Calls	Billing Calls	Industry Standards ⁽²⁾
Percent of calls answered within target timeframe	N/A	N/A	N/A	78 to 80% within 20 to 30 seconds
Average speed of answer	5 seconds	3 to 6 minutes	15 to 30 minutes	25 to 30 seconds
Percent of calls terminated by caller	1 to 5%	20 to 30%	70 to 85%	5% average
Average talk time	60 seconds	270 seconds	360 seconds	200 to 275 seconds
Average after-call work time	0 seconds	90 seconds	90 seconds	80 to 190 seconds
Utilization / percent of scheduled time CSRs are on calls or in after-call work	20 to 75%	Almost 100%	Almost 100%	76%
Percent of time CSRs are unavailable due to vacation, training or sickness.	45%	45%	45%	30%

Source: DR 2.3.0014 and Vanguard Study of Customer Service

(1) June 2000

(2) Purdue University Benchmark Report and other industry statistics

- PGW does not hire short-term staff at peak demand periods, and, due to work rule restrictions, has had difficulty in temporarily assigning staff

from other departments to its call centers as needed. PGW has not used part-time or contract personnel to achieve desired or appropriate call response goals.

2. PGW call centers could meet reasonable service level standards if all personnel were present and available, and if the billing and service functions were consolidated.
 - PGW has made several attempts to prepare attendance guidelines for the call center and for customer affairs in general. The last version was approved in January 1997, and customer affairs management has made several unsuccessful attempts to update the policy since late 1999. These attempts are still in draft form and were not officially approved for various reasons. (See Chapter XIII-Human Resource Management.)
 - A review of the absentee report for the call center for September 7, 2000 identified three employees with over 70 days of consecutive absenteeism. The two employees with the most days off (121 and 96 respectively) were absent because each allegedly had a broken foot. PGW could not provide a reason why these two employees' injuries made it impossible for them to answer the phones.
 - According to a "local agreement" entered into in 1987, call center employees believe they have two hours and forty minutes each eight hour day when they do not have to be available to take calls. According to management, employees believe that they can literally be away from their desks for that amount of time without having to provide any explanation to management. Call center management is attempting to change this work rule and require this "auxiliary time" to be only a thirty-minute lunch and two fifteen minutes breaks (the same as other PGW employees). The extra auxiliary time of one hour and forty minutes a day for a CSR in the call center equates to about 20 percent of a typical eight-hour workday. With 78 employees in the call center averaging about \$46,000 a year or more in base salary, auxiliary time could be costing PGW potentially as much as \$750,000 per year.
 - **Exhibit VIII-4** shows the staffing necessary to meet a reasonable service level standard compared to the level provided by the 36 available staff on July 27, 2000. If thirty-one additional CSRs were added, PGW could meet service level objectives. The 77 CSRs needed on-site are one fewer than the 78 positions currently budgeted. One cannot assume, however, that all employees would be on-site at any point in time.
 - In Exhibit VIII-4, "service level" is the percent answered in total number of seconds. For example, in "emergency-current service level" the level is 95 percent of all calls are answered in 30 seconds. For "billing-current service level," calls take an average of 39 minutes to be answered.

Exhibit VIII-4

Staffing Level Required to Meet Call Center Service Levels

Existing Functions	Current Service Level	Available Staff on 7/27/00	Alternative Proposed Functions	Achievable Service Level	Staffing Required
Emergency	95% of calls within 30 seconds	3	Emergency	97% of calls within 30 seconds	4
Commercial Service	77% of calls within 84 seconds	4	Billing & Service	85% of calls within 90 seconds	68
Service	78% of calls within 230 seconds	10			
Billing	1% of calls within 39 minutes	17			
Hispanic	18% of calls within 153 seconds	2	Hispanic	85% of calls within 90 seconds	5
Total		36			77

Source: DR 2.3.0072 and BWG analysis

3. The cost of staffing PGW's call center is high.

- **Exhibit VIII-5** provides the staffing of the call center from September 1999 to June 2000. Although there are 78 positions identified for the call center, only 48 people on average, or 62 percent, were there at any point in time.
- Since PGW has historically filled most of the call center positions on the basis of seniority, many of the personnel have substantial vacation to which they are entitled. This only exacerbates the attendance/availability issue and may require increased budgeted positions to make sure that sufficient staff is in attendance on a daily basis.
- The CSR is a highly paid position at PGW as the average base salary, exclusive of benefits, of a CSR exceeds \$46,000 per year. Until recently, the CSR positions were filled according to seniority, without considering skill levels or an employee's ability to talk with customers. Since the CSR position is not an entry-level position, as is the case in many utilities, it could be expected that PGW would have highly trained and experienced CSRs.

Exhibit VIII-5

Call Center Staffing ⁽¹⁾

Month	Average No. of Unavailable FTEs	Average No. of Available FTEs
1999		
September	27	51
October	26	52
November	27	51
December	34	44
2000		
January	31	47
February	33	45
March	21	57
April	NA	NA
May	34	44
June	37	41
Average FTEs	30	48
Percentage	38%	62%

Source: DR 2.3.0055

(1) Based on 78 budgeted FTEs. Nine of these are temporarily assigned to other functions in the company.

- PGW's union could provide the name of only one utility in the country that paid its CSRs more than PGW does.
4. PGW has placed insufficient emphasis on filling the customer affairs department positions after management had determined that the positions were warranted.
- PGW has not filled job vacancies within the department in an expeditious manner. As of August 1, 2000, PGW had neither a Vice President-Customer Affairs nor a Director-Customer Service due to a resignation and a personnel transfer. In October 2000, PGW retained an executive on an interim basis to serve as the Vice President-Customer Affairs.
 - Since September 1999, the customer affairs department has requested a total of an additional 53 personnel, including 30 additional call center CSRs. PGW had filled only 36, or 68 percent, of those positions.
 - PGW's attempt to adequately staff the call center has proven to be ineffective. **Exhibit VIII-6** provides the unfortunate chronology of PGW's human resource department's attempts to fill the CSR positions. Although additional personnel were requested in April and June 2000, ten

Exhibit VIII-6

Timeline for Filling CSR Positions

Date	Action by Human Resource Department
3/2/00	Received requisition for two CSRs. During discussion, the number was increased to four. Requested not to post requisition until VP Customer Affairs determined a final number.
4/5/00 to 6/15/00	Received a requisition for an additional five CSRs. Requested clarification on the number of CSRs needed. Recruitment activity left pending until the number was approved by senior management.
6/15/00	Received third requisition for 30 representatives including ten bilingual. Requested that the customer affairs department post the position intra-departmentally.
6/15/00	Posted positions intra-departmentally.
6/16/00	Grievance filed by the union.
6/21/00	Intra-departmental posting taken down. Reviewed the wording for the posting and the testing criteria to be used for approximately three weeks. Selected a vendor to administer the customer service assessment.
7/12/00 to 7/26/00	Posted job throughout PGW.
7/25/00	Contacted Congreso de Latinos Unidos, a community organization, to recruit bilingual applicants.
7/26/00	Received 118 applications from eight PGW departments. Qualified 78 based on attendance criteria. Established testing criteria including reading, math, computer applications, and customer service assessment profile.
8/14/00 to 8/21/00	Tested 77 internal applicants.
8/25/00	Attended Career Job Fair advertised in the Philadelphia Inquirer. Requested information on entry level starting salary for external candidates. Extended offers to internal candidates who qualified.
8/26/00 to 9/27/00	Tested external candidates and ten internal candidates.

**Exhibit VIII-6
(continued)**

Timeline for Filling CSR Positions - 2000

Date	Action by Human Resource Department
9/12/00	Attended Latino job fair to source additional bilingual candidates.
9/23/00	Interviewed thirteen external applicants and selected six.
9/29/00	Provided salary information to selected external applicants.
10/2/00	Extended offers to six external candidates, of whom four accepted. Continued interviews and testing for additional external candidates.
10/10/00	Interviewed additional candidates from 10/12/00 to 10/16/00.

Source: DR 2.8.0066

of the thirty requested personnel were not selected until late September, which made it too late to have these employees ready and trained for the winter months.

- To increase the number of personnel available to answer the phone during the fall and winter months, in August 2000, PGW offered "flexibility assignments" to attract up to 28 employee volunteers from the collections unit and district offices to the call center. If PGW does not receive an adequate number of volunteers, it will assign employees to the program based on reverse seniority.
5. CSRs cannot address all customer issues during a single call from a customer.
- Although BCCS allows a CSR to handle all areas of customer inquiry, PGW does not make full use of this capability.
 - Since existing work rules prevent a CSR from making certain adjustments to customer records, calls are transferred by the CSR to customer accounting for resolution. Call center performance would be improved if the CSR could tell the customer what his or her new balance is, after various adjustments.
 - The union indicates that the current work rules ensure that CSRs do not select the wrong adjustment code, thereby adversely affecting the general ledger account. However, union personnel in the district offices routinely address all needs of a customer at one time.

6. PGW does not have a single customer access phone number, and its phone system does not provide customers an estimated waiting time.
 - PGW has separate phone numbers for credit and collections, emergency, and billing and service issues as well as an Hispanic language option, and its phone personnel are not cross-trained so that each CSR can address any customer issue.
 - Inbound collections phone personnel are physically separated from other call center personnel and are not active participants in the activities of the call center.
 - PGW's phone system does not provide customers an estimated call waiting time. Customers need this information so that they can control the time they spend on the phone.
7. While CSRs have received some training over the last five years, CSRs are not "well trained" on the use of BCCS, and some CSRs do not have basic skills necessary for the position.
 - The call center and district office personnel have received the following training since 1995: Kaset—customer service skills; AT&T—customer service skills (one day); Drexel Learning—customer service skills (one day); Phone Pro—customer service skills (call center personnel only). PGW has no data regarding the effectiveness of this training.
 - Most of the BCCS training was provided in 1998, six months prior to the installation of the system on July 1, 1999, thereby reducing the overall effectiveness of the training.
 - PGW has recently increased the level of training with a new training staff. Almost 100 percent of the recent CSR training is BCCS-related. PGW has retained external consultants to develop a user's manual for BCCS, which should improve CSR training.
 - According to PGW management, some CSRs do not have basic computer, math or communication skills. Union personnel have not previously participated in basic skills testing, which should be a requirement for the CSR position. PGW did not require basic skill level testing of CSR job applicants until July 2000.
8. PGW does not have a functioning and accurate customer billing system, despite the substantial effort being made to increase the effectiveness of the BCCS.
 - As described in Chapter XI-Information Technology, PGW's attempt to convert to BCCS on July 1, 1999 was a disaster. BCCS was converted without adequate training or parallel systems to ensure that customer information was accurate.

- In the fall of 2000, personnel were still trying to correct over 10,000 customer billing exceptions created by the BCCS conversion.
9. A survey of customer satisfaction performed in early 2000 found an overwhelmingly negative opinion of PGW.
- The first phase of the survey, completed in May 2000, consisted of conducting three focus groups in April 2000. Participants in the focus groups were recruited from PGW lists of customers who had visited a district office in the previous three months. The findings of the first phase were used to design a phase two quantitative survey, which has yet to be completed.
 - Although participants expressed some positive feelings towards PGW, the overwhelming viewpoint was negative. Most participants did not trust PGW to provide either good customer service or accurate billing. The poor service conveys to customers that PGW does not have any regard for them.
 - Most participants stated that the wait time to talk to a CSR on the phone is too long. If PGW shortened the waiting time or notified customers of the wait time to speak to a CSR, most participants indicated that they would conduct more business with PGW over the phone. Many participants indicated that the only way to resolve their problems was to visit a district office. Participants visited a district office because they wanted proof of payment or proof that their problems were resolved.
 - Participants indicated that they would accept co-locating district offices with the City's water department or closing them if the call center and billing improvements were more responsive. Although most participants indicated that co-locating the district offices would be better than closing them, they expressed concerns that co-location would worsen service and lengthen waiting lines.
 - Most participants indicated that they would appreciate customer service enhancements and were interested in being provided "estimated wait time" on their telephone calls and "service appointment scheduling" improvements. However, because of the low level of trust in PGW, most participants were skeptical that the use of new technologies would actually work.
10. PGW appropriately provides its customers a number of ways to pay their bills.
- In the first nine months of fiscal year 2000, PGW received about 3.3 million payments amounting to \$394.6 million from customers. About 71 percent of the payments and about 74 percent of the dollars were received by mail. District offices collected 389,000 payments, or about 12 percent of total payments, amounting to 11.6 percent of the total dollars collected.

The remaining 17 percent of the payments, representing 14 percent of the dollars, were received from a variety of other sources.

- PGW uses 250 payment centers provided by three different vendors, as well as eight district offices. Only cash, check or money orders are accepted at the payment locations. Customer are not charged for making payments at the payment centers, although PGW pays vendors 50 cents for each transaction.
 - Credit cards are accepted only in the district offices or through the mail, and not over the phone. PGW expects to provide that service by January 1, 2001. PGW plans to allow customers to pay through its web site at some time in the future.
11. Field collections may not be as cost-effective as other collection methods now available in the marketplace, and the section's 39 employees might be better used to address other customer service functions.
- The field collection department's 39 employees collect less than \$10 million per year, at a cost of more than \$2.0 million per year. **Exhibit VIII-7** provides the amounts collected and the cost of field collection operations since 1996.

Exhibit VIII-7

**Field Collections Efforts
(\$ millions)**

Fiscal Year	Amount Collected	Cost of Field Collections ⁽¹⁾	Return Ratio
1996	\$ 13.8	\$ 2.4	5.8:1
1997	9.8	2.4	4.1:1
1998	8.6	2.2	3.9:1
1999	6.5	2.0	3.3:1
2000 (through July)	8.7	1.9	4.6:1

Source: DR 2.3.0084

(1) Salaries, benefits, direct charges, such as transportation, and overhead

- Many utilities have moved away from having field personnel collect cash and have instead utilized other methods such as collection agencies and small claims court. Other utilities have found that collection agencies are more cost effective because they specialize in this area and use advanced collection techniques.
- PGW believes it needs to use field personnel as well as other collection techniques. PGW's other collection practices have included collection

agencies as well as filing municipal liens and/or small claims against non-paying customers.

12. PGW's program to install automatic meter readers (AMRs) is nearly complete.
 - Currently, the field services department is completing the installation of AMRs on all residential meters. In FY 1999, PGW installed almost 51,000 AMRs, and in FY 2000, over 19,600. PGW is budgeting for over 20,000 installations for the 2001 fiscal year. According to PGW, by August 31, 2001, they will have converted all active residential accounts to AMRs. This effort, when completed, will reduce substantially the number of estimated bills per cycle.
 - The AMRs have a projected life of 15 years. PGW plans to replace the AMRs at the end of their projected life by using a third party to replace the battery in the AMR devices. The third party will be responsible for disposal of the batteries.
13. Because of its AMR program, PGW's costs to manually read meters has declined significantly in the last three years.
 - In FY 1998, the average number of meter readers assigned to making manual meter reads was 37, at an estimated annual salary cost of \$1.5 million.
 - In FY 1999, the average number of meter readers assigned to manual routes daily declined to 24. During 1999, several meter readers were also loaned out to other departments, for example, collection and distribution. The estimated salary cost for reading routes with the hand-held devices was \$945,000.
 - In FY 2000, due to the AMRs installation program, it was no longer necessary to assign manual meter reading routes to meter readers on a daily basis. However, certain accounts that can be read from the outside of the house were still assigned to meter readers. The approximate salary cost to read these accounts was less than \$40 thousand for the fiscal year.
14. PGW sends out numerous estimated bills, some to the same customer address for several billing periods in a row, because it has not had access to the meters to read them.
 - PGW does not know the number of estimated bills that it has issued in the last five years. As indicated in Chapter X-Financial Management, PGW's external auditors noted in their 1997 and 1998 management letters that PGW had not updated factors for calculating estimated bills for several years.

- As of August 31, 2000, PGW had not read over 17,000 residential meters for three months or more. If PGW has made a manual reading during the past nine months, then it can estimate the reading. If the meter was not read in the previous nine months, PGW's policy is to bill the customer for the standard service and commodity charges. Due to the BCCS problems, PGW billed only the service charges for a period of time, thereby losing the cash flow from the delayed billing of commodity charges. The PUC requires meter reading at least once every six months.
- As indicated in **Exhibit VIII-8**, PGW had about a 64 percent success rate at reading manual meters in fiscal year 2000. In August 2000, 12.9 percent of PGW's customer bills were based on estimated meter readings, and in September 2000, 13.7 percent were based on estimated readings. As PGW completes its AMR installation programs, the number of estimated readings should be reduced.

Exhibit VIII-8

Manual Reads Statistics

Month	Manual Reads Attempted	Successful Manual Reads	Percentage of Successful Reads
1999			
September	5,944	2,477	41.7%
October	4,772	2,266	47.5
November	4,689	3,250	69.3
December	4,089	2,740	67.0
2000			
January	3,323	2,257	67.9
February	5,883	3,838	65.2
March	10,464	7,281	69.6
April	3,515	2,751	78.3
May	7,255	5,069	69.9
June	6,180	4,155	67.2
Totals	56,114	36,084	64.3%

Source: DR 2.3.0036

15. PGW's process for reading the meters of commercial and/or industrial accounts is not cost effective because the company has not yet installed AMRs on all of these accounts.
 - In fiscal year 2000, PGW spent about \$500,000 to manually read commercial / industrial accounts which have not had AMRs installed.
 - PGW uses ten meter readers to read commercial/industrial accounts.

- PGW has installed 6,745 AMRs on these accounts over the past two years, which is 45 percent of the total. The remainder will be installed by 2003.
16. PGW has placed insufficient emphasis on reducing delinquent payments and uncollectible accounts and improving cash inflows.
- **Exhibit VIII-9** provides PGW's aging accounts receivable for the 1997 and 1998 fiscal years. Due to the BCCS conversion problems, PGW is unable to provide similar information for the 1999 and 2000 fiscal years.

Exhibit VIII-9

Aged Accounts Receivable (\$ millions)

Age of A/R	A/R as of 9/4/98	Percentage of Total	A/R as of 9/5/97	Percentage of Total
30 to 59 days	\$ 10.5	7.8%	\$ 10.0	6.9%
60 to 90 days	7.2	5.3	10.7	7.3
90 to 119 days	14.4	10.7	13.2	9.0
120 days and over	102.6	76.2	112.1	76.8
Total	\$ 134.7	100.0%	\$ 146.0	100.0%

Source: DR 2.3.3

- Out of approximately 512,000 customers, about 80,000 to 85,000, or about 16 percent, are chronic delinquent accounts. Given such a high level of delinquent accounts, customer deposits are inadequate, and are declining as shown in **Exhibit VIII-10**.

Exhibit VIII-10

Customer Deposits

Balance Sheet Date	Amount (\$ millions)	Average Deposit
August 31, 1998	\$ 1.3	\$ 16.64
August 31, 1999	1.0	12.94
Change in customer deposits	(0.3)	(3.70)

Source: DR 2.3.0001

- PGW's 1999 typical residential bill was \$71.20 per month, and 178 days pass from the billing date until the ultimate write-off of a past due account. The 178 days represents approximately six billing cycles, or \$427.00 past due on a typical customer bill.
- As indicated in **Exhibit VIII-11**, for fiscal years 1995 to 1999, PGW's write-offs averaged 7.7 percent per year, which is almost four times the industry average of two percent. Reducing PGW's write-off rate to two percent would save PGW over \$28 million per year.

Exhibit VIII-11

**Bad Debt Write-Offs
(\$ millions)**

Fiscal Year	Revenues	Write-Offs	Percent of Revenues Written-Off
1995	\$ 473	\$ 37.9	8.0%
1996	569	34.3	6.0
1997	544	39.6	7.2
1998	486	46.5	9.6
1999	463	36.7	7.9
Five-Year Average	\$507	\$39.0	7.7%

Source: DR 2.3.0017

- In 1998, write-offs were \$46.5 million, which was 9.6 percent of revenues. The high 1998 write-off was attributable to PGW's Customer Responsibility Program (CRP), which provides low income customers an affordable bill payment schedule based on their household income. The program was initiated in 1995, but there was no enforcement of collections until late 1997. This lack of enforcement allowed a large number of participants to remain on the program without making payments. Enforcement resulted in the removal of numerous customers from the program, and discontinuance of their service for non-payment. Their account balances, which had accumulated over two years, were written off.
- Collection efforts suffer because PGW does not consistently perform credit checks on customers, take large enough deposits from customers, or report customer delinquency to credit bureaus.

17. PGW's shut-off policy, as specified in its current tariff, is too lenient.

- Although PA Code 52 ss 56.91-95 permits a shut-off in 32 days, PGW does not send out its first reminder to customers until day 27. PGW's first possible shut-off is on day 48 and the final is on day 58.
- **Exhibit VIII-12** provides the days from billing and the steps PGW takes to terminate service. PGW can reduce its time to terminate a customer's service from its current 48-day practice to the 32-day practice permitted by the PUC.

Exhibit VIII-12

Steps for Terminating Residential Service

Days from Billing	PGW Action
20	Due Date
27	Reminder mail notice mailed
41	First telephone call
43	Field call
48	First possible shut off notice
50	Field call / Shut off notice mailed
54	Second shut off notice mailed
58	Shut off

Source: DR 2.3.0033

18. PGW can attain a one-time cash flow benefit of \$21 million if it mails its bills the day after it reads the meters.
 - Currently, PGW's customer bills are not mailed until two days after the meters are read.
 - Each day's billing amounts to about \$21 million in cash flow. By eliminating the one day delay, PGW can attain, over time, a one-time cash flow improvement of \$21 million, or an annualized benefit of \$1.3 million based on an interest rate of six percent.
19. Management has not placed sufficient emphasis on the need to meet customer expectations in its field service operations.
 - CSRs normally schedules customer visits via BCCS and the interface with the Mobile System. They have no assurance that field operations keep the appointments they make.
 - The number of appointments kept from the standpoint of the customer differs substantially from the number of appointments met from the standpoint of PGW. PGW takes credit for meeting an appointment if its employee shows up on-site on time, and not if it completes the work the

customer desired. This practice increases the number of calls to the call center and adversely affects the overall customer impression of PGW.

20. The district offices may no longer be cost-effective due to a significant decrease in customer traffic and the offices' high cost of processing cash payments.

- **Exhibit VIII-13** provides specific district office statistics comparing the 1999 and 2000 fiscal years. Although the district offices continue to receive about 14,000 customer visits per month, the volume of traffic and work has decreased substantially in the past year.
- In general, the number of payment coupons received in the district offices declined by 41.7 percent from 1999 to 2000, the customer traffic declined almost 26.6 percent, and the total number of customer transactions has decreased by over 29.6 percent.
- Each district office reports substantial reductions in every category, including number of payment coupons received in the office, amount of customer traffic, and number of customer transactions.
- The district offices' cost for processing a payment is \$3.20. In comparison, the Buy Pay program's (185 contracted payment collection sites such as neighborhood check cashing businesses) cost to PGW for processing a payment is \$0.50.
- According to an internal audit report prepared in late 1999, "there are significant opportunities for improvement related to payment collections at PGW's district offices." The report indicates that management should consider closing some, or all, of the district offices; that cash collection methods need to be improved; and that district office daily deposits need to be reconciled to bank statements. This audit report is the only study that PGW provided in response to a request for costs of operating or closing district offices.
- PGW has transferred seven of the eight district office managers to the customer review unit (CRU), which leaves seven offices under the day-to-day supervision of a union person. There is no management person for customers to talk to or complain to within each office at any point in time. Substantial money transactions are not under the direction and supervision of a management employee.
- Most utilities have either closed or substantially reduced their district office locations. PECO closed their neighborhood offices and Philadelphia Water Revenue Bureau has only three offices compared to PGW's eight district offices. District offices increase the costs to all customers who do not use their services. PGW should conduct a detailed analysis to determine which district offices should be closed and the timing of their closings.

Exhibit VIII-13

District Office Statistical Comparison

Category by District Office	Fiscal Year 1999	Fiscal Year 2000	Percentage Difference
Payment Coupons			
Center City	116,723	67,053	-42.6%
South Philadelphia	67,528	41,638	-38.3
West Philadelphia	108,722	65,552	-39.7
North Philadelphia	72,794	39,456	-45.8
Germantown	68,469	39,547	-42.2
Frankford	53,157	31,496	-40.7
North Central	44,927	23,773	-47.1
Northeast	49,876	31,168	-37.5
Total	582,196	339,683	-41.7%
Customer Traffic			
Center City	41,896	25,823	-38.4%
South Philadelphia	23,800	17,914	-24.7
West Philadelphia	38,847	27,383	-29.5
North Philadelphia	33,214	24,085	-27.5
Germantown	26,073	17,929	-31.2
Frankford	24,778	18,288	-26.2
North Central	19,105	16,641	-12.9
Northeast	24,441	22,234	-9.0
Total	232,154	170,297	-26.6%
Customer Transactions			
Center City	81,679	47,088	-42.3%
South Philadelphia	41,150	27,178	-34.0
West Philadelphia	57,620	35,956	-37.6
North Philadelphia	46,337	37,343	-19.4
Germantown	54,812	35,504	-35.2
Frankford	47,049	34,943	-25.7
North Central	32,615	28,224	-13.5
Northeast	40,381	36,422	-9.8
Total	401,643	282,658	-29.6%

Source: DR 2.3.0054

21. PGW has a significant backlog of unprocessed customer complaints.

- PGW received over 1,600 complaints from April 1999 to May 2000. As shown in **Exhibit VIII-14**, as of September 1, 2000, there were 466

complaints outstanding, 81 percent of which were over 90 days old. The vast majority, 69 percent of complaints, were about billing disputes.

Exhibit VIII-14

Customer Complaints Aging ⁽¹⁾

Category	30 Days	30-90 Days	90-180 Days	Over 180 Days	Total
Billing Disputes	22	64	27	207	320
Metering	0	0	17	26	43
Discontinuance or Transfer	0	1	46	40	87
Other Payment Issues	0	0	0	2	2
Service Extensions	0	0	2	10	12
Other	0	0	1	1	2
Total	22	65	93	286	466

Source: DR 2.2.0018

(1) As of September 1, 2000.

- PGW is committed to complying with PUC requirements as mandated by the Memorandum of Understanding (MOU) signed by PGW and the PUC in July 2000. The MOU covers requests of payment agreements and termination notices, other types of customer inquiries, that is, bill-related and service-related, and the CRU; identifies PGW's current and planned additions for staffing in the call center, escalation unit, CRU, and correspondence unit; describes the training, identifies staff to be trained, and provides the estimated time frame for completion.
- PGW has increased staffing in the CRU through the transfer of supervisory personnel from seven of the eight district offices. Additional staffing may be necessary to adequately address the substantial number of customer complaints.
- The CRU has received approximately 23 informal complaints per day since the MOU was signed. Many complaints would not be made if PGW's call center was adequately managed in the first place.

22. PGW has recently taken steps to reestablish its revenue recovery unit.

- In March 1998, the revenue recovery unit was disbanded. All management employees were subsequently reassigned to various departments and all union employees were returned to the collections department. Although the program was not cost-effective, it is necessary to "send a signal" to customers.
- **Exhibit VIII-15** indicates the thefts detected and the money recovered by the revenue recovery unit for fiscal years 1995 to 1997.
- PGW is in the process of developing a pilot program to identify specific details of a new theft-of-service program. The security and loss prevention unit is currently interviewing perspective candidates for two revenue protection investigator positions.

Exhibit VIII-15

Effectiveness of Revenue Recovery Efforts (\$ millions)

	FY 1995	FY 1996	FY 1997
Accounts Visited	20,757	37,349	16,943
Number of Thefts Detected	2,347	3,434	4,684
Dollar Value of Thefts Detected	\$2.1	\$3.2	\$4.0
Dollars Collected and Agreements Made	\$1.5	\$1.6	\$2.1
Total Productive Hours Spent	N/A	31,262	31,495
Hours to Detect and Terminate Each Gas Theft	N/A	9.1	6.7

Source: DR 2.4.0093 and 2.4.0094

23. PGW does not have an effective major accounts program.

- PGW identifies any account with an estimated usage greater than 5,000 mcf per year as a major account. The major accounts section is responsible for these customers and handles all inquiries or complaints. The major accounts section makes every effort to research customer problems and correct them in an expedient manner.
- PGW cannot identify its top 25 major revenue accounts, and cannot access contact names and phone numbers for each. Marketing needs this information from BCCS in a form that will allow it to retrieve information and manipulate the data in any manner necessary. Marketing needs to be

able to identify the largest customers by margin contribution, size of facility, load and type of business.

- Marketing currently collects other information from many sources including the BCCS system, historical information, and gas planning department information. It then combines these various sources of data using a PC database software.
- PGW has not measured the effectiveness of its marketing programs for industrial customers, large commercial customers, and major accounts. It plans to retain major accounts by providing better customer service and competitive pricing.
- Pricing for the interruptible rate classes is set on a monthly basis by a team of individuals from throughout PGW. Prices are set based upon PGW's incremental cost of natural gas, alternate fuels and the maximization of margins to a level where the company does not lose load.
- Due to the variations in the types of business within the city coupled with the small number of interruptible customers (470), it is difficult for PGW to determine the elasticity of the affects on pricing of the various rate classes.

24. While the marketing department has limited its advertising and programs to small initiatives using internal personnel, it has identified several future projects.

- The volatility in both the oil and natural gas markets over the past few months has forced PGW to rethink how it deploys its marketing resources.
- PGW has several programs that are currently in effect or under development, including: a conversion incentive program; a commercial/industrial steam conversion program; commercial/industrial tariff changes; and a gas cooling workshop.

25. PGW's Customer Responsibility Program (CRP) complies with the provisions of the Gas Act, and is similar to the PUC's policy statement on customer assistance programs (CAP) in most major respects.

- The PUC's policy statement indicates that the participation limit for a CAP should reflect a needs assessment, consideration of the estimated number of low-income households in the utility's service territory, the number of participants currently enrolled in the CAP, participation rates for assistance programs, and the resources available to meet the needs of the targeted population. Payment plans should be based on one or more of the following: percentage of income plan; percentage of bill plan; rate discount; minimum monthly payment; annualized, average payment; and/or an alternative payment formula approved by the PUC.

- On November 9, 1993, the PGC adopted CRP, a new low-income program, which became effective on February 7, 1994. The purpose of the CRP is to increase the collection of revenues, provide an affordable payment agreement for low-income customers, impress responsibility on the customer, and reinforce the importance of conservation. CRP is PGW's primary low-income payment arrangement program.
- Customers are eligible if their gross household income is at or below 150 percent of the federal poverty level (FPL), as verified by pay stubs, letters or W-2 forms. A five percent down payment of one month's estimated bill is required at application. About 53,000, or about 10.4 percent, of PGW customers use one of the five separate CRP options, which include three discounted programs and two non-discounted programs.
- The three discount agreements apply if the participant's gross monthly income is at or below 135 percent of the FPL. About 60 percent, or 31,800 customers, are in the 7.35 percent option which provides them a CRP budget amount equal to 7.35 percent of the gross household income. Another 30 percent, or 15,900 customers, are in the \$30 minimum payment per month option. Only about ten customers use the third discount option, the customer needs unit agreement, which is used for exceptions.
- The remaining ten percent of CRP customers use the two non-discount agreements, BUD 2 and Philadelphia Housing Authority (PHA). BUD 2 is the only plan available to customers who fall between 135 and 150 percent of the FPL. This option requires the customer to pay the monthly budget amount plus two percent of his pre-CRP arrears. The PHA option is for customers who are tenants of the PHA who receive a utility allowance. The CRP budget amount is the PHA allowance.
- Participants in the CRP have the following responsibilities:
 - If eligible, apply and assign a LIHEAP grant to PGW each year.
 - Recertify each year.
 - Allow PGW to install an AMR device.
 - Accept conservation services through PGW's Conservation Works Program (CWP), if offered.
 - Pay excess usage charges if usage exceeds the monthly limit.
 - Pay LIHEAP make-up charges if eligible for LIHEAP and did not assign a grant to PGW.
 - Pay non-CRP eligible charges.
 - A conservation credit of \$40 is applied to customers who were not charged excess usage charges and who qualified for a LIHEAP grant to PGW.

- The CRP differs from the CAP policy statement in certain respects. As indicated in **Exhibit VIII-16**, the primary differences are in the areas of design elements, control features and defaults.

Exhibit VIII-16

CRP and CAP Policy Statement Comparison

PA Code 52, 69.261-267 (CAP)	PGW Tariff, Regulation 45 (CRP)
69.261 - General	No Section
69.262 - Definitions	4.50.1 - Similar
69.263 - Development	No Section
69.264 - Participation level may be limited	4.50.2.C - Ongoing enrollment, year-round
69.265 - Design elements: <ul style="list-style-type: none"> • Program funding. • Payment plan proposal: Provides for reduced payments for households between 135 and 150 percent of FPL. • Percent of income-gas heating. 	4.50.4-11 - Design elements: <ul style="list-style-type: none"> • Similar funding. • Percent of income plan. • CRP offers five different payment plans. The three discount agreements limit payments to 12 percent of gross income. The two non-discount agreements are not limited. The BUD 2 nondiscount plan is available to customers between 135 and 150 percent of FPL.
Control features: <ul style="list-style-type: none"> • Minimum payments-gas heating \$18 to \$25. • Consumption limit based on participant's historical average; 11 percent recommended. • High usage treatment-URP. • Maximum credit-gas heating - \$840 • Eligibility criteria: customer of record at or below 150 percent of the FPL, low-income / payment troubled gas heating customer; no allowance for an upfront arrearage payment. • Appeals process: if application denied, use company dispute procedures; may appeal to Pa. Bureau of Consumer Services. • Administration: may include nonprofit organizations. • Outreach, intake and verification: calculation of payment; explanation of CAP; application of LIHEAP grants; consumer education and 	Control features: <ul style="list-style-type: none"> • Minimum payment of \$30, unless granted exception on a case-by-case basis. • Excess usage is charged for discounted agreements, based on comparing participant's usage to average of eligible population. • Conservation/weatherization offered. • No limit of credit (discount) offered. • Eligibility criteria: similar, except PGW's program is for all low income / payment troubled customers. PGW requires an upfront five-percent payment for arrearages. • Appeal process: if application denied, use PGW dispute procedures; may appeal to PGC. • Administration: PGW • Outreach, intake and verification: similar.

**Exhibit VIII-16
(continued)**

CRP and CAP Policy Statement Comparison

PA Code 52, 69.261-267 (CAP)	PGW Tariff, Regulation 45 (CRP)
<p>Control features (continued): referral; account monitoring; and annual reapplication.</p> <ul style="list-style-type: none"> • Arrearage forgiveness: should occur over a 2 to 3 year period upon receiving regular payments. 	<p>Control features (continued):</p> <ul style="list-style-type: none"> • Arrearage forgiveness: While tariff has provisions for forgiving arrearages, PGW does not forgive them.
<p>Default provisions:</p> <ul style="list-style-type: none"> • Failure to make payment: customer is removed and placed in regular collection cycle. • Failure to abide by consumption limits: failure to obtain meter readings; failure to report income and family size changes; failure to accept budget counseling, and weatherization; failure to annually verify eligibility. • Reinstatement policy: customer may be reinstated at utility's discretion. • Coordination of energy assistance benefits: • Evaluation: 	<p>Default provisions:</p> <ul style="list-style-type: none"> • Failure to make payment: customer is removed and placed in regular collection cycle. Customer must be at least two full CRP bills behind to be considered in default. It then takes 45 days from the time the customer became delinquent to be removed from the program and placed in the regular collection cycle. Customers can always stay two payments behind. • Failure to abide by consumption limits: Similar. • Reinstatement policy: suspension from CRP lasts for 12 months or until the responsibility is met. If suspended for payment reasons, customer is not reinstated for a period of one year from the time he defaulted. • Coordination of energy assistance benefits: PGW does not waive LIHEAP make-up charges to customers who assigned the grant to another utility. • Evaluation: original documentation on the creation of CRP calls for similar processes. The process is monitored by the CRP Advisory Committee.
<p>69.266 - Cost recovery: considers both revenue and expenses.</p>	<p>Cost recovery: no section.</p>
<p>69.267 - Alternative program design.</p>	<p>Alternative program design: no section</p>

Source: DR 2.3.0031 and BWG analysis

26. Although PGW has a comprehensive recertification notification process for CRP, the financial controls for collections from CRP participants have not worked since the BCCS conversion on July 1, 1999.

- A district office CSR has the authority to put a customer on CRP without a manager's approval. All information and proof is filed in the district office. Internal audit has performed two special reviews to ensure that customers who are on the program are indeed eligible.
- In the BCCS system, the CRP collection module (CRP C&C) includes two components, financial and non-financial. The CRP C&C financial component issues collection notifications and actions based on payment records. The CRP C&C non-financial component issues recertification notifications and processes reapplications to the program.
- Due to system conversion problems, the CRP C&C financial module has not functioned since July 1, 1999. PGW is reassessing and testing this module and expects that new procedures will be implemented in March 2001.

27. Based on a 1997 evaluation, PGW's CRP is not cost effective.

- As shown in **Exhibit VIII-17**, the cost of the program has decreased for the last three fiscal years. However, the average PGW customer pays about twenty-two cents per mcf to support the CRP program.

Exhibit VIII-17

CRP Cost to Customers

Fiscal Year	CRP Discount (\$ millions)	Applicable Sales (mcf)	Cost to average PGW Customer per mcf
1997	\$17.8	57,874,177	\$0.31
1998	12.0	51,987,264	0.23
1999	11.5	52,105,057	0.22

Source: DR 2.3.0076

- The last external evaluation of CRP was issued in September 1997, for the 1995 and 1996 fiscal years. The evaluation analyzed consumption, transactions, both direct and operational costs and general service costs for customers while they were on the program, and the overall financial effects of CRP. It also assessed the effectiveness of the transfer of the policy goals into program regulations. A telephone survey was conducted

of current and former participants in CRP to assess their understanding of, and attitudes toward, the program.

- According to the September 1997 report, the consultants expressed concern that there was potential for the CRP to become less cost effective as more good-paying low-income customers joined the program. The report made two general recommendations for improving CRP:
 - Control the size of CRP and, if necessary, limit the number of good-paying customers who join.
 - Systematically enforce the payment requirements for CRP participants to help customers maintain payment discipline.
- PGW management has indicated that they have corrected many of the problems associated with the 1997 evaluation. PGW should proceed with the evaluation planned for the summer of 2001.

28. PGW does a good job of receiving available grants for low income assistance.

- As indicated in **Exhibit VIII-18**, for the fiscal years 1996 to 2000, PGW receives about 20 percent of LIHEAP grants and 18 percent of available LIHEAP state funds.

Exhibit VIII-18

LIHEAP and CRISIS Grants Received ⁽¹⁾

	1996	1997	1998	1999	2000
LIHEAP:					
Number of grants	46,606	47,966	49,105	43,035	41,085
Percent of state grants	19.1%	20.5%	21.2%	18.9%	18.7%
Total funds (millions)	\$5.64	\$10.0	\$9.78	\$9.12	\$8.81
Percent of state funds	16.5%	19.8%	21.0%	17.4%	17.3%
CRISIS:					
Number of grants	6,631	7,600	12,140	4,770	16,786
Percent of state grants	9.0%	12.0%	18.8%	11.1%	18.5%
Total funds (millions)	\$1.92	\$1.90	\$3.02	\$1.20	\$4.98
Percent of state funds	11.2%	10.8%	18.7%	14.0%	28.0%
Totals:					
Number of grants	53,237	55,566	61,245	47,805	57,871
Funds (millions)	\$7.56	\$11.90	\$12.80	\$10.32	\$13.79
Percent of state funds	14.7%	17.5%	20.4%	17.0%	20.1%

Source: DR 1.1.0010

(1) Fiscal Year

- PGW receives about 14 percent of state CRISIS grants and 16.5 percent of CRISIS state funds.
29. While PGW's Conservation Works Program (CWP) provides cost-effective energy savings to PGW's CRP customers, and its funding level is in excess of PUC guidelines.
- CWP is intended to reduce the overall long-term cost of CRP by providing free weatherization, conservation and education services to the 53,000 CRP customers. CWP began in 1990 and, for the first six program years, was operated by the Energy Coordinating Agency of Philadelphia (ECA).
 - Since September 1996, PGW has used two external contractors to perform the energy audit or conservation assistance efforts. Both contractors employ an approach to install only the most cost-effective measures. Half of PGW's \$2.2 million conservation budget goes to each of the contractors. The \$2.2 million funding level is about double the PUC's funding guideline of 0.2 percent of total revenues, which would require a funding level of about one million dollars. About 4,200 households per year take advantage of the CWP program at a cost of approximately \$500 each.
 - The most recent CWP evaluation was in June 1998, and its results are summarized in **Exhibit VIII-19**. The savings were generally consistent with expectations. PGW's program evaluators do not include sidewall insulation, which the PUC has found to be one of the most cost-effective program measures. PGW believes that, due to the high number of brick row houses in its service territory, sidewall insulation would not be cost effective.

Exhibit VIII-19

1998 CWP Evaluation

Program Measure	Contractor No. 1 Savings (ccf per year)	Contractor No. 2 Savings (ccf per year)
Roof Insulation	189	90
Thermostat	91	58
Air Sealing	70	70
Other Measures	100	59
Total Savings	450	277

Source: DR 2.3.0050

- PGW's residential usage reduction program (RURP) is generally in compliance with Pennsylvania's residential low income usage reduction program (LIURP). **Exhibit VIII-20** compares the Pennsylvania

residential low income usage program with PGW's RURP. Unlike the PUC's LIURP, PGW does not require the installation of a program measure using either a seven- or twelve-year payback criterion.

Exhibit VIII-20

RURP and LIURP Comparison

PA Code 52, Chapter 58	PGW Tariff Regulation 16
58.1 Purpose: <ul style="list-style-type: none"> Establishment of usage reduction programs for low-income customers. 	16.1 Purpose: <ul style="list-style-type: none"> Similar
58.4 Program funding: <ul style="list-style-type: none"> At least 0.2 percent of a covered utility's jurisdictional revenues Provisions for funding revisions Pilot programs Recovery of costs. 	16.3 Program funding: <ul style="list-style-type: none"> At least 0.2 percent of gross revenue or \$1 million, whichever is greater Advisory committee to provide assistance on special provisions No pilot program section Costs recovered through rate payers, subject to PGC review.
58.5 Administrative Cost: <ul style="list-style-type: none"> 15 percent of the annual budget for the usage reduction program. 	16.3 Administrative Cost: <ul style="list-style-type: none"> Similar
58.6 Consultation: <ul style="list-style-type: none"> The utility may consult with experienced individuals or organizations. 	16.4 Consultation: <ul style="list-style-type: none"> PGW uses an advisory committee composed of experienced individuals.
58.8 Tenant eligibility: <ul style="list-style-type: none"> Tenant eligibility with landlord written permission Landlord contribution 	Tenant eligibility: <ul style="list-style-type: none"> Similar
58.9 Program announcement: <ul style="list-style-type: none"> Identify eligible population, at least yearly. Provide mass mailing to eligible population. Send copy of notice to other agencies that assist low-income customers. If feasible, send personalized mailings and offer personal contact. 	Program announcement: <ul style="list-style-type: none"> No section. PGW identifies CWP-eligible population and provides them with mailings, phone calls and notices.
58.10 Program announcement prioritization:	Program announcement prioritization: <ul style="list-style-type: none"> No section. Similar prioritization of eligible customers is followed in CWP.
58.11 Energy audit survey: <ul style="list-style-type: none"> Program measure installation required using a seven- or twelve-year payback criterion. 	Energy audit survey: <ul style="list-style-type: none"> No section. CWP design includes an energy audit.

**Exhibit VIII-20
(continued)**

RURP and LIURP Comparison

PA Code 52, Chapter 58	PGW Tariff Regulation 16
58.12 Incidental repairs: <ul style="list-style-type: none"> Allows \$300 or more expenditures for incidental repairs to install program measures. 	Incidental repairs: <ul style="list-style-type: none"> No section.
58.13 Usage reduction education:	Usage reduction education: <ul style="list-style-type: none"> No section.
58.14 Program measure installation: <ul style="list-style-type: none"> Outlines different measures and components applicable to the usage reduction program. 	16.6 Program measure installation: <ul style="list-style-type: none"> Similar Also allows for expenditure on repairs in order to reduce usage.
58.15 Program evaluation: <ul style="list-style-type: none"> Outlines evaluation components Reports due annually. 	16.2 Program evaluation: <ul style="list-style-type: none"> Requires independent evaluator to analyze similar components.
58.16 Advisory panel: <ul style="list-style-type: none"> Creation of advisory panel Membership 	16.4 Advisory panel: <ul style="list-style-type: none"> PGW uses an advisory committee composed of experienced individuals to provide advice on program design, evaluations and implementation.
58.17 Regulatory review: <ul style="list-style-type: none"> Utility may not implement a program without PUC approval 	Regulatory review: <ul style="list-style-type: none"> Upon PGC request, PGW will prepare comprehensive program reviews of program design and program funding.
58.18 Exemptions: <ul style="list-style-type: none"> Under special circumstances, the utility may petition for exemption from the required usage reduction program. 	Exemptions: <ul style="list-style-type: none"> No section.

Source: DR 2.3.0031 and BWG analysis

30. PGW provides a Senior Citizen Assistance Program to all seniors based solely on age, without regard to need.

- A 20 percent discount program is provided to over 90,000 customers who are 65 or older. Income or need is not a basis for the assistance. In fiscal year 1999, only six percent, or 5,449, of the participants in the senior citizen discount program were participants in the CRP.
- As shown in **Exhibit VIII-21**, the senior citizen discount cost PGW \$13 to \$16 million annually for the fiscal years 1997 to 1999, which added about \$0.26 per mcf to other PGW customers' bills.

Exhibit VIII-21

Cost of Senior Citizen Program

Fiscal Year	Total Cost (\$ millions)	Participation Level	Number in CRP	Percent in CRP	Additional Cost to Customers (per mcf)
1997	\$ 16.3	93,583	4,821	5.2%	\$ 0.28
1998	14.3	91,934	5,021	5.5	0.28
1999	13.5	90,355	5,449	6.0	0.26

Source: DRs 2.3.0032 and 2.3.0079

- Income or ability to pay is not a criteria to benefit from the program. In fact, some of Philadelphia's wealthiest citizens may benefit from this program if they are over 65 years of age. Since PGW rates are relatively high already, this additional burden on the average customer is inappropriate.
 - The senior discount program places an administrative burden on PGW personnel since it is their responsibility to ensure that the customer who is receiving the discount is still the primary customer or that the person is still living.
 - Periodically, PGW performs a death certificate match to ensure that the customers are still alive and, therefore, that the account is still eligible to receive the discount. PGW has received many reports of customers receiving the senior discount long after the eligible senior citizen has died.
31. With deregulation, PGW will be at a competitive disadvantage because it is the vehicle for the implementation of social programs for the City of Philadelphia.
- In fiscal year 1999, PGW had three social programs with an aggregate cost of \$27.2 million. These include: the Senior Citizen Program (\$13.5 million), which offers customers over the age of 65 a 20 percent discount on their gas bills without a needs test; CWP (\$2.2 million); and CRP (\$11.5 million).
 - Currently, the cost of these programs is spread across the volume of natural gas used in the calculation of the GCR. The costs of these programs could more appropriately be considered a City expense rather than an element of the PGW GCR.

F. RECOMMENDATIONS

1. Improve the overall performance and cost-effectiveness of the customer call center.
 - Fill senior management positions with qualified personnel. Fill open positions that exist within all customer affairs operations, including the call center.
 - Implement a single customer access phone number and provide cross-training to all customer service representatives (CSR) so that each can address any customer issue. Provide "estimated call wait time" to customers so that they can choose whether or not to remain on hold.
 - Take steps to reduce absenteeism and the use of auxiliary time in the call center to ensure that sufficient personnel are on-site to respond to customers in a timely manner. Auxiliary time for CSRs could be costing PGW as much as \$750,000 per year.
 - Take steps to bring CSR salaries in line with industry practices. Eliminate the focus on seniority in filling CSR positions and require relevant skills instead. Consider freezing salaries of certain high paid employees.
 - Increase the level of training provided to CSRs and ensure that the training provided is monitored for its cost effectiveness. Complete and utilize a users' manual for the Billing, Credit and Collection System (BCCS).
 - Resolve CSR worker flexibility issues for the benefit of the customer. Change work rules as necessary to ensure maximum utilization of the Billing, Credit and Collection System (BCCS).
 - Establish a target date to either make the call center effective and customer-oriented or consider outsourcing the entire function. Establish industry standard call response time goals and ensure that staffing is based on achieving those goals.

(Refers to Conclusions 1 through 7.)

2. Correct all billing, credit and collection system (BCCS) inaccuracies. (Refers to Conclusion 8.)
3. Complete the customer satisfaction survey. Prepare a plan to address each of the negative findings and conduct similar customer satisfaction surveys on an ongoing and regular basis. Use improvement in the performance measurements to evaluate management performance. Report the results of the customer satisfaction survey to the public. (Refers to Conclusion 9.)

4. Conduct a study to determine if field collections personnel should be transferred to other areas of customer contact, and if collections should be outsourced to private vendors. (Refers to Conclusion 11.)
5. Take steps to reduce the number of estimated bills and ensure that no customer goes over six months without a meter read. Update factors for calculating estimated bills on an annual basis. (Refers to Conclusion 14.)
6. Complete the installation of Automated Meter Reading (AMR) devices on commercial / industrial accounts to improve the cost-effectiveness of reading their meters. (Refers to Conclusion 15.)
7. Take steps to reduce delinquent payments and uncollectible accounts. Establish a goal for write-offs of customer receivables that is consistent with industry standards. Use the Billing, Credit and Collection System (BCCS) to check credit of customers and to report payment histories to credit bureaus as appropriate. Increase customer deposit requirements for chronic delinquent accounts. Reducing PGW's bad debt writeoffs to two percent would save PGW over \$28 million per year. (Refers to Conclusion 16.)
8. Revise policies so that PGW can shut off customers after 32 days compared to its current 48 day termination practice. (Refers to Conclusion 17.)
9. Review the feasibility of reducing the meter-read-to-billing cycle lag to one day. Implementation will provide PGW with a one-time cash flow benefit of \$21 million. (Refers to Conclusion 18.)
10. Measure appointments kept for field service work from the standpoint of the customer, that is, actually accomplishing the work desired, and not on whether the employee says he or she was at the job site at a specific time. (Refers to Conclusion 19.)
11. Conduct a study to determine which district offices should be closed and the timing of their closing. The study should consider the current status of customer satisfaction, specifically with respect to the responsiveness of the call center. (Refers to Conclusion 20.)
12. Increase the effectiveness of the Customer Review Unit (CRU) and periodically measure and report its compliance with the Memorandum of Understanding (MOU).
 - Determine appropriate staffing levels to ensure that customer complaints are effectively addressed.
 - Develop summary and trend information on the types of customer complaints so that preventive action may be taken in the future.

(Refers to Conclusion 21.)

13. Complete efforts to reinstitute a revenue recovery unit. (Refers to Conclusion 22.)
14. Develop an effective marketing and sales function and increase focus on major accounts, based on revenues received. (Refers to Conclusions 23 and 24.)
15. Improve the cost effectiveness of the Customer Responsibility Program (CRP). Work with the PUC's Bureau of Consumer Services to conform the CRP with appropriate provisions of the PUC's Customer Assistance program (CAP) guidelines to the extent possible. In this regard, PGW must make the financial controls portion of BCCS operable in March 2001 as planned and to have an independent evaluation of the program prepared in the summer of 2001 as planned. (Refers to Conclusions 25, 26 and 27.)
16. Eliminate the Senior Citizens Assistance Program and base any future bill reductions on an assessment of need. Elimination of the senior citizen assistance program could save PGW \$13.5 million per year based on the program's cost for 1999. (Refers to Conclusion 30.)
17. Appeal to the City administration to tighten eligibility rules for PGW's social programs and/or transfer the cost of the social programs from PGW to the City general fund. (Refers to Conclusion 31.)

Gas Distribution and Supply Management

A. BACKGROUND

This chapter provides our review of the following areas:

- Gas distribution system planning, engineering and construction
- Gas distribution operations and maintenance
- Facilities and engineering services
- Materials management
- Transportation management
- Gas supply and management, gas planning, and gas control.

All gas distribution functions including system planning, engineering and construction, operations and maintenance report to the Manager of Distribution. The distribution department coordinates its activities with the City Water Department, as appropriate. Facilities and engineering services, materials management, and transportation report to the Director of Asset Management / Fleet Operations. The Manager of Distribution and the Director of Asset Management / Fleet Operations report to the Senior Vice President of Operations, who reports to the interim CEO.

Gas supply and management functions include gas planning, gas supply, and gas control. Each of these units reports to the director of supply and transportation, who reports to the senior vice president of marketing and supply services, who reports to the interim CEO.

PGW operates in a challenging gas distribution environment. The system is old and the territory is urban. PGW's distribution department delivers gas from the city gates (where gas is transferred from interstate pipelines to PGW) or its liquefied natural gas (LNG) plants to its customers. PGW's service territory is highly populated and densely settled. Because most of PGW's distribution system is under pavement, PGW must contend with city traffic. PGW has little "green field" space where gas distribution system construction and maintenance is relatively easy to perform.

Distribution functions report to the Senior Vice President of Operations, who reports to the interim CEO. Distribution functions include gas distribution system planning, engineering, construction, operations and maintenance. The operations area is also responsible for the LNG facilities and other functions such as engineering and field services. Operations has 1,303 employees, or 71.8 percent of PGW's work force. Further, 1,132 of the operations employees are union members. These employees represent 79.4 percent of the total number of union members in PGW. Operations is responsible for over 40 percent of the O&M budget and 93 percent of the capital budget.

PGW's gas distribution system has components dating back to the turn of the century. **Exhibit IX-1** shows the vintage of PGW's system by decade. More than half of PGW's system is over fifty-years-old. Because the system was constructed over a long period of time, it includes components that were the current technology when installed but are now archaic. For example, early in the twentieth century, gas systems were predominately low pressure and gas utilities installed large cast iron pipes, the best material available at the time, to carry the low pressure gas. Today, new systems use smaller plastic pipes to carry equivalent volumes of medium pressure gas for distribution to customers. Because of the large installed base of low pressure distribution, PGW has never converted to a predominately medium pressure system and still uses relatively large pipes.

Exhibit IX-1

Distribution System Age

Decade Installed	System Miles	Percentage of System
Pre-1900	262.6	8.8%
1900-1909	713.8	23.8
1910-1919	213.5	7.1
1920-1929	327.6	10.9
1930-1939	136.0	4.5
1940-1949	210.1	7.0
1950-1959	253.7	8.5
1960-1969	365.4	12.2
1970-1979	182.4	6.1
1980-1989	216.7	7.2
1990-1997	118.2	3.9
Totals	3,000.0	100.0%

Source: DR 2.4.0014

Some of the system installed in prior decades has inherent problems today. Cast iron pipe joints can leak, cast iron pipes can break during severe weather changes, and steel main and services that are not cathodically protected are prone to corrosion, which can lead to leaks. PGW's system has substantial amounts of cast iron pipe, as well as steel main and bare steel services that are not cathodically protected, as shown in **Exhibit IX-2**.

Cast iron pipe is highly durable, with many examples of hundred-year-old main providing reliable service today. However, the mechanical joints are prone to leakage as the caulked joints deteriorate and the pipe segments are moved by street traffic above, construction nearby, or freeze and thaw cycles. This normally results in fairly small amounts of leaking gas. Of even greater concern is the potential for cast iron pipe to break during extreme weather changes (freeze and thaw cycles) or in conjunction with a water main break that washes out the supporting earth under the cast iron main. Cast iron main breaks often

result in larger amounts of gas being released. Newer cathodically protected steel pipe and plastic pipe with fused or welded joints are not nearly as prone to these problems.

Exhibit IX-2

Problem System Components

System Component	1999 Amount	Percent of Total
Cast iron main	1,751 miles	52%
Coated but not cathodically protected steel main	536 miles	18%
Unprotected bare steel services	223,851 services	44%

Source: Statistical Comparison and DR 2.4.0105

Coated steel main and bare steel services that are not cathodically protected are vulnerable to corrosion that can lead to leaks. The steel can react with the surrounding earth in a manner that causes the steel molecules to migrate out of the pipe, resulting in corrosion. If the corrosion becomes severe enough, a leak will develop. Cathodic protection counteracts the corrosive process and slows corrosion, thereby reducing leaks.

As indicated in **Exhibit IX-3**, cast iron main, coated steel main, and bare steel services caused the majority of PGW's leaks from 1995 to 1999. The Department of Transportation (DOT) Office of Pipeline Safety requires operators to report incidents that cause fatalities, injuries requiring hospitalization, and/or \$50,000 or more of property damage. Since 1990, PGW has had thirteen reportable incidents of which nine were attributable to cast iron main failures, one from cast iron main third-party damage, one from unprotected steel service pipe failure, and two from unprotected steel service third-party damage.

Exhibit IX-3

Leaks and Reportable Incidents

Component	Leaks (1995 to 1999)	Percent of Total Leaks
Cast Iron Main	7,999	75% of main leaks
Coated Steel Main	344	3% of main leaks
Bare Steel Services	25,501	96% of service leaks

Source: Statistical Comparison, DR 2.4.0105 and BWG analysis

For its gas supply, PGW is served by two interstate pipelines, the Transcontinental Pipeline (Transco) and the Texas Eastern Pipeline (Tetco), which both originate in South Texas. PGW also contracts for considerable underground storage. PGW has historically injected gas into storage in the summer, when gas prices were lower, for withdrawal in the winter, when gas prices were higher. PGW's long-term gas supply contracts are summarized in **Exhibit IX-4**.

Exhibit IX-4

Long-Term Supply Contracts

Supplier	Pipeline	Daily Volume (Dth)	Termination Date
Williams	Transco	55,212	10/31/2001
Hess	Transco	20,000	10/31/2001
Hess	Tetco	20,000	9/30/2003
Sempra	Tetco	20,000	9/30/2000

Source: DR 2.4.0074

PGW's LNG capabilities were designed around its distribution system. PGW owns and operates four billion cubic feet of LNG storage capacity and it relies on this capacity to meet design day send out requirements of about 750,000 mcf. PGW's contracts for flowing gas from the pipelines will not meet the demand on the coldest days and the LNG resource is required to keep the gas distribution system functioning. The LNG facilities also provide insurance against interstate pipeline transport and underground storage withdrawal problems. PGW historically has liquefied gas for storage in the summer months, when gas prices were lower, and vaporized liquid natural gas from storage for sendout on the winter days when it was needed. PGW spent \$265 million on purchased gas in fiscal year 1999, 56 percent of the total gas operations and maintenance (O&M) expenses.

PGW currently has 512,000 customers, of whom 350 are tariffed at a lower rate to be interrupted if necessary on peak days. Interruptible customers typically have alternate fuel capability and provide a safety valve should gas demand overcome available supply on a given day. PGW also has just ten transportation customers who procure their own gas but have it delivered by PGW. PGW currently procures the gas for all of its other customers.

The building services department, which has 67 employees, maintains buildings and facilities for PGW. Its responsibilities include controlling maintenance and custodial costs, managing energy usage, and managing the compressed natural gas (CNG) refueling stations for PGW's vehicles. The department provides full service management of nineteen properties, encompassing 740,000 square feet of floor space, where PGW personnel work. This includes maintenance of over 1,500 tons of heating, ventilating and air conditioning

equipment, approximately 800,000 square feet of parking lots, and eight district offices. The building services department also procures and maintains PGW's real estate.

The engineering services department, which has 29 employees, is staffed with engineers and draftspersons who are responsible for gas plant, building and facilities, street project designs, and creating and maintaining distribution system maps. PGW designs are required to comply with applicable codes and regulations. Engineering maintains design and drawing files for all PGW projects.

The materials management department, which has 74 employees, is responsible for purchasing, receiving and warehouses, material distribution, and administrative functions. The departments' warehouse and storeroom operations, which have eleven locations, maintain material and supply inventories to meet the needs of PGW's departments on an around the clock basis seven days a week. Personnel in this section receive, inspect, store, maintain and control items used on a day-to-day basis. The delivery service section picks up and delivers materials, tools and equipment for PGW's departments on an as-needed basis. The purchasing staff is responsible for procuring the most cost-effective goods and services. Purchasing also performs standards testing and inspections as necessary to ensure vendor adherence to PGW's material specifications.

The transportation department, which has 53 employees, is responsible for providing PGW with a cost-effective and high quality fleet of vehicles and equipment necessary for the various business units to perform their functions. The transportation department has three work groups. Its administrative unit prepares the capital and operating budgets, manages the use and procurement of fuel for PGW's vehicles, and monitors productivity and costs related to fleet operations. It is also responsible for making sure that planned maintenance and safety inspections are performed as required, and for registering and licensing vehicles. The maintenance unit services and maintains PGW's vehicles, and various support shops perform tasks such as bodywork, repairs and painting. The radio shop unit installs and maintains PGW's two-way digital and analog radio communications equipment, and handles all FCC licensing requirements. PGW has 31 mechanics and outsources glass work, major auto body work, and transmission work.

B. RFP OBJECTIVES

In this task area, as indicated in the PUC's RFP, we determined the effectiveness and efficiency of PGW's gas management and distribution operations, and the adequacy of its gas safety and risk management programs, including:

- The capabilities of the new gas management and mobile dispatch systems compared to systems used by other gas utilities, the process employed and cost incurred to implement the systems, and the training of personnel in the systems' use;
- PGW's gas supply portfolio, including its mix of pipeline, storage, and supplemental peaking assets, to determine whether PGW has the resources to meet peak-day and design winter firm requirements in the most optimal manner;

- The adequacy of overall system maintenance efforts, with a particular emphasis on the priority and costs of PGW's program for replacing cast iron pipe;
- The need to expand the cathodic protection program to include all existing coated steel pipe;
- The extent of PGW's leak detection efforts, soundness of repair versus replacement decision-making criteria, and adequacy of budgetary allowances for repair/replacement purposes;
- The need to expand the current damage prevention program;
- The adequacy of PGW's employee safety, skills training, and productivity improvement / work management programs;
- The effectiveness of workload dispatching and control, including planning, scheduling, dispatching, and controlling of job orders as well as methods used to verify that they are properly documented and completed;
- The reasonableness of facilities, material and supply inventory levels, and vehicles maintained; and
- The adequacy of PGW's efforts to identify outside contracting opportunities, and manage and control such contracts.

All of the aforementioned objectives are addressed in this chapter except the adequacy of PGW's employee safety and skills training programs, which is addressed in Chapter XIII-Human Resource Management, and the effectiveness of PGW's work management and manpower planning programs, which is addressed in Chapter IV-Staffing Levels and Chapter XV-Proposed Work Management and Manpower Planning Program.

C. EVALUATIVE CRITERIA

In conducting the review of the gas management and distribution area, we used the following criteria:

- Are PGW's efforts to implement the GMS and WAMS/Mobile Systems proceeding in a successful manner, and will the systems meet PGW's functional requirements.
- Are PGW's engineering capabilities adequate for its needs?
- Does PGW manage its construction projects effectively?
- Does PGW's system planning process appropriately balance costs, reliability, and safety?

- Are PGW's current plans for meeting future demand reasonable, with adequate attention to various alternatives and contingency plans?
- Is PGW diligent in identifying the cause of gas losses and minimizing such losses?
- Is PGW acquiring gas at a reasonable cost?
- Is PGW adequately monitoring the quality and volume of gas at city gates?
- Are PGW's gas inventory policies sound?
- Is gas dispatched in an economical manner?
- Are maintenance procedures thorough and effective?
- Is the cast iron pipe replacement program appropriate?
- Is the repair-versus-replacement decision making process sound and is there adequate budget to make replacements as needed ?
- Is the damage prevention program appropriate for the conditions in PGW's service territory?
- Does PGW devote sufficient attention to cathodic protection and corrosion control?
- Are the PGW's buildings and facilities adequately maintained?
- Does PGW have an effective strategy for acquiring, managing, and selling real estate and land holdings?
- Does PGW have effective procedures for assuring compliance with environmental requirements in the design process?
- Do PGW's purchasing practices result in quality products being obtained at reasonable prices?
- Are PGW's inventory practices consistent with providing materials on a timely basis and at reasonable costs?
- Are PGW's fleet operations cost effective?

D. WORK STEPS

To complete the review in this area, we performed the following tasks:

- Reviewed engineering, construction and materials standards.

- Assessed the quality of PGW's engineering skills.
- Evaluated the process by which PGW reviews and approves engineering designs.
- Determined if engineering processes, systems, and staffing mix are adequate.
- Evaluated PGW's performance in the management of several recent construction projects specifically in terms of projected and actual costs, schedules, expenditure forecasts, and project accountability.
- Reviewed the system planning process and the latest system plan.
- Evaluated the processes and assumptions used for performing economic analyses of distribution alternatives.
- Examined the coordination and communication between engineering and related functional areas, including gas supply, marketing and construction.
- Reviewed PGW's gas supply portfolio, including the mix of pipeline, storage, and supplemental peaking assets.
- Reviewed PGW's formulation of gas supply alternatives.
- Reviewed load forecasting methodologies and results.
- Reviewed PGW's design day selection process, including:
 - Selection criteria
 - Analysis of weather records
 - Comparison of performance under actual weather conditions compared to design day calculations.
- Evaluated plans for responding to forecasting results, meeting growth targets, contingency plans for meeting alternative scenarios of high, low and most likely growth, and potential or actual gas system constraints.
- Compared unaccounted-for usage over the past five years with statistics from similar companies.
- Determined if unaccounted-for usage is increasing or decreasing, and why.
- Compared the cost of gas with other similar utilities.
- Assessed efforts to minimize gas costs and to ensure that costs do not rise faster than market prices.
- Reviewed existing gas supply and transportation contracts, focusing on cost escalators, price caps, contract re-openers, minimums and maximums, and exit

clauses. Determined if the contracts provide adequate flexibility for changes in demand or market prices for gas.

- Determined if PGW has a reasonable mix of short- and long-term supply contracts.
- Determined if PGW makes effective use of spot market gas purchases.
- Reviewed procedures for testing the quality, heat content, and volume of gas receipts.
- Assessed the adequacy and accuracy of measurement procedures.
- Analyzed inventory policies and determined if those policies are consistent with expected demand for gas and availability of supply during peak periods.
- Evaluated the inventory planning process and compared actual inventories to planned over the past few years.
- Assessed decision rules used in dispatching gas on a daily basis.
- Reviewed the training and supervision of the dispatchers.
- Determined if PGW compares actual dispatch with optimal dispatch.
- Reviewed compliance with required maintenance and inspection programs.
- Reviewed procedures for developing and maintaining transmission and distribution system documentation and mapping.
- Appraised the procedures and methods followed to respond to emergency outages, and the history of response to emergency calls.
- Determined the frequency of preventive maintenance programs, and evaluated the appropriateness of these programs.
- Reviewed cast iron replacement program including scope, schedule, economics and status. Determined if the program is appropriate based upon leak histories, safety incidents and economics.
- Reviewed the leak detection and tracking efforts.
- Reviewed the repair-versus-replacement decision making methodology.
- Compared replacements made with replacements needed.
- Determined if the replacement budget is adequate.
- Reviewed third-party damage trends and compared damage rates to similar utilities.

- Reviewed the damage prevention program and initiatives including: one call systems, contractor education, and public education.
- Determined if the damage prevention program is adequate and appropriate for the conditions in the service territory.
- Reviewed the most recent corrosion control plan.
- Compared the level of system corrosion protection with that of other gas companies.
- Reviewed and assessed leak history, by type of pipe and type of leak.
- Determined whether cathodic protection should be applied to all coated steel pipe.
- Evaluated the process for establishing, updating, and assuring the use of standards for materials, construction, and estimation.
- Reviewed policies and procedures governing the construction and maintenance of PGW buildings.
- Reviewed procedures used to account for and control buildings, real estate, and equipment.
- Reviewed PGW programs for effective use of land held for future plant and storage facilities.
- Reviewed policies and procedures for acquiring and maintaining property, rights of way, and easements.
- Determined how PGW works with other utilities on the joint use of rights of way and easements.
- Evaluated PGW's procedures for disposing of property.
- Evaluated methods for ensuring compliance with environmental requirements during the design process.
- Reviewed the organizational structure and assessed the assignment of materials management responsibilities, degree of centralization, approval levels, and staffing levels.
- Reviewed purchasing procedures with respect to internal controls, standardization, and coordination with the cash management function.
- Assessed PGW's efforts to form "partnering" arrangements with vendors to reduce costs.

- Reviewed the use of blanket orders, discounts, and standard purchase order contract provisions.
- Examined procedures for vendor screening and selection.
- Reviewed the procedures for materials management from completion of initial requisition to the issue of the item from inventory.
- Assessed procedures for calculating stocking levels, handling backorders, maintaining accurate perpetual records, and identifying obsolete items.
- Evaluated trends in stocking levels and inventory turnover and compared PGW ratios with those of similar utilities.
- Reviewed the location of stores and warehouse facilities to determine if an adequate level of service is provided to users.
- Inspected storerooms for efficiency and security.
- Determined if the amount and type of vehicles operated is appropriate for PGW's size and service territory.
- Reviewed and evaluated fleet management practices, focusing on the justification and monitoring of fleet size and composition, assignment and pooling of vehicles, and standards for use of each class and type of equipment.
- Assessed operation and maintenance policies and practices for mobile equipment, including safety standards, preventive maintenance, scheduling, and vehicle outage records.
- Assessed vehicle acquisition practices and policies regarding standardization, lease or buy and replace or retire decisions, and vehicle specifications.
- Assessed the fleet management organization with respect to functional responsibilities and interfaces with other departments.

E. FINDINGS AND CONCLUSIONS

1. While the Mobile system was implemented effectively and was required because of the BCCS conversion to a client service environment, the system does not provide substantial benefits over its predecessor DXT Mobile system.
 - The client-server based Mobile system went into operation in July 1999. The purpose of the Mobile system is to dispatch service orders to laptop computers in the vehicles of field servicemen. The system interfaces with the order entry system in BCCS. The types of orders which are dispatched

include emergency gas leaks, appliance service orders, repair orders, turn-ons, shut-offs, and meter changes, sets and removal.

- The Mobile system replaced a similar mainframe system (the DXT system) and was required because the customer information database which the DXT system used was no longer available on the mainframe due to the implementation of BCCS. BCCS utilizes a client-server Oracle database, and the DXT system used a database on the mainframe. BCCS forced the need for a replacement to DXT. The initial phase of the Mobile system for development and implementation cost \$1.7 million.
 - A “bare bones, plain vanilla” approach was necessary for the first phase in order to have a replacement ready for the DXT system by the time that BCCS was implemented in July 1999 and the mainframe database no longer was available. A second phase was started in fiscal year 2000 to build on phase one and add features that were available under DXT, but which were not available in phase one. In addition, phase two will provide users more flexibility, incorporate certain enhancements, and upgrade to a newer version of the vendor’s software. The total cost of phase two is estimated to be \$1.0 million.
 - The Mobile system capabilities are comparable to similar systems used by other gas utilities, and field service personnel are well-trained in the use of the system. At this time, the Mobile system has more flexibility, enables real-time initiation and completion of orders, and can operate independently of other systems.
2. PGW has not received any benefits from Gas Management System (GMS) because it has never used the system.
- PGW has planned to develop and implement a GMS since 1996 in anticipation of deregulation and the need to buy gas from third-party suppliers. The objective of GMS is to manage information pertaining to planning, acquiring, delivering, selling, reconciling, and accounting for the gas that is purchased, sold, stored, or transported by PGW.
 - In 1999, a system was installed using as its base GasStar, a software product from Ensyte, a vendor specializing in this area. After GasStar was customized to meet several unique PGW needs, the system became operational on a stand-alone basis in the fall of 1999. However, the interfaces between GMS and BCCS and the general ledger, which were also programmed by Ensyte, have yet to be tested. The original cost estimate for the project was \$1.1 million. The total cost of development and implementation was \$1.3 million.
 - Although GMS was installed and was fully operational, PGW has not used it to keep its database current. The system is now in the “maintenance mode.”

Maintenance costs paid since July 1999 total \$72,000 and include upgrades to the system.

- There are different opinions as to why GMS is not being used. First, a full-time person is needed to enter data and maintain the tables in the system, and this person is reportedly not available due to budgetary constraints. Second, it is not clear that the system is really needed. GMS would allow PGW to track every gas transaction with its suppliers and to automate the handling of complicated processes such as scheduling and nominations, but PGW currently has only nine gas transportation customers. These processes are handled efficiently now using Excel spreadsheets, which do not require as much data entry and maintenance as does GMS. In short, the benefits from GMS are not clear, either for the present or for the future. PGW was unable to cite any savings, including reducing headcounts, which were to accrue from implementing GMS.
3. While PGW recognizes the need for a work management and manpower planning system, project plans are incomplete.
- The primary function of a work management and manpower planning system is to set standards, schedule, track, and account for the time and cost of the workforce. The Mobile system provides many components of a work management system for its field services workforce, but is not used for the distribution operations workforce.
 - Prior to the development of BCCS, PGW planned to implement a work and asset management system (WAMS), but this effort was postponed for several reasons. First, after some investigation, the operations department believed that most of the software packages available were not suitable for a gas utility environment. Second, it became evident that the highest priority within the operations department was to replace the DXT system because of the need to accommodate the new BCCS database. Finally, the initial estimate for the WAMS project was \$5.5 million, and management felt that this figure was low and that there were too many competing demands for both funds and staff. Consequently, PGW postponed the WAMS project until 2002.
 - Phase III of this audit developed specifications for a work force management and manpower planning program. (See Chapter IV-Staffing Levels and Chapter XV-Proposed Work Management and Manpower Planning Program.)
4. While PGW's distribution system planning makes efforts to balance cost, reliability and safety, the lack of adequate funding has adversely affected PGW's efforts to upgrade its aging distribution network.
- PGW's system planning process centers on the capital budgeting process, which details expected capital expenditures by type. The distribution piping

network model is updated once per year and includes all main and service work installed up to that point. This model is used to simulate proposed changes to the network. Results are used to decide how to grow, replace and modify the system.

- PGW’s repair-versus-replace decision making is sound. PGW has a formal guideline for managing prudent main and service replacement prioritization. This guideline considers many factors such as main maintenance history, street reconstruction, sewer and water construction, broken mains, service records, enforced relocations, and on-site evaluations.
- As indicated in **Exhibit IX-5**, PGW’s annual capital budget has increased at a slower rate in recent years. PGW is spending less money each year on the growth and replacement of its aging distribution network. In fiscal year 1999, distribution’s annual capital budget was 35.6 percent less than in fiscal year 1996.

Exhibit IX-5

**Annual Capital Budget for Distribution Plant
(\$ million)**

Fiscal Year	Amount
1996	\$35.4
1997	38.2
1998	28.8
1999	22.8
Percent Change from 1996 to 1999	-35.6%

Source: Statistical comparison and BWG analysis

- Although the system planning process is sound and PGW knows how to apply available funds effectively, PGW has invested insufficient capital in recent years to upgrade the archaic components of the distribution network.
5. While PGW is diligent in identifying the cause of gas losses and minimizing such losses with the funds available, the age and piping materials used in the system make it prone to leaks.
- **Exhibit IX-6** provides PGW’s unaccounted-for gas as a percent of throughput for the last five years. This level of unaccounted-for gas is high if compared to the average of all other gas companies, but is comparable to low pressure gas systems which inherently have meter inaccuracies.

- PGW maintains a backlog of detected but not repaired leaks that has ranged from 1,700 to 3,000 over the last ten years. This level of leaks is high compared to the average of all other gas companies, but is not unusual for a system with so much cast iron main.

Exhibit IX-6

Unaccounted-For Gas

Fiscal Year	Percentage of Throughput
1995	3.1%
1996	3.5
1997	4.6
1998	3.1
1999	3.6
Average	3.6%

Source: Statistical Comparison

6. PGW's cast iron pipe replacement program for the last six years was inadequate, and current budgets do not provide for recovering the progress lost in that period.
 - PGW has 1,751 miles of cast iron distribution main, which is 58 percent of its main. Only five utilities, PSE&G, Michcon, Boston Gas, Brooklyn Union, and Peoples Gas Light, have more cast iron main than PGW. Most utilities with more than 500 miles of cast iron pipe replace one percent per year.
 - From 1995 to 1999, PGW had 6,399 cast iron main joint leaks. In addition, there were 1,600 cast iron main breaks. Together, cast iron main joint leaks and pipe breaks accounted for 75 percent of all main leaks during this period. Over the last ten years, cast iron joint leaks have caused one reportable incident and cast iron main breaks have caused nine. Cast iron main failures were involved in nine of the thirteen PGW reportable incidents.
 - According to a recent study by an external consultant retained by PGW, gas leaks caused by a cast iron main pipe break are over one hundred times more likely to result in a reportable incident than service leaks, corrosion leaks, or joint leaks.
 - The same consultant study reported that there is a 0.63 correlation between winter degree days and cast iron main breaks. That is, the colder the winter, the more likely cast iron mains are to break. A strong correlation also exists between water main breaks and cast iron main breaks. Water main breaks

can create cavities in the supporting soil that cause gas mains to break. In general, the colder the year and the colder the January spike, the more cast iron main breaks will occur.

- As indicated in **Exhibit IX-7**, PGW has replaced cast iron main at a slower pace in recent years. From 1990 to 1994, PGW replaced an average of 21.8 miles of cast iron main per year. This rate declined to an average of nine miles of cast iron pipe replaced per year from 1995 to 1999, a reduction of 59 percent. At the nine miles per year rate, it will take 195 more years to fully replace PGW's cast iron main.

Exhibit IX-7

Historical Cast Iron Replacements

Calendar Year	Miles Replaced	Miles Remaining	Percentage Replaced
1990	37	1,868	1.9%
1991	18	1,850	1.0
1992	20	1,830	1.1
1993	12	1,818	0.7
1994	22	1,796	1.2
1995	8	1,788	0.4
1996	10	1,778	0.6
1997	12	1,766	0.7
1998	8	1,758	0.5
1999	7	1,751	0.4

DR 2.4.0105

- In FY 2000, PGW replaced just 9.3 miles of cast iron main. While the current capital budget calls for increased spending in future years, as indicated in **Exhibit IX-8**, the increase will only return PGW to about one percent per year replacement program and will not recover the one-half percent average replacement efforts of the six-year period from 1995 to 2000.
7. While PGW's cast iron replacement program has reduced joint leaks and cast iron main breaks, cast iron main breaks are the biggest challenge to the safety of PGW's distribution network.
- PGW repaired an average of 1,568 joint leaks per year from 1990 to 1994. This was reduced to an average of 1,280 per year for 1995 to 1999, an 18 percent reduction. However, at an average cost of \$1,300 per repair (using the new keyhole and encapsulate technology), it costs PGW approximately \$1.7 million per year to locate, classify and repair joint leaks.

Exhibit IX-8

Budgeted Cast Iron Replacements

Fiscal Year	Replacement Dollars ⁽¹⁾ (\$ millions)	Replacement Miles	Miles Remaining	Percentage Replaced
2000	\$10.8	9.3	1,742	0.5%
2001	15.2	18.2	1,724	1.0
2002	11.0	18.7	1,705	1.1
2003	11.0	18.7	1,686	1.1
2004	11.3	18.2	1,668	1.1
2005	11.3	18.3	1,650	1.1

Source: DR 2.4.0119

(1) Includes encapsulation and bell joint repairs.

- PGW has reduced the cast iron main break rate from 470 per year, from 1990 to 1994, to 320 per year, from 1995 to 1999, or a 32 percent reduction. This should not produce a false sense of security, however, since the last severe winter, which was in 1994, caused 818 breaks. Another severe winter could produce a similar result.
 - Any winter produces dangerous main breaks and exposure to fatalities, personal injuries and property damage. A severe winter could produce catastrophic failures. PGW knows how to identify and replace the most vulnerable cast iron main, and its recent limited program has reduced the leak and break rates. The cast iron replacement programs should place a priority on pipe that is six inches, since this size is more prone to failure.
8. While PGW devotes considerable attention to cathodic protection and corrosion control, the PUC's gas safety division believes certain issues need resolution.
- PGW has a corrosion control group within the distribution department that designs corrosion control for new construction and retrofits, ensures that installation is proper, makes field tests to assure that it is working properly, maintains maps and records, and prepares required reports.
 - The PUC's gas division is now responsible for monitoring PGW's adherence to pipeline safety rules, which were previously monitored by the Federal Department of Transportation. The PUC's gas division believes that PGW may be in violation of federal pipeline safety regulations that require coated steel pipe to have cathodic protection. PGW believes that it fully complies with the federal regulations. Neither the PUC nor the Federal Department of Transportation has yet cited PGW for a violation of these regulations.
 - As indicated in **Exhibit IX-9**, although the amount of coated but not cathodically-protected steel main has decreased in recent years, the leak rate

has increased. From 1990 to 1994, leaks averaged 31 per year. This has more than doubled to an average of 69 per year from 1995 to 1999.

Exhibit IX-9

Coated-But-Not-Cathodically-Protected Steel Main

Year	Miles Replaced or Cathodically Protected	Remaining Miles	Percentage Change	Leaks Repaired	Leaks Per Mile
1990	8	566	1.4%	31	.05
1991	1	565	0.2	41	.07
1992	1	564	0.2	33	.06
1993	2	562	0.4	30	.05
1994	0	562	0.0	20	.04
1995	2	560	0.4	59	.11
1996	7	553	1.3	90	.16
1997	3	550	0.5	59	.11
1998	3	547	0.5	56	.10
1999	11	536	2.0	80	.15

Source: DR 2.4.0105

- At the 1999 pace of reducing or protecting this type of main by 11.0 miles per year, it will take 49 years to remove or cathodically protect all existing coated but not cathodically protected steel main.
 - In 1991, PGW initiated a program to apply cathodic protection to existing coated steel pipe installed before August 1, 1971. To date, PGW has protected 16.6 miles, and the program is continuing. It costs approximately \$367 thousand per mile to replace coated-but-not-cathodically-protected steel main and about \$125 thousand per mile to add cathodic protection. In either case, associated bare steel services are replaced in conjunction with the work on the coated but not cathodically protected steel main.
 - It costs approximately \$5,000 to repair a coated but not cathodically-protected steel main leak, or about \$345 thousand per year.
9. Both the number of bare steel services and the number of bare steel service leaks have declined in recent years.
- As indicated in **Exhibit IX-10**, the average bare steel leaks per year was 5.1 thousand from 1995 to 1999. The two reportable incidents related to bare steel services over the last ten years occurred in 1993 and 1995, respectively.

Exhibit IX-10

**Bare Steel Services
(Thousands)**

Year	Services Reduced	Remaining Services	Percentage of Services Reduced	Service Leaks Repaired by Replacing the Service
1995	7.1	256.3	2.7%	5.7
1996	9.4	246.9	3.7	6.5
1997	7.7	239.1	3.0	4.6
1998	4.6	234.5	1.9	4.3
1999	10.7	223.9	4.6	4.3
Average 1990 - 1999	7.9			5.1

Source: DR 2.4.105

- PGW spends about \$7.7 million each year to replace an average of 5.1 thousand leaking services for the years 1995 to 1999, at an average cost of \$1,500 per service.
 - The remaining services are replaced or abandoned in conjunction with main replacements or adding cathodic protection to mains.
 - The bare steel services are at least 30 years old, and the rate of leakage will increase over time due to corrosion. Since services are close to buildings, base steel services are a safety concern. Although bare steel services are included in PGW's leak survey program, PGW does not have a specific program to perform leak surveys devoted solely to bare steel services.
 - At the 1999 rate of reducing bare steel services by 10,700 per year, it will take 21 years to remove all bare steel services. If the rate of leakage increases as the pipes age, PGW should increase its replacement rate accordingly.
10. The size of PGW's engineering and technical work force has not kept pace with the increasing demands for engineering and technical expertise.
- PGW's total number of engineering and technical personnel has remained at 34 from January 1, 1990 to the present.
 - However, the number of departments with engineers has doubled from six in 1990 to twelve today. PGW has added engineers to the marketing, project

management, transportation, information technology, gas control and human resources departments. The engineering services department had a staff of 29 employees as of August 31, 2000.

- Since 1990, the proliferation of engineering needs has caused a dilution of engineering talent in critical areas. The number of engineers in gas supply/processing has declined from eleven to six: in distribution from eight to four; and in engineering from twelve to six.
 - At a time when PGW's business environment has increased in complexity, PGW has redeployed engineering and technical positions from highly technical and complex areas such as distribution and engineering to staff the new needs in areas like marketing and gas control. This leaves the traditionally engineering areas vulnerable during a period when substantial change is required in the basic gas distribution and management functions. Only one senior executive in PGW is an engineer.
11. While PGW manages its construction projects effectively, it could reduce costs on all projects by contracting out more construction work or improving the cost-effectiveness of in-house union personnel.
- PGW follows a formal distribution engineering design and construction process. It maintains distribution standards which were last updated on July 10, 2000. The standards provide construction and materials specifications for the gas distribution system.
 - PGW measures actual distribution construction work hours versus estimated construction work hours in order to monitor productivity and improve the estimating process. PGW also monitors total cost and schedule variances to control costs and to improve estimating accuracy.
 - PGW has investigated several new practices to lower the cost of replacing mains, including direct insertion, pipe splitting, pipe linings, and electric fusion technology to replace expensive fittings and couplings.
 - PGW has estimated that increased use of contractors could lower total main replacement costs by ten percent or more.
 - PGW's experience indicates that a contractor labor price for a particular project is lower than that of PGW forces by 20 percent. Labor makes up approximately half of the total cost of construction projects.
 - PGW could save significant amounts of money, and accomplish more construction or main replacement work, if all of the work were done at the labor rate paid to contractors. For example, based on a \$15.2 million 2001 fiscal year budget for main replacements, PGW could save \$1.5 million by using contractors for this work, reducing PGW crew wages, and/or improving productivity of the crews.

12. The PUC has required PGW to implement a more aggressive winter survey and inspection plan.
- PGW's minimum schedule for leak surveys, last revised on May 21, 1998, exceeds the DOT requirements.
 - In a September 13, 2000 order, the PUC ordered PGW to develop and implement a plan for more aggressive pipeline inspections and leakage surveys with particular attention to areas vulnerable to frost damage and corrosion. On October 18, 2000, PGW submitted a winter survey and inspection plan to the PUC.
 - PGW must also take appropriate steps to comply with the operator qualifications rule that requires it to file a written plan by April 1, 2001, and to certify all operators by October 31, 2002.
13. PGW's damage prevention program is appropriate.
- As indicated in **Exhibit IX-11**, PGW's rate of third-party damages per markout requests has improved in recent years. The number of markout requests is an indicator of construction activity. As the amount of construction activity increases, there is a greater potential of third party damages. Comparing the number of damages to markout requests gives an indicator of the effectiveness of the damage prevention program. The lower the ratio, the better the program. While the rate dropped from .008 in 1995 to .005 in 1996, it remained at .006 from 1997 to 1999.

Exhibit IX-11

Third-Party Damages Per Markout Request

Year	Third-Party Damages	Number of Markout Requests	Damages Per Request
1995	163	21,157	.008
1996	118	23,473	.005
1997	158	28,089	.006
1998	156	27,984	.006
1999	162	31,025	.006
Percentage Change 1995 to 1996	(0.06%)	46.6%	(25.0%)

Source: DR 2.4.0051

- From 1995 to 1999, the number of third-party damages declined by 0.6 percent while the number of markout requests increased by 46.6 percent.
- PGW maintains a markout and foreign construction inspector program that marks out PGW facilities in response to one call locate requests, inspects non-PGW construction that may affect the PGW network, educates contractors on damage prevention, and enforces compliance with the Pennsylvania One Call Act.
- Main leaks due to third-party damages average only 18 per year. This is remarkable given PGW's dense service area and level of construction activity. PGW's third-party damage service leak rate of 0.1 per mile of plastic services is well below the average of 0.8 for large distribution companies.

14. PGW is acquiring gas at a reasonable cost.

- PGW's portfolio gas acquisition strategy has three parts. The first part is based on a fixed price targeted to be under the GCR. The second part is purchased at first of the month index prices. The final part is purchased on supply contracts at first of the month index prices, but has the ability to be turned off so that PGW can take advantage of price fluctuations in the market. As part of the GCR process, PGW projects natural gas costs for the coming year. It then works to keep the actual costs at or below the projections.
- As indicated in **Exhibit IX-12**, PGW's purchased gas cost per mcf sold has risen in recent years, consistent with industry trends.

Exhibit IX-12

Purchased Gas Cost Per MCF Sold

Year	MCF Sold ⁽¹⁾	Gas Supply Expense (\$ million)	Cost Per MCF
1996	75,823,802	\$281.2	\$3.71
1997	69,880,557	269.8	3.86
1998	63,279,679	244.8	3.87
1999	62,098,343	264.5	4.26

Source: Statistical comparison and BWG analysis

(1) Total gas purchased and sold to residential and commercial customers

- PGW's 1999 average revenue per residential customer, of which gas cost is a large part, is competitive with panel companies, as indicated in **Exhibit IX-13**.

Exhibit IX-13

Revenue per Residential MCF Comparison
(1999)

Utility	Average Revenue per Residential MCF
EGC	\$10.70
BUG	9.64
BG	9.08
UGI	9.08
PECO	8.44
PGW	8.37
PNG	7.77

Source: Statistical Comparison

- PGW's gas costs are subjected to rigorous review prior to implementing gas cost adjustments, formerly by the Philadelphia Gas Commission (PGC) and now by the PUC. Consumer advocates and other intervenors analyze PGW's strategy and actions in great detail.
15. PGW has an appropriate gas supply management strategy.
- PGW's internal gas supply management strategy is to:
 - Maintain an appropriate mix of pipeline capacity, underground storage, LNG and supply assets.
 - Sustain flexibility while utilizing the most economical supply including flowing gas, storage and LNG.
 - Maintain direct control over storage gas.
 - Reduce annual costs without damaging peak day and design winter supply capability.
 - Convert existing supply contracts to seasonal supply contracts and/or storage to achieve financial and operational flexibility.
 - Purchase gas from geographically diverse regions.
 - Ensure effective use of flexible long-term supply contracts.
 - Mitigate costs through off-system sales and capacity release.
 - PGW has three categories of gas supply:

- Interstate pipeline transport contracts for flowing gas supply
 - Contracts for underground storage
 - PGW's own LNG storage facilities.
- The flowing gas contracts are used for routine daily gas sales and to inject gas into underground storage or to liquefy for LNG storage. The stored gas is used for peak days or, occasionally, when it is more economical to use than flowing gas.
 - PGW has contracts with Transco and Tetco, the only two pipelines that serve Philadelphia. The total mainline capacity is 300,034 Dth per day.
 - PGW has nine underground storage contracts with a total inventory capacity of 19,428,367 Dth and a demand entitlement of 237,090 Dth.
 - PGW owns and operates LNG facilities with over four billion cubic feet of storage capacity.
16. PGW is adequately monitoring the quality and volume of gas at city gates.
- The quality of gas (BTU content and specific gravity) is sampled and tested by the PGW chemical laboratory.
 - PGW makes an initial check of volume measurements by comparing SCADA volumes to pipeline volumes. The volume of gas received is measured at the city gate stations and the results are compared to the pipeline bills. Variances in excess of 2 percent are investigated and the causes are determined and corrected monthly.
17. While PGW's gas inventory policies are sound and the gas supply department generally dispatches gas in an economical manner, PGW senior management ordered uneconomical dispatches from 1996 through 1999 to conserve cash.
- PGW has formal ground rules for design day planning that were updated on August 10, 2000. They are followed by the formal design day planning committee.
 - Consistent with industry practices, PGW's gas planning system is composed of five separate models: demand; gas dispatch and cost supply; optimizer; market segment; gas cost rate (GCR); and revenue. To plan and optimize its gas inventory, PGW uses the model on a daily basis to review opportunities that could take advantage of changing market conditions.
 - At the former chief operation officer's (COO) direction during the winter months (November to March) in 1996 to 1997, 1997 to 1998, and 1998 to 1999, the sendout requirements were to be met out of storage gas including LNG, regardless of availability of more economically priced gas in the market. This was a standing directive from the former COO to the gas

acquisitions and control group during the winters for the three years. The directive was deviated from occasionally due to the weekly status model producing adverse results, which called for an interruption of the interruptible class of customers. PGW has not yet quantified the cost of the deviations from the economical dispatch of gas.

18. PGW's gas supply department may not be fully prepared for the changing environment precipitated by deregulation and the evolving natural gas market.

- PGW's total throughput is increasing at a rate of 0.5 percent per year. However, the mix of the throughput is changing. Gas sales are declining at a rate of 2.2 percent per year while gas transportation is increasing at a rate of 20.7 percent per year. This trend will likely accelerate when deregulation makes choice available to smaller commercial and residential customers in 2003.
- Natural gas costs are expected to stay high for the foreseeable future. According to a September 18, 2000 Business Week article, "There is Not Enough Gas to Go Around," this year's wellhead price of \$3.09 per mcf is 48.5 percent higher than last year's average. Further, most estimates call for natural gas to hover in the range of \$3 to \$4 per mcf for the next few years. Because of increased use of natural gas for generating electricity for the summer air conditioning season, the demand for natural gas no longer peaks in the winter and sags in the summer. Rather, the demand for natural gas is less seasonal. The price differential between summer and winter is changing, and the economics of storing low price gas in the summer for use in the higher priced winter are also changing. This is affecting gas inventories in the United States, which, in the summer of 2000, were down 15 percent from the summer of 1999.
- PGW's gas supply department is aware of all of the changes and challenges in the natural gas industry. It knows that its current gas supply portfolio will have to change because of deregulation and increased competition. However, because of senior management changes, cash shortages, and multiple regulatory hearings, the department has not had the time and resources necessary to prepare a new comprehensive strategic plan for its gas supply portfolio.

19. PGW's buildings and facilities are utilized in an appropriate manner, and PGW plans and manages its real estate needs in a reasonable manner.

- **Exhibit IX-14** provides a summary of PGW buildings and facilities. PGW is upgrading facilities as funds are made available, and it plans its real estate and facilities needs in a reasonable manner. For example the engineering department developed the designs for the PGW call center. Included in the design were the inclusion of ergonomic features designed to improve working conditions and performance.

Exhibit IX-14

Buildings and Facilities

Location	Total Sq. Ft.	Owned	Leased	Annual Rent
Office Buildings:				
1800 N. 9th Street	261,868	X		
800 W. Montgomery Ave.	180,724	X		
Castor Station	6,156	X		
Belfield Station	8,261	X		
Porter Station	7,100	X		
1849 N. 9th Street	62,899	X		
9th & Diamond Streets	27,615	X		
District Offices:				
Frankford	9,655		X	\$36,000
Germantown	4,112		X	\$49,344
North Philadelphia	24,290	X		
South Philadelphia	12,112	X		
West Philadelphia	16,744	X		
Center City	4,528		X	\$121,323
Northeast	4,800		X	\$80,112
Gate Stations:				
Ashmead	20,473			
0-34	4,555			
Whitman	5,010			
Penrose	392			
Ivy Hill	3,432	X		
Somerton	43,770			
Richmond	9,061			
0-30	-			
0-60	-			
Plants:				
Passyunk Plant (1)	60.0 acres	X	X	\$49
Richmond Plant	25.4 acres	X		
Tioga Station	34.8 acres	X		
Parking:				
Parking-1800 N. 9th Street	274,075	X		
Parking	12,500		X	\$1,200

Source: DR 1.4.0012

(1) Partially owned/partially leased

- As indicated in Chapter VIII-Customer Service, Billing and Collection, PGW should consider closing some or all of its seven district offices. Otherwise, PGW facilities are utilized in an appropriate manner.
20. PGW's performance of its own janitorial services with its own union personnel is not cost effective.
- As indicated in **Exhibit IX-15**, PGW's costs for janitorial services for its 740,000 square feet of office space has averaged \$1.90 per square foot per year for the period from 1997 to 2000. In 2000, it cost PGW \$1,487,000 for its janitorial services.

Exhibit IX-15

Janitorial Services Costs

Fiscal Year	Cost Per Square Foot
1997	\$1.97
1998	1.76
1999	1.87
2000	2.01
1997 to 2000 average	1.90

Source: DR 1.4.0013

- Cleaning contracts for buildings in the center of Philadelphia using union personnel currently cost about \$1.48 per square foot, which would equate to an annual cost of \$1,095,000 for PGW. PGW estimates that it pays its union cleaners almost double the wages paid to unionized workers elsewhere in the city. Outsourcing its janitorial services could reduce PGW's costs by at least \$400,000 per year.
 - In early 1996, PGW received bids to outsource its janitorial services. At that time, non-union contractor bids were the lowest bids received and averaged about \$400,000 per year lower than PGW's costs at that time. To reduce its janitorial costs, PGW should solicit bids from union and non-union contractors as well as a bid from its own building services department.
21. PGW's engineering and design process addresses environmental requirements and PGW is in compliance with applicable environmental laws.
- The engineering services department is responsible for addressing the environmental issues associated with the three types of projects it performs: gas plant engineering; engineering for owned and leased buildings; and engineering in support of street projects. In response to a BWG data request,

PGW's legal department indicated that "PGW is not currently a party in any outstanding environmental litigation."

- Gas plant engineering work is performed in a manner designed to mitigate existing environmental issues and to design new projects to meet environmental and code requirements. Prior to the start of any new engineering project, the engineering and chemical services departments survey the project site and develop a list of expected environmental issues. Costs to address environmental issues are budgeted as a part of the project authorization phase.
- As part of the gas plant addition and modification design process, the engineering services department obtains building and environmental permits including:
 - Building permits from the City of Philadelphia
 - Water discharge permits from the Delaware River Commission
 - Water quality-related permits from the Pennsylvania State Department of Environmental Protection, Bureau of Water Quality.

In addition, PGW is required to satisfy Environmental Protection Agency (EPA) air quality requirements.

- PGW engineering is also responsible for design projects in PGW owned and leased buildings. Asbestos and lead are the two most significant environmental issues in any PGW building project. Prior to the start of any building project, the department surveys the building defining the areas containing lead paint and asbestos. The building projects require approved plans for the removal of the lead paint and abatement of asbestos hazards as a part of the project design. The City of Philadelphia controls permits required for lead and asbestos removal. All new equipment added to the building must conform to environmental requirements.
 - The City of Philadelphia owns the streets and the ground under the street, and is required to clean up street environmental problems. When engineering designs street projects, the design assumes that there are no environmental problems in the street. Should the construction crews identify any environmental issues, PGW notifies the City and the Pennsylvania Department of Environmental Protection (DEP). The City is then responsible for resolving the environmental problems.
22. Since 1998, PGW has significantly reduced its purchasing expenditures as a result of changing its procurement philosophy.
- As shown in **Exhibit IX-16**, PGW blanket purchase orders dropped from 239 in 1997 to 158 in 1999, a decrease of 33.9 percent. The blanket

purchase order purchasing amount declined by \$10.0 million from 1997 to 1999. A blanket purchase order is an order that is issued to a vendor for a specific period of time, for example, a year, against which a number of drawdowns or orders can be placed during the time period specified. Standard purchase orders dropped by 621 orders, or 29.1 percent, for a \$8.7 million reduction during the same period.

Exhibit IX-16

**Purchase Orders
(\$ millions)**

Year	1997	1998	1999
Blanket Purchase Orders			
Number	239	188	158
Amount	\$21.3	\$10.9	\$11.3
Standard Purchase Orders			
Number	2,134	1,592	1,513
Amount	\$21.7	\$17.3	\$13.0
Total	\$43.0	\$28.2	\$24.3

Source: DR 1.4.17

- The three major reasons for the reductions relate to a change in approach for the planned maintenance program at the LNG plant, a change in the inventory program, and a reduction in the number of vehicles purchased.
 - Previously, the maintenance work at the LNG plant was contracted to specialty contractors with experience in the maintenance of the equipment similar to that installed at the gas plant. The program of performing major maintenance during the off-season with outside maintenance contractors was stopped. Maintenance shifted from preventive to repair when broken and when run rates exceed certain predetermined levels. This approach was adopted in anticipation of the LNG replacement project and is a good strategy until that construction job is complete. At that time PGW should reevaluate its maintenance approval. The LNG plant's operating performance continues to be good. PGW now performs the majority of the repair work with in-house union personnel.
 - PGW reduced the level of inventory carried to support its appliance and heater repair activities. Parts purchasing is now done as a just-in-time process. PGW shifted to larger parts suppliers with larger inventories to support the just-in-time purchasing process. The larger suppliers allowed PGW to reduce its number of blanket orders.

- Due to cash shortages, PGW stopped replacing its transportation fleet in 1998. Previously, PGW replaced a fixed percentage of cars and trucks every year. The current fleet has vehicles that are on average older than vehicles that PGW has maintained in prior years, and older than the average age of industry fleets.

23. While PGW has reduced its materials inventory by 21.8 percent and increased its inventory turnover rate by 42 percent since 1996, its inventory turnover rate is lower than that of many gas utilities.

- PGW has reduced its inventory from \$15.6 million in 1996 to \$12.2 million in 2000, a decline of 21.8 percent.
- During the same time period, it has increased its inventory turnover rate by 42 percent, from 1.9 to 2.7.
- Increasing the turnover rate from 2.7 to 3.0, a level realized by a number of gas utilities, would result in a further inventory reduction of \$1.3 million and \$260 thousand savings per year from eliminating the associated inventory carrying costs assuming a 20 percent per year carrying charge.
- PGW contracts with an auction company to dispose of its obsolete inventory.

24. PGW has reduced the size of its fleet by over ten percent since 1996, and it has fewer vehicles per employee than other gas utilities.

- PGW's vehicle mix, which is shown in Exhibit IX-17, is comparable to that of similar utilities.

Exhibit IX-17

Vehicle Inventory

Year	1996	1997	1998	1999	2000	Percent Change
Cars	228	245	237	199	180	-21.1%
Small Trucks	441	444	439	408	421	-4.5
Large Trucks	185	201	186	166	164	-11.4
Miscellaneous ⁽¹⁾	144	157	144	130	127	-11.8
Total	998	1,047	1,006	903	892	-10.6%

Source: DR 1.4.19

(1) Miscellaneous -- portable compressors, cranes, graders, digger-loaders, bobcats and forklifts.

- A 1998 Utility Fleet Management and Benchmarking Study by an external consultant indicated the average ratio of total employees to vehicles for a gas utility was 1.9. PGW's ratio is 2.0.
25. PGW's vehicle maintenance costs are excessive and likely to increase unless an aggressive vehicle replacement program is undertaken.
- As shown in **Exhibit IX-18**, total vehicle maintenance costs have increased by 7.7 percent from 1996 to 2000. The upward trend reflects the increased maintenance needed to keep the older fleet in operation. PGW has limited its new vehicle purchases since September 1, 1995.

Exhibit IX-18

Vehicle Maintenance Costs

Fiscal Year	Total Costs (\$ millions)	Number of Vehicles	Average Cost Per Vehicle
1996	\$2.6	998	\$2,605
1997	2.8	1,097	2,674
1998	2.7	1,006	2,684
1999	2.9	903	3,212
2000	2.8	892	3,139
Percent Change 1996 to 2000	7.7%	-10.6%	20.5%

Source: DR 1.4.20 and BWG analysis

- As shown in Exhibit IX-18, the average maintenance cost per vehicle increased by 20.5 percent from 1996 to 2000. Transportation department management has indicated that this increase is due to more engine and transmission failures than PGW had experienced in the past.
- Based on its current mix of vehicles, PGW's average maintenance costs per vehicle should be in the range of \$2,400 to \$2,500, compared to PGW's average cost of \$3,139 in fiscal year 2000. Reducing its vehicle maintenance costs to an acceptable level would provide savings of \$600,000 to \$700,000 per year.
- PGW's high maintenance costs are due to a number of factors including an aging fleet and an excessive number of mechanics. Currently, PGW has thirty-one mechanics, compared to a need for 22 to 25 mechanics, based on

the vehicle mix of its fleet and using industry vehicle / mechanics benchmarks.

- As indicated in **Exhibit IX-19**, PGW fleet availability has remained relatively constant from 1996 to 2000 and is at an acceptable level. However, as the need to complete larger maintenance projects increases, future fleet availability will be adversely affected.

Exhibit IX-19

Fleet Availability

Year	Percent Availability
1996	94%
1997	95
1998	94
1999	94
2000	94

Source: DR 1.4.19

26. PGW needs to implement a new fleet management information system to improve its ability to analyze fleet operations costs on a life cycle basis.
 - Fleet management's current information system is unable to generate the reports it needs to perform appropriate vehicle life cycle analyses, so that it can determine the most economic vehicle replacement policy.
 - A new system is scheduled to be developed and implemented in fiscal year 2001. This system should help PGW to determine the cost-effectiveness of its maintenance practices, as well as its vehicle replacement policy.

F. RECOMMENDATIONS

1. Make a final decision with respect to operating or disposing of the Gas Management System (GMS).
 - GMS should not be scrapped, but it should be put on the shelf and no resources devoted to it until PGW's needs for gas management computer systems support are more clearly defined.

- If the need for a GMS becomes more clear in the future, then the GMS application can be reviewed to determine if any modifications are necessary, and implemented then.

(Refers to Conclusion 2.)

2. Accelerate the cast iron main replacement program.

- PGW's external consultant has recommended a one percent per year replacement rate for cast iron main which is fairly common in the industry.
- Because it has restricted its replacement program in the last six years to half of the recommended level, PGW should implement a one and one half percent cast iron replacement program for the next six years, which would replace about 27 miles per year. At the 1995 to 1999 average cost per mile of \$1.2 million, this would require an annual additional expenditure of \$11.2 million beyond that budgeted, less any enforced main replacement reimbursements, and adjusted to reflect cost rate changes due to inflation or productivity improvements.
- This investment would be offset by partial reductions in the \$1.7 million per year cost to repair joint leaks, the \$1.5 million per year to repair cast iron main leaks, and the potentially high costs of reportable incidents.

(Refers to Conclusions 6 and 7.)

3. Accelerate the replacement or cathodic protection programs for coated-but-not-cathodically-protected steel main, and continue to replace bare steel services.

- Because the leak rate is increasing on coated but not cathodically-protected steel main, the program to replace or cathodically protect this main should be accelerated. Because adding cathodic protection is cheaper than replacing the main, wherever cathodic protection will extend the life of the pipe enough to justify the addition, it should be favored over replacement.
- Continuing the 1999 rate of eleven miles per year would result in a forty-eight-year replacement/protection program. This should be accelerated to bring PGW into compliance with federal pipeline safety regulations in a ten-to twenty-year period.
- The annual cost would depend on whether the pipe were replaced or protected. The 1999 replacement cost of \$367 thousand per mile is about three times the cost to add cathodic protection, \$125 thousand per mile. This cost should be offset by a reduction in the annual steel main corrosion leak repair cost of \$345 thousand.
- Bare steel services are replaced when they are discovered to be leaking, at a rate of about 5,100 per year, and, in conjunction with main replacements and

adding cathodic protection, at about 2,800 per year. The accelerated programs to reduce cast iron main and coated but not cathodically-protected steel main will increase the rate of bare steel service reduction. The bare steel services should thus be eliminated in less than 28 years. The annual cost of \$7.7 million to replace leaking services should decline in time.

(Refers to Conclusion 8 and 9.)

4. Evaluate engineering staffing levels and trends to determine the most cost-effective way to obtain engineering services.

- PGW should examine the needs for engineers in each of its departments and in the executive ranks now and over the next ten years, and should adjust its engineering work force to accommodate the changing needs. While some routine engineering work can be effectively outsourced, the basic engineering talent required to analyze situations, develop plans, set standards, and solve problems should reside within PGW in experienced, well-qualified engineers.

(Refers to Conclusion 10.)

5. Reduce PGW crews' wages and/or increase their productivity to make them more cost-effective, or contract out more construction work.

- Since contractors are able to achieve a lower construction labor rate than in-house crews, PGW should lower the in-house costs to the contractor levels or below by reducing wages or improving productivity. Attaining the ten percent reduction in labor rate costs would provide PGW with \$1.5 million annual savings in its main replacement program based on its fiscal year 2001 capital budget.
- If this is not accomplished in a reasonable amount of time, then the in-house work force should be reduced and contracting the construction work increased. If the in-house work force is reduced, PGW should retain core skills and capabilities so that it can manage contractors effectively.

(Refers to Conclusion 11.)

6. Avoid dispatching gas in an uneconomical manner.

- PGW knows how to dispatch gas economically. A policy should be in place and enforced so that PGW always dispatches gas in the most economic manner.

(Refers to Conclusion 17.)

7. Prepare a new gas supply strategic plan that addresses deregulation and the evolving natural gas market.

- Substantial industry changes, cash shortages, and changing PGW executive management have placed PGW's gas supply and management functions under severe strain for the last few years.
 - PGW should take a fresh look at how the gas supply market is changing and how its demand market will change with increased consumer choice. This review should be comprehensive and should result in a strategic gas supply plan that will guide the gas supply and management functions for the next five years. Topics that should be covered include: gas supply sources and prices; gas price seasonality; effects of deregulation; changes in the market; underground and LNG storage; pipeline capacity; models and information system requirements; and staffing needs. (Refers to Conclusion 18.)
8. Solicit bids to perform janitorial services from contractors as well as from PGW's building services department, and select the most cost-effective bid. Outsourcing janitorial services can reduce PGW's costs by about \$400,000 per year. (Refers to Conclusion 20.)
9. Take steps to increase the inventory turnover rate from 2.7 to 3.0 or greater.
- Increasing the turnover rate to 3.0 will result in an inventory reduction of \$1.3 million, and will also reduce inventory carrying costs by \$260,000 per year.
- (Refers to Conclusion 23.)
10. Undertake a comprehensive fleet operations improvement program.
- Implement a new fleet management information system that can accumulate and report maintenance costs by vehicle.
 - Perform life cycle analysis and develop a plan for the cost-effective replacement of aging vehicles that balances maintenance and acquisition costs by class of vehicle.
 - In connection with the implementation of the proposed work management and manpower planning program outlined in Chapter XV, reduce the number of mechanics in the fleet operations department.
 - Implementing an appropriate vehicle replacement program and improving the productivity of the mechanics should reduce annual maintenance costs by \$600 to \$700 thousand per year.
- (Refers to Conclusions 25 and 26.)

CHAPTER X

Financial Management

A. BACKGROUND

In this audit area, we evaluated the effectiveness of PGW's financial management practices. Areas of investigation included financial policies, financial planning, financing, revenue requirements and rate setting, operational and capital budgeting, internal accounting, and cash management.

PGW is an organization in financial disarray. Since 1991, PGW had avoided requesting increases in base rates, using questionable financing transactions when necessary to meet the debt service coverage requirements of its revenue bond ordinances. During the last three years, revenue projections were missed by about \$20 million annually due to mild weather which decreased gas sendout in comparison to the forecast. Due to a computer conversion in July 1999, PGW lost control of its billing and accounts receivable process, which significantly reduced its cash flow. Further, PGW has a high cost structure for a municipal utility, which is primarily attributable to its highly leveraged capital structure and the attendant cost of capital. In recent years, PGW has had a turnover in senior management positions, some of whom were discharged for alleged malfeasance.

PGW's current CEO and CFO have served on an interim basis since March 2000. In evaluating PGW's financial condition, the new senior management team determined that an increase in base rates of \$52 million was necessary and has made a request for this increase in connection with budget hearings before the Philadelphia Gas Commission (PGC) which were concluded in August. In addition, during the past year, the cost of purchased gas has increased significantly, requiring PGW to adjust its Gas Cost Rate (GCR) by \$120 million. Filings for action on the GCR and base rates are pending before both the PGC and the PUC, which, under the Natural Gas Competition Act (Gas Act) of 1999, assumed regulatory responsibility for approval of PGW rates beginning July 1, 2000.

Sections 2212 (d) and (e) of the Gas Act mandate that PGW shall continue to provide natural gas supply and distribution services under its prior tariff, that the PUC is authorized to make changes to PGW's tariff when requested by PGW to do so, and that the PUC shall "follow the same ratemaking methodology and requirements that were applicable to PGW prior to the assumption of jurisdiction by the PUC." The rate covenants in the PGW revenue bond ordinances and the PFMC Management Agreement provide that rates be established based upon the required flow of funds, except rates for the City and Board of Education.

Minimum revenues must be sufficient to pay for (a) operations and maintenance expense and debt service, including i) depreciation, ii) employee retirement costs, iii) the PFMC management fee for salaries for the three members of senior management not to exceed \$800,000 in FY 2000 plus incentive compensation, iv) salaries and expenses of the PGC, v) all sinking fund charges for principal, and interest on bonds; and (b) an \$18 million annual transfer to the City, early debt retirement, and capital additions.

B. RFP OBJECTIVE

In this area, we performed a review of PGW's financial management in accordance with the following objectives which were provided in the PUC's RFP for this audit.

- Evaluate the effectiveness and efficiency of PGW's financial management functions, including:
 - the capabilities and effectiveness of PGW's new financial reporting system relative to the systems used by other gas utilities, the process employed and costs incurred to implement the system, and the training of personnel in the system's use;
 - the appropriateness of PGW's accounting policies, procedures, and accounts for PUC ratemaking purposes;
 - the reasonableness of PGW's annual dividend to the City of Philadelphia, as well as any other transfer of funds between the two entities;
 - the existence of adequate internal controls (both administrative and financial), and the effectiveness of the internal audit function;
 - an assessment of PGW's financial modeling capabilities and the adequacy of processes used for establishing, monitoring, and revising capital and operating budgets and forecasts;
 - the cost-effectiveness of PGW's current capital structure;
 - an assessment of PGW's plans for sustaining the current bond rating, as well as any plans for alternative financing arrangements; and
 - PGW's deployment of strategies such as insurance, hedging and other techniques in reducing the impact of adverse weather on PGW's financial condition.

C. EVALUATIVE CRITERIA

We used the following criteria to evaluate PGW's financial management.

- Does PGW have effective financial management, including clearly articulated financial policies, and an established process for evaluating financial alternatives?
- Has PGW taken appropriate advantage of financing alternatives available to tax exempt issuers of securities without compromising its long-term financial integrity?

- Does PGW use a sound approach to determine revenue requirements and does it have appropriate modeling tools to evaluate financial alternatives?
- Is the Financial Asset Management Information System (FAMIS) providing PGW the financial information it needs in a timely and accurate manner?
- Do PGW's capital and operating budget processes provide managers with the information necessary to control spending and allocate resources wisely?
- Does PGW have an effective cash management program?
- Does an appropriate internal control environment exist at PGW and do accounting controls ensure accurate and timely financial reporting?

D. WORK STEPS

To complete the review, we performed the following tasks:

- Reviewed financial policies to determine if they address all important issues relating to the preservation of PGW's long-term financial integrity. Identified any deviations from established policies.
- Determined if FAMIS has the capability of providing financial information that will be required to meet the challenges of industry restructuring and to meet the PUC's reporting requirements.
- Reviewed recent financings to determine their purpose and conformity with established policies. Determined if the transactions were in the best long-term interests of PGW and its ratepayers.
- Determined if PGW determines revenue requirements, cost of service by customer class, and rate design in a manner that is consistent with PUC requirements.
- Reviewed procedures used to account for and control accounts receivable, accounts payable, inventory, equipment, and real estate, and determine if PGW has updated these procedures to reflect the implementation of FAMIS, BCCS and other new computer systems.
- Reviewed the allocation of responsibilities within the accounting functions, the major accounting reports, and the accounting processes for overall appropriateness and support of PGW operations.
- Reviewed the capital and operating expense budgeting process to determine whether it contains an appropriate level of management controls, including responsibility and accountability for costs and revenues.
- For the capital and operating expense budgeting processes, assessed assumptions, authorization levels, techniques, time horizons, and levels of management participation.

- Identified and evaluated procedures used to analyze costs and variances and to alert management to operating and financial problems.
- Reviewed PGW's cash management practices including: procedures related to cash receipts and disbursements; use of available cash balances; cash forecasting, including assumptions, timelines and historical accuracy; and the use of short-term borrowing to meet seasonal working capital requirements.
- Evaluated the internal auditing function to determine whether it provides an independent and reliable system of checks and balances with oversight by the Audit Committee of the PFMC Board of Directors.
- Reviewed a representative sample of internal audits conducted over the past three years, including findings, recommendations, and resultant actions taken. Identified the degree to which management accepts the recommendations of internal auditors.
- Reviewed the reasonableness of PGW's annual \$18 million dividend payment to the City of Philadelphia, as well as any other transfers of funds between the two entities.
- Assessed PGW's plans for sustaining or improving the current bond rating, as well as any plans for alternative financing arrangements.
- Evaluated PGW's deployment of strategies such as insurance, hedging and other techniques in reducing the affects of adverse weather on PGW's financial condition.
- Reviewed PGW's interface and contacts with the financial community, including presentations to investment bankers and ratings agencies.
- Reviewed the scope of the forensic audit of PGW recently commissioned by the City of Philadelphia Finance Director.

E. FINDINGS AND CONCLUSIONS

1. Due to its deteriorating financial position, PGW is seeking outside assistance to avoid a critical cash shortage.
 - PGW has requested a \$52 million increase in base rates from the PUC to become effective before the 2000-2001 winter heating season. This is in addition to a request for a \$120 million increase in the GCR to reimburse PGW for the higher cost of natural gas purchased for resale on the open market.
 - In late September 2000, PGW requested a \$45 million interest-free loan from the City of Philadelphia to provide working capital that is needed immediately.

- As indicated in **Exhibit X-1**, **Exhibit X-2** and **Exhibit X-3**, PGW's financial position has deteriorated over the past three years. The historical perspective is highlighted by: net losses ranging from \$13.0 million to \$20.3 million annually; lower than expected gas sendout attributable to weather conditions about 15 percent warmer than expected; increasing net accounts receivable; increasing long-term debt; full use of PGW's short-term borrowing capability; reduced construction expenditures; and debt service coverage barely above the 1.50 required by the revenue bond ordinances.

Exhibit X-1

Comparative Balance Sheets (\$ millions)

Items	1998 ⁽¹⁾	1999 ⁽¹⁾	2000 ⁽²⁾	2001 ⁽³⁾
Assets:				
Cash	\$ 9.9	\$ 16.1	\$ 5.5	\$ 46.1
Net accounts receivable	32.6	40.4	71.1	65.4
Net utility plant	821.4	856.5	872.6	897.8
Other	<u>365.5</u>	<u>370.8</u>	<u>292.7</u>	<u>309.0</u>
Totals	<u>\$1,229.4</u>	<u>\$1,283.8</u>	<u>\$1,241.9</u>	<u>\$1,318.3</u>
Equity and liabilities:				
City equity	\$ 252.0	\$ 231.7	\$ 218.8	\$ 268.7
Long-term debt	778.0	856.6	853.5	886.9
Commercial paper	56.2	75.3	97.0	97.0
Other liabilities	<u>143.2</u>	<u>120.2</u>	<u>72.6</u>	<u>65.7</u>
Totals	<u>\$1,229.4</u>	<u>\$1,283.8</u>	<u>\$1,241.9</u>	<u>\$1,318.3</u>

Source: DR 2.5.3

(1) FY ended 8/31

(2) Based on eight months actual and four months projected per FY 2001 operating budget filed June 9, 2000 with the PGC

(3) Per FY 2001 operating budget filed June 9, 2000 with the PGC

- Projections for fiscal year 2001 in Exhibit X-2 include the full amount of the base rate increase, and personnel and other cost reductions from programs already implemented. Although heating degree days over the most recent five- and ten-year periods averaged 4,405 and 4,331 respectively, projections for fiscal year 2001 are based on 4,600 degree days, which is considered normal based upon a 30-year average.

Exhibit X-2

**Comparative Income Statements
(\$ millions)**

Items	1998 ⁽¹⁾	1999 ⁽¹⁾	2000 ⁽²⁾	2001 ⁽³⁾
Operating Revenues:				
Gas	\$488.8	\$462.7	\$515.7	\$573.1
Proposed Base Rate Increase				52.0
Other	<u>23.0</u>	<u>24.2</u>	<u>21.3</u>	<u>24.3</u>
Totals	<u>\$511.8</u>	<u>\$486.9</u>	<u>\$537.0</u>	<u>\$649.4</u>
Operating Expenses:				
Gas Purchases	\$246.7	\$219.0	\$253.0	\$294.6
Other Cash Expenses	177.8	189.0	204.2	204.7
Depreciation and Amortization	41.0	33.8	32.2	42.8
Proposed Cost Savings	<u> </u>	<u> </u>	<u> </u>	<u>(12.5)</u>
Totals	<u>\$465.5</u>	<u>\$441.8</u>	<u>\$489.4</u>	<u>\$529.6</u>
Operating Income:	<u>\$46.3</u>	<u>\$45.1</u>	<u>\$47.6</u>	<u>\$119.8</u>
Interest and Other:				
Interest Expense	\$ 50.4	\$ 55.6	\$ 59.4	\$ 57.8
Other Income	(5.1)	(8.2)	(16.8)	(5.8)
City Payment	<u>18.0</u>	<u>18.0</u>	<u>18.0</u>	<u>18.0</u>
Totals	<u>\$ 63.3</u>	<u>\$ 65.4</u>	<u>\$ 60.6</u>	<u>\$ 70.0</u>
Net Increase (Decrease) in Retained Earnings	<u>(\$17.0)</u>	<u>(\$20.3)</u>	<u>(\$13.0)</u>	<u>\$49.8</u>

Source: DR 2.5.3

(1) FY ended 8/31

(2) Based on eight months actual and four months projected per FY 2001 operating budget filed June 9, 2000 with the PGC

(3) Per FY 2001 operating budget filed June 9, 2000 with the PGC

Exhibit X-3

Comparative Cash Flow Indicators (\$ millions)

Items	1998 ⁽¹⁾	1999 ⁽¹⁾	2000 ⁽²⁾	2001 ⁽³⁾
Net construction expenditures	\$70.5	\$68.1	\$51.0	\$62.3
Internally generated funds	21.5	18.3	(19.8)	21.5
Proceeds from external financings	50.2	53.1	--	40.8
Debt to equity ratio	3.31	4.02	4.35	3.66
Debt service coverage 1975 bonds	1.52	1.53	1.72	3.17
Debt service coverage new bonds	--	1.58	1.61	3.53

Sources: DRs 2.5.3; 2.5.6; 2.5.23; and 2.5.10

(1) FY ended 8/31

(2) Based on eight months actual and four months projected per FY 2001 operating budget filed June 9, 2000 with the PGC

(3) Per FY 2001 operating budget filed June 9, 2000 with the PGC

2. PGW's financial position is threatened further by the potential non-renewal of the bank letter of credit supporting its \$100 million commercial paper program.

- Although PGW maintains this credit facility at a high cost, the cost would increase significantly if borrowings were needed beyond the term of the current agreement.
- The existing bank letter of credit is for a two-year period ending June 30, 2001, with a one-year extension annually on the anniversary date. The primary bank, Morgan Guaranty Trust Company (Morgan), has postponed its consideration of the extension requested by PGW as of June 30, 2000, and a participating bank has advised Morgan that it will not renew the line of credit beyond June 30, 2001. Morgan is soliciting other institutions to participate in this line of credit.
- Under Section 2.2 (b) of the Morgan Credit Agreement, any failure by Morgan to respond to a request for an extension or renewal of the letter of credit shall be deemed to be a denial of such request.
- Currently, PGW pays 82.5 basis points to maintain its letter of credit in comparison to 20 to 40 basis points paid by tax exempt issuers with better credit ratings. If the PGW bond rating applicable to its revenue bonds were to slip below investment grade of BBB- (Standard & Poor's (S&P)) or Baa3 (Moody's), the cost of the line of credit would increase to 140 basis points.

- Based on its current \$97 million of outstanding commercial paper, it currently costs PGW about \$412 to \$606 thousand more per year to maintain its letter of credit than other issuers with better credit ratings. A slip in revenue bond ratings to S&P's BBB- would cost PGW an additional \$567 thousand per year.
 - If the current letter of credit is not renewed or replaced, PGW will no longer be able to issue commercial paper, and the cost of future letters of credit will increase significantly. Borrowings needed under the letter of credit to pay outstanding commercial paper would be at the default rate of interest specified in the agreement, which is three percent higher than the base rate which pertains to borrowings absent an event of default.
3. To meet coverage requirements in previous years, PGW has sought regulatory approval from the PGC and entered into financial transactions that have affected its cash flows, raised its debt to equity ratio, and ultimately reduced its financial flexibility.
- Until August 2000, PGW had not sought regulatory approval for an increase in base rates for nearly ten years.
 - PGW has allowed its commercial paper program, which was originally established to provide working capital, to become a permanent part of its capitalization.
 - PGW obtained PGC regulatory approval to defer and amortize the write-off of \$37.5 million in uncollectible accounts receivable in 1995. This amount was specifically identified as a regulatory asset under SFAS No. 71 in the PGC order approving the FY 1996 operating budget.
 - PGW did not obtain regulatory approval from the PGC for the accelerated recovery of the investment in the synthetic natural gas (SNG) and propane air (LP) plants which were abandoned in prior years. Although the SNG and LP facilities are no longer used or useful, they are included in "utility plant in service" at a net book value of \$13.0 million and \$2.7 million respectively as of August 31, 1999, and are being depreciated over their original service lives.
 - PGW entered into sale and lease-back transactions to reduce debt service coverage requirements from 1.5 to 1.0 times on lease payments related to equipment financing.
 - PGW entered into a forward contract where it sold the present value of interest income on the debt service reserve fund to raise \$21.1 million and meet coverage requirements in 1995.

- In 1999, PGW entered into an interest rate options contract to raise \$9 million for its cast iron gas main replacement program. It subsequently used the proceeds for other purposes.
 - In connection with refunding transactions to lower the present value of debt service payments, PGW structured small “scoop” transactions to capture the next principal payment due on debt, thereby improving cash flow and extending the term of the debt.
4. In FY 2000, PGW used a creative approach to meet an important covenant contained in the Morgan credit agreement.
- Section 7.13 of the credit agreement requires PGW to reduce its outstanding commercial paper to zero at least once each year between May 1 and August 1 (the reduction date). Alternatively, PGW may demonstrate that its available cash and investments exceed the amount of commercial paper outstanding for a period of five consecutive business days ending on the reduction date.
 - For the period from May 11, 2000 through July 2, 2000 inclusive, PGW’s cash on hand exceeded the balance of commercial paper outstanding in daily amounts ranging from about \$10 million to \$30 million. At other times of the year, the balance of commercial paper outstanding exceeded cash on hand in amounts averaging approximately \$75 million from September through February and about \$40 million thereafter.
 - On May 11, 2000, PGW received a \$45.0 million advance from the capital improvement fund to be used for capital projects in FY 2000, or to be repaid to the fund on or before August 31, 2000. About \$26.9 million of this advance was not used for construction and was repaid on August 31, 2000. However, it was returned to PGW as another advance against the capital improvement fund on September 5, 2000.
 - According to PGW, the transactions described above are permitted under Pennsylvania statutes relating to municipal corporations. However, absent such advances, PGW would not have met the reduction date provision of the credit agreement.
5. PGW may have jeopardized its bond rating in the design of the debt service coverage test relating to its 1998 revenue bonds.
- The bond rating agencies give PGW high marks for the 1.50 debt service coverage requirement contained in the 1975 and 1998 revenue bond ordinances.
 - However, in the 1998 bond ordinance, the coverage test relating to “new bonds” is defined in a manner that differs from the calculation pertaining to the 1975 bonds. For new bonds, debt service on the 1975 bonds and capital

lease payments must be covered only 1.00 times, and the remainder is available to produce the 1.50 times required coverage on the 1998 bonds. If all debt service entered into the equation at the same time, PGW would have had coverage of only 1.23 times in FY 1999, as shown in Exhibit X-4.

Exhibit X-4

**Debt Service Coverage Test as of August 31, 1999
(\$ millions)**

Calculation Component	Actual 1975 Bonds	Actual 1998 Bonds	Pro forma
Funds provided by operating revenues and other income:			
Operating Revenues	\$ 486.9	\$ 486.9	\$ 486.9
Other Income	<u>8.2</u>	<u>8.2</u>	<u>8.2</u>
Totals	<u>\$ 495.1</u>	<u>\$ 495.1</u>	<u>\$ 495.1</u>
Less: Funds applied to operating expenses:			
Operating Expenses	\$ 441.8	\$ 441.8	\$ 441.8
Less: Depreciation and amortization	(33.8)	(33.8)	(33.8)
Other	<u>(1.0)</u>	<u>(1.0)</u>	<u>(1.0)</u>
Totals	<u>\$ 407.0</u>	<u>\$ 407.0</u>	<u>\$ 407.0</u>
Funds available for operating expenses	\$ 88.1	\$ 88.1	\$ 88.1
Debt service - 1975 bonds	57.7	(57.7)	
Debt service coverage - 1975 bonds	1.53		
Capital lease payments		(7.9)	
Funds available for 1998 bonds		22.5	
Debt service - 1998 bonds		14.2	
Debt service coverage - 1998 bonds		1.58	
Debt service - 1975 and 1998 bonds			71.9
Debt service coverage - 1975 and 1998 bonds			1.23

Source: DR 2.5.10 and BWG analysis

6. In their most recent reports, two of the three major rating agencies placed PGW's revenue bonds on their "credit watch lists," and the other's classification is just above junk bond status.
 - As of August 31, 1999, PGW had total revenue bonds outstanding of \$869.2 million. **Exhibit X-5** provides the principal maturities and scheduled

interest payments for the revenue bonds for the fiscal years ending August 31, 2001, 2002, 2003 and 2004.

Exhibit X-5

**Principal Maturities and Scheduled Interest
Payments for Revenue Bonds
(\$ millions)**

Year Ending August 31	Principal	Interest	Totals
2001	\$ 35.3	\$ 47.8	\$ 83.1
2002	35.1	46.5	81.6
2003	32.7	46.7	79.4
2004	31.4	45.6	77.0

Source: PGW August 31, 1999 annual report

- In a report issued in July 2000, S&P placed \$79.4 million of PGW gas works revenue bonds and \$20.0 million of subordinate gas works revenue bonds on “credit watch” with negative implications. S&P said that the “rating action reflects PGW’s very weak cash flows arising from a convergence of budgeting that did not reflect the trend towards warmer winters, historic ongoing problems with high accounts receivable, and the faulty implementation of a new billing system.” S&P states that rate relief is needed by this fall.
- Other credit weaknesses cited by S&P include the following:
 - Potentially above-average gas rates if PGW’s five-year plan is not fully implemented, especially in a market that will be open to retail choice beginning in fiscal year 2004.
 - Aggressive future projections which assume normal weather conditions that have not occurred in recent years, as well as productivity cost savings ranging from five to ten percent of expenditures.
 - Deferred capital spending limited by declining excess cash flow.
 - Uncertainty regarding the long-term management structure and operating strategy.
- S&P says that these negative factors are offset by sound legal provisions, which require 1.50 coverage on an accrual basis on the senior bonds, despite the lowered revenue requirements from the creation of a subordinate lien. To preserve its rating, S&P indicated that PGW will need to obtain rate relief and implement the projected productivity savings. The cost reductions are

critical to PGW's ability to fund future capital needs and to be competitive in order to retain customers following the introduction of customer choice anticipated in fiscal year 2004.

- A June 3, 1999 Fitch public finance report rated PGW's gas works revenue bonds "BBB+". The report cited PGW's strengths as: new management with demonstrated and strong financial skills; stable firm residential and commercial customer mix; and a well-operated system. It cited risks as weak financial performance and a high outstanding receivables balance.
 - A February 1999 Moody's Investors Service (Moody's) report assigned a "Baa2" rating for senior lien revenue bonds and "Baa3" for subordinate lien bonds. Moody's said that the ratings were based on PGW's highly leveraged assets, weak liquidity, high bill payment delinquency rate, and a recurring administrative instability that affected its operations. In the summer of 2000, Moody's placed PGW on its credit watch list.
 - The spread in interest rates between high yield municipal bonds, that is, "junk bonds" with low credit ratings, and higher quality municipal bonds has ranged from 20 to 200 basis points over the last ten years, depending on market conditions. If its bond ratings are reduced to those of "junk bonds," PGW's future bond financings will be more expensive. For example, if PGW's bond ratings were reduced to a high yield rating and the spread were 50 basis points, it would increase PGW's interest costs by \$176,000 per year to finance the \$35.3 million of revenue bonds maturing in 2001.
7. The \$18 million annual transfer payment by PGW to the City of Philadelphia is required by agreement and is reasonable in consideration of general municipal utility practices governing such payments throughout the country.
- Under the management agreement between the City and PFMC, the PGC was required to set rates sufficient to enable PGW to make payments to the City in an annual principal amount of \$18 million. The Gas Act also allowed for a similar transfer to the City.
 - The City payment is also specifically identified as a priority in the application of PGW revenues in the 1975 and 1998 bond ordinances.
 - Similar payments are considered by other municipal utilities to represent a dividend on the equity investment made in the utility by the city, or, alternatively, as a payment in lieu of taxes.
 - Ignoring the question of the ability to pay, if the PGW \$18 million transfer were a dividend, it would represent a return of approximately 8.4 percent on the average City investment in PGW in FY 2000.
 - Alternatively, if the payment is considered in lieu of taxes, using the City's real property tax rate for FY 2000 of approximately 8.3 percent and an

assessment ratio of 25 percent applied to the net book value of PGW utility plant as of August 31, 2000, the computed amount is almost exactly \$18 million.

- For PGW, the payment represents 3.6 percent of annual revenues of about \$500 million. In California, many municipal utilities make payments to their cities in the range of seven percent of revenues. City Public Service of San Antonio, which operates a large, well-managed combination gas and electric utility pays the City of San Antonio 14 percent of revenues. Although San Antonio is at the high end of the scale relating to such payments, its utility has among the lowest gas and electric rates in Texas and maintains a AA revenue bond rating.
8. Although the City of Philadelphia has considered selling PGW, its analysis indicated that a sale would not provide clear benefits to the City.
- In June 1998, the City of Philadelphia commissioned a study by the City's and PGW's financial advisor to determine how the proposed unbundling legislation (now adopted as the Gas Act) might affect PGW. The study published in January 1999 addressed how industry-wide changes might present an opportunity for the City to sell PGW.
 - The study indicated that a sale of PGW could generate proceeds of between \$1.0 and \$1.4 billion. At the \$1.4 billion range, the City would receive compensation equal to PGW's current \$18 million annual transfer to the City. However, other City goals, including lower rates, preservation of existing social programs, and avoidance of significant employee layoffs, would not be achieved.
 - The study also determined that PGW has higher operating costs than comparable gas companies, that it is burdened by the costs of social programs, and that its rate structure leaves it vulnerable to changes in usage which are dependent on weather.
 - At the time the study was completed, the gross receipts tax was determined to be an insurmountable roadblock to the sale of PGW. Subsequently, the gross receipts tax was repealed, and this roadblock no longer exists.
9. The PFMC Board of Directors does not have a functioning audit committee and its audit committee has not met with the outside auditors for several years.
- Under its management agreement, "PFMC's primary obligation is to apply the highest standards of management practice and diligence to the operations of the Gas Works." PFMC's Board of Directors has not consistently applied this provision of the agreement as it relates to the function of its audit committee.

- There is no documentation of audit committee meetings prior to February 1999. Although minutes are available for meetings held in September and December 1999, the meetings were attended only by the chairman of the audit committee and indicated that additional appointments were under consideration. In January 2000, the audit committee of the PFMC Board of Directors met with three members present. However, soon after this date, the new mayor reconstituted the PFMC Board of Directors.
 - While the audit committee was reestablished in August 2000, it has only one member and is not yet functioning.
10. For many years PGW has not implemented corrective actions in response to management letters on internal control received from the external auditor in connection with the annual audit.
- The internal control weaknesses cited by the auditor were fundamental, for example, PGW was not reconciling its monthly bank accounts on a timely basis.
 - Management letters reviewed in connection with financial statement audits for the three years ended August 31, 1998 identified 36 observations, 11 of which were repeated each year. An additional five recommendations were repeated in the last two years. The audit issues repeated from year to year are summarized in **Exhibits X-6**.
 - Although the external auditors have not issued their management letter relating to the August 31, 1999 audit, the draft contains many recommendations from prior years.
 - The current PGW controller indicates that PGW has taken corrective action on all items with the expectation that significant progress towards improving internal control will be made in fiscal year 2001.
11. At this time, PGW has, inappropriately, virtually eliminated its internal audit function.
- For many years, PGW has not given an adequate level of emphasis to the internal audit function, and planned audits are routinely not performed because the auditors are diverted to other activities.
 - During the third quarter of calendar year 2000, at the direction of the interim CFO, the director of internal audit and three other professional members of the internal audit staff were transferred to temporary assignments. They have subsequently returned to their internal audit positions. Two of the remaining auditors resigned and another one requested and also received a transfer to another department. PGW has not yet filled these vacancies, and its plans to do so are not currently known.

Exhibit X-6

External Auditor Observations

A. Repeated in 1996, 1997 and 1998:

Audit Topic	Audit Observation
Wire transfer approval	Lack of proper segregation of duties
Accounts receivable reconciliation	Not performed by accounting department
Internal audit work required with respect to inventory	IA no longer participating in storeroom inventories
Guidelines for waiving finance charges on overdue customer accounts	None exist
Non-gas purchase orders	Indicate order quantities on "receiving" copies
Payment of invoices	Payment of invoices less than \$7,500 prior to due date
Other accounts receivable	Monitoring could be improved
Work order analysis and cost estimation	High incidence of over budget work orders
Tracking of certain special accounts	Detail is manually tracked
Internal information technology audit	Not performed in a timely manner

Source: DR 2.5.0016 and BWG analysis

B. Repeated in 1997 and 1998:

Audit Topic	Audit Observation
Bank reconciliations	Not performed in a timely manner
Manual collectible study	Not performed for 1997 or 1998
Inventory supervisor recounts	Not performed
Calculation of estimated bills	Factors not updated for several years
American Express corporate card program and expense reimbursement	Process not effective and not in compliance with policy
Retrospective study of accounts receivable	Not performed

Source: DR 2.5.0016 and BWG analysis

- Because of the shortage of audit personnel, and diversion of existing personnel to special assignments, there is a significant gap between audits performed and audits planned.
 - Although thirty audits were included in the FY 1998 audit plan, only eight reports were issued.
 - The FY 1999 audit plan contained twenty audits, of which fourteen were completed. The last completed internal audit report was issued in October 1999.

- While some of the ten audits included in the FY 2000 audit plan were started or neared completion, internal audit has issued only one report to date, and it is unknown if or when any others will be issued.
 - If PGW is unable or unwilling to retain a viable internal audit function internally, it should consider outsourcing the function.
12. Although the Securities and Exchange Commission (SEC) requires external audit firms to rotate audit partners when the partner has spent seven consecutive years on a client, the partner on the PGW audit has served more than ten consecutive years.
- PGW, a municipal utility, does not come under the jurisdiction of the SEC.
 - Most “Big Five” audit firms follow this SEC requirement for most major clients, regardless of whether or not they are regulated by the SEC.
13. While the budget process is properly designed and PGW budgeting personnel understand their responsibilities relating to cost control, the budgeting process is not linked to the strategic planning process.
- In concept, PGW’s budgeting process appears appropriate. Documentation of key assumptions is especially good. However, there is not an effective monitoring program to serve as an early warning of deviations from the budget plan. The budget process is not yet linked to the strategic plan effectively.
 - The director of budget and financial forecasting is responsible for the process used to establish PGW’s operating budget. In the first quarter of the fiscal year, a letter is sent asking all departments for input to the process. This letter establishes firm guidelines for format and supporting documentation. As an example, it states that “all departmental costs and personnel levels must be fully justified in writing, incorporating a critical review initially.”
 - Budget variance reports are issued which provide detailed explanations of deviations from expected results.
 - With few exceptions, budgets are prepared at the department level and are not driven down to lower levels of management. Experience indicates that unless supervisors and managers are held individually accountable for meeting specific financial objectives they will not manage their resources appropriately.
14. In the past, PGW management has inappropriately shifted capital dollars from approved projects to fund overruns on other projects.

- Although PGW prioritizes projects during the capital budgeting process, managers use the highest priorities to obtain approval for projects in their areas of responsibility. Among the available priorities, only expenditures relating to safety, reliability and enforced relocations are likely to be approved.
- Revenue producing projects and discretionary projects for improved efficiency are usually not approved. A summary of capital budget priorities from the Proposed FY 2001 Capital Budget is shown in **Exhibit X-7** below.

Exhibit X-7

**FY 2001 Capital Budget Priorities
(\$ millions)**

Priority	Description	Budget Request	Request Percent	Recommended Budget ⁽¹⁾	Recommended Percent
1	Safety	\$21.2	39.7%	\$19.2	38.9%
2	Reliability	7.3	13.1	6.3	12.8
3	Enforced Relocation	8.7	16.2	9.3	18.8
4	Revenue Producing	7.7	14.5	8.5	17.2
5	Improved Efficiency	8.8	16.5	6.1	12.3
Total		\$53.7	100.0%	\$49.4	100.0%

Source: DRs 2.5.0013, 2.5.0043 and 2.5.0051, and BWG analysis

(1) The capital budget request was submitted to the PGC on July 7, 2000. To date, the PGC and City Council have yet to approve the budget which was recommended by PGC's hearing examiner.

- In the past, PGW has inappropriately shifted dollars from projects approved in the capital budget to different projects without obtaining approvals from the PGC or the City Council. Specifically, PGW redirected an estimated \$20 million to cover costs for BCCS which was budgeted to cost \$9.7 million and the cost of which now exceeds \$32.7 million. In response, the City Council did not approve PGW's fiscal year 2000 capital budget until almost nine months after the start of the fiscal year.
15. While the treasury department is adequately staffed, the interim CFO has not delegated responsibility for cash management to the treasurer.
- In well-managed organizations, the most important functions of the treasurer are: to evaluate the cause of delays in cash inflows and deposits; to recommend changes in policies and procedures to eliminate delays; and to have the authority to implement the corrective action needed. The PGW treasurer does not have authority to implement corrective action.

- The treasurer prepares annual, monthly and daily forecasts of cash receipts and disbursements based upon seven years of historical data. Actual results are compared to the estimates, and formal variance reports are prepared.
 - Procedures exist to ensure that cash received in the PGW district offices and “buy-pay” locations is deposited. However, internal audit has not reviewed these procedures in recent years.
 - The treasurer recognizes that the lack of adequate policy and procedures, related to customer deposits and service termination for nonpayment, contribute to significant delays in cash receipts and write-offs, but he has not had the authority to influence or alter such policies.
16. The FAMIS and MAPS systems are functioning effectively and provide the financial information needed by PGW in a timely manner.
- FAMIS was installed two years ago and includes accounts payable, cash management, general ledger, and a fixed assets project tracking module.
 - MAPS was installed in June 2000 and includes an inventory, purchasing and order entry capability which replaced the earlier mainframe systems.
 - All of the modules of both systems utilize the same client server Oracle database that is used by BCCS.
 - The cost of these systems, including hardware and software, in-house personnel, overhead, training, and consultants, was \$3.0 million for FAMIS and \$1.2 million for MAPS.
17. Although PGW has developed adequate practices and procedures manuals in connection with the implementation of the MAPS and FAMIS systems, other procedural manuals are out-of-date.
- The practices and procedural manual associated with MAPS were issued in June 2000, and include well-documented process and schedule of authorizations and user workbooks.
 - The controller’s department has a comprehensive set of manuals pertaining to the FAMIS system, including training manuals and job aids.
 - As shown in **Exhibit X-8**, some of the procedural manuals in the controller’s department show no evidence of review or update for ten or more years.
18. PGW does not have a formal verification process for all assets to ensure the accuracy of accounting records.
- While there is no regulatory requirement or schedule of required inventories, normal business practice would dictate that physical inventories of certain

assets, such as motor vehicles, work equipment, computers, and furniture, should be performed on a scheduled basis.

Exhibit X-8

Revisions to Controller's Department Procedural Manual

Procedure Title	Procedure Number	Revision Date
Annual physical inventory of Naphtha, LPG and LNG	729	8/23/83
Cash disbursements	744.01	6/10/92
Customer deposits - partial payments	766	3/18/86
Customer payments-by-phone	643	9/11/78
Handling of messenger service receipts and priority mail	576	8/6/75
Payment of contractor invoices for main and service installation	659	8/17/79
Payroll time reporting	7375	5/29/84
Pension calculation	770	9/18/86
Tool control	570	6/9/75
Transmittal of cash for storeroom CODs and over-the-counter sales	715.01	10/24/91

Source: DR 2.5.0089 and BWG analysis

- Other assets associated with the provision of service to customers should be inventoried using physical inventory or sample techniques depending on the asset.
19. During the 1999 to 2000 heating season, PGW used weather risk insurance to hedge against unusually warm weather.
- Last year, PGW paid \$950,000 for a policy that provided \$10 million in coverage. Although heating degree days were low, they were only marginally below the strike level in the policy and only \$758,000 was recovered. The policy did provide insurance protection against a further decline in degree days than that actually experienced.
 - PGW is currently reviewing quotes for coverage for the 2000 to 2001 heating season. Quotes for similar coverage in the current year are much higher because insurance companies paid on a number of policies in the prior year. A decision to renew weather insurance for the 2000 to 2001 winter season should be based on a comprehensive economic analysis.
20. In September 2000, the City finance director entered into a preliminary agreement with a "Big Five" accounting firm to perform a retrospective forensic audit of PGW. The proposed scope of the audit is not firmly established, but it is proposed to include:

- A review of the facts and circumstances surrounding the acquisition and implementation of PGW's BCCS.
 - An investigation of activities performed by former PGW senior management. The purpose of the investigation is to detect potential fraud, waste, mismanagement, misconduct, earnings manipulation, misappropriation of corporate assets, conflicts of interest, inappropriate segregation of duties, transactional fraud, and violation of fiduciary duties.
 - An analysis of PGW's procedures, practices and protocols related to both voluntary and involuntary employee separations to assess risks due to downsizing.
21. Although PGW has an adequate financial modeling capability, it does not have a statement of financial policy, and, therefore, does not have established parameters against which to examine financial alternatives or measure financial performance.
- The gas planning and federal regulatory affairs department maintains a sophisticated modeling system that provides PGW with decision support capability in the areas of load management, supply planning, facility planning, and assessment of operational and financial requirements.
 - Output from this model is used to support rate case filings and for preparation of operating and capital budget requests and related financing plans.
 - However, the financing plans are not examined against established parameters relating to cost of service, return on investment, debt service coverage, capitalization ratios, working capital requirements, and a number of other financial targets that are specified in the statements of financial policy of other gas utilities.

F. RECOMMENDATIONS

1. Take the necessary steps to mitigate the current financial crisis and implement appropriate measures to ensure that PGW is not allowed to make the types of questionable transactions that have compromised its financial position and impaired its credibility with lenders, the rating agencies, and others in the financial community. Improving PGW's credit ratings could reduce its current costs to maintain its line of credit by \$412 to \$606 thousand per year. Similarly, it could cost PGW \$176,000 in increased interest costs per year to refinance the \$35.3 million bonds maturing in 2001 if PGW's bond ratings were reduced to a high yield bond rating and the spread between high yield and high quality bonds ratings at the time of issuance of these bonds were to be 50 basis points. (Refers to Conclusions 1 through 6.)

2. Evaluate periodically, that is, every four to five years, whether or not the City should sell PGW. Since the last evaluation was made in 1998, the City should perform its next evaluation no later than 2003 or sooner if conditions warrant an earlier assessment. (Refers to Conclusion 8.)
3. Establish a functioning audit committee on the PFMC Board of Directors, and restore a viable internal audit function either internally or by outsourcing it. Implement internal control recommendations from the external auditor in a timely manner. (Refers to Conclusions 9, 10 and 11.)
4. Require the external auditing firm to adhere to SEC guidelines that require the rotation off the assignment if the partner-in-charge has served in that capacity for seven or more years. As an alternative, PGW should consider placing next year's audit of PGW open to bid (Refers to Conclusion 12.)
5. Establish responsibility accounting centers at the lowest practical level of management, and set performance objectives for managers and supervisors that include specific budget performance targets that are linked to the strategic planning process. (Refers to Conclusion 13.)
6. Establish a finance committee on the PFMC Board of Directors with specific responsibilities to monitor PGW's capital and operating budget processes and budget variances. (Refers to Conclusion 14.)
7. Assign responsibility to the treasurer's department for establishing and enforcing cash management policies including accounts receivable collection policies and procedures. (Refers to Conclusions 15.)
8. Update accounting procedures manuals and implement procedures for the inventory and tracking of capital assets. (Refers to Conclusions 17 and 18.)
9. Take steps to implement all appropriate recommendations from the forensic audit currently being performed by an external accounting firm. (Refers to Conclusion 20.)
10. Establish a statement of financial policy which includes parameters against which PGW senior management and the PFMC Board of Directors can evaluate financial alternatives and performance. (Refers to Conclusion 21.)