

ENERGY ASSURANCE PROGRAM PILOT

YEAR ONE REPORT

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Philadelphia Gas Works

Customer Activities Department

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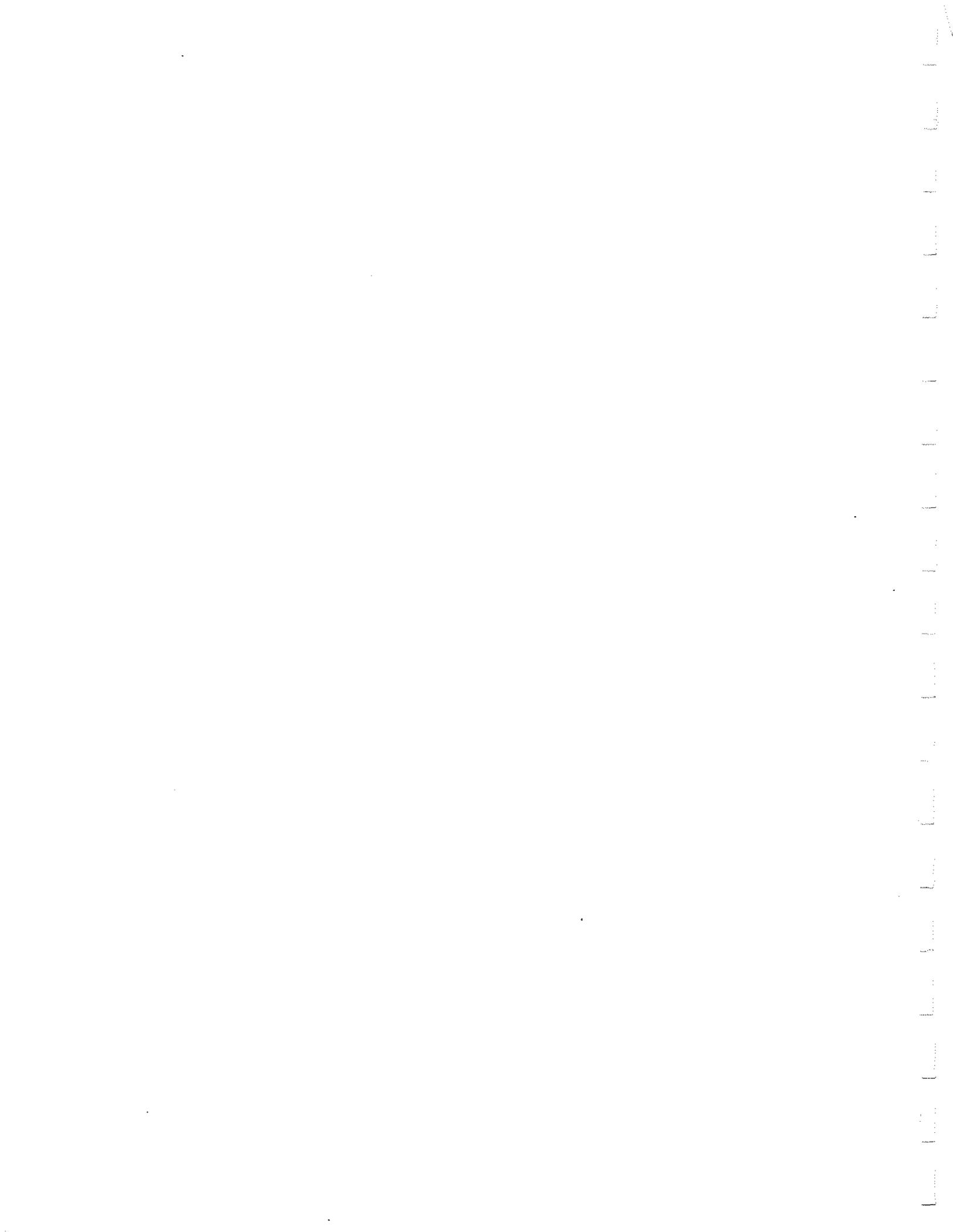


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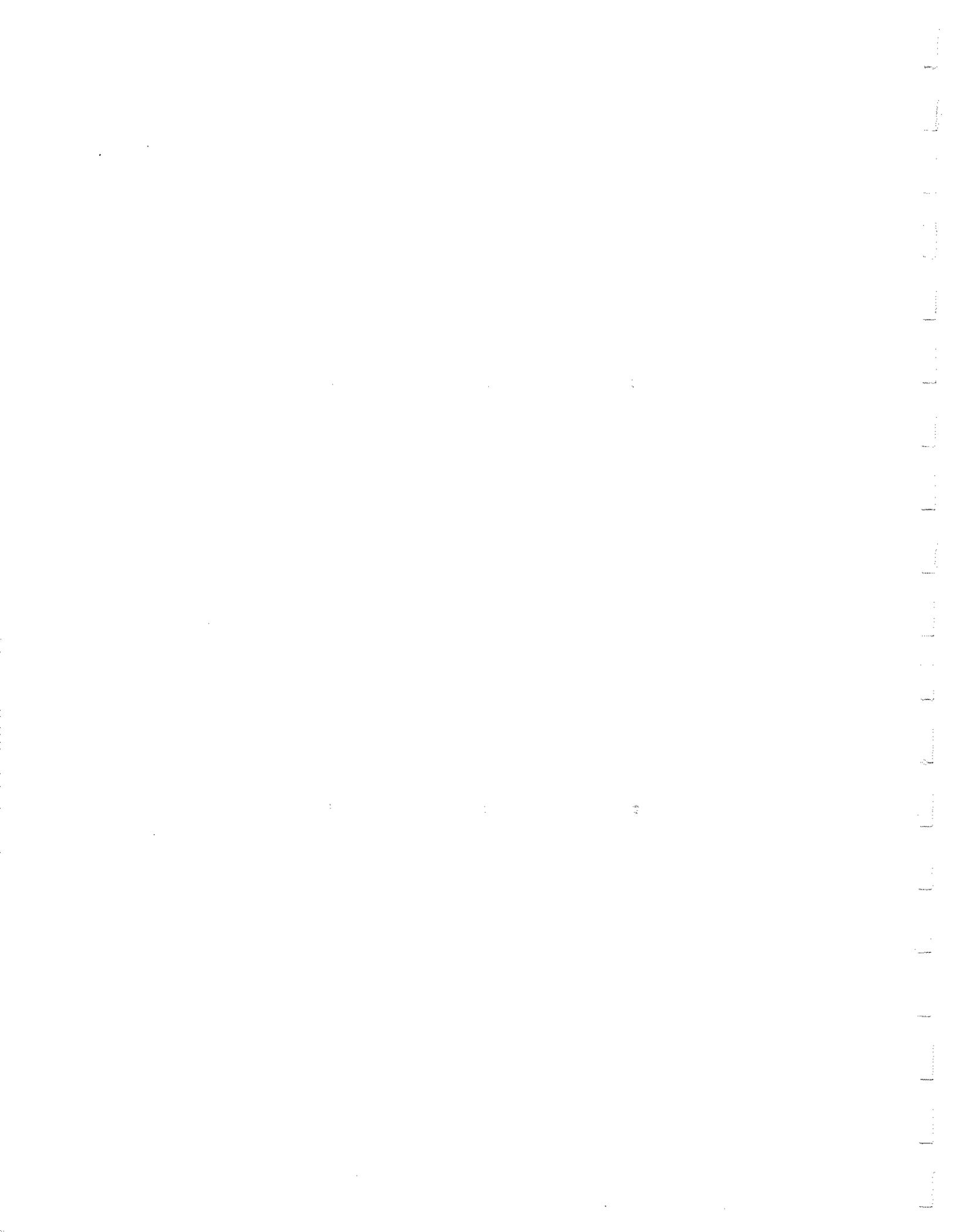


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Executive Summary

The Energy Assurance Program (EAP) was proposed as a possible solution to the substantial low-income arrearage problem faced by the Philadelphia Gas Works (PGW). To test the effectiveness of this program, a two-year pilot was put into place in March 1990 and over 5,000 participants were enrolled through December of 1990.¹

EAP participants were enrolled in a way that allows us to project the results of the pilot to the entire PGW residential customer base. The data collected for program participants allow us to compare the payment and agreement performance under the EAP program to payment and agreement performance in the year prior to EAP enrollment. In addition, data are available for a comparison group of customers for the program year.

This report furnishes detailed information on the implementation of and findings from the program. It includes information on:

- The history of PGW's residential collection problem.
- The design of the EAP payment system.
- Participation in the EAP pilot.
- The EAP program's impact on payment behavior.
- The other benefits and costs of the EAP program.

This report also presents summary assessments of the EAP, including:

- An economic assessment of the performance of the EAP.
- A discussion of the alternatives available to the Philadelphia Gas Commission to meet the needs of PGW and its low-income customers.
- Recommendations for improving the EAP if the Philadelphia Gas Commission chooses to implement a full-scale EAP program.

This Executive Summary furnishes a brief overview of the information presented in the report. To attain a complete understanding of the evaluation, the reader is encouraged to review the detailed discussions and tabulations in the body of the report.

¹Another group of over 10,000 participants were enrolled in the EAP program during 1992. Those customers are not included in this analysis.

Overview of PGW's Residential Collection Problems

The statistics presented in Section 1 of the report show that PGW has a serious problem with residential arrearages. At the end of PGW's 1991 fiscal year, PGW had \$47.7 million in arrears (10.5% of sales). In addition, during FY 1991, PGW wrote off \$21.8 million (4.7% of sales). A report prepared by the American Gas Association and the Edison Electric Institute shows that write-off percentages for comparison companies ranged from 0.9% to 2.6%.²

These arrearages also have a serious impact on PGW customers. At the end of FY 1991, 141,000 PGW residential customers were in arrears. During FY 1991, about 40,000 PGW customers (7.6%) had their service terminated for nonpayment. PGW's service termination rate is significantly higher than are those of comparison companies (which range from 2.0% to 6.2%).

Trend analysis shows that the largest increase in the problem occurred between 1980 and 1985. During that time period, gas prices increased dramatically, the economic position of low-income customers deteriorated, and a significant number of customer termination protections were put in place. Various parties have postulated that one or more of these factors were directly responsible for the increase in arrearages, write-offs, and terminations. We have no evidence that would lead to meaningful conclusions on this issue.

The trend data also show that, to some extent, the problem has stopped growing in the past several years. The arrearage rate increased from 5.2% in 1980 to 9.1% in 1987 but grew only to 10.5% by 1991. The write-off rate jumped from 1.7% in 1980 to 4.7% in 1987 and was 4.7% in 1991. In part, the slow rate of growth has resulted from comparatively low average gas bills, which in turn resulted from warm weather and low gas prices.

Overview of the Energy Assurance Pilot Program

The Energy Assurance Program (EAP) was proposed as a possible solution to the substantial low-income arrearage problem faced by the Philadelphia Gas Works (PGW). The EAP is designed to assist all residential low-income PGW customers. It consists of two basic program elements.

- First, the amount that customers pay for gas service is based on a fixed percentage of household income, rather than on the amount of gas used.
- Second, after three payments, outstanding arrears over \$144, if any, are forgiven over a 36-month period at a rate of 1/36 per month.

It is suggested by program proponents that these program elements will enable low-income customers to get current on utility bills and to stay current in the future.

²We selected a group of eight large gas utilities in the Northeast and Midwest for comparison. All of these utilities have large urban areas included in their service territory. None of the utilities is restricted to a central city as is PGW.

As part of the agreement with PGW, participating customers agree to fulfill several program requirements.

- First, the customer agrees to make a payment each month. The monthly payment is a fixed percent of income plus \$4 for outstanding arrears, if any.
- Second, the customer agrees to apply for LIHEAP and CRISIS energy assistance when these grants are available or within 90 days of the opening of the next program year.
- Third, the customer agrees to cooperate in making sure that his/her gas meter is read monthly.
- Fourth, the customer agrees to make efforts to conserve energy and will pay for any usage that exceeds a preset limit. The limit is computed as 110% of the weather-normalized usage from the base year – the year prior to entering the EAP program.

The agreement is broken if the customer gets behind by three payments. The customer can restore program eligibility by meeting his/her annual EAP responsibility within the first 12 months. The customer must be recertified to continue participation in the following year.

The EAP pilot recruitment and data collection procedures were designed to meet a number of requirements, including:

- Enrollment of a representative group of PGW customers as program participants.
- Enrollment of at least 5,000 program participants.
- Enrollment of customers at both PGW customer service offices and the offices of selected community-based organizations.

All of these requirements were met during the pilot recruitment phase.

It is useful to note that, for a variety of reasons, the program was not implemented exactly as it was designed. These kinds of difficulties are expected in the development of a complex program pilot. We expect that they affected the program only marginally and did not change the program results in a major way.³

³One exception to this statement is that the enrollment was expected to start in November, when energy assistance benefits were available. Since it did not start until March, a large share of the customers were enrolled when energy assistance benefits were not available. The rate of receipt of energy assistance was substantially higher for those customers who were enrolled when energy assistance was available. While participants could have applied for energy assistance during the following LIHEAP season, they were most likely to receive assistance if they applied for benefits at the time of enrollment.

Participation in the Energy Assurance Program Pilot

The Participant Selection Phase of the EAP pilot was designed to furnish detailed information on program participation by EAP Potential and Control customers. The data allow us to make estimates of the number and type of low-income customers who would participate in EAP if it were made available to all low-income customers.

To limit the pilot program to a representative sample of EAP customers, PGW selected a random sample of 22,260 residential customers. This group was called the "EAP Potential" customers. A total of 1,850 of these customers were enrolled through the restricted enrollment procedure. These customers form the core group for analysis of the program. An additional 3,424 customers were enrolled through an open-enrollment procedure. These customers are excluded from the analysis because they do not comprise a representative sample of PGW's customers.

The "EAP Potential" customers were divided into four separate groups. Each group was notified of the program in a different way. The four notification methods were: a PGW letter, a community-based organization (CBO) letter, a PGW bill message, and no active notification. Participation analysis shows that the active recruitment methods (PGW letter and CBO letter) resulted in 60% more participation than did the passive recruitment methods (bill message or no active notification).

Participation analysis shows the number of participants who would have enrolled if the EAP program had been open to all low-income customers for the period from 3/15/90 to 11/1/90. With active recruitment, participation would have been about 20,000 customers and with passive enrollment, participation would have been about 12,700 participants.

Analysis of demographic data shows that a large portion of the EAP pilot participants are public assistance customers. About 50% of participants rely mainly on public assistance, 20% rely on retirement income, 10% rely on employment income, and the remaining 20% fall into other categories.

Participation analysis also shows that about 42,400 customers would have enrolled in all low-income programs (EAP and 5%-2%) during the period from 3/1/90 to 3/1/91 if the EAP program had been available to all low-income customers. In contrast, the 5%-2% alone would have enrolled about 36,100 if no EAP were available. This suggests that the EAP does induce some participation in low-income programs. However, the majority of the customers it brings into low-income programs would have participated in the 20% down program instead.

Most of the customers who were in the EAP pilot would have participated in alternative payment programs (5%-2% or 20% down) if the EAP were not available. Thus, as the program was implemented, it appears that customers were perceiving it as a low-income arrearage payment plan. If customers continued to think of the program in this way, we estimate that full-scale EAP program participation would probably reach no more than 40,000 low-income customers.

If the program is presented in a way that changes the "payment program" perception, a somewhat different scenario might unfold. As customers become more aware of the EAP program and its benefits, substantially more customers may enroll, including many who are currently paying their full gas bills. Rough estimates suggest that about 70,000 customers might

participate under such a scenario. Moreover, one can expect that it would take a number of years for the participation rate to reach this level.

It is important to note that the analysis that follows regarding payment behavior furnishes data only for an EAP program that enrolls mostly payment-troubled customers. If a substantial number of customers who are currently paying their full bills enroll, it would significantly change program dynamics.

Assessment of the EAP Program's Impact on Customer Payment and Usage Behavior

The EAP can potentially affect customers in three ways.

- First, the EAP can be expected to change the **timeliness** of customer payments. Under EAP, most customers are asked to pay less than under a regular budget or a 5%-2% payment agreement. Thus, it is expected that more customers will be able to achieve the requested payment.
- Second, the EAP may change the total amount of **cash paid by the customer**. By lowering the size of the requested payment, PGW may either receive more total dollars (since more payments are made) or fewer total dollars (since the average size of payments will be smaller).
- Third, the EAP may change the **dollars from assistance payments** paid to the company. By requiring that the customer apply for assistance benefits, the program may raise the amount received in grants. By allowing the customer to assign the grants to another utility, the program may lower the amount received in assistance grants.

Analysis of PGW billing data furnishes a number of basic findings for EAP participants in the "EAP Potential" sample.⁴

- About 69% of the customers were current on their EAP agreements after 12 months. Customers in the lower percentage-of-income groups (5% and 7%) had higher compliance rates than did those in the higher percentage-of-income group (8%).
- During the 12 months, customers made payments that covered over 9 of the 12 required payments. The average payment was \$53. This compares to an average monthly suggested budget bill without EAP of \$111.

⁴All statistics are weighted to account for differential probabilities of selection. There were 1,850 customers in the analysis. Agreement compliance statistics are based on the 1,770 (96%) for whom data are available. The payment analysis statistics are based on the 1,654 (89%) for whom payment analysis statistics are available.

- The total amount of cash paid by customers on their accounts during the period averaged \$391. The average total amount billed under EAP was \$469.
- About 49% of EAP customers assigned at least one assistance grant to PGW, for an average of \$167. Most EAP customers could have qualified for about \$500 in assistance payments.
- The average annual usage for EAP customers was 125.4 Mcf, which would have cost \$913 if retail PGW rates had been charged. The total cash paid on the accounts of these customers, \$559, covered about 61% of the full retail amount of the bill.⁵
- For EAP participants, current year forgiveness averaged \$343 and preprogram arrearage forgiveness averaged \$182. Outstanding arrearages for EAP customers fell from \$1,131 at the beginning of the year to \$960 at the end of the year.

We developed EAP year statistics and base year (the year prior to EAP enrollment) statistics for each EAP participant. These data furnish a comparison of the customer's performance on EAP to the customer's performance on other programs.⁶ Findings from this analysis include:

- EAP participants showed substantial improvements in agreement compliance. Under EAP, over 70% of customers were able to make 12 payments. For comparison, when these same customers had a 5%-2% plan in the base year, only 19% were able to make 12 payments.
- EAP participants increased average number of cash payments but decreased the average size of those payments. In total, annual cash payments fell by \$110 under EAP compared to the base year. This reduction appears to be directly related to the low level of requested payments. The 8% of income group actually increased average annual cash payments by about \$40.
- EAP participants increased the average amount of assistance dollars assigned to PGW. Average annual assistance grants rose by about \$23 under EAP compared to the base year.

⁵This coverage analysis includes the \$4 per month arrearage payment in the annual payment amount. This is done to make the coverage estimates comparable with coverage estimates from the preEAP period.

⁶All statistics are weighted to account for differential probabilities of selection. There were 1,850 customers in the analysis. Agreement compliance statistics are based on the 1,372 (74%) for whom data are available in both the EAP year and the base year. The payment analysis statistics are based on the 1,291 (68%) for whom payment analysis statistics are available for the EAP year and the base year.

- In total, average annual payments fell by \$87 under EAP, from \$693 to \$606. The coverage rate for the two time periods was about the same because there was substantially higher usage during the base year, because of colder weather in the base year.
- During the base year, customers received an average of \$78 in forgiveness from the 5%-2% program. During the EAP year, customers received an average of \$586 in forgiveness.
- During the base year, average arrearages for customers increased from \$611 to \$886. As a result of the substantial forgiveness, average arrearages for these same customers fell from \$1,089 to \$841 during the EAP year.

We developed EAP year statistics for low-income payment program (EAP and 5%-2%) customers in both the "EAP Potential" group and the "Control" group. We compared statistics for these two groups to uncover any biases that might exist in the base year / EAP year comparison. In general, these data confirmed that the EAP customers had better agreement compliance than the 5%-2% customers, but they did not contribute as much in payments.

Other Benefits and Costs Attributable to the EAP Program

The statistics presented above measure the direct benefits and costs of the EAP Program. They show the amount of revenue generated from EAP customers and compare it to the retail cost of the gas used. A number of other benefits and costs are associated with the EAP program.

- Potential benefits to PGW include avoided collections costs, enhanced employee satisfaction, and improved corporate image (community relations).
- Potential costs to PGW include program enrollment and recertification costs, agreement compliance costs, and other ongoing program expenses.

It is very difficult to directly measure the size of these potential benefits and costs. We made use of EAP pilot data to make estimates. However, there are two important limitations to these estimates. First, a mature, full-scale EAP may have quite different costs than a pilot where procedures are still being developed. Second, the data on the comparison costs (i.e., the costs associated with the 5%-2% program) have limitations.

Because of the uncertainty associated with the data, we developed a range for estimates. The estimated net benefit to PGW of implementing the EAP ranges from a high estimate of \$35 to a low estimate of -\$4. In comparing the EAP to other programs, this amount should be netted out of the difference in revenue returned by the two programs.

The EAP also offers substantial nonpayment benefits to EAP participants. The program can help these customers maintain gas service, may assist those customers in meeting other financial obligations. The EAP may also impose some costs on EAP participants. Under EAP, customers must make a significant time commitment to complete the EAP application and meet other program requirements.

Economic Assessment of the EAP Program

The Philadelphia Gas Commission is concerned about the economic viability of the EAP Program. Three measures of program performance have been selected by the EAP Advisory Committee for examination to address this question. They are:

- Variable Cost of Service – Do EAP participants cover the variable cost of gas and contribute to fixed costs of service?
- Comparative Cost of Service – Under EAP, do participants contribute more than they do under the existing set of collection options?
- Affordability – Are EAP participants contributing as much as they can afford to contribute?

Each of these measures will serve as information to assist the Philadelphia Gas Commission in determining the economic feasibility of the EAP. Development of a specific measure does not, in itself, suggest that the measure is a determinant of the economic feasibility of the EAP program.

In looking at the first two measures described above, we are actually comparing three alternative approaches to the low-income payment problem. The alternatives available to the Philadelphia Gas Commission include:

- Implementation of an EAP program to complement existing payments options
- Retention of the existing set of payment options
- Termination of all customers who cannot pay 100% of the cost of service.

In applying the variable cost of service test, we are examining whether other ratepayers are better off if the EAP is implemented or if all nonpaying customers have their service terminated. In the comparative cost of service test, we are directly examining the difference between the EAP and the existing set of program options. The third measure, affordability, is more speculative. It asks us to consider whether there are indications that customers could afford to pay more on their bills or whether customers cannot even afford to pay the amounts they are currently paying.

Variable Cost of Service Tests

We developed two estimates of variable cost: a short-run variable cost and a long-run variable cost. The short-run variable cost includes only the commodity cost of gas, since in the short-run the only cost that PGW could avoid by terminating nonpaying customers is the commodity cost of gas. The long-run variable cost includes all gas purchase costs (commodity cost and demand charges), as well as EAP program operations costs, meter-reading costs, customer service costs, and collections costs.

The estimated variable costs are:

- Short-run variable cost = \$2.12 per Mcf
- Long-run variable cost = \$3.91 per Mcf

We found that, during the EAP analysis year, the amount contributed by EAP customers from all sources exceeded both the short-run and long-run variable cost of gas.

EAP payments do not vary with the amount of gas used. The EAP analysis year was at least 10% warmer than the long-term average. Under a scenario where EAP customers used 10% more gas (approximately normal usage), EAP payments still would exceed both the short-run and long-run variable cost. Under a scenario where EAP customers use 20% more gas (a high usage year) EAP payments would exceed the short-run variable cost of gas, but would not exceed the long-run variable cost of gas.

Comparative Cost of Service Test

The second measure of interest is the comparative cost of service. Do customers contribute more net revenue to the company under the EAP than they do under the alternative set of programs?

It is clear from the base year/EAP year analysis that customers behave differently under EAP than they did under the previous set of collections programs. EAP customers make payments more consistently and are much more likely to maintain their agreements. An important question, however, is whether this behavioral change translates into additional revenue for PGW.

Looking at the entire population of EAP customers, it is clear that the EAP participants did not contribute as much as they did in the base year. Total payments under EAP were 13% lower than they were during the previous year. Cash payments by customers were 21% lower under EAP than they were during the base year.

However, some subgroups of the EAP population did increase the amount that they paid under the EAP program. The 8% of income group increased their total payments under EAP by 18%, including a 12% increase in cash payments. One important reason that the average payment fell under EAP is that this group was a smaller part of the EAP population than was expected.⁷

It is not only the total amount of payments collected that is important but also the costs associated with collecting the payments. The data presented on other benefits and costs suggest that the net cost savings associated with the EAP program range from -\$4 to \$35 per customer. The difference between total payments under EAP and total payments in the base year is \$87. Thus, we estimate that the net difference between payments under EAP and

⁷For the analysis group, the 5% of income group was 47% of the EAP population, the 7% of income group was 37%, and the 8% of income group was 16%. In the original program design, it was expected that the 5%, 7%, and 8% of income groups would comprise 25%, 59%, and 16% respectively.

payments under the alternative programs is between \$52 and \$91 annually (between \$4 and \$8 per month).⁸

Affordability Test

There is no easy way to define affordability. In one sense, if an individual cannot make required gas payments, it is up to that individual to alter budgetary priorities so that he/she can make required payments. However, it is clear that our society generally agrees that people should be able to live at a certain minimum standard. In that context, a basic necessity is unaffordable if its cost, summed with the costs of all other necessities, exceeds total income.

One could argue that the total amount paid by the customer during the base year is the amount that is "affordable." Customers in the 5% of income group paid an average of \$421 in cash during the base year and only \$267 during the analysis year. Moreover, the average EAP bill for the year was only \$278. From this first affordability perspective, the EAP is not asking that customer for enough in cash payments – the customer can afford to pay more toward his/her gas bill.

An alternative discussion of affordability suggests that, by examining the behavior of customers during the base year period, we can see that the amount they were required to pay was not affordable. During the base year, 26% of EAP participants had their service terminated. Moreover, the average shutoff period was 41 days. One could argue that, if these customers could afford to pay the amount that was asked, they would not have allowed themselves to have service terminated for this period.

Additional information is furnished by the behavior of customers in the different percent-of-income categories. Over 70% of the customers in the 5% of income group were able to maintain their agreements, while closer to 50% of the 8% of income group were able to maintain their agreements. This suggests that the 5% of income group is not being "pushed" to the same level of "affordability" as the 8% of income group.

Finally, one can use the data furnished by the Grier Partnership. Using survey data, they found that almost 50% of low-income households had less than \$0 remaining after subtracting essential nongas expenditures. From this perspective, many EAP participants are contributing more than they can afford to contribute.

It is appropriate to utilize all of these indicators in making an assessment of the affordability of the current EAP payments levels. Agreement compliance rates increased dramatically, and nonpayment service terminations decreased dramatically as a result of the EAP. The question a policymaker must address is, "What level of adversity strikes an appropriate balance between the need to have a credible collections tool (i.e., service termination) and the desire to avoid the social problems caused by service termination?"

⁸Under EAP, successful customers are granted shortfall forgiveness and preprogram arrears forgiveness. Under the 5%-2% program, successful customers are granted only preprogram arrears forgiveness. Under other programs, no forgiveness is granted.

Options for Working with Low-Income Customers

The Philadelphia Gas Commission is considering alternatives for working with low-income customers because, over time, a segment of the low-income population has found it very difficult to pay its gas bills and maintain gas service. This is not a problem that is unique to Philadelphia, nor is it a problem that is limited to areas with a particular set of programs or shutoff restrictions in place. All public utility commissions and utilities face the difficult question of whether they should serve customers who truly cannot afford to pay the retail rate for gas service. However, the problem is more serious for PGW because its low-income customers make up a larger share of the PGW customer base than is true for most other utilities.

In examining alternatives, three general classes of options appear appropriate for consideration.

- Improve the existing set of programs
- Implement an improved EAP on a full-scale basis
- Return to an aggressive collections approach

The EAP pilot furnishes data on the first and second options since we have explicitly compared the EAP to the existing set of programs. Though the EAP pilot does not offer much insight into the third option, it is appropriate to list it as one of the choices that the Gas Commission may wish to consider.

This report furnishes detailed information on the performance of EAP and on how the EAP compares with the existing collections system. It is our assessment that the current system and the EAP are comparable in the dollars that they collect for PGW. Further, we expect that some minor modifications (in particular, raising the required EAP payment amounts) would result in the two programs' performing at about the same level.⁹

Given this result, it is our conclusion that the choice of collections systems should be based more on an assessment of the ability of low-income customers to pay, rather than on the economic evidence from this pilot. More directly, the decision should rest on the Philadelphia Gas Commission's appraisal of the appropriate role for a municipal utility in helping to meet the needs of low-income customers.

⁹There is one exception to this statement. To date, we have found that the EAP did not "induce" a substantial amount of participation among customers who otherwise would have been paying their full bill. As low-income customers become more familiar with the program, it is possible that there will be additional participation by low-income customers who have been making full payments. For this group of customers, the EAP is clearly more expensive than the existing set of programs.

Option 1: Try to improve the current system if the belief is that:

- With the existing array of programs, customers can afford to pay their utility bills.
- Customers occasionally have difficulty paying their bills and that a generous repayment plan (such as the 5%-2% plan) is required to get the customer back on the right track.
- It is moderately important to try to minimize the health and safety problems caused by service termination.

Option 2: Move to a full-scale EAP if the belief is that:

- Even with the existing assistance programs, low-income customers simply cannot afford to pay their utility bills.
- It is appropriate for the utility to differentiate rates for residential customers based on income level.
- It is very important to try to minimize the health and safety problems caused by service termination.

Option 3: Move to an aggressive collections system if the belief is that:

- All customers should pay the fully embedded cost of their gas service.
- It is not important for a municipal utility to try to minimize the health and safety problems caused by service termination.

In general, each option can be expected to yield some benefits and to have some costs. No system will eliminate the low-income payment problem, and no system will eliminate the costs associated with collections and write-offs, yet each system puts an emphasis on solving one particular aspect of the problem:

- In improving the current system, PGW would be attempting to reduce arrears while also avoiding writeoffs in the short-run by maintaining the low-income customer's individual responsibility for payment of the full gas bill.
- In moving to a full-scale EAP, PGW would be attempting to "solve" payment difficulties for as many low-income customers as possible and would be willing to realize write-offs to do so.
- By moving to an aggressive collections approach, PGW would be attempting to minimize delivery of service that low-income customers cannot afford and would be trying to put in place a strong deterrent to nonpayment.

In the end, the choice among options made by the Gas Commission will be a practical and philosophic one, rather than an economic one, since there is no clear difference between the potential economic performance of the different options. Economic improvements will come with improved operation of any of the selected options.

Recommended Improvements in the EAP Program

If the Philadelphia Gas Commission chooses to move to a full-scale implementation of the EAP, a number of improvements can make the system more cost-effective and more responsive to customer needs.

Recommendation 1 – Change Payment Parameters

In comparing the EAP to the current program, average customer payments fell dramatically for the 5%-of-income group, while they actually increased for the 8%-of-income group. We recommend changing the payment level to 7% of income for all groups.

Recommendation 2 – Improve the Rate of Assignment of Assistance Grants

On average, EAP customers received less than \$200 in assistance grants, while they were eligible for as much as \$500. Several possible improvements could increase the rate of assignment.

Recommendation 3 – Limit the Low-Income Customer's Choices

One problem with the EAP was that customers always had the option of reverting to a 5%-2% plan. Another was that customers who broke their agreement were not subjected to collections for many months. We recommend:

- Eliminating the 5%-2% plan by making the terms of the EAP that the customer pays the minimum of 7% of income or budget plus 2% of arrears. In effect, this formula combines the EAP and the 5%-2% plan.
- Eliminating concept of multiple agreements by making the customer "cure" the existing EAP agreement rather than starting a new agreement.
- Shortening the default period to two months to start collections actions once it is clear that a customer is having difficulties.
- Shorten the winter restrictions period to reduce the amount a defaulting customer would need to "cure" broken EAP agreements.

Recommendation 4 – Improve the Customer Support Systems

In the previous recommendation, we discussed program rules that would make the EAP rules "tougher." To balance these rules and make them implementable, we recommend some changes that make agreement maintenance easier for participating customers.

- Allow customers to renegotiate agreements if income falls or the number of household members increases.
- Set up a special "catastrophe" fund to help "truly needy" customers "cure" their broken EAP agreements.

Recommendation 5 – Separate the EAP Program Staff from the Collections Department

The EAP is quite different from other collections activities. The EAP attempts to work "cooperatively" with the customer, while collections necessarily uses an "adversarial" approach. It is very difficult for a collections department staff person to develop the skills required for the two very different approaches to collections.

Recommendation 6 – Improve Recertification Procedures

Customers do not appear to respond to recertification notices. In part, changes such as elimination of other options may improve recertification. Other efforts should be made to improve recertification levels.

Recommendation 7 – Improve Conservation Efforts

Once a customer has been enrolled in EAP, large consumption bills are the responsibility of PGW rather than of the customer.¹⁰ In many cases, high consumption results from serious structural defects in the property. In such a situation, PGW could save money by removing limits placed on repairs. A case-by-case analysis would be required to justify such exceptions.

Acting on Recommendations

If the Philadelphia Gas Commission chooses to implement a full-scale EAP, there is much additional work to be done by PGW and the EAP Advisory Committee. It is clear that the EAP, as currently implemented, is not as effective as it could be. In some cases, the changes required to make the necessary improvements are clear, but will require additional work (and costs) on the part of PGW staff. In other cases, the solutions to problems identified in the pilot are not clear and will require additional work on the part of PGW and the Advisory Committee jointly to determine cost-effective and workable solutions.

¹⁰ Customers are responsible for excess usage over the base year. However, there is little or no evidence of systematic increases in usage by customers. Further, the excess usage process is very expensive to implement.

Section 1

Overview of PGW's Residential Collection Problems

The Energy Assurance Program (EAP) was proposed as a possible solution to the substantial low-income arrearage problem faced by the Philadelphia Gas Works (PGW). To test the effectiveness of this program, a two-year pilot was put into place in March 1990. Participants were enrolled through December of 1990, with some agreements finalized as late as March of 1991.

In attempting to understand the ability of EAP to fulfill its goals, it is important to understand the extent and the nature of the problems faced by PGW. Important questions include:

- How serious is the arrearage and bad debt problem faced by PGW?
- What other programs have been implemented to try to address low-income collection problems?
- How have customer service regulations changed in the last decade?
- How has the financial position of low income households changed in the last decade?

In this section of the report, data are developed to address each of these questions. These data provide a context within which to view the development of the program and the results of the pilot.

1.1 Long-Term Trends for PGW Residential Customers

A series of important events have affected the size of the PGW's residential customer base and the level of PGW's residential arrears and bad debt write-offs. To examine trends, data have been developed by PGW in four areas, including:

- The characteristics of PGW's residential customer base
- The costs to PGW of residential collections problems
- The impact of payment problems on PGW customers
- The sources of funding for paying low-income customer bills

In each of these areas, the data presented are aggregate or average statistics for PGW's residential customer base. In a few cases, important data could not be obtained. In others, the data that PGW was able to develop do not directly address the analytic question. In both cases, the limitations on the data are noted.

The tables in this section should be used with caution. We present statistics for selected years and furnish information on some of the events that may have influenced arrearage and write-off levels. While these trend data and events show some interesting relationships, they do not furnish proof of a causal relationship. For example, in the early years of the 1980s, the Gas Commission imposed the first winter shutoff rules, there was a rapid increase in residential gas prices, the country experienced a very serious recession, and there was a serious reduction in spending on social programs. Over the same period, the level of residential arrears grew dramatically for PGW. It is impossible to determine which of the factors listed had the greatest impact on PGW's arrearage levels and rates.

Characteristics of PGW's Residential Customer Base

Table 1-1 focuses on the summary characteristics of PGW's residential customer base. The table gives the reader an idea of the size of the PGW residential customer base and of the changes in the average bills that customers experienced over the period 1980 to 1991.

The data in the table are defined as follows.

- Line 1 shows the total number of active residential accounts (in thousands) as of 8/31 of the year indicated.
- Line 2 shows the average cost per MCF for the typical residential full-use customer (fiscal year).
- Line 3 shows the average usage (in MCFs) for the typical residential full-use customer (fiscal year).
- Line 4 shows the average annual bill for the typical residential full-use customer (fiscal year).
- Line 5 shows the total residential sales (in millions) for the company (fiscal year). This is the total amount of revenue that would have been attained if all customers had paid all of their bills.
- Line 6 shows the total annual heating degree days (base 65) for Philadelphia (fiscal year).

**Table 1-1
Trends in Residential Customer Characteristics**

	YEAR						
	1980	1985	1987	1988	1989	1990	1991
Active Residential Accounts	449	504	505	508	507	502	502
Average Residential Rate per MCF ¹	\$3.77	\$7.38	\$6.83	\$6.68	\$6.92	\$6.93	\$6.88
Average Residential Usage in MCF	124	109	112	113	115	113	111
Average Typical Bill	\$467	\$802	\$770	\$771	\$784	\$771	\$681
Total Residential Sales	\$230	\$341	\$329	\$332	\$339	\$334	\$300
Heating Degree Days	4,712	4,448	4,498	4,709	4,574	4,428	3,913

Table 1-1 offers several insights into the changing residential gas market faced by PGW and the changing cost of gas service borne by PGW customers.

- The number of active residential accounts was dramatically higher in 1985 than it was in 1980. In the late 1970s, serious supply disruptions resulted in restrictions on new gas connections. When those restrictions were lifted in 1982, a significant number of new gas accounts were established. Since 1985, however, the number of active residential accounts has remained relatively stable.
- The average annual bill for PGW residential customers was substantially higher in 1985 than it was in 1980. After accounting for inflation, the average annual

¹Changes in residential rates are a function of both changes in the costs of gas and changes in the costs associated with delivery of gas. The rate is set by the Philadelphia Gas Commission based on requests from PGW and comments from various interested parties.

cost for a typical full-use customer was 32% higher in 1985 than it was in 1980.² Since that time, however, the average bill for a PGW customer has fallen and was 33% lower in 1991 than it was in 1985 (adjusting for inflation).³ Both of these trends are consistent with national trends in utility gas prices.

- A number of factors have contributed to fluctuations in the size of total residential revenues for PGW, including the size of the customer base, the average rate, and the number of heating degree days. While revenues increased from 1980 to 1985, they would have increased by even more if the winter of 1985 had been as cold as the winter of 1980. The warm weather in 1990 and 1991 contributed significantly to the relatively low level of revenues for those years.

The most important changes for low-income customers have been in the size of the average bills. The average bill in 1985 represented a substantial increase in burden over the bills in 1980. However, in the last five years, the average bill has actually fallen. Enrollment statistics show that half of the customers enrolled in EAP have incomes below 50% of the poverty line. For a family of four living at 50% of the poverty line, the typical bill represented 12.5% of income in 1980, 14.9% in 1985, and 10.1% in 1991. For a single person with a child living at 50% of the poverty line, the typical bill represented 18.5% of income in 1980, 22.8% in 1985, and 15.4% in 1991.⁴

Costs to PGW of Residential Collections Problems

Table 1-2 furnishes data on the size of the collection problem faced by PGW. In this table, statistics focus on the dollar values of arrears, write-offs, and collections costs.

The data in the table are defined as follows.

- Line 1 shows the total amount of sales, in millions, for the fiscal year shown.
- Line 2 shows the total amount of arrears, in millions, as of 8/31 of the year indicated. Amounts owed by customers are classified as arrears if they are past due 30 days or more.
- Line 3 shows the arrears divided by the total amount of sales (Table 1-1).
- Line 4 shows the total amount of write-offs, in millions, for the fiscal year.

²The average annual bill was 72% higher in 1985 than it was in 1980. However, over the same time period, the consumer price index increased by 30%. Thus, after adjusting for inflation, the average annual bill increased by 32%.

³The average annual bill was 15% lower in 1991 than it was in 1985. However, over the same time period, the consumer price index increased by 27%. Thus, after adjusting for inflation, the average annual bill decreased by 33%.

⁴In general, a fall in the average price of gas compared to other goods should mean that gas is more affordable. However, if income for certain population segments is not growing and other bills (housing, food, etc.) increase at the rate of inflation, it is likely that gas bills will remain unaffordable for these population segments. Evidence on income trends for special subgroups will be examined later in this section of the report.

- Line 5 shows the write-offs divided by the total amount of sales (Table 1-1).
- Line 6 shows the total amount budgeted for collections activities in millions for the fiscal year. Amounts budgeted for the meter investigation unit are excluded.

**Table 1-2
Trends in the Cost of Collections Problems**

	YEAR						
	1980	1985	1987	1988	1989	1990	1991
Total Sales	\$325.8	\$489.4	\$450.5	\$465.1	\$467.3	\$466.3	\$455.0
Total Arrears	\$17.1	\$38.2	\$41.2	\$37.8	\$39.2	\$43.3	\$47.7
Arrears/Sales Ratio	5.2%	7.8%	9.1%	8.1%	8.4%	9.3%	10.5%
Net Write-offs	\$5.4	\$11.6	\$21.2	\$20.8	\$18.9	\$24.7	\$21.8
Write-off/Sales Ratio	1.7%	2.4%	4.7%	4.5%	4.0%	5.3%	4.7%
Total Collections Costs	\$2.5	\$7.5	\$7.3	\$7.1	\$6.3	\$6.0	\$5.7

As with the previous table, Table 1-2 shows some changes over time.

- The total amount of arrears was substantially higher in 1985 than it was in 1980. After adjusting for inflation, the total amount of arrears in 1991 was about the same as the total amount of arrears in 1985. However, since the average price of gas fell, the arrears to sales ratio grew by about 35%, representing an increased burden for PGW ratepayers.
- The total amount of write-offs was substantially higher in 1985 than it was in 1980. After adjusting for inflation, the total amount of write-offs peaked in 1987 and fell slightly by 1991. However, since the average price of gas fell, the write-offs to sales ratio remained at about the same level from 1987 to 1991.

A report prepared by the American Gas Association and the Edison Electric Institute further illustrates the seriousness of the problem faced by PGW.⁵ For 1990, that report showed that

⁵The report is The Collection Picture, published in August 1991 by AGA and EEI. The data are for PGW's internal use only, and statistics for other utilities cannot be reported here. To help the reader to understand how PGW compares to other utilities, we selected a group of eight large gas utilities in the Northeast and Midwest and examined the data for those companies. We report the range of values for those companies.

PGW wrote off 5.4% of sales. By comparison, the same table showed that write-off percentages for comparable companies ranged from 0.9% to 2.6%, less than half the rate for PGW. The high rate for PGW is due, in part, to the fact that the PGW service area is restricted to the city of Philadelphia, where there is a low average income level. All of the other utilities reviewed have some suburban service areas.⁶

Impact on PGW Customers of Payment Problems

Failure by a customer to pay bills results in arrears and, eventually, to temporary or permanent service termination. Table 1-3 shows how extensive these two problems are for PGW customers.

The data in the table are defined as follows.

- Line 1 shows the total number of residential customers (in thousands) as of 8/31 of the year indicated.
- Line 2 shows the total number of residential customers in arrears (in thousands) as of 8/31 of the year indicated.
- Line 3 shows the percent of residential customers in arrears as of 8/31 of the year indicated.
- Line 4 shows the total number of customers (in thousands) as of 8/31 of the year indicated.
- Line 5 shows the total number of service terminations (in thousands) during the fiscal year indicated. (Counts of residential terminations were not available.)
- Line 6 shows the percent of customers with service terminations due to nonpayment during the fiscal year indicated.

An analysis recently undertaken by PGW shows the severity of these termination actions. There were 29,903 customers with nonpayment shut-offs between 4/1/90 and 12/31/90. About 19% of these customers had service restored within seven days. About 57% had service restored between eight and 180 days after termination. About 17% waited more than 180 days. The remaining 7% of customers still had not had service restored by July 1992.

⁶The Consumer Service Activities Report, prepared each year by the Pennsylvania Public Utility Commission's Bureau of Consumer Services, furnishes data for Pennsylvania Utilities. One reader of this report requested that those data be used for these comparisons. However, the statistics available from that report do not match data furnished by PGW.

**Table 1-3
Arrearage and Shutoff Rates for PGW Customers**

	YEAR						
	1980	1985	1987	1988	1989	1990	1991
Total Residential Customers ⁷	449	500	497	497	498	494	497
Residential Customers in Arrears	135	141	143	135	125	136	141
Residential Arrearage Rate	30%	28%	28%	27%	25%	27%	28%
Total Customers (All Types)	469	523	524	528	529	526	528
Customer Nonpayment Shutoffs	9	28	35	36	35	38	40
Nonpayment Shutoff Rate	1.9%	5.4%	6.7%	6.8%	6.6%	7.2%	7.6%

Table 1-3 furnishes some surprising results.

- The customer arrearage rate was relatively stable over the time period examined. Even though the total amount of arrears has grown, the number of customers in arrears has not changed.
- The level of service terminations was substantially higher in 1985 than it was in 1980. Since 1985, there has been an upward trend.

From the AGA/EEI report, it appears that PGW's termination rate is higher than that of the companies selected for comparison. PGW's rate of 7.2% for 1990 compares to a range of 2.0% to 6.2% for comparison companies.

⁷Excludes PHA customers.

Sources of Funding for Paying Low-Income Customer Bills

Several different public programs are available to assist low-income customers in paying their gas and electric bills. LIHEAP and CRISIS are funded by the federal government and administered by the state and city. These programs are limited to low-income customers. UESF is a private fuel fund that disburses emergency grants to households. Table 1-4 show the number of dollars that have been disbursed under these programs.

The data in the table are defined as follows.

- Line 1 shows the total number of PGW customers (in thousands) who assigned their LIHEAP grants to PGW.
- Line 2 shows the total value of LIHEAP grants assigned to PGW (in millions of dollars).
- Line 3 shows the total number of PGW customers (in thousands) who assigned their CRISIS grants to PGW.
- Line 4 shows the total value of CRISIS grants assigned to PGW (in millions of dollars).
- Line 5 shows the number of weeks LIHEAP and CRISIS grants were available.
- Line 6 shows the total number of PGW customers (in thousands) who assigned their UESF grants to PGW.
- Line 7 shows the total value of UESF grants assigned to PGW (in millions of dollars).
- Line 8 shows the total value of assistance grants from all sources (in millions of dollars).

The table shows that, while dollars from individual sources have fluctuated somewhat, the total value of assistance dollars to PGW has been fairly constant. Moreover, when Table 1-4 is compared to Table 1-2, we see that loss of those assistance dollars could have a substantial impact on the arrearage and write-off levels for PGW. Federal budget concerns may result in reduction or elimination of the LIHEAP program in coming years.

**Table 1-4
Grants to Low-Income Customers to Assist in Paying PGW Bills**

	YEAR						
	1980 ⁸	1985	1987	1988	1989	1990	1991
Total LIHEAP Recipients	N/A	47.2	50.4	40.8	42.1	43.5	45.0
Total LIHEAP Dollars	N/A	8.1	\$10.5	\$9.1	\$9.0	\$9.2	\$8.6
Total CRISIS Recipients	N/A	14.9	16.4	14.8	11.1	14.3	16.8
Total CRISIS Dollars	N/A	3.1	\$3.6	\$3.2	\$3.0	\$4.0	\$4.5
Weeks Programs Open	N/A	N/A	42	39	35	37	35
Total UESF Recipients	N/A	2.6	1.7	2.0	2.5	2.2	1.6
Total UESF Dollars	N/A	\$0.5	\$0.5	\$0.5	\$0.8	\$0.4	\$0.3
Total Dollars from All Sources	N/A	\$11.7	\$14.6	\$12.8	\$12.8	\$13.6	\$13.1

Summary of Trend Analysis

The tables presented in this section help the reader to understand the nature of the payment problems faced by PGW and the impact of these problems on PGW's residential customers in terms of service termination.

⁸A small federal energy assistance program was in place in 1980. Statistics on the level of assignment of grants to PGW are not available.

Several findings stand out:

- Average residential gas bills were substantially higher in 1985 than they were in 1980. Since 1985, gas bills have declined substantially compared to the prices for other goods.
- The arrearage rate for PGW was twice as high in 1991 as it was in 1980. The write-off rate was three times as high in 1991 as it was in 1980. PGW has substantially higher write-off rates than do other gas companies in the Northeast and Midwest.
- The percent of customers in arrears has not changed much over time, but the number of customers terminated for nonpayment was much higher in 1991 than it was in 1980. PGW's termination rate appears to be higher than for comparison companies.
- Public and private assistance funds pay a substantial amount of money to PGW each year for low-income customers. Reduction or elimination of these programs could significantly impact payments to PGW by low-income customers.

1.2 Evidence Regarding the Ability to Pay Among Low-Income Households

An important goal of the EAP pilot is to find a long-term solution to the arrearage problems faced by PGW and the service maintenance problems faced by low-income customers. The nature of the solution developed will necessarily be based on some understanding of the low-income customer's long-term ability to pay gas service bills.

There is no accepted way to determine whether low-income customers can afford to pay their gas bills. However, the evidence prepared for testimony before the Philadelphia Gas Commission by Eunice Grier on behalf of the Public Advocate (June 12, 1989) should be considered in this report.⁹ This evidence was developed using data from the U.S. Bureau of the Census, the U.S. Bureau of Labor Statistics, and the U.S. Department of Energy. We have not confirmed the validity of the data. However, from our knowledge of similar data from the American Housing Survey (AHS) and other surveys, we find that it is credible.

The testimony prepared by Ms. Grier furnished a number of important estimates.

- In 1988, about 164,000 households in Philadelphia whose income fell below 150% of the federal poverty line (p. 8) used gas. The median income for these households was \$7,034 (p. 9).
- In 1988, the average percent of income spent for gas by households with incomes below 50% of the poverty line was 26.2%, for those with incomes between 50% and 100% of the poverty line was 14.6%, and for those with

⁹Since a Settlement Agreement was signed, the evidence was never formally presented.

incomes between 100% and 150% of the poverty line was 8.6%. About 45% of those with incomes below 50% of poverty spent 25% or more of their income for gas service (Exhibit ESG-17).

- In 1988, almost 50% of low-income households had less than \$0 remaining after subtracting essential nongas expenditures (Exhibit ESG-20). Among households with income below 50% of the poverty line, 100% had less than \$0 remaining after subtracting essential nongas expenditures (Exhibit ESG-22).

Other data on the status of low-income household also can be considered. Table 1-5 presents trend data for a number of important indicators.

- Line 1 shows the average grant level in nominal dollars. Line 2 shows the average grant level in real (inflation-adjusted) dollars. The figures in line 2 show that the purchasing power of public assistance households has fallen by more than 25% since 1980.
- Line 3 shows the average size of the public assistance caseload for selected years. The caseload has fallen, in part because the average benefit level has fallen. The lower the benefit level, the fewer the number of household who qualify for benefits.
- Line 4 shows the total percent of persons below the poverty line in Philadelphia in 1980 and 1990. The number remained about the same level.
- Line 5 shows the average annual unemployment rate for years between 1980 and 1992. The high levels in 1980, 1982, and 1984 coincide with the rapid rise in PGW arrearages and writeoffs during the same period.

The statistics presented in Table 1-5 illustrate the deterioration of the financial position of the lowest income households in Philadelphia. This coincides with a rapid increase in the payment problems among these households.

**Table 1-5
Evidence on the Financial Position of Low-Income Households in Philadelphia**

	YEAR						
	1980	1982	1984	1986	1988	1990	1992
Nominal Average AFDC Grant ¹⁰	\$315	\$328	\$325	\$350	\$365	\$383	\$398
Real Average AFDC Grant (In 1980 Dollars)	\$315	\$271	\$248	\$248	\$245	\$234	\$224
Monthly AFDC Caseload (In thousands)	85	N/A	N/A	N/A	N/A	65 ¹¹	76
Percent of Persons in Poverty	20.6%	N/A	N/A	N/A	N/A	20.3%	N/A
Average Annual Unemployment Rate ¹²	8.8%	10.4%	8.1%	6.9%	5.8%	N/A	8.7%

1.3 Synopsis of Customer Service Regulations History

A number of factors, internal and external, have affected PGW's ability to collect from low-income customers. The dramatic shifts between 1980 and 1985 resulted from at least four factors – the rapid increase in gas prices, the serious recession, the reduction in public assistance benefits, and the implementation of customer service regulations regarding collections. It is impossible to tell which of these factors had the greatest impact on payment problems.

In this section, we review the regulatory activity that took place from 1979 to 1991. This review shows that, in general, the regulations moved in the direction of offering low-income customers more protections from service termination and easier access to reconnection. These protections included shutoff restrictions, notice requirements, and more lenient repayment options.

List of Regulatory Actions

¹⁰ AFDC statistics furnished by Leon Cerullo, Pennsylvania Department of Public Welfare, Philadelphia County Assistance Office.

¹¹ Statistic for July 1989. This represents the lowest caseload during the entire period identified.

¹² Data supplied by the Labor Market Analysis Section, Bureau of Research and Statistics, Department of Labor and Industry, Commonwealth of Pennsylvania.

The list below was developed by PGW for an internal collections report.

1979 and 1980 – PGW experienced its first official Customer Service Regulations. The agreement terms became: Initial payment of no more than 35% and no less than 20%, with that being no more than 15% of total household income. Customer has five days to make a down payment.

1980 and 1981 – Above agreement terms still in effect. PGW experienced its first official moratorium, which had been mandated by the Philadelphia Gas Commission. (Note: Appendix indicates that Commission approval was required for termination.)

1981 and 1982 – Agreement terms were changed in February '82 to a required immediate payment of 10% if gas service had not been terminated, 20% if gas service was terminated once, and 35% if gas service was terminated more than once. The balance of the agreement was to be paid in no less than six months.

1982 and 1983 – PGW accelerated the charge-off time period from nine months to three months. Agreement terms changed to the CHRONIC and NONCHRONIC agreement plan. During the winter, customers could pay 80% down, go on budget billing, and receive 20% discount on the original arrears. The agreement terms during the spring and summer were: CHRONIC – graduated increase of initial payment and paid in full by September; NONCHRONIC – same as the terms from February '82.

1983 and 1984 – All Delinquent Customers with arrears prior to March 31 had a graduated increase in the initial payment of March 31 arrears, with the balance of March needing to be paid by September and the arrears subsequent to March being paid in 12 months.

1984 and 1985 – Another moratorium imposed involving low-income customers. All Delinquent Customers (who were low-income) were permitted to pay only 5% down and 2% of the arrears each month for 48 months. PGW introduced the Limited Service Pilot Program.

1985 and 1986 – The 5% - 2% agreement was refined to allow the low-income customers a possible 50% forgiveness. All other delinquent residential customers were permitted to enter into an agreement for 20% down and 24 months to pay the balance. Customers who fail to comply with the terms of an agreement were not permitted to enter into more than two agreements in a 12-month period.

1988 and 1989 – The income criterion for recipients of LIHEAP/CRISIS was reduced from 150% of the poverty level to 135%.

1989 and 1990 – The income criteria for the recipients of LIHEAP/CRISIS was restored to 150% of the poverty level. The Limited Service Program was suspended because of the lack of funding from the City of Philadelphia.

1990 and 1991 – Changes to the Customer Service Regulations launched the "Energy Assurance Pilot Program" and affordable agreements. Moratorium was imposed for all residential heating accounts from November 15, until April 1st. The termination of gas service was contingent upon making personal contact to avoid shutoff.

Obviously, the actions taken are much more complex than is presented in this summary. However, the summary is useful to help one understand the range of options that have been used to address low-income payment problems.

Summary of Regulatory Actions

The actions described in the previous list fall into several types.

- Moratoria – In 1980, the Commission mandated the first moratorium, which required Commission approval for service termination. In 1984, special termination procedures were implemented for customers with medical emergencies, or preschool children and for senior citizens. In 1990, a blanket winter moratorium was introduced.
- Payment Terms – In 1979, initial payment levels were reduced to 20% - 35% of the outstanding bill (no more than 15% of total annual income). In 1981, initial payments were reduced to 10% for customers with no previous service terminations. In 1982, CHRONIC customers were given a new set of graduated initial payment levels. In 1984, the 5% - 2% payment plan was introduced.
- Arrearage Forgiveness – In 1982, customers who made an initial payment of 80% and went on budget billing would have the remaining 20% forgiven. In 1984, the Limited Service pilot was put in place where customers who had explicit limitation on service could pay 25% of the General Service Rate and receive 50% forgiveness on past arrears. In 1985, the 50% forgiveness option was added to the 5% - 2% program. In 1990, the EAP program was introduced.

Over time, moratoria have become more encompassing, initial payment requirements have been reduced, and arrearage forgiveness options have been introduced. The programs have been put in place to attempt to assist customers, particularly low-income customers, to maintain gas service.

Section 2

Overview of the Energy Assurance Program Pilot

The Energy Assurance Program (EAP) was proposed as a possible solution to the substantial low-income arrearage problem faced by the Philadelphia Gas Works (PGW). To test the effectiveness of this program, a two-year pilot was put into place in March 1990. Participants were enrolled through December of 1990, with some agreements finalized as late as March of 1991.

In this section of the report, we furnish information on the design of the program and of the evaluation.

2.1 Program Design

The EAP is designed to assist all residential low-income PGW customers. It consists of two basic program elements.

- First, the amount that customers pay for gas service will be based on a fixed percentage of household income, rather than on the amount of gas used.
- Second, after three payments, outstanding arrears over \$144, if any, are forgiven over a 36-month period at a rate of 1/36 per month.

It is suggested by program proponents that these program elements will enable low-income customers to get current on utility bills and to stay current in the future.

As part of the agreement with PGW, participating customers agree to fulfill several program requirements.

- First, the customer agrees to make a payment each month. The monthly payment is a fixed percent of income plus \$4 for outstanding arrears, if any.
- Second, the customer agrees to apply for LIHEAP and CRISIS energy assistance when these grants are available or within 90 days of the opening of the next program year.
- Third, the customer agrees to cooperate in making sure that his/her gas meter is read monthly.
- Fourth, the customer agrees to make efforts to conserve energy and will pay for any usage that exceeds a preset limit. The limit is computed as 110% of the weather-normalized usage from the base year — the year prior to entering the EAP program.

The agreement is broken if the customer gets behind by three payments. The customer can restore program eligibility by meeting his/her annual EAP responsibility within the first 12 months. The customer must be recertified to continue participation in the following year.

2.2 EAP Pilot Design

The goal of the EAP pilot is to ". . . determine the operational and economical feasibility of the EAP on a system-wide basis." Under the pilot, more than 5,000 low-income PGW customers were enrolled for a period of two years. The data on these participants and on comparable nonparticipants will be used to examine the effectiveness of the program.

Enrollment procedures for the pilot program were designed to meet several requirements.

- First, to the extent possible, the pilot needs to enroll the same mix of customers as would a full-scale program and should allow the projection of the mix of participants in a full-scale program.
- Second, the pilot should facilitate the evaluation of the program. It should allow the development of appropriate comparison groups to enhance the evaluation.
- Third, the above requirements should be met with limited funds for recruitment and without substantial screening of nonparticipating households.

The Participant Selection Process included a number of elements that allowed it to meet the pilot requirements.

- First, a stratified random sample of PGW customers was selected as the "EAP potential" group. Only customers designated as EAP potential were eligible to be enrolled in the program. (PGW district offices were able to identify EAP potentials by looking for the EAP designation on the customer's account record, and external intake sites were given lists of those addresses that were eligible for inclusion in the program.)
- Second, EAP potentials were randomly divided into groups for differential approaches to recruitment. (The recruitment options were: letter from PGW, letter from external site, bill notice, and no contact.)
- Third, a set of control customers was selected to allow development of comparison groups.

The final evaluation is presented in several stages, making use of the various elements of the Participant Selection Process.

- First, differential weights are attached to each type of customer so that statistics will be representative of the projected population.

- Second, the behavior of EAP participants during the first year of the program is compared to their behavior in the "base year." (The base year is the 12 months prior to enrollment in EAP.)
- Third, the behavior of EAP customers is compared to the behavior of matched control customers.

This analysis enables interested parties to answer a series of questions. In particular, it will allow them to explore whether the EAP is better or worse than existing alternatives, and whether the EAP meets specific economic criteria.

2.3 Differences Between Program Design and Program Implementation

It is useful to note that, for a variety of reasons, the program was not implemented exactly as it was designed. A number of these differences may have affected the program performance. Examples of the differences include:

- The program was expected to start in November 1989. However, it was not started until March of 1990. So most enrollment occurred when energy assistance grants were not available. This could have had an impact on the number of assistance grants assigned by EAP participants. }
- Program participants were to have been recertified after one year on the program. However, there was delay in mailing of recertification letters for many participants. This could have had an effect on the ability of participants to "cure" their agreements. On the other hand, participants were given a number of "chances" to recertify. This could have inflated recertification rates over what they would be under more stringent guidelines.
- There was disagreement regarding the treatment of assistance dollars between PGW and other parties to the Settlement Agreement. At the beginning of the pilot, assistance dollars were being allocated to offset the overall program writeoff. Later it was agreed that the assistance dollars had to be credited to an individual participant's account. Program participants may have reduced assignment of grants to PGW because of the perception that they were not receiving any benefit from the assistance grant.
- The implementing regulations state that a EAP households "which have been dismissed from EAP may be reinstated for a new Program Year" as long as "the household has met its annual EAP responsibility from the prior Program Year." In practice, once a customer was dismissed from EAP, he/she was not offered the program again.

These kinds of difficulties are expected in the development of a complex program pilot. We expect that they affected the program on the margin and did not change the program results in a major way.

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Section 3

Participation in the Energy Assurance Program Pilot

The Participant Selection Phase of the EAP pilot was designed to furnish detailed information on program participation by EAP Potential and Control customers. The data allow us to examine several important questions, including:

- How many low-income customers would participate in a full-scale EAP program?
- What types of customers would participate in a full-scale EAP program?
- How would alternative methods of program outreach affect participation rates?
- What other programs would potential EAP customers choose over EAP?

In addition, the structure of the participant selection process allowed us to develop a control group for comparison of program performance with other payment plan options.

In this section of the report, we review participation statistics, furnish estimates of full-scale program participation rates, and examine the characteristics of participants. In the next section, we give a detailed understanding of how the control group was developed.

3.1 Participant Recruitment Design

An important goal of the participant selection process was to estimate expected program participation in a full-scale EAP. The following design was used to assist in the development of these estimates.

- A representative sample of PGW customers was selected and was labeled as "EAP Potential" customers.

A second representative sample of PGW customers was selected and was labeled as "Control" customers.

- The sample of EAP Potential customers was divided into ten randomized replicates. Some customers were explicitly offered the program through a mail contact or bill insert, while others were offered the program only if they presented themselves at a program intake site.

No contact was made with Control customers.

- Intake was conducted at PGW offices and at selected community-based organizations (CBOs). PGW personnel could determine whether a customer

was EAP Potential from a code on the computer screen. The CBO staff needed to consult an address listing.

In the original design, no Control customers were to be enrolled in EAP. Because participation quotas were not filled with the selected sample, an open enrollment period was allowed and some Control customers became EAP participants.

Since each EAP Potential customer was selected at random with a known probability, the sample of EAP Potential customers can be used to make inferences regarding the expected behavior of the entire population. There are two steps to the process of estimating expected participation for the entire population:

- First, we examine the participation behavior for each EAP Potential customer.
- Second, we sum the weights for each customer who participated to estimate the expected total participation for a full-scale program.¹

The following sections describe the results of the participation analysis. It first examines simple participation rates for the sample and then makes weighted estimates of participation rates for the entire PGW customer base.

3.2 Raw Program Participation Statistics

The EAP Potential sample (i.e., customers who were allowed to enroll in the EAP pilot) was selected in two stages. The first stage was implemented in March 1990, when 9,822 customers were selected as EAP Potentials. These customers were divided into five groups for enrollment recruitment. The second stage was implemented in April 1990, when an additional 12,448 customers were designated. Enrollment began in March and continued through December. Stage 1 EAP Potential customers could have enrolled from March to December. Stage 2 EAP Potential customers could have enrolled from April to December.

In addition, there was an open enrollment period.² Enrollment in the EAP Potential sample was lower than was expected and was too slow to ensure that 5,000 customers would be enrolled by the end of 1990 (as desired by the EAP Advisory Committee). Therefore, an open enrollment period was designated, during which any PGW customer could be enrolled in EAP. Open

¹For each selected customer, the case weight is the inverse of the probability of selection. Thus, if a customer had a 1 in 10 chance of being selected as an EAP Potential, the customer's weight would be 10. This means that we are using the behavior of this customer to make inferences regarding the behavior of 10 similar PGW customers.

²In general, there was a concern that the pilot would be oversubscribed. Therefore, the sample was artificially limited so that program enrollment could be kept below 5,000. Once it was clear that the sample would not result in 5,000 participants, an open enrollment period was implemented so that the pilot could meet the terms of the Settlement agreement.

enrollment was available from mid-August to November 1. Open enrollment through the CBOs was available until mid-December.

A second round of 10,000 EAP enrollments was completed during the period April 1991 to August 1991. EAP Potential and Control customers who were not participating in EAP were eligible to participate in this second round of enrollment.

Table 3-3 shows the recruitment treatment that was associated with each replicate.

Table 3-1
Description of Recruitment Actions by Replicate

Stage of Recruitment	Recruitment Replicate	Recruitment Action
3/90	1	No Contact
3/90	2	Letter on PGW Stationery – March
3/90	3	Letter on CBO Stationery – March
3/90	4	Letter on PGW Stationery – April
3/90	5	Letter on CBO Stationery – April
4/90	6	No Contact
4/90	7	PGW Bill Message – July
4/90	8	Letter on CBO Stationery – May
4/90	9	PGW Bill Message – July
4/90	10	Letter on CBO Stationery – May
CONTROL	CONTROL	No Contact

It was expected that customers in replicates 2 to 5 would participate at the greatest rate (longest period of enrollment with the most active enrollment method), followed by customers in replicates 8 and 10 (shorter enrollment periods with active enrollment method), replicates 7 and 9 (shorter enrollment periods with some notification), replicate 1 (longest enrollment period with no notice), and replicate 6 (shorter enrollment period and no notice).

Table 3-2 shows the percentage of customers in each replicate who enrolled in the EAP during each time period (standard errors are shown in parentheses for each statistic).

**Table 3-2
Raw EAP Participation Rates**

Stage of Recruitment	Recruitment Replicate	(EAP 5,000) First Year Rates (SE)	(EAP 10,000) Second Year Rates (SE)	Total Rates (SE)
3/90	No contact	7.6% (0.6)	2.7% (0.4)	10.3% (0.7)
3/90	PGW letter	9.4% (0.6)	2.7% (0.4)	12.3% (0.7)
3/90	CBO letter	10.3% (0.7)	2.0% (0.3)	12.3% (0.7)
3/90	PGW letter	12.3% (0.8)	2.4% (0.4)	14.7% (0.9)
3/90	CBO letter	12.7% (0.8)	3.0% (0.4)	15.7% (0.9)
4/90	No contact	6.3% (0.5)	3.5% (0.4)	9.8% (0.6)
4/90	Bill message	6.6% (0.5)	3.6% (0.4)	10.2% (0.6)
4/90	CBO letter	9.7% (0.6)	3.3% (0.4)	13.0% (0.7)
4/90	Bill message	6.7% (0.6)	4.4% (0.5)	11.1% (0.7)
4/90	CBO letter	11.1% (0.7)	3.5% (0.4)	14.6% (0.8)
CONTROL	CONTROL	2.0% (0.1)	5.2% (0.2)	7.4% (0.2)

The percentages presented have a sampling tolerance associated with them, based on the standard error presented in parentheses. In general, for comparing each of the replicates in the first year to one another, a difference of about 1.5 points is statistically significant. For comparing each of the replicates in the second year, a difference of about 1.1 points is statistically significant.

To understand the impact of various recruitment alternatives, it is useful to look at groups of replicates.

- Groups 1 and 6 are the no contact replicates. The difference between the two is not statistically significant. This implies that there was not a statistically significant impact from having a one-month longer enrollment period.
- Groups 2 and 3 are the March active recruitment groups. The difference between the two is not statistically significant. This implies that there was not a statistically significant impact from having the recruitment letters sent on CBO stationery.
- Groups 4 and 5 are the April active recruitment groups. The difference between the two is not statistically significant. This implies that there was

not a statistically significant impact from having the recruitment letters sent on CBO stationery.

- Groups 8 and 10 are the May active recruitment groups. The difference between the two is not statistically significant. This is expected since they received exactly the same treatment.
- Groups 7 and 9 are the July bill message groups. The difference between the two is not statistically significant. This is expected since they received exactly the same treatment.

Among active recruitment groups, it is notable that the lowest rates were experienced by the groups whose letters were mailed in March. Perhaps the April and May mailings were more likely to get the attention of customers because the winter shutoff moratorium ended in April during 1990.

Further, there is a clear separation between the active enrollment groups (2 - 5, 8, and 10) and the passive enrollment groups (1 and 6). The active enrollment groups range from 9.4% to 12.3%, with an average of 10.9% (+/-0.6). The passive enrollment groups range from 6.3% to 7.6%, with a mean of 6.9% (+/-0.5). However, the bill message groups (7 and 9) also show very low enrollment rates – not discernibly different from the passive enrollment groups.

From open enrollment, 2.0% (+/-0.2) of control customers were enrolled in EAP.

Several findings can be derived from table.

- There is no discernible difference in the participation rates based on the type of letter sent (i.e., CBO stationery vs. PGW stationery).
- The active recruitment clearly resulted in greater participation, suggesting that the group might be analyzed differently from the passive recruitment group.
- The bill message appears to have had little effect and does not appear different from passive recruitment.

To simplify the participation analysis, we will examine three groups of customers – active replicate customers (replicates 2 - 5, 8, and 10), passive replicate customers (replicates 1, 6, 7, and 9), and control customers.

3.3 Weighted Program Participation Rates

While it is useful to look at raw participation rates for the selected sample, the goal of the research is to estimate projected participation rates for a full-scale program. To make these estimates, case weights are attached to each of the participating customers. By summing the weights of participating customers, we can make a projection of the full-scale program participation.

Table 3-3 presents the weighted participation projections.

- Estimates for the active replicates are presented in the first row. The first-year estimate represents the expected participation from the first nine months (mid-March to mid-December) of a full-scale EAP pilot using a letter recruitment method. The second-year estimate represents the expected additional participation in the second-year from a passive recruitment enrollment from April to August.
- Estimates for the passive replicates are presented in the second row. The estimate represents the expected participation from the first nine months (mid-March to mid-December) of a full-scale EAP pilot using a bill message or other passive recruitment method. The second-year estimate represents the expected additional participation in the second year from a passive recruitment enrollment from April to August.
- Estimates for the Control group are presented in the third row. Since the Control group is representative of the remaining PGW customer base, the figures for the first-year estimate should be roughly equal to the actual first-year open enrollment totals – the actual total was 3,340. Similarly, the second-year estimate should be roughly equal to the actual second year open enrollment totals – the actual total was 10,565.

Table 3-3
Weighted EAP Participation Rates

Analysis Group	First Period (EAP 5,000) Participation Projection	Second Period (EAP 10,000) Participation Projection
Active Replicates	20,051	5,972
Passive Replicates	12,689	6,816
Control Group	3,249	10,623

45,508
805,152

33,198

23,411

These estimates represent the best available estimate of the number of PGW customers who would sign up for an EAP under the recruitment scenarios tested and the time period allotted for enrollment. If the program had been broadly advertised or had been available for the entire year, one would expect participation rates to increase.

3.5 Pre-pilot Estimates of EAP Program Participation

The numbers presented in Table 3-3 appear quite low compared to pre-pilot expectations by some parties of the number of customers who might be interested in the program. Two pre-program data sources are available to assess these participation estimates. First, pre-program data from PGW's data files show the number of customers who had previously participated in low-income programs. These data can furnish some idea of the group of customers who showed a propensity to participate. Second, data prepared for Consumer Legal Services by Eunice Grier can be used to examine the expected rate of sign-up for the EAP.

Examination of Database Characteristics

Three characteristics available from the PGW database help to estimate the number of expected EAP participants. First, any customer who had previously participated in a 5%-2% plan and whose income is still below 150% of the poverty line is eligible for the EAP. Moreover, since a large percentage of those who start the 5%-2% plan fail to complete the program, many of these customers are likely to still have outstanding arrears. Second, any customer who has received energy assistance grants (LIHEAP regular grants or CRISIS grants) and whose income has not changed is eligible for the EAP. Finally, any customer who is in arrears would derive some benefits from the EAP if he/she were income-eligible.

Table 3-4 presents estimated customer counts for each of these three groups using the data files that were available for 3/1/90 (just prior to the beginning of EAP enrollment).

- Customers were categorized as prior 5%-2% customers if there was a record of participation in the 5%-2% program at any time prior to 3/1/90.³
- Customers were categorized as prior assistance customers if there was an assistance grant recorded between 3/1/89 and 3/1/90.⁴
- Customers were categorized as arrearage customers if the overdue amount on the account was more than twice the suggested budget for the account.⁵

³Note that the number of customers in this part of the table represents only customers who are active or who were the last resident in a dwelling with an inactive account. These numbers are somewhat lower than the number of 5%-2% agreements taken each year. However, since many customers take more than one 5%-2%, the number of customers represented by counts of 5%-2% agreements is substantially lower than the number of agreements taken. For the period from 3/1/90 to 3/1/91, we estimate from the control sample that 36,839 agreements were taken by 29,334 customers.

⁴From PGW statistics, we expect that the actual number of customers who received assistance grants was between 42,000 and 43,000. The lower number here is caused by the substantial mobility among low-income customers. A substantial fraction of the low-income customers who were active on 3/1/90 can be expected to be new customers or old customers who did not notify PGW that they had been customers at a previous residence.

⁵We expect that this is an overcount of customer arrears. Since the analysis uses the March account history, some budget plan customers may have built up positive amounts due because winter bills are higher than summer bills.

**Table 3-4
Preprogram PGW Customer Counts – Weighted Estimates
Target Groups by Sample Type**

Customer Characteristics	Sample Group		
	Active Replicates	Passive Replicates	Control Group ⁶
5%-2% Participant Prior to 3/1/90	35,216	34,120	31,789
Assistance Grant 3/1/89 to 3/1/90	34,454	34,630	31,365
60-Day Arrears on 3/1/90	146,390	142,037	133,598

If previous participation in a 5%-2% program is indication of a high probability of EAP participation, we might estimate that about 35,000 customers would sign up for the EAP. By looking at assistance grants receipts, we again find that about 34,000 customers might sign up for the EAP.

A cross-tabulation between the two items shows that the total number of customers with both characteristics (5%-2% and assistance) is about 12,141, while the total number of customers with either characteristic is about 57,527. One would expect a very high rate of participation among customers with both characteristics. However, the population with either characteristic probably represents a better number for the range of customers who might ultimately be interested in the program.

Finally, the arrears statistics is also important. Among the approximately 35,000 previous 5%-2% customers, more than 27,000 remained in arrears on 3/1/90. This group also appears to have a high probability of program participation.

⁶The control group counts are slightly biased for these customer groups because of the way the control group sample was selected. Final selections were not made until December 1990, and information was lost for households who were active on 3/1/90 but were not active on 12/1/90.

Examination of the Grier Data

As discussed in Section 1 of the report, Eunice Grier estimated that 164,000 of these accounts (about one-third) were low-income (had incomes below 150% of the federal poverty line). However, it is not in the interest of all low-income customers to participate in EAP. The EAP payment rates are set at 5% of income for those with incomes below 50% of the poverty line, 7% for those with incomes between 51% and 100%, and 8% for those over 100%. An exhibit from Eunice Grier's prepared testimony (ESG-17) shows the percent of income spent by households in each income group. Table 3-5 shows how this translates into maximum potential participation rates among low-income customers.

Table 3-5
Effective Maximum Participation Rates for EAP

GROUP	Number of Customers	Percent of Customers Whose Monthly Budget is Greater than Their Required EAP Payment	Effective Maximum Participation ⁷
Less than 50% of Poverty	25,000	96%	24,000
50% to 99% of Poverty	63,000	79%	49,770
100% to 149% of Poverty	76,000	50%	38,000
TOTAL	164,000		111,770

Thus, of the 164,000 categorically eligible low-income customers, only about 112,000 (two-thirds) would receive any benefits from the program (i.e., would have lower monthly payments under EAP than under a standard budget billing agreement).

Summary of Preprogram Estimates Data

From the data available prior to program implementation, then, we can draw these conclusions:

- About 164,000 customers are categorically eligible for the program.
- About 112,000 customers could potentially receive some benefit from participating in the program.⁸

⁷This ignores customers whose EAP payment is greater than their suggested budget and who may choose to enroll in the EAP to get arrearage forgiveness benefits.

⁸This ignores customers whose EAP payment is greater than their suggested budget and who may choose to enroll in the EAP to get arrearage forgiveness benefits.

- About 57,000 current customers have shown either the need to participate a low-income payment program (5%-2% participants) or have shown an inclination to participate in a program (fuel assistance participants). However, not all 57,000 customers would receive benefits under EAP.
- About 27,000 current customers had participated in a 5%-2% in the past and were still in arrears on 3/1/90.
- About 12,000 current customers had participated in a 5%-2% in the past and had also received an assistance grant in the last year.

As one can see, the preprogram data actually support a fairly broad range of potential program estimates. If program participation is focused primarily among the existing arrearage/program participating groups, a number in the range of 10,000 to 60,000 seems appropriate. However, if current nonparticipants enter the program, the number could go substantially higher.

3.6 Critical Examination of Participation Rates

Two types of analysis can contribute to our overall understanding of the participation choice among PGW customers. First, we can examine, in general, how the customers in each sample responded to the availability of the EAP program. Second, we can examine these same statistics for each of the special customer groups that can be defined using preprogram data.

Statistics on Customer Activities

Each customer had a myriad of choices during the year following the EAP sign-up period – EAP enrollment, 5%-2% enrollment, etc. Moreover, the customer could have chosen to take more than one of these actions. To facilitate examination of the participation decision, we have developed the following hierarchy for analysis. Customers were characterized as:

- 1) EAP sign-up from 3/1/90 to 11/1/90 (unrestricted enrollment of EAP potentials by PGW and CBOs)
- 2) EAP sign-up from 11/1/90 to 3/1/91 (restricted enrollment by CBOs of EAP potentials and some delayed enrollments)
- 3) 5%-2% sign-up from 3/1/90 to 11/1/90
- 4) 5%-2% sign-up from 11/1/90 to 3/1/91
- 5) 5%-2% active after 3/1/90 from an agreement prior to 3/1/90
- 6) 20% down agreement sign-up 3/1/90 to 3/1/91
- 7) 20% down agreement active after 3/1/90 from an agreement prior to 3/1/90
- 8) Assistance grant between 3/1/90 and 11/1/90
- 9) Assistance grant between 11/1/90 and 3/1/91
- 10) No assistance or agreement activity

In this hierarchy, a customer is categorized by the first relevant category. For example, if a customer had a 5%-2% agreement and EAP agreement during the period 3/1/90 to 11/1/90, he/she would be categorized in group 1. Table 3-6 presents the number of customers in each group for each of the sample types.

Table 3-6
EAP Year – Customer Agreement and Assistance Activity
By Sample Group

Activity Hierarchy	Sample Group		
	Active Replicates	Passive Replicates	Control Group
EAP Sign-up (3/90-10/90)	19,005	11,537	2,189
EAP Sign-up (11/90-2/91)	1,047	1,151	1,060
5%-2% Sign-up (3/90-10/90)	14,104	16,557	23,445
5%-2% Sign-up (11/90-2/91)	2,664	2,507	3,891
5%-2% Active After 3/90	5,612	6,315	5,528
20% Down Sign-up (3/90-2/91)	40,902	40,646	44,132
20% Down Active After 3/90	8,896	11,789	9,713
Assistance Grant (3/90-10/90)	10,789	10,295	9,537
Assistance Grant (11/90-2/91)	10,175	11,023	12,229
No Activity	415,930	417,304	417,400
Total Customers	529,124	529,124	529,124

A number of inferences can be made from the from Table 3-6.

- It is clear that the EAP sign-up rate is substantially higher for the active recruitment groups.
- Post 11/1 EAP sign-up rates for all groups are similar. This makes sense, since the active recruitment efforts for the active replicates were implemented in the spring.
- The total participants in EAP and 5%-2% (rows 1 through 5) are similar for all groups – a total of 42,432 for the active replicates, 38,067 for the passive replicates, and 36,113 for the control group – though, as one might expect, the EAP does appear to increase participation in these low-income programs.⁹
- The low-income program participation rates in the group where EAP participants were actively recruited were about 6,300 customers higher than

⁹The difference between the maximum replicate low-income program participation rate (8.0%) and the minimum replicate participation rate (7.2%) is statistically significant at the 95% confidence level. The difference between the minimum replicate participation rate figure and the control group participation rate (6.8%) is not statistically significant.

for the control group. About 4,000 of those customers appear to come from the 20% down program participants, about 800 from assistance grant households who do not participate in programs, and about 1,500 from those who had no activity under the existing set of programs (5%-2%, 20% down, and assistance grants).

- The increase in low-income program participation rates because of the passive enrollment into the EAP is about 2,000 customers. About 1,500 of that appears to come from the 20% down program, and the remaining 500 appears to come from the assistance grant households. As might be expected with passive enrollment, there is almost no impact on the number of customers who would not otherwise have had some contact with PGW or a CBO.

In general, it appears that a substantial number of customers found that it was in their interest to choose the EAP over the 5%-2% program. However, even in the active replicates, about 40% of those customers who signed up for a low-income program during the period 3/1/90 to 11/1/90 signed up for the 5%-2% rather than sign up for the EAP.¹⁰

There also appears to have been some movement from the 20% down program to the EAP. These may be households who did not feel that the benefits of the 5%-2% program were worth the "effort" associated with qualifying.

There appears to be very little participation among "nonagreement assistance grant groups" (rows 8 and 9 in Table 3-6) and among the "no agreement activity group" (row 10 in Table 3-6). In the active replicate test group, 20,964 customers received an assistance grant but did not sign up for EAP (almost half of all assistance grant customers), while the control group contained 21,768 of these customers. This leaves the largest puzzle from the pilot participation analysis. It is clear that many low-income households who are currently paying their bills and receiving assistance could benefit from the EAP. However, it appears that very few of them have signed up for the EAP – even though they signed up for fuel assistance programs.

This analysis suggests the following.

- First, it is unlikely that there will be a massive influx (enrollment by all low-income customers who could benefit) to a full-scale EAP program.
- Second, as word of the program spreads, it seems that this group of households is likely to contribute additional participants.
- Third, many low-income households have no interest in participating in "low-income" programs.

¹⁰There is reason to believe that a greater percentage would have selected the EAP if they were more familiar with the program.

Examination of Specific Customer Groups

As we saw in the preprogram analysis, several types of preprogram characteristics might prove important in determining program participation. Examination of these preprogram characteristics groupings gives us a better understanding of the participation decision that was made.

Table 3-7 presents the population counts for each of eight groups of PGW customers, and Table 3-8 shows the distribution of EAP participation by these groups. The eight rows defined in the table are based on the status of three separate variables: prior 5%-2% participation, prior assistance receipt, and current 60-day arrears. In general, as we move down the rows, customers would appear to have less interest in the EAP and would be less likely to be eligible. (Customers who have participated in 5%-2%, who have received a fuel grant, and who are in arrears are more likely to participate than customers who have none of those attributes.) This table is useful because it helps us to focus on the groups with significant numbers of customers.

Table 3-7
Preprogram PGW Customer Counts
by Preprogram Characteristics and Sample Group

Group	Customer Category			Sample Group		
	5%-2%	Fuel Grants	60-Day Arrears	Active Replicates	Passive Replicates	Control Group
Group 1	Yes	Yes	Yes	10,009	10,155	8,332
Group 2	Yes	Yes	No	2,133	2,431	2,044
Group 3	Yes	No	Yes	17,227	16,161	14,903
Group 4	Yes	No	No	5,847	5,372	6,512
Group 5	No	Yes	Yes	6,681	6,441	6,328
Group 6	No	Yes	No	15,630	15,603	14,661
Group 7	No	No	Yes	112,473	109,280	104,035
Group 8	No	No	No	359,124	363,681	372,309
All Groups				529,124	529,124	529,124

Table 3-8
EAP Participant Counts
by Preprogram Characteristics and Sample Group

Group	Customer Category			Sample Group		
	5%-2%	Fuel Grants	60-Day Arrears	Active Replicates	Passive Replicates	Control Group
Group 1	Yes	Yes	Yes	5,041	3,149	1,046
Group 2	Yes	Yes	No	460	248	23
Group 3	Yes	No	Yes	5,176	3,552	1,104
Group 4	Yes	No	No	516	185	0
Group 5	No	Yes	Yes	1,876	1,105	190
Group 6	No	Yes	No	768	288	61
Group 7	No	No	Yes	4,916	3,374	762
Group 8	No	No	No	1,298	788	63
All Groups				20,051	12,689	3,249

The active replicates for the first and third groups in Tables 3-7 and 3-8 (previous 5%-2% and still in arrears) account for a substantial share of the EAP enrollments. In Table 3-7, we see that there are 27,236 customers in those two groups (using the active replicate counts). These groups accounted for 10,217 EAP enrollments (over half) and 6,091 5%-2% plan enrollments. While it is possible that additional EAP enrollments could come from this group, the EAP year enrollment in these low-income programs accounted for about 60% of the cases.

The second and fourth groups in Tables 3-7 and 3-8 (those with a 5%-2% agreement in the past but who were in arrears on 3/1/90) do not appear to be strong contributors to the current group of EAP participants; nor does there appear to be a large amount of participation expected. Among the 7,980 customers represented, only 975 enrolled in EAP and only 573 enrolled in the 5%-2% program. A large portion (5,581 or 70%) had no agreement, though 822 of these did receive an assistance grant.

Group 5 represents 6,681 customers who have never had a 5%-2% plan, but have signed up for assistance in the past and were in arrears. A fairly large percentage of these customers enrolled in either the EAP or a 5%-2% (1,876 EAPs and 1,822 5%-2% plans for a total of 3,698 or 55%). However, this is such a small group that it has little impact on overall EAP participation rates.

Group 6 represents the 15,630 customers who received fuel assistance in the past but were not in arrears and had not participated in a 5%-2% plan. This group had a very low rate of participation in EAP. Only 767 customers signed up for EAP (about 5%), while 9,833 (over 60%) signed up for fuel assistance again. If there is one group that could be expected to increase the

enrollment in EAP, it would be this one. However, they would appear to have a very different impact on the program, since they are currently paying their full bills regularly.

Group 7 represents the remaining 112,473 customers who are in arrears. A large percentage of these customers, 60,537 (54%), had no agreement or assistance activity. Another large portion of this group, 37,665 (33%), used the 20% down plan. Still, this group was a significant contributor to the total EAP enrollments, with 4,915 customers participating and an additional 6,706 participating in the 5%-2% plan. This behavior leads one to believe that a large portion of these customers either do not qualify for the EAP and 5%-2% or are not interested in the programs.

Examination of Group 8 tells one a lot about the dynamics of the arrearage problem for PGW. Of the 359,123 customers with no agreement, assistance, or arrearage activity prior to 3/1/90, 342,266 (95%) completed the year with no agreement or assistance activity. An additional 5,558 participated in assistance programs but had no other activity. Group 8 contributed only 1,298 customers to the EAP program and only 943 additional cases to the 5%-2% plan.

In general, the findings from this detailed analysis of specific customer groups confirm the previous findings from the comparison of the test and control group by agreement activity.

- A large part of the EAP agreement activity is a replacement for the 5%-2% agreement activity, with a large share (over half) of the EAP participants coming from previous 5%-2% participants.
- Another large part of the EAP activity (about one-third) comes from customers who are in arrears but who do not have a history of agreements with PGW. However, these customers are a very small portion of all the nonagreement customers with arrears outstanding.
- A small part of the EAP activity comes from customers who have previously had no agreements or arrears. Even though a large percentage of previous assistance customers signed up for assistance again during the EAP year, they did not enroll in the EAP.

Again, this suggests that the EAP activity would not significantly increase unless these low-income assistance customers began to participate in larger numbers.

Examination of Second Year Enrollment Data (EAP 10,000)

During the second period of EAP enrollment (open enrollment with passive recruitment), an additional weighted total of 5,972 customers enrolled from the active replicate groups (Table 3-3). It is useful to examine the source of these enrollments. Did the same patterns of enrollments continue — with the majority coming from the existing low-income program households? Or does this represent a large additional influx of new households?

Table 3-8 shows the first-year agreement activity for the second-year enrollment customers, and Table 3-9 shows the first-year preenrollment characteristics for the second-year enrollment customers.

Table 3-9
Second Year Enrollment Counts
By Customer Agreement and Assistance Activity in the EAP Year

Activity Hierarchy	Sample Group
	Active Replicates
EAP Sign-up (3/90-10/90)	0
EAP Sign-up (11/90-2/91)	0
5%-2% Sign-up (3/90-10/90)	2,299
5%-2% Sign-up (11/90-2/91)	628
5%-2% Active After 3/90	514
20% Down Sign-up (3/90-2/91)	801
20% Down Active After 3/90	84
Assistance Grant (3/90-10/90)	342
Assistance Grant (11/90-2/91)	207
No Activity	1,097
Total Customers	5,972

From Table 3-9, we see that a large portion of the second-year EAP customers were 5%-2% plan customers in the EAP year. For example, of the 14,104 customers who signed up for the 5%-2% plan during the period 3/90 to 11/90 (see Table 3-6), 2,299 or 16% signed up for the EAP in the following enrollment period. In total, 4,326 (72%) of the second-year EAP customers had participated in the 5%-2% plan or the 20% down plan during the first EAP year. This suggests that, under the current enrollment procedures, the additional activity that would result from continued operations of the EAP would be relatively small over time and would be limited by the total size of the group of customers who have a propensity to participate in these low-income programs. Again, there is no significant movement by the nonagreement assistance population into the EAP.

Table 3-10
Second Year Enrollment Counts
by Preprogram PGW Customer Counts

Group	Customer Category			Sample Group
	5%-2%	Fuel Grants	60-Day Arrears	Active Replicates
Group 1	Yes	Yes	Yes	838
Group 2	Yes	Yes	No	120
Group 3	Yes	No	Yes	1,324
Group 4	Yes	No	No	113
Group 5	No	Yes	Yes	487
Group 6	No	Yes	No	264
Group 7	No	No	Yes	1,871
Group 8	No	No	No	955
All Groups				5,972

In the first year, base year 5%-2% participants accounted for about 50% of all EAP participants. In the second year, Groups 1 to 4 accounted for 2,395 (40%) of the EAP participants. However, a large additional part of the EAP participants in the second year came from Group 7 customers, many of whom had agreement activity during the first EAP year.

Summary of Weighted Participation Data

We developed this careful examination of weighted participation data to examine the "reasonableness" of the initial weighted EAP program participation estimates. From the active replicate sample, we predicted a total of 26,023 EAP participants from the first two periods of full-scale EAP enrollment (see Table 3-3). Moreover, since a large fraction of EAP participants are not recertifying, the annual caseload would be somewhat lower than the 26,023. These estimates are somewhat lower than the total of over 35,000 current 5%-2% plan participants (see Table 3-4) and the over 57,000 customers who either have participated in the 5%-2% plan or have received assistance.

The examination of weighted program estimates by preprogram group and activity type suggests that the estimate of 26,000 EAP participants is reasonable. Several factors are brought together to make this assessment.

- First, of the 27,236 customers who were in the 5%-2% plan in the past and who were in arrears on 3/1/90 (Groups 1 and 3), about 60% participated in a low-income payment agreement during the EAP year – in a ratio of 63% of the cases enrolling in EAP and 37% enrolling in the 5%-2% plan. Even if all 27,236 customers enrolled in a new plan, the share enrolling in EAP

would be about only 17,150. Customers in arrears who have had an assistance grant (Group 5) also appear to sign up for the program at a fairly high rate. However, this is a fairly small group of customers (6,681).

- Second, the other previous 5%-2% customers who were not in arrears on 3/1/90 (Groups 2 and 4) showed a very low program participation rate. Similarly, the assistance customers who had no arrears and no previous program activity (Group 6) showed very low program participation rates. These groups include about 23,610 customers – of whom only 1,742 signed up for EAP.
- Third, among the arrears group who have had no prior 5%-2% activity or assistance grants, very few appear to be interested in low-income programs. Of the 112,473 customers in this group, only 4,916 participated in EAP and only 6,706 participated in the 5%-2% plan, while 37,665 participated in the 20% down plan. Again, there may be a substantial number of low-income customers in this group, but they do not show their presence from their selection of payment program options.
- Fourth, among the remaining customers, very few (11,300) show any agreement activity, and, of those, a large proportion (80%) are 20% down plan participants.

Stating these findings in a more general way, it appears that PGW's low-income customers can be divided into three groups:

- About 34,000 low-income customers could be identified as low-income (5%-2% plan or assistance) who had outstanding arrears. These customers participated in the EAP at a fairly high rate and comprised a majority of EAP participants.
- About 24,000 low-income customers could be identified as low-income (5%-2% plan or assistance) who did not have outstanding arrears. These customers had very low EAP participation rates and were a very small share of EAP participants.
- Finally, the remaining 106,000 low-income customers (out of the 164,000 estimated by Eunice Grier) were either in arrears with no indicator or low-income status or were not in arrears. These customers had very low EAP participation rates, though they were a moderate fraction of EAP participants.

Thus, it appears that the EAP program is being perceived as an arrears payment plan by PGW's low-income customers. The majority of those signing up have arrears and have had previous experience with the 5%-2% plan or the 20% down plan. As long as this perception remains, the annual program participation levels are likely to stay in the range of 20,000 to 30,000 customers.

Table 3-11 presents estimates on the active expected level of enrollment in the long run for all low-income customers if the program continues to be perceived as an "arrears payment program." The first column shows the estimated population of the group. The second column shows the estimated participation rate in EAP for each group. The participation rate represents the percent of customers in the group who would ever enroll in EAP.¹¹ The third column shows the expected participation. The annual caseload would be less than the total expected participation, since not all participants would sign up in the first year and many participants would fail to meet the recertification requirements.

Table 3-12
Expected EAP Participation Levels
Extrapolated from Observed Participation

Low-Income Customer Group	Estimated Population	Estimated Participation Rate	Estimated Participation Level
In Arrears & Prior Program Participation	34,000	65%	22,100
Not In Arrears & Prior Program Participation	24,000	14%	3,360
Not In Arrears & No Prior Program Participation	106,000	13%	13,780
TOTAL	164,000		39,240

Among the unserved population, the most likely group to participate would be the 15,000 customers who received fuel assistance in the past but have not had arrears or agreement activity. These customers clearly are willing to participate in low-income programs, but they may perceive the EAP as something that is not relevant to them. If this group were recruited more effectively or if the general perception of the program among PGW customers were to change, this group could contribute a significant number of new participants. However, it is important to note that, since these customers are currently paying their bills and could be expected to pay their EAP bills as well, enrolling these customers may have a very different impact on the program economics than continuing to enroll the current customer type.

Among the remaining customers, there has not even been participation in a fuel assistance program to suggest an interest in participation. It is unclear whether any recruitment effort to get these customers to enroll would be successful. However, from the data it does appear that, as a fraction of these households have serious trouble with PGW bills, they may come to be enrolled in EAP.

¹¹The participation rate estimates are extrapolated from observed participation rates. For the three groups, actual first- and second-year participation rates were 43.5%, 9.5%, and 8.5%. Rates were inflated by 50% to explore the implications for maximum expected participation rates.

Table 3-13 presents estimates for the maximum expected enrollment in the long run for all low-income customers, if the program were recognized as an assistance program for all low-income customers. In Table 3-13, the rows and columns are defined in the same way as for Table 3-12. The participation rates are estimated by examining the number of customers who could expect to receive benefits from the program and by estimating program participation based on previous program participation behavior.¹² As with the prior extrapolation in Table 3-12, it is unlikely that the annual caseload would ever reach this level. In addition, it would take several years for information on the program to be disseminated to a point where all interested households would have the opportunity to participate.

Table 3-13
Expected EAP Participation Levels
Extrapolated from Program Benefit Rates and Expected Maximum Participation Rates

Low-Income Customer Group	Estimated Population	Estimated Participation Rate	Estimated Participation Level
In Arrears & Prior Program Participation	34,000	65%	22,100
Not In Arrears & Prior Program Participation	24,000	50%	12,000
Not In Arrears & No Prior Program Participation	106,000	33%	35,000
TOTAL	164,000		69,100

3.7 Characteristics of Participating Customers

Data from the program intake forms serve to complete the picture of the current EAP participants. At enrollment, customers were asked questions relating to demographics, sources of income, and employment history. The following discussion draws on those data to build a profile of EAP participants. In the next section, different groups are examined to assess whether preprogram characteristics relate to program performance.¹³

¹²For this extrapolation, much more generous participation rates are employed for the second and third groups in the table. The participation rate for the first group is not changed because the original estimate assumed that all customers in the group would take advantage of either the EAP or the 5%-2%, based on the program that offered them the greatest benefit. The participation rate for the second group is based on the assumption that two-thirds of the customers can benefit from the program and that three-fourths of those will participate ($.67 \times .75 = .50$). The participation rate for the third group is based on the assumption that two-thirds of the customers can benefit from the program and that one-half of those will participate ($.67 \times .50 = .33$).

¹³These statistics are based on a datafile that includes 4,810 EAP participants. No information is available on the remaining participants at this time.

The single most dominant characteristic of the EAP population is that these households are primarily families headed by single female parents. The intake forms show that 63% of the customers are in families that have a single female parent. About 44% of these families have a child under five years old in the household. In contrast, relatively few of these households have an elderly person (over 65) in the household. Only 12% of the EAP households include at least one person over 65.

A large share – 61% – of the households received public assistance benefits (AFDC or SSI) as a source of income. A smaller group – 17% – received retirement benefits (SSA or pension). Only 3% reported receiving wages for self-employment income. This is somewhat inconsistent with the fact that 11% reported having worked full-time all year and an additional 6% reported having worked at least part of the year. However, it is clear that a large share of the households represent a public assistance population.

The education level is low for a large share of the EAP population. Over half (55%) report that they did not graduate from high school. Only 9% report attendance at college.

In keeping with the high rate of home ownership among low-income households in Philadelphia, a fairly large share of the EAP population are homeowners – 46%.

Table 3-14 presents the data classification system that will be used for the remainder of the report. It shows that the EAP population is dominated by "traditional" public assistance customers. Forty percent of EAP customers are families with a single female parent, one or more children, and public assistance income. However, there are some other important subsegments. Sixteen percent of the households are other public assistance households. Twelve percent of the households are working. Seventeen percent of the households are retirees. The remaining 15% of the households cannot be classified in any of the ways identified above. These population segments will be used in the next section to examine program performance.

Table 3-14
Unweighted Distribution of EAP Participants¹⁴
By Classification Group

Classification Group	Number of Cases	Percentage of Cases
Employment Income Customers	560	12%
Retirement Income Customers	827	17%
Single-Parent Assistance Customers	1,924	40%
Other Assistance Customers	783	16%
Other Customers	716	15%
TOTAL	4,810	100%

¹⁴These statistics are based on a datafile that includes 4,810 EAP participants. No information is available on the remaining participants at this time.

When only EAP potential customers are examined, the distributions are slightly different. Table 3-15 shows the weighted distribution of participants in the EAP potential sample for the passive and active replicates. The differences between the replicates are very small, suggesting that, while the number of participants was affected by the recruitment, the type of participant was not. The EAP potential group has a slightly greater share of participants in the retirement income group.

Table 3-15
Weighted Distribution of EAP Participants
by Classification Group
by Replicate

	Active Replicates	Passive Replicates
Classification Group	Weighted Percent	Weighted Percent
Employment Income Customers	12%	11%
Retirement Income Customers	22%	22%
Single-Parent Assistance Customers	35%	33%
Other Assistance Customers	14%	18%
Other Customers	17%	16%
TOTAL	100%	100%

Section 4

Assessment of the EAP Program's Impact on Customer Payment and Usage Behavior

The EAP represents a significant departure from previous programs that PGW has implemented for low-income customers. For low-income customers who were in arrears prior to enrollment, the terms of the EAP are quite different from the terms of the other payment plan options (5%-2% or 20% down). Under EAP, the required payment amounts can be much lower for many households, and the arrearage forgiveness amounts can be much greater. For low-income customers who were not in arrears prior to enrollment, payments on the current bill can be much lower than previously. It is expected, then, that the payment and usage behavior under the EAP will be quite different from behavior under other programs.

In this section, we present data on customer payment and usage behaviors. The statistics are presented in three sections.

- First, we examine program performance for EAP participants during the first 12 months of program participation – including agreement compliance and payment coverage rates. These statistics give the reader a basic understanding of how customers have responded to the EAP program.
- Second, we present statistics that show how the behavior of customers under the EAP program compares to their behavior in a base year period. These statistics help to show how the EAP may have changed behavior for individual customers.
- Finally, we present statistics that show how the behavior of customers under the EAP program compares to the behavior of other, similar customers who are not enrolled in EAP. These statistics help one to examine whether there were any changes in the way customers responded to PGW during the test period.

Throughout the analysis, we examine special subgroups of customers. One of the most important groupings is income class. Customers at different income levels have varying abilities to pay and are asked to pay differing amounts toward their bills. Other groupings of interest include: intake data classification, preprogram agreement activity, enrollment arrearage level, and assistance program participation.

In the analysis, we will be examining data for all EAP Potential customers, using combined sample weights. Preliminary tabulations were used to compare the behavior of minimum replicate customers to that of maximum replicate customers. In that analysis, there were no significant differences in behavior. The preliminary tabulations are available upon request. In addition, unweighted tabulations can also be requested.

4.1 Characteristics of EAP Participants

In the analysis of EAP participants, 1,850 EAP participants from the EAP Potential sample are selected. These customers represent a weighted total of 17,101 PGW customers who would have participated in a EAP program during the first year. Tables 4-1 and 4-2 present frequencies for important subgroups used in the analyses. Table 4-1 shows the weighted distribution of cases by the percent-of-income classification. Table 4-2 shows the weighted distribution of cases by the intake data classification.¹ Table 4-3 shows a cross-tabulation of percent-of-income by intake data classification.

Almost half of the EAP participants had incomes at or below 50% of the poverty line and were asked to pay 5% of annual income toward their PGW bill. Only 16% of customers had incomes above 100% of the poverty line and were asked to pay 8% of annual income toward their PGW bill.

**Table 4-1
Percent-of-Income Distribution**

Income Group	Weighted Number of Cases	Weighted Percent of Cases
5% of Income	8,005	47%
7% of Income	6,293	37%
8% of Income	2,803	16%
TOTAL	17,101	100%

Almost half of the EAP participants had public assistance as their only source of income (single-parent public assistance and other public assistance). About 20% had retirement income, and only a little over 10% had income from employment.

**Table 4-2
Intake Data Classification**

Income Group	Weighted Number of Cases	Weighted Percent of Cases
Employment Income Customers	1,936	11%
Retirement Income Customers	3,364	20%
Single-Parent Assistance Customers	5,750	34%
Other Assistance Customers	2,307	13%
Other Customers	3,744	22%
TOTAL	17,101	100%

¹See Section 3 for a complete definition of the intake data classification scheme.

Among customers with income from employment, almost half were in the 8% of income group. Retirement income customers were more concentrated in the 7% of income group. For both public assistance groups, a very large portion fell into the 5% of income group.

**Table 4-3
Percent-of-Income Distribution
by Intake Data Classification**

Income Group	5% of Income	7% of Income	8% of Income	TOTAL
Income Customers	11%	40%	49%	100%
Retirement Customers	13%	67%	20%	100%
Single-Parent Assistance Customers	82%	17%	1%	100%
Other Assistance Customers	72%	25%	3%	100%
Other Customers	27%	45%	28%	100%

The implication of Table 4-3 is that a strong correlation exists between the percent-of-income categorization and the intake data classification. For example, we expect that findings for the 5% of income group will be similar to findings for the public assistance group. However, it is useful to look at both breakdowns to try to assess whether it is the level of income or the source of income that is more important in determining payment behaviors.

4.2 First-Year Payment Behavior for EAP Participants

We begin the analysis with an examination of customer behavior under the EAP program. This analysis uses the 1,850 EAP participants who were part of the EAP Potential sample. Statistics are weighted based on the customer's probability of selection for the EAP Potential sample. Complete data for the set of tables in this section are not available for all customers. Table 4-4 shows weighted and unweighted case counts for the customers who are used in each part of the analysis.

The first set of statistics relate to agreement compliance. In the analysis, we focus on agreement compliance status after the customer has had the opportunity to have had at least 12 EAP bills due. To ensure 12 bills have been due, we use cases that have had at least 14 months since enrollment, allowing one month at the beginning for receipt of the first bill and one month at the end for the twelfth bill to be due. Over 96% of the participants are available for the compliance analysis.

Of those customers who are used in the compliance analysis, not all have adequate data for the payment analysis. Two types of problems resulted in elimination from that analysis. First, some customers (about 5%) had two or more PGW accounts at the same time, which can either be intentional (the customer chooses to be responsible for two bills) or unintentional (the customer fails to notify PGW that he or she has moved). Second, a small number (about 2%) of customers

were missing either billing or payment records. As a result, about 89% of the cases are available for the payment analysis.

**Table 4-4
Status of Cases for First-Year Payment Analysis
Unweighted and Weighted Case Counts**

Customer Group	Number of Customers	Weighted Number of Customers	Weighted Percent of Customers
Total Customers	1,850	17,101	100%
Agreement Compliance Analysis Customers ²	1,770	16,439	96%
Payment Analysis Customers ³	1,654	15,141	89%

The goal of the case selection procedure is to use as much data as possible, while maintaining a consistent analytic focus. Since the statistics presented on agreement compliance focus on 12 months of payment history, it would be inappropriate to use customers with less than 12 months of EAP history. Further, no bias is expected from removal of these cases from the analysis.

Similarly, complex procedures could have been used to retrieve and manipulate the account and payment data for the additional 116 customers who were excluded from the payment analysis. However, that would have detracted from the resources that could be applied to the larger study. Since there is no clear bias from excluding the customers, this data retrieval and manipulation effort was not undertaken.

Agreement Compliance Statistics

One important goal of the EAP is to establish payment agreements that customers can keep. Hopefully, this will result in substantially fewer collections actions and thus reduced collections costs associated with the customer group. In addition, the customers will establish a different type of relationship with PGW and be better able to maintain gas service.

Table 4-5 presents the EAP agreement status for customers after the first 12 required payments. Customers are current if they have paid all bills that are due. They are in default if they are one or two bills behind. They are broken/curable if they are three or more bills behind. If they select a different payment plan or otherwise request plan termination, they are categorized as

²Agreement compliance can be examined for all customers who have at least 14 months of EAP history.

³Payment analysis can be completed for all those customers with at least 14 months of EAP history and all those customers for whom account histories are available in the required format.

dismissed. A small share of the customers have requested termination of gas service. These customers are categorized by their status when they canceled.

Counting both the current customers and the cancel/current customers, 69% of EAP participants were successful for the first 12 agreement payments. In addition, 6% of the customers were in default, only one or two payments behind. Since the "cure" provision is available, these statistics suggest that as many as 75% of EAP participants were "successful" on the EAP agreement.

**Table 4-5
Agreement Status After 12 EAP Bills**

Agreement Status	Weighted Percent of Participants
Current	67.0%
In Default	3.8%
Broken/Curable	18.7%
Cancel/Current	2.3%
Cancel/Default	2.6%
Cancel/Broken	1.5%
Dismissed ⁴	4.1%
TOTAL ENROLLED	100.0%

Table 4-5a on the next page shows the summary of payment status by percent-of-income group and Table 4-5b on the following page shows the summary of payment status by intake classification group. It is clear that the higher percent-of-income payment groups have lower program success rates. This is to be expected, since these customers are required to pay a significantly larger share of the total PGW bill, on average.

It is somewhat surprising that the 7% of income group fares so well, achieving such a compliance rate that is much closer to the 5% of income group than to the 8% of income group. Tables 4-3 and 4-5b are useful in understanding this pattern. From Table 4-3, we see that the greatest share of retirement income customers fall in the 7% of income group. From Table 4-5b, we see that the retirement income customers had the highest compliance rate, more than 10 points above any other group. Thus, the presence of a large number of retirement income customers in the 7% of income group probably raises the compliance rate for this group compared to the rates for other percent-of-income groups.

⁴None of these customers were dismissed for failing to recertify. Recent data shows that a large number of customers failed to recertify for the program.

The employment income group has the lowest compliance rate (Table 4-5b). Perhaps the inconsistency of employment income for these low-income households is responsible for the failure to pay regularly. If this trend continues, it might suggest that payment adjustments need to be made as customers get or lose jobs.

Table 4-5a
Agreement Status After 12 EAP Bills
By Percent-of-Income Group

Percent-of-Income Group	Agreement Status	Weighted Percent of Participants
5% of Income		
	Current ⁵	73.5%
	In Default	6.0%
	Broken/Curable	18.5%
	Dismissed	2.0%
	TOTAL	100.0%
7% of Income		
	Current	71.3%
	In Default	6.7%
	Broken/Curable	18.2%
	Dismissed	3.8%
	TOTAL	100.0%
8% of Income		
	Current	52.5%
	In Default	7.3%
	Broken/Curable	29.1%
	Dismissed	11.1%
	TOTAL	100.0%

⁵Includes both "current" and "cancel/current" participants.

Table 4-5b
Agreement Status After 12 EAP Bills
By Intake Classification

Intake Data Classification	Agreement Status	Weighted Percent of Participants
Employment Income Customers	Current	48.4%
	In Default	8.5%
	Broken/Curable	34.1%
	Dismissed	9.0%
	TOTAL	100.0%
Retirement Income Customers	Current	84.5%
	In Default	3.2%
	Broken/Curable	9.6%
	Dismissed	2.7%
	TOTAL	100.0%
Single-Parent Assistance Customers	Current	67.3%
	In Default	8.5%
	Broken/Curable	22.1%
	Dismissed	2.1%
	TOTAL	100.0%
Other Assistance Customers	Current	72.7%
	In Default	6.6%
	Broken/Curable	16.8%
	Dismissed	3.9%
	TOTAL	100.0%
Other Customers	Current	66.9%
	In Default	5.5%
	Broken/Curable	21.5%
	Dismissed	6.1%
	TOTAL	100.0%

While it is important to ensure that EAP customers succeed on the program, it would be ideal if this could be achieved with few or no collection actions. Table 4-6 shows the distribution of

number of agreement breaks by EAP participants. Over half of customers had no agreement breaks (no times when they fell behind by three payments) and thus had no collection actions. An additional 33% had only one agreement break. Two percent of customers had three or more agreement breaks.

**Table 4-6
Distribution of Agreement Breaks**

Agreement Breaks	Weighted Percent of Participants
0	52%
1	33%
2	13%
3+	2%
TOTAL	100.0%

Program planners may be interested in ways to increase the payment compliance for the EAP. While direct information from noncomplying customers is not available, some data can assist in understanding the problem. Table 4-7 shows the number of payments made by Broken/Curable and Dismissed Customers. Over 50% of these customers made two payments or less. This suggests that efforts should be targeted to the first few months of program enrollment to get the customer back "on the right track."

**Table 4-7
Payments Made by Broken/Curable and Dismissed Customers**

	Weighted Percent of Participants
0	29.1%
1	15.8%
2	8.9%
3	7.8%
4	6.7%
5	10.4%
6+	21.3%
TOTAL	100.0%

Payment Frequency Statistics

EAP program proponents suggest that regular payment of an affordable bill will furnish a long-term solution to payment problems for many low-income customers. Table 4-8 presents information on this issue. The first row shows what the average monthly budget bill would have been for these customers – if they had been on the 5%-2% plan (budget + 2% of arrears). The second row shows the average monthly EAP bill (payment actually requested). Over the period examined, an average of 11.9 payments were expected. In fact, EAP participants made fewer than the required number of payments (only 7.4 of the required 11.9), though the average payment was slightly larger than requested because some customers made up several EAP payments at one time.⁶

Table 4-8
Payment Amount and Frequency
Comparison of Projected 5%-2% Bill, Actual EAP Bill, and Actual EAP Payments

Payment Frequency Statistic	Weighted Mean
Projected Monthly 5%-2% Bill ⁷	\$111
Monthly EAP Bill	\$40
Number of Payments Required	11.9
Actual Average Payment	\$53
Average Number of Payments Made	7.4

Tables 4-8a and 4-8b on the next page show these same statistics by percent-of-income group and by intake data classification group. The percent-of-income group table shows the expected pattern of increasing average payments as the percent-of-income requested increases. The intake data classification group table shows that the employment income group had the highest average requested payment and the lowest number of actual payments. The retirement income group had the highest average number of payments, which is consistent with their high rate of program compliance. The single-parent assistance group had a low average number of payments, despite having a low average monthly EAP bill.

⁶The goal of the program is to give the customer an affordable payment so that the customer can afford to make 12 regular payments. However, it was not uncommon for EAP customers to miss a payment and then pay double the next month.

⁷Computed as suggested monthly budget plus 2% of arrears.

Table 4-8a
Payment Amount and Frequency
Comparison of Projected 5%-2% Bill, Actual EAP Bill, and Actual EAP Payments
By Percent-of-Income Group

Payment Frequency Statistic	Income Group		
	5% of Income (Weighted Mean)	7% of Income (Weighted Mean)	8% of Income (Weighted Mean)
Projected Monthly 5%-2% Bill	\$105	\$111	\$125
Monthly EAP Bill	\$23	\$43	\$77
Number of Payments Required	11.9	11.9	11.9
Actual Average Payment	\$31	\$52	\$89
Average Number of Payments Made	7.1	7.9	7.0

Table 4-8b
Payment Amount and Frequency
Comparison of Projected 5%-2% Bill, Actual EAP Bill, and Actual EAP Payments
By Intake Data Classification

Payment Frequency Statistic	Intake Data Classification Group				
	Employment Income	Retirement Income	Single-Parent Assistance	Other Assistance	Other Customers
Projected Monthly 5%-2% Bill	\$115	\$114	\$104	\$109	\$116
Monthly EAP Bill	\$67	\$40	\$30	\$24	\$49
Number of Payments Required	11.8	12.0	11.8	11.9	11.9
Actual Average Payment	\$81	\$47	\$31	\$31	\$61
Average Number of Payments Made	6.6	9.0	6.8	7.3	7.1

In addition to cash payments by the customer, energy assistance grants contribute to the coverage of the cost of gas used by EAP participants. Table 4-9 shows that 51% of customers assigned no assistance grants to PGW during the year, even though they are eligible for assistance.

**Table 4-9
Distribution of Assistance Payments**

Number of Grants	Weighted Percentage
0	51%
1	29%
2+	20%
Total	100%
Mean Number of Grants Per Customer	0.71
Mean Amount of Grants Per Customer	\$167

Two factors could have contributed to what seems to be a low rate of grant assignment. First, since PGW did not require a customer to assign the grant as part of the EAP, the customer could choose to assign the grant to another fuel supplier. Second, the customer may have failed to apply for a grant at all.

We do not have data on all grant applications by EAP customers. However, the intake data furnish some insight into the problem. Some program reviewers were concerned that during CBO intake, customers would be encouraged to assign their assistance grant to obligations besides PGW. The data show that 49% of customers who signed up at PGW received an assistance grant, compared to 48% of those who signed up at the CBO. Thus, there is no discernible difference between the two groups.⁸

Payment Amount and Revenue Coverage Statistics

A crucial issue in the EAP evaluation is the extent to which the payments made under EAP cover the costs of the gas used by EAP participants. In this analysis, we will examine both the projected coverage rates (EAP bill compared to the suggested budget bill) and the actual coverage rates (EAP payments compared to the fully embedded cost of the gas used). We will

⁸One caveat associated with this finding is that not all grants were received at program enrollment. PGW made a significant effort to target EAP customers who had not received grants. A second important caveat is that PGW initially characterized and treated the grants as if they were not to be credited to an individual customer's account. That program rule was changed during the EAP analysis year.

not review the variable cost of service in this section, nor will we examine the costs associated with collecting the payments that were made. Both of these issues will be addressed in Section 6, the economic analysis of the EAP program.

Tables 4-10 and 4-10a present information on projected EAP program coverage rates. Table 4-10 shows how different payment levels compare to the suggested annual budget bill. The first line shows the suggested budget, and the second line the average annual amount of EAP payments that would be made if all participants made all required payments. The third line shows the annual average amount of payment if all EAP payments were made and all participants received a LIHEAP grant. The fourth line presents the annual average amount of payments if all EAP payments were made, all participants received a LIHEAP grant, and all participants with arrears received CRISIS grants. It is clear from Table 4-9 that relatively high bill coverage rates require receipt of assistance payments.

**Table 4-10
Potential Payment Amounts and Coverage Rates
By Potential Assistance Grant Receipt**

Payment/Assistance Scenario	Mean Payments	Mean Coverage Rate
Budget Bill	\$1,044	100%
EAP Bill Only	\$469	45%
EAP Bill + LIHEAP Grant	\$669	64%
EAP Bill + LIHEAP & CRISIS Grants	\$941	90%

Table 4-10a furnishes the coverage rates of each of the scenarios by percent-of-income group. The difference between bill coverage rates for the 5% of income group and the 8% of income group are substantial. The 5% of income group covers just over one-fourth of the fully embedded bill with customer payments, while the 8% of income group covers over three-fourths. With EAP payments, LIHEAP grants, and CRISIS grants, the average customer in the 8% of income group is projected to contribute toward preprogram arrears (i.e., annual coverage rate exceeds 100%).

**Table 4-10a
Potential Coverage Rates
By Potential Assistance Grant Receipt and Percent-of-Income Group**

Payment/Assistance Scenario	Percent-of-Income Group		
	5% of Income	7% of Income	8% of Income
Budget Bill	100%	100%	100%
EAP Bill Only	28%	48%	77%
EAP Bill + LIHEAP Grant	48%	67%	96%
EAP Bill + LIHEAP & CRISIS Grants	76%	91%	121%

Table 4-11, on the next page, presents data on the actual usage and payment data for the analysis year. The following analytic measures are presented.

- Average Usage (CCFs) – the average number of CCFs actually used by the customers. In all tables, the average CCFs in the post-EAP period is substantially lower than the average CCFs in the pre-EAP period because the weather was much warmer in the post-EAP period.
- Average Revenue Billed – the average amount that EAP participants *would have been charged* for the gas used if they were not on the EAP program.
- Average Total Payments – the average amount of payments made in the customer's name, from all sources.
- Average EAP Bill – the average amount the EAP participants would have been asked to pay if they had stayed in the program for the analysis year.
- Average Cash Payments – the average amount of payments made in cash by the customer during the year. It includes all nonassistance payments, including 5% down payment amounts, EAP current bill payments, EAP arrears payments, and payments made when no program was in place.⁹
- Average Assistance Payments – the average amount of assistance payments made on the customer's account during the year. It includes LIHEAP payments, CRISIS payments, and UESF payments.
- Ratio of Payments to Revenue – compares average total payments to average revenue. Comparing the ratio in the pre-EAP period to the ratio in the post-EAP period is deceptive, since gas usage was lower than normal in the post-EAP period because of relatively warm weather.

⁹An important analytic decision was made regarding the cumulation of cash payments from EAP participants. In some cases, EAP customers made payments outside the selected EAP analysis year that represented "cures" for missed agreement payments. Since these payments were made because of EAP program participation and are applied to usage during that time period, the payments were included. The net effect of this decision is to raise estimated EAP payment levels by about \$20.

Table 4-11 shows that the average revenue billed for the analysis year was somewhat below the annualized suggested budget (\$913 compared to \$1,044). This resulted from the relatively warm weather during the analysis year. Total customer payments cover about 78% of the total amount billed under EAP. Total payments from all sources covered about 61% of the fully embedded cost of the gas used by EAP participants.

**Table 4-11
Actual Payment Amounts and Coverage Rates**

Usage/Payment/Coverage Statistic	Mean
Usage (CCFs)	1,254
Revenue Billed	\$913
Total Payments	\$559
EAP Bill	\$469
Cash Payments	\$391
Assistance Payments	\$168
Ratio of Payments to Revenue	61%

Table 4-11a shows how the coverage rates were distributed by percent-of-income group. Customers in the 8% of income group covered over 80% of their current year bills, while customers in the 5% of income group covered just under half of their current year bills.

**Table 4-11a
Actual Coverage Rates
By Percent-of-Income Group**

Percent-of-Income Group	Mean Coverage Rate
5% of Income	49%
7% of Income	67%
8% of Income	81%
All Participants	61%

Table 4-11b shows that coverage rates varied somewhat across intake data classification groups. The highest fully embedded bill coverage rate was achieved by the employment income group, while the public assistance groups had the lowest coverage rates.

**Table 4-11b
Actual Payment Amounts and Coverage Rates
By Intake Data Classification**

Intake Data Classification Group	Mean Coverage Rate
Employment Income	75%
Retirement Income	65%
Single-Parent Assistance	54%
Other Assistance	56%
Other Customers	65%
All Participants	61%

Obviously, receipt of energy assistance is an important factor in coverage of the fully embedded cost of the gas used by EAP participants. Table 4-11c shows that, for those customers who received an assistance grant, the average coverage rate was over three-fourths, while it was under one-half for those who did not receive an assistance grant.

**Table 4-11c
Actual Payment Amounts and Coverage Rates
By Receipt of Public Assistance**

Assistance Group	Mean Coverage Rate
Received Energy Assistance	77%
Did Not Receive Energy Assistance	45%
All Participants	61%

Table 4-12 presents the coverage rate data in a slightly different way. It shows the range of coverage rates for customers. The first row of the table shows that, when customers were sorted from the highest coverage rate to the lowest, those at the 90th percentile had a coverage rate of 129%. This means that one-tenth of the EAP participants had a coverage rate above 129%. Similarly, customers at the 10th percentile had a coverage rate of 20%, or that one-tenth of EAP participants had a coverage rate of less than 20%. The table reveals a fairly broad range of coverage rates under the program.

**Table 4-12
Distribution of Actual Coverage Rates**

Participant Segment	Coverage Rate
90th Percentile	129%
75th Percentile	93%
Median	62%
25th Percentile	37%
10th Percentile	20%

Arrearages and Forgiveness

An important part of the EAP program is the forgiveness component. Under the plan, the shortfall between the fully embedded cost of gas used by the customer and the EAP billing is forgiven if the customer makes an EAP payment. In addition, if the customer makes at least three EAP payments, preprogram arrears are forgiven at a rate of 1/36 per EAP payment. Table 4-13, on the next page, shows statistics for revenue, payments, arrears, and forgiveness for the analysis year.

Line #1 of Table 4-13 shows the average arrears for customers at the beginning of the analysis year. Adding the total retail charge for the gas used by customers (line #2 of Table 4-13), we can see the total amount due from the customer (line #3 of Table 4-13) during the year – including both the existing arrears and the current gas usage. Next, payments and assistance grants (lines #4 and #5) are subtracted from the amount due, to give the gross customer arrears (line #6). The increase in arrears prior to forgiveness (line #6 minus Line #1) is \$354 in the analysis year. In the analysis year, customers accrued a large amount of forgiveness – a total of \$525 from both the current bill forgiveness provision (line #7) and the preprogram arrears forgiveness (line #8). Thus, the average end-of-year arrears (line #9) fell by \$171. Under the EAP program, a large number of arrears were forgiven and customers experienced a decrease in arrears. From PGW’s perspective, this represents a substantial write-off, and a reduction in outstanding receivables.

Table 4-13
Change in Arrears for First-Year EAP Participants

	Row #	First Year of EAP Enrollment
Average Beginning of Year Customer Arrears (Beginning PGW Receivables)	1	\$1,131
+ Average Retail Cost of Gas Service for Year	2	\$913
= Average Total Amount Due to PGW	3	\$2,044
- Average Cash Payments from Customer	4	\$391
- Average Cash Grants from Customer	5	\$168
= Average Gross End of Year Customer Arrears (Gross Ending PGW Receivables)	6	\$1,485
- Average Net Current Year Forgiveness	7	\$343
- Average Net PreProgram Arrearage Forgiveness	8	\$182
= Average Net End of Year Customer Arrears (Net Ending PGW Receivables)	9	\$960

4.3 Base Year/First-Year Payment and Usage Comparison for EAP Participants

Most EAP participants have been PGW customers for a number of years. As of the beginning of the EAP pilot, EAP participants had been customers for an average of six years, with over 90% having had more than a year of pre-EAP history with the company. This extended customer history allows us to compare the behavior for each EAP participant to his or her behavior in the year prior to EAP. This furnishes one form of comparison for the EAP program – it shows how the customer responded to the EAP program compared to the way the customer responded to other collection attempts prior to enrollment in EAP.

In Section 4.2, we restricted the analysis to cases who were EAP participants from the EAP Potential sample and who met other specified criteria. In the analysis, we further excluded cases based on additional criteria. Table 4-14 shows that **1,320** cases had data that allowed them to be used in the agreement compliance analysis and **1,291** had data that allowed them to be used in the payment analysis.

Table 4-14
Status of Cases for Base Year/First-Year Comparison
Unweighted and Weighted Case Counts

Customer Group	Number of Customers	Weighted Number of Customers	Weighted Percent of Customers
Total Customers	1,850	17,101	100%
Agreement Compliance Analysis Customers ¹⁰	1,372	12,179	74%
Payment Analysis Customers ¹¹	1,291	11,621	68%

In general, the agreement compliance and payment levels for these customers are better than the levels for all EAP customers. These are customers who were able to maintain a consistent history with the company over a three-year period. However, the customers had better records in both the base year and the EAP year than did customers who were not included in the analysis. Thus, while the levels are biased upwards in most cases (for both the base year and the EAP year statistics), the direction and the magnitude of the change is expected to be unbiased.

¹⁰ Agreement compliance can be examined for all customers who have at least 14 months of EAP history, were customers for a full year prior to enrolling in the EAP program, and were customers for at least a full year after enrolling in the EAP program.

¹¹ Payment analysis can be completed for all those customers with at least 14 months of EAP history for whom between 350 and 380 days of pre-EAP and post-EAP data are available.

Agreement Compliance Statistics

As was shown in Table 4-5, a relatively high level of agreement compliance was achieved by participating customers – 67% stayed on the program and made payments for at least 12 months. In this analysis, we examine how this agreement compliance rate compares with the agreement compliance rate among customers who had other types of agreements during the base year period.

Table 4-15 presents data to compare the agreement compliance rates. Among the customers used in this comparison analysis, almost half (44%) had a 5%-2% agreement during the base year period. Among those agreements, only 19% managed to make 12 agreement payments, while among these same customers, 73% stayed on the EAP program for at least 12 months and had made all required payments. Similarly, for the roughly one-fifth (18%) who had 20% down agreements during the base year (and no 5%-2% agreements), only 10% managed to make 12 agreement payments, while 78% of the same customers were current after 12 EAP bills. In general, this illustrates a significantly different behavior by participating customers.

**Table 4-15
Percent of Customers Making Twelve Agreement Payments**

Prior Year Payment Program	Weighted Number	Weighted Percent of Cases	Weighted Percent Making 12 Payments in the Prior Year	Weighted Percent Making 12 EAP Payments
5%-2% Plan	5,326	44%	19%	73%
20% Down Plan	2,245	18%	10%	78%
No Prior Year Program	4,608	38%	NA	77%
TOTAL	12,179	100%	NA	76%

Table 4-15a shows these same "success rate" comparisons for the different percent-of-income levels. In the year prior to EAP, all household appeared to have about the same success rate on the 5%-2% plan. Under the EAP, all households had higher success rates, with the lower-income households having the highest success rates, presumably because their bills are quite a bit lower than the 5%-2% plan bills.

Table 4-15a
Percent of Customers Making 12 Agreement Payments
By Percent-of-Income Group

Prior Year Payment Program	Percent-of-Income Group	Weighted Percent Making 12 Payments in the Prior Year	Weighted Percent Making 12 EAP Payments
5%-2% Plan	5% of Income	17%	87%
	7% of Income	23%	75%
	8% of Income	15%	56%
20% Down Plan	5% of Income	4%	79%
	7% of Income	11%	78%
	8% of Income	18%	55%

Payment Frequency Statistics

As noted previously, program proponents suggest that, since the EAP requests a lower monthly payment amount than do other collection efforts, customers will be likely to make payments with greater frequency. Table 4-16 presents the statistics that compare payment frequency under EAP to payment frequency during the base year. As expected, the average number of payments made rose by 37%, while the average amount per payment fell by 42%.

Table 4-16
Customer Payment Amount and Frequency
Comparison of Base Year to EAP Year

Payment Frequency Statistic	Base Year Weighted Mean	EAP Year Weighted Mean
Actual Average Amount Per Payment	\$89	\$52
Average Number of Payments Made	6.0	8.2

Table 4-16a shows how the payment frequency patterns shifted for the percent-of-income groups. In general, it appears that the larger the reduction in the amount requested, the higher the increase in the number of payments. For example, the average amount per payment for the 5% of income group fell by 62%, while the average number of payments made increased by over 50%. The average amount per payment for the 8% of income group fell by only 12%, while the average number of payments increased by 20%.

Table 4-16a
Customer Payment Amount and Frequency
Comparison of Base Year to EAP Year
By Percent-of-Income Group

Payment Frequency Statistic	Percent-of-Income Group	Base Year	EAP Year
Average Amount Per Payment			
	5% of Income	\$81	\$31
	7% of Income	\$89	\$51
	8% of Income	\$101	\$89
Average Number of Payments Made			
	5% of Income	5.2	7.9
	7% of Income	6.9	8.7
	8% of Income	6.4	7.7

Table 4-16b shows how payment frequency statistics changed by intake data classification group. The "other assistance" group had the largest percentage increase in number of payments (58%), in part due to the very large decline in the average size of payments (63%). The employment income group, many of whom are in the 8% of income group, had a comparatively small (16%) reduction in average amount per payment.

Table 4-16b
Customer Payment Amount and Frequency
Comparison of Base Year to EAP Year
By Intake Data Classification Group

Payment Frequency Statistic	Intake Data Classification Group	Base Year	EAP Year
Average Amount Per Payment	Employment Income	\$97	\$81
	Retirement Income	\$92	\$46
	Single-Parent Assistance	\$81	\$39
	Other Assistance	\$82	\$30
	Other Customers	\$91	\$60
	Average Number of Payments Made	Employment Income	5.6
Retirement Income		7.5	9.7
Single-Parent Assistance		5.3	7.6
Other Assistance		5.2	8.2
Other Customers		6.3	7.9

Table 4-16c, on the next page, shows how these statistics broke out for customers who were successful on the EAP compared to those who were not successful on the EAP. It is interesting to note that customers who were current after 12 months had made an average of only 9.2 payments. This suggests that a substantial number of customers made several EAP payments at the same time. For customers who were current, payment amounts declined by 49%, while payment numbers rose by 44%. For customers who were not current, payment amounts declined by only 14%, but payment numbers did not change at all. It appears that this group was treating the EAP program in the same way they treated the previous payment programs. Their payment patterns suggest that they made only a few payments under EAP and later made additional payments to forestall shutoff.

Table 4-16c
Customer Payment Amount and Frequency
Comparison of Base Year to EAP Year
By Program Performance

Payment Frequency Statistic	Program Performance Group	Base Year	EAP Year
Average Amount Per Payment	Current	\$89	\$45
	Not Current	\$84	\$72
Average Number of Payments Made	Current	6.4	9.2
	Not Current	4.7	4.7

Another explicit design of the EAP program is to try to encourage customers to make use of available public assistance dollars. To participate in the program, customers must agree to apply for all available public assistance. There are two reasons why this did not result in a 100% participation rate in assistance. First, many customers signed up at a time when the assistance programs were not open, and customers were not removed from the program for failing to subsequently sign up for assistance programs. Second, customers were not required to assign the grant dollars to PGW. Table 4-17 presents data on the distribution of assistance grants in the EAP year compared to the base period. The percentage of customers receiving grants and the average number of grants rose during the EAP period. Thus, the average amount of assistance dollars per customer rose by 15%, to \$180.

Table 4-17
Distribution of Assistance Payments
Comparison of Base Year to EAP Year

Number of Grants	Base Year	EAP Year
0	56%	48%
1	27%	31%
2+	17%	22%
Total	100%	100%
Mean Number of Grants Per Customer	0.65	0.76
Mean Amount of Grants Per Customer	\$157	\$180

Table 4-18 shows that the EAP program resulted in receipt of grants for a number of customers who had not received grants in the base year period. In addition, the majority of customers who did receive grants in the base year also received them during the EAP year.

**Table 4-18
Base Year to EAP Year Assistance Payment Comparison**

Assistance Pattern	Weighted Percentage
Base Year and EAP Year	31%
Base Year Only	13%
EAP Year Only	21%
Neither Year	35%
Total	100%

Payment Amount, Revenue Coverage, and Usage Statistics

Tables 4-19 through 4-19c present important information on how the usage, billings, and payment levels in the EAP program compared to those in the base year. The rows of Table 4-19 have the same definition as the rows of Table 4-11, as defined on page 4-13.

**Table 4-19
Actual Payment Amounts and Coverage Rates
Comparison of Base Year to EAP Year**

Usage/Payment/Coverage Statistic	Base Year Mean	EAP Year Mean
Usage (CCFs)	1,447	1,297
Revenue Billed	\$1,046	\$934
Total Payments	\$693	\$606
EAP Bill	NA	\$483
Cash Payments	\$536	\$426
Assistance Payments	\$157	\$180
Ratio of Payments to Revenue	66%	65%

The first row of Table 4-19 shows an important difference between the base year and the EAP year. During the base year, customers used an average of 1,447 ccf, while they used an average of 1,297 during the EAP year. This reduction of about 10% appears to be largely caused by warmer weather during the EAP year (as discussed later in this section).

This reduction in usage is important because it makes the coverage rate analysis more complex. Since EAP billings are a function of income rather than usage, it can be expected that, all other things being equal, the EAP program will have a higher coverage rate during warm years, when less gas is used, and a lower coverage rate during cold years, when more gas is used. For example, the average total payments from all sources fell by \$87 to \$606 in the EAP year compared to \$693 in the base year, a reduction of 13%. However, the average coverage rate remained approximately the same.

Table 4-19 also shows that the increase in assistance payments under EAP was important. The average customer payments under EAP fell by \$110 to \$426. However, the rise in assistance payments by \$23 furnished a small offset.

It is important to remember that Table 4-19 does not furnish a complete picture of the economic viability of the EAP. It merely present statistics on usage, payments, and coverage rates. Other information on avoided costs and customer benefits (presented in Section 5) are important components of the analysis.

Table 4-19a shows that, in terms of coverage rate, the program was most successful for the 8% of income group. The customers in this group raised their average coverage rate from 65% during the base year to 86% during the EAP year. Similarly, Table 4-19b, on the next page, shows that only the employment income group increased their payment coverage rates substantially during the EAP year

Table 4-19a
Actual Payment Amounts and Coverage Rates
Comparison of Base Year to EAP Year
By Percent-of-Income Group

Percent-of-Income Group	Base Year Mean Coverage Rate	EAP Year Mean Coverage Rate
5% of Income	62%	51%
7% of Income	72%	70%
8% of Income	65%	86%
All Participants	66%	65%

Table 4-19b
Actual Payment Amounts and Coverage Rates
Comparison of Base Year to EAP Year
By Intake Data Classification Group

Intake Data Classification Group	Base Year Mean Coverage Rate	EAP Year Mean Coverage Rate
Employment Income	58%	78%
Retirement Income	78%	68%
Single-Parent Assistance	60%	56%
Other Assistance	67%	62%
Other Customers	65%	69%
All Participants	66%	65%

Table 4-19c again highlights the importance of energy assistance. During both the base year and the EAP year, those customers who assigned energy assistance grants to PGW had a substantially higher coverage rate than did those customers who did not assign grants to PGW..

Table 4-19c
Actual Payment Amounts and Coverage Rates
Comparison of Base Year to EAP Year
By Receipt of Public Assistance

Assistance Group	Base Year Cases	Base Year Mean Coverage Rate	EAP Year Cases	EAP Year Mean Coverage Rate
Received Energy Assistance	681	74%	766	79%
Did Not Receive Energy Assistance	643	59%	558	48%
All Participants	1,324	66%	1,324	65%

Finally, Table 4-20 shows the distribution of coverage rates from payments received during the year. In general, the distribution of payment coverage rates was similar for the base year, when compared to the EAP year. However, at the upper end, a small group (10%) of EAP customers appear to have very high coverage rates – over 130%. Only 5% of customers had coverage rates above this level during the base year.

**Table 4-20
Distribution of Actual Coverage Rates
Comparison of Base Year to EAP Year**

Participant Segment	Base Year Coverage Rate	EAP Year Coverage Rate
90th Percentile	112%	130%
75th Percentile	91%	95%
Median	69%	65%
25th Percentile	45%	40%
10th Percentile	20%	25%

Arrearages and Forgiveness

The most significant way in which the EAP departs from previous programs is in the current year and preprogram forgiveness that is granted in exchange for regular payments. As a customer makes payments, he/she is credited with current year shortfall forgiveness (the difference between the fully embedded cost of service and the EAP bill) and preprogram arrearage forgiveness. In the 5%-2% program, customers are expected to cover all of the current budget bill plus 2% of the preprogram arrears with each monthly payment. In exchange, the customer could have up to 50% of the preprogram arrears forgiven.

The rows of Table 4-21, on the next page, are defined in the same way as the row of Table 4-13 (see page 4-16). In Table 4-21, however, the customer's preprogram experience is compared to the customer's EAP experience. As noted, the main difference occurs in rows 7 and 8. During the base year, customers averaged only \$78 in preprogram arrearage forgiveness. The net result for PGW was a \$275 increase in the average receivables for these customers. During the EAP year, on the other hand, customers received an average of \$375 in current year forgiveness and \$211 in preprogram arrearage forgiveness. This total of \$586 in write-offs per customer was accompanied by a \$248 reduction in average receivables.

**Table 4-21
Change in Arrears
Comparison of Base Year to EAP Year**

	Row #	Base Year Period	First Year of EAP Enrollment
Average Beginning of Year Customer Arrears (Beginning PGW Receivables)	1	\$611	\$1,089
+ Average Retail Cost of Gas Service for Year	2	\$1,046	\$934
= Average Total Amount Due to PGW	3	\$1,657	\$2,033
- Average Cash Payments from Customer	4	\$536	\$426
- Average Cash Grants from Customer	5	\$157	\$180
= Average Gross End of Year Customer Arrears (Gross Ending PGW Receivables)	6	\$964	\$1,427
- Average Net Current Year Forgiveness	7	\$0	\$375
- Average Net PreProgram Arrearage Forgiveness	8	\$78	\$211
= Average Net End of Year Customer Arrears (Net Ending PGW Receivables)	9	\$886	\$841

4.4 Test Group/Comparison Payment and Usage Comparison

When a program evaluation is undertaken, the ideal design includes a test group, who participates in the program, and a control group, who would have participated in the program if they had been given the opportunity. To have such a control group, two pieces of information are needed. First, one needs to know that a customer was eligible for the program. Second, one needs to know that the customer would have participated in the program. In tests for the effectiveness of new drugs, control patients are screened for eligibility and given a placebo. In this study, it would have been very expensive to recruit and screen control customers and almost impossible to assess whether an eligible customer would have chosen to participate.

In the original study design, we selected an EAP potential group and a control group. We planned to make derived estimates for the control group, using data from both the original EAP population and from the control population. Two factors made that approach difficult. First, an open enrollment period was allowed, so that total pilot enrollment could reach 5,000 customers. Second, data "noise" because of imperfections in the PGW customer accounting data and the RAC data-capturing procedures appears to make such derived estimates analytically difficult to interpret.

However, as was demonstrated in Section 3, the combined EAP and 5%-2% population from the EAP potential group roughly matches the combined EAP and 5%-2% population from the control group – in numbers and in terms of the preprogram agreement activity. For this reason, the two populations are compared, with the control group customers serving as a quasi-control for the test group customers. The results of this analysis are similar to the results of the base year/EAP year comparisons.

Table 4-22, on the next page, shows that status of cases for the analysis. The analysis includes all cases from the EAP potential group and the control group who signed up for a 5%-2% agreement or an EAP agreement during the period 3/1/90 to 2/28/91. For these purposes, the only restriction placed on the analysis is that the customers could not have overlapping accounts and the customers had to have valid account and payment data. The table shows that, of **35,009** customers represented in the EAP potential sample with agreements, **31,620 (90%)** had data that allowed us to use them in the analysis. Of **30,649** customers in the control sample with agreements, **27,171 (89%)** had data that allowed us to use them in the analysis.

It is clear that the EAP Potential group represents a greater portion of the population than does the Comparison group. However, it is evident from the following analysis that the differences in behavior between the two groups appear to relate more to differences in program participation than to differences in the makeup of the groups. It is important to remember that the analysis in Section 3 suggested that a large part of the "induced participation" in the EAP was a transfer from the 20% down program to the EAP, with a small part coming from the general population of nonagreement customers. Thus, the additional customers in the EAP Potential analysis group are agreement customers.

Table 4-22
Status of Cases for the Test Group/Comparison Group Analysis

Customer Group	Customer Status	Number of Customers	Weighted Number of Customers	Weighted Percent of Customers
EAP Potential Group	Total Customers	3,617	35,009	100%
	Payment Analysis Customers	3,336	31,620	90%
Comparison Group	Total Customers	2,866	30,649	100%
	Payment Analysis Customers	2,609	27,171	89%

Table 4-23 shows that, in the EAP potential sample, 51% of the households participating in low-income payment programs selected the EAP, while 49% selected the 5%-2% plan. About 11% of the comparison group were EAP participants.

Table 4-23
Type of Participation for Test Group/Comparison Group Analysis

Status for EAP Year	EAP Potential		Comparison Group	
	Weighted Number of Cases	Weighted Percent of Cases	Weighted Number of Cases	Weighted Percent of Cases
EAP Participation	16,157	51%	3,102	11%
5&2 Participation	15,463	49%	24,069	89%
ALL ANALYSIS CASES	31,620	100%	27,171	100%

The EAP Potential group represents what would happen if both the EAP program and the 5%-2% program were available to customers on an as-needed basis. The Comparison group represents what would happen if only a limited EAP program were available and approximates what would happen if the 5%-2% plan were the only available low-income payment program.

Payment and Usage Analysis

In the pre-/postcomparison for EAP customers, we saw that EAP customers increased the average number of payments, while they were reducing the average size of payments. They also increased their rate of energy assistance receipt.

In the test group/comparison group analysis (Table 4-24), we see that the average number of payments from the EAP Potential group was greater than that of the Comparison group and that the average size of payments was smaller. However, looking at the rate of assistance grant

receipts, we see that the comparison group had a higher fraction of households receiving energy assistance (80% versus 67%), and the mean dollar value for the energy assistance payments was higher among the Comparison group.

This energy assistance grant finding suggests that some additional activity by PGW during the EAP year resulted in more assistance grants for 5%-2% customers than previously. In this light, the improved grant receipt performance in the pre-/postanalysis appears to be an overstatement of the potential impact of the EAP (as implemented) for increasing assistance grant receipts.

**Table 4-24
Test Group / Comparison Group Analysis
Payment Size and Number**

	EAP Potential	Comparison Group
	Weighted Mean	Weighted Mean
Average Number of Cash Payments	6.4	5.7
Average Size of Cash Payments	\$64	\$83
Average Number of Assistance Payments	0.67	0.80
Average Size of Assistance Payments	\$154	\$185

Table 4-25 shows that the average total payments, average cash payments, and average coverage rate were all higher for the Comparison group than they were for the EAP Potential group. This is generally consistent with the pre-/postanalysis that shows a reduced total payment level under the EAP program as currently configured.

**Table 4-25
Test Group / Comparison Group Analysis
Usage and Payment**

	EAP Potential	Comparison Group
	Weighted Mean	Weighted Mean
Average Days of Usage	349	358
Average Usage (CCFs)	1,169	1,216
Average Revenue Billed	\$862	\$898
Average Total Payments	\$567	\$657
Average Cash Payments	\$411	\$471
Average Assistance Payments	\$154	\$185
Ratio of Payments to Revenue	66%	73%

Finally, Table 4-26 shows that, in both the EAP Potential group and the Comparison group, the 5%-2% customers had consistently higher coverage rates than did the EAP participants.

Table 4-26
Test Group / Comparison Group Analysis
Coverage Percentage by Type of Program Participation

Program Group	EAP Potential	Comparison Group
	Weighted Ratio of Payments to Revenue	Weighted Ratio of Payments to Revenue
EAP	60%	52%
5%-2%	73%	76%
TOTAL	66%	73%

Section 5

Other Benefits and Costs Attributable to the EAP Program

The statistics presented in Section 4 measure the direct benefits and costs of the EAP Program. They show the amount of revenue generated from EAP customers and compare that to the fully embedded cost of service for that gas. A number of other benefits and costs are associated with the EAP program. The purpose of this section of the report is to present and describe these benefits and costs, to identify the parties to whom these benefits accrue, and to present statistics related to the prevalence and, where feasible, the value of these costs and benefits.

5.1 Identifying Other Benefits and Costs

The EAP attempts to change the relationship between the utility and the low-income customer by establishing a new basis for the relationship. Under the EAP, PGW asks each customer to pay an amount that is "affordable" given the customer's income level. In return, PGW expects the customer to make regular payments and to meet the other terms of the agreement that will make the program less costly to PGW. Those other terms include application for available assistance programs and participation in the weatherization program (if the household is selected for the program). The desired change in customer behavior is that the customer will improve payment patterns and will increase participation in energy assistance program.

Benefits and Costs Accruing to PGW

The potential nonrevenue benefits for PGW from the EAP include:

- Avoided collections costs – If the customer makes regular payments, the company will not have to undertake the activities that were traditionally required to obtain payment (notices, phone calls, field visits, and terminations).
- Enhanced employee satisfaction – Employees may prefer to work with customers in this "cooperative" environment rather than in the existing environment, which can be "adversarial."
- Improved corporate image – Customers who are aware of the program may have an improved perception of PGW.

The potential additional¹ nongas costs for PGW from the EAP include:

- Enrollment and recertification costs – Direct costs of explaining agreements to customers, setting up customer accounts for agreements, and subsequent contacts for recertification.
- Agreement compliance costs – Direct costs associated with ensuring that customers meet program requirements, including collections actions for missed

¹These are additional costs beyond what normally would be incurred in serving the customer, and they directly relate to the customer's participation in the EAP program.

payments, notifications regarding the need to apply for assistance benefits, and excess usage computations and review.

- Other ongoing program expenses² – Including administrative expenses associated with ongoing oversight of program procedures, customer accounting expenses associated with ongoing information needs, and other types of program expenses.³

Benefits and Costs Accruing to EAP Participants

The potential nonpayment⁴ benefits to the customer from participation in the EAP may include:

- Gas service benefits – A range of positive effects derived from the ability to maintain gas service, including health and cleanliness, safety, and comfort.
- Other financial benefits – Improved ability to meet other financial obligations because of reduced gas payments and arrearages.
- Landlord relations benefits - If the landlord recognizes the value of the Conservation Works program, the program can positively affect landlord relations.

The potential nonpayment costs to the customer from participation in the EAP may include:

- Time commitment – The time required to complete the EAP application and to meet subsequent program requirements.
- Landlord relations – Potential backlash for tenants from landlords who are opposed to the conservation portion of the EAP program.

5.2 Illustration and Quantification of Other Benefits and Costs of EAP for PGW

Limited information is currently available to quantify the other benefits and costs of the program for PGW. In some cases, explicit decisions were made to exclude direct data collection from the evaluation plan. In other cases, the data that are available do not precisely match the issues of interest. For each of the benefits and costs identified, we will identify the types of data that are

²We are ignoring program implementation costs for the time being. Since most of the program start-up costs were required by the implementation of the pilot, these costs are sunk costs and should not be part of forward-looking examinations of program options. Any costs associated with dramatic changes in the program structure, however, are included in the analysis.

³Two important costs not discussed in this section are the weatherization program costs and the energy education program costs. They have been left out of the discussion for two reasons. First, the decision on whether or not to include these programs as part of the EAP is independent of the decision to implement the EAP. Second, any costs incurred for one of these programs has a payback period that extends for from three to ten years. Therefore, it would be inappropriate to account for these costs without a corresponding accounting of the benefits from reduced gas consumption over a long time horizon.

⁴These are benefits besides the reduction in current payments and the forgiveness of preprogram arrears.

needed, the information that is currently available, and the potential for retrieving additional information.

Avoided Collection Costs

It seems clear from the agreement compliance statistics presented in Section 4 that fewer collection actions will be required under EAP than under the existing array of low-income program options. Under EAP, almost seven in ten customers were able to make 12 agreement payments (Table 4-5), and over half of the participants had no agreement breaks recorded during the time period from enrollment to February 1992 (Table 4-6). In contrast, very few of the customers who enroll in the 5%-2% plan are able to keep their agreements for more than a few months. Thus, we expect that PGW can avoid some collection costs for EAP customers.

The best way to examine avoided collections costs would be to look at the collections actions in the same way as we did usage and payments. First, we would examine the collections actions for EAP customers. Second, we would look at collections actions for the EAP customers during the base year and during the EAP analysis year. Finally, we would examine collections actions for the EAP participants and the comparison group. From the analysis, we would estimate the differential level of collection actions and, by adding data on the costs of collection actions, could estimate the avoided costs associated with the EAP.

To date, data have not been retrieved on the detailed collection actions because information supplied at the time data downloading procedures were developed suggested that these data were inconsistent and might be misleading. Current PGW management is comfortable that the data are valid and suggests that they can be used for the purpose outlined in the preceding paragraph.

Until such data become available, a number of other indicators can be used to estimate the likely range of avoided collections costs. Two sources furnish useful information:

First, general data on agreement compliance and total company collections cost can be used to ratio-estimate the way that collections costs for EAP customers compare to what they would have been without EAP.

Consider the following computations.

- 1) During the first year, 69% of EAP customers made the 12 required payments (Table 4-5). While it is not universally true that there were no collections costs for these customers, we expect that they were substantially more limited for the successful EAP customers than for the 5%-2% customers.
- 2) During calendar year 1990, PGW reports that 36,817 5%-2% agreements were taken. Of these, 29,035 (79%) had broken within 12 months or, conversely, that 21% made the required 12 payments.⁵

⁵Data supplied by PGW. Prepared from a computer-generated report #R49410. For EAP participants who were 5%-2% customers during the base year, the 12-month compliance rate was estimated to be 19% (Table 4-15).

- 3) During 1990, PGW spent \$6.0 million on collections costs, and there were 136,000 residential customers in arrears at the end of the year.⁶ If all the collections costs were spent on residential customers (which they were not), the average collection costs per arrearage customer would be \$44.12.
- 4) If we assigned the average value of collections, \$44.12, to each customer who broke an agreement during the year following enrollment in the agreement, the average annual collections cost for EAP customers would be \$13.68⁷ (31% breaking * \$44.12) and for 5%-2% customers would be \$34.85 (79% breaking * \$44.12).

Thus, if these estimates accurately reflect the real nature of collections cost for these two groups, the average avoided collections cost for EAP, compared to the 5%-2% option, is \$21.17 per participant.⁸

Second, more detailed data on nonpayment shutoffs furnish a better sense than agreement compliance of the severity of low-income payment problems. Table 5-1 presents statistics on the count of EAP customers who had at least one nonpayment shutoff during the analysis year compared to the base year. Table 5-2 furnishes a count of the total number of shutoffs for all EAP participants during the base year and during the EAP year.

**Table 5-1
Customers with Nonpayment Shutoffs
Comparison of Base Year to EAP Year**

Shutoff Type	Base Year		EAP Year	
	Weighted Number	Weighted Percent	Weighted Number	Weighted Percent
Shutoff at the Meter	3,440	20%	1,112	6%
Shutoff at the Curb	1,075	6%	324	2%
No Shutoffs	12,585	74%	15,664	92%
All Customers	17,100	100%	17,100	100%

⁶This total includes a number of activities in addition to residential collections. Thus, the figure used here is an overstatement of average residential collection costs.

⁷This number is consistent with a special data analysis prepared by PGW. After examining the accounts for all EAP customers (from both the first year and second year of enrollment), we estimate the total cost of collection actions during fiscal year 1992 to be \$197,838, an average of \$12.46 per EAP customer.

⁸This computation assumes that EAP and 5%-2% customers require collections actions that are similar to the "average" customer who is in arrears. We have every reason to believe that these customers require more extensive and expensive collections actions than the average. If the average costs for these customers were twice the average for all arrearage customers, the avoided cost would double to \$42.34.

Table 5-2
Total Number of Nonpayment Shutoffs
Comparison of Base Year to EAP Year

Shutoff Type	Base Year	EAP Year
	Weighted Number	Weighted Number
Shutoff at the Meter	3,623	1,135
Shutoff at the Curb	1,125	340

The total cost of collection actions leading to a shutoff can be estimated. Prior to shutoff, a customer should receive notices and phone calls for two months (while in default) and phone calls and field visits in the third month (after the agreement is broken). If the household is shut off after three months, the customer should have received two mail notices (@ \$0.34), eight telephone calls (@ \$1.62), and three field visits (@ \$8.27). A shutoff at the meter costs \$26.17, and a shutoff at the curb costs \$10.58. Finally, restoration of services, which occurs in about 93% of the cases, costs approximately \$74.⁹

Summing the components of the termination, the total cost of a termination is \$138.62 for a shutoff at the meter and \$123.03 at the curb. The projected total costs for service terminations among the 17,100 customers on the EAP program was \$640,629 for the EAP participants during the base year and \$199,163 during the first year of EAP participation. The average difference over all 17,100 EAP customers is \$25.82 per customer in avoided collections costs for service terminations.

The two estimates for avoided costs are surprisingly close (\$21.17 compared to \$25.82), suggesting that a number in the range of \$20 to \$30 is probably the correct figure.

Other Benefits Accruing to PGW

The other benefits identified on page 5-1 have not been measured, and, even if they were measured, they would be difficult to quantify.

Measurement of the impact of the EAP on corporate image would be most successful if a pre/post tracking study were put in place. However, since there is a pilot program that gives some, but not all, customers an awareness of the EAP, there is no way to implement this pre/post study. Alternatively, a general customer survey with special questions regarding the assessment of the EAP would furnish some information on the impact of the EAP on corporate image.

Quantifying the benefit from improved corporate image is somewhat more difficult. The only feasible approach would be to develop a "current expenditures benefit ratio" by examining actual corporate image expenditures and the benefit derived from those expenditures. This assessment would furnish an estimate of the cost associated with a specific level of improvement in corporate

⁹These figures were furnished by PGW in a memorandum dated 10/2/92.

image. The measured impact of the EAP, then, would be assigned quantitative value using the benefit ratio derived from existing corporate image expenditures.

Similarly, measures of the impact of EAP on employee satisfaction could be developed using employee research techniques. The benefit from improved employee satisfaction (or the cost associated with decreased employee satisfaction) could then be translated into a quantitative measure based on a derived "current expenditures benefit (cost) ratio."

There are currently no plans to undertake either of these studies.

Enrollment and Recertification Costs

For the EAP to be successful, it must be carefully explained to enrolling customers. The program is quite different from any previous arrangement with customers and can easily be misunderstood. The program includes new and different types of customer responsibilities that must be clearly identified for customers.

PGW has estimated that the staff time required to complete an EAP application is one hour, and the time required for an EAP certification is one-half hour. They estimate the labor costs at \$22 and \$11 respectively.

PGW has never measured the time required for a 5%-2% agreement. In general, the agreements are less complicated and are expected to take less time than the EAP. In addition, some of these agreements are now taken over the telephone, further reducing the costs. On the other hand, it is common for a customer to have more than one 5%-2% agreement during the year. At a minimum, one would expect that the agreement would take 15 minutes to complete, at a cost of \$5.50. If an agreement took 30 minutes to complete and 25% of the cases had two agreements per year, the average annual costs would be \$13.75 per year.

Given the information furnished above, the maximum annual enrollment and recertification costs are \$22 per customer. If the average customer is on the program for two years, the average annual costs fall to about \$16.50. Finally, if the costs associated with a 5%-2% are \$5.50 per year, the additional costs associated with the EAP are about \$11 per year (\$16.50 - \$5.50). If the costs associated with the 5%-2% plan are \$13.75 per year, the additional costs associated with the EAP are about \$2.75 per year.

Agreement Compliance Costs

The costs associated with agreement compliance were, by and large, netted out as part of the avoided cost computation on pages 5-2 and 5-4.

Other Ongoing Program Expenses

The EAP program requires a certain level of ongoing attention from the PGW management. For FY 1992, total program expenses for the Customer Activities Group and the Customer Review Unit were \$91,062. As the program becomes more routinized, certain expenses may fall. However, as the program grows, other costs will rise. If the total amount were averaged over an annual caseload of 25,000 customers, the average annual cost per customer would be \$3.64.

During FY 1992, information systems costs for the EAP were \$164,653. Since substantial modifications in the procedures were implemented during the year, we expect that this is not a good indicator of long-run costs. However, any ongoing program will incur expenses as modifications are made to the program or as it becomes appropriate to collect information on the program status for certain groups of customers. Though these program expenses cannot be anticipated, some attention should be given to the likely range of costs for such expenses.

One example of such an expense is the development of software to create special recertification notices. PGW estimates that this procedure costs about \$15,000 to develop, or about \$0.60 per EAP customer if the caseload were 25,000, and about \$0.55 per customer to implement. Obviously, the costs associated with such developments will depend on the complexity of the task. However, if one assumes that three such developments would be required each year, the cost would be about \$3.45 per EAP customer (3 * \$1.15).

There is also some concern on the part of PGW staff regarding the excess consumption procedure. For the first year EAP pilot, the excess consumption review process alone cost \$36,721 or over \$7.00 per case. (Each excess consumption case that had insufficient base year reads had to be examined by hand.)

Adding the program management costs and the systems development costs, the total ongoing program expenses would be \$7.09 per year. If the excess consumption review is continued, the average cost would be about \$14.09 per year.

Summary of PGW Benefits and Costs

Table 5-3 summarizes the information presented on benefits and costs that accrue to PGW. Since these are merely rough approximations of the true benefits and costs, we have constructed two estimates. In the first column of Table 5-3, we use the maximum expected benefit and the minimum expected cost for EAP. This furnishes an estimate of the highest expected net benefit from the EAP. In the second column, we use the minimum expected benefit and the maximum expected cost. This furnishes an estimate of the lowest expected net benefit from the EAP. Using this approach, Table 5-3 shows that the expected net benefits will range from - \$4 to + \$35.

**Table 5-3
Summary of Annual Per Customer Benefits and Costs
Accruing to PGW from the EAP**

Type of Benefit/Cost	Maximum Benefit from EAP	Minimum Benefit from EAP	Special Notes
Avoided Collection Costs	+ \$42	+ \$21	Maximum assumes that agreement cases use twice as many collections resources as other arrearage cases.
Improved Corporate Image	Not estimated	Not estimated	Would require examination of existing expenditures that are targeted to improve PGW's image
Improved Employee Satisfaction	Not estimated	Not estimated	Would require examination of existing expenditures that are targeted to improving employee satisfaction at PGW
Enrollment and Recertification	- \$3	- \$11	Maximum EAP benefit assumes 1.25 agreements per year for nonEAP @ 30 minutes per agreement. Minimum EAP assumes 1 agreement per year for nonEAP @ 15 minutes per agreement.
Agreement Compliance Costs	Included in Avoided Collections Costs		Ignores the costs associated with calling customers to encourage participation in energy assistance programs
Ongoing Program Expenses	- \$4	- \$14	Maximum assumes that program will remain static for caseload of 25,000. Minimum assumes that substantial ongoing systems development costs will occur and that excess consumption review will be continued.
TOTAL NET BENEFITS TO PGW	+ \$35	- \$4	

OTW lens
Mobility
Collectability
Address
Cost-of-Capital
Time Value.

5.3 Illustration and Quantification of Other Benefits and Costs of EAP for Participating Customers

It is clear from the analysis in Section 4 that the EAP is an important program for participating customers. On average, participating customers pay less of their own money for gas service, receive more energy assistance, and are granted a substantial amount of program and preprogram forgiveness. These are all strong positive benefits from the program.

In general, the evaluation plan did not focus on other benefits and costs to participating customers. However, a few pieces of information can be brought to bear on the issue.

Gas Service Benefits

As noted in Table 5-1, customers experience many fewer nonpayment service terminations under the EAP. The service termination rate fell from 26% in the base year to 8% during the EAP year. However, among those customers terminated, the severity (measured in days off the system) does not appear to have been affected in a significant way by the EAP (Table 5-4). Thus, a major benefit of the program is a reduced risk of shutoff.

**Table 5-4
Severity of Nonpayment Shutoffs
Comparison of Base Year to EAP Year**

Severity Level	Base Year		EAP Year	
	Weighted Mean Days	Weighted Percent	Weighted Mean Days	Weighted Percent
No Shutoffs	0	74%	0	92%
1 - 7 Days	3	14%	5	5%
8 - 30 Days	23	2%	16	0.5%
30 - 90 Days	62	5%	59	0.5%
90 Days or More	143	5%	177	2%
All Customers ¹⁰	41	100%	43	100%

Other Financial Benefits

It is also very likely that customers will obtain other benefits from the program, including a greater ability to pay nongas bills. However, there was no attempt to measure these potential benefits.

Time Costs Associated with EAP Participation

Participation in the EAP program can involve some time commitment from the participating customer. The time involved includes:

¹⁰Weighted mean duration of shutoffs for those customers who had a shutoff.

- At a minimum, the customer must spend the time required to apply and then to recertify for the program each year. While this could take as little as an hour, the average for all customers is likely to be substantially more than that when one includes travel time, waiting time, and second visit time for those customers who fail to furnish all of the required documentation.

In contrast, for those customers with records of an assistance grant or 5%-2% agreement in the last year, 5%-2% agreements can be taken over the phone.

- If a customer does not enroll while the energy assistance grant programs are open, he or she is required to apply for these benefits.¹¹ As with the program enrollment, this application could take very little time or could take a great deal of time.

In contrast, the customer applies for an energy assistance grant under the 5%-2% plan only if it is in his or her best interest.

- If the customer is selected for weatherization benefits, there are potential time requirements associated with that program.

Under the 5%-2% plan, weatherization program participation is voluntary.

We have not furnished any estimates of the time commitment required for the average EAP participant, nor have we attempted to assign an economic value to the time. We are merely highlighting that the EAP involves a more significant commitment from the customer than does the 5%-2% plan or other agreement options.

Costs Associated with Landlord Relations

If a renter is selected for the weatherization program, he or she is expected to obtain the landlord's consent for weatherization work. If landlords perceive this as a negative,¹² some program participants could bear costs associated with poorer landlord relations.

It is clear that some tenants feel that these costs are high. Early in the program, a number of renters were being threatened with program dismissal because they did not attempt to obtain the landlord's consent for weatherization. Since the EAP generally offers a benefit to customers, that customers put themselves at risk for program dismissal over what seems on the surface to be a simple request implies that the tenants were concerned about potential damage to the landlord relations.

¹¹To date, no customer has been dismissed from the program for failing to obtain energy assistance benefits.

¹²Since the program improves that quality of the housing unit, landlords should look favorably upon the program.

Summary of Customer Benefits and Costs

Table 5-5 summarizes the limited information available on nonpayment benefits and costs for participating customers. In general, the costs appear small compared to the substantial shortfall and arrearage forgiveness benefits outlined in Section 4.

**Table 5-5
Summary of Annual Per Customer Benefits and Costs
Accruing to PGW from the EAP**

Type of Benefit/Cost	Nature of Benefit/Cost	Special Notes
Reduced Service Terminations	Main benefit is a reduced risk of shutoff – from 26% in the base year to 8% under EAP	Among those customers who do have service terminations under EAP, there is no evidence that the average length of termination is affected by EAP
Improvement in Other Finances	Customers are more likely to be able to keep up with nongas bills	No data available for further discussion
Cost of Time Commitment	Time required to make application and meet other program requirements	We expect that the time required will vary widely based on individual experience and selection for special program elements
Cost of Impact on Landlord Relations	Deterioration in landlord relations relating to signing the weatherization waiver	Over time, as landlords become familiar with the program, there may be less hesitancy to contact landlords for waivers

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Section 6

Economic Assessment of the EAP Program

The Philadelphia Gas Commission is concerned about the economic viability of the EAP Program. Three measures of program performance have been selected by the EAP Advisory Committee for examination to address this question. The three measures are:

- Variable Cost of Service – Do EAP participants cover the variable cost of gas and contribute to fixed costs of service?¹
- Comparative Cost of Service – Under EAP, do participants contribute more than they do under the existing set of collection options?
- Affordability – Are EAP participants contributing as much as they can afford to contribute?

Each of these measures will serve as information to assist the Philadelphia Gas Commission in determining the economic feasibility of the EAP. Development of a specific measure does not, in itself, suggest that the measure is a determinant of the economic feasibility of the EAP program.

In this section, we develop operational definitions for the measures specified above and review statistics regarding the performance of the EAP with respect to each of these tests. There are significant challenges in the definition and measurement of each criterion.

In looking at the first two measures described above, we are actually comparing three alternative approaches to the low-income payment problem. The alternatives available to the Philadelphia Gas Commission include:

- Implementation of an EAP program to complement existing payments options
- Retention of the existing set of payment options
- Termination of all customers who cannot pay 100% of the fully embedded cost of service.

In applying the variable cost of service test, we are examining whether other ratepayers are better off if the EAP is implemented or if all nonpaying customers have their service terminated. In the comparative cost of service test, we are directly examining the difference between the EAP and the existing set of program options. The third measure, affordability, is more speculative. It asks us to consider whether there are indications that customers could afford to pay more on their bills or whether customers cannot even afford to pay the amounts they are currently paying.

¹The purpose of the EAP pilot program is to provide data to the Commission for use in evaluating whether the program should be continued and/or expanded. An appropriate economic cost indicator should reflect the resources required to administer the program. In this regard, PGW explicitly rejects the use of the very short run definition of "variable cost" as a cost measure for use in evaluating a potentially ongoing and expanding program. Further, PGW believes that the short run cost estimate is undervalued.

6.1 Variable and Fixed Costs of Service

One potential justification for the EAP is that, as long as a customer is contributing to the fixed costs of service, delivery of the service is preferable to service termination. In putting forth this justification for the EAP, one makes two critical assumptions.

- First, one is assuming that it is possible to price-differentiate (charge different customers different prices).
- Second, usage of the measure implies that the regulators are making a choice between using the EAP program or terminating all low-income customers who cannot pay 100% of their bill.

These two assumptions are important in that they make the meaning of the measure clearer. We are asking the question, "Is the EAP (a price differentiation strategy) preferable to service termination?" It does not furnish an assessment of which low-income program to implement; it merely compares the EAP option to the service termination option.

The components of the variable cost of service are:

- A fuel component
- A customer service component

Fuel Component of Variable Cost

The fuel component is potentially made up of two components:

- The average purchased commodity charge for gas – the amount PGW is charged for each Mcf of gas that it purchases.
- The demand charge – the amount that PGW has to pay to ensure that it will have access to enough gas to serve all of its customers.

In addition, PGW's total charge has two elements – the base charge and the GCR. In part, the GCR accounts for retrospective adjustments to the rates to make up for differences between the projected and actual costs of gas to PGW in previous time periods.

It is PGW's position that demand charges should be included in a measure of variable cost, and it is CLS's position that demand charges should be excluded.² Given the nature of demand charges, we suggest that two different fuel components should be presented. Even if the decision were made to terminate all low-income customers who could not pay 100% of their bills, PGW would have to terminate customers over time – not all at once. At some fixed interval, PGW would reassess its need for gas based on its reduced residential customer load. The savings in demand charges could not be realized until an appropriate contract was renegotiated. Over

²In part, CLS' position is based on the fact that the decision to serve interruptible industrial customers is based on commodity costs alone. In addition, CLS suggests that PGW intentionally maintains an "excess supply" position to guard against supply disruptions.

time, PGW would reach a point where the residential customer base reached a new stable level and the demand charges would not be paid for by customers no longer on the system.

In the short run, the fuel component of the variable cost of gas is equal to the commodity charge for gas. In the long run, the fuel component of the variable cost of gas is equal to the commodity charge plus the demand charge. The difference between the short run and the long run depends on the amount of time required to reach a stable level of residential customers and the average contract length for gas.

PGW notes that "recent activities at the federal regulatory level, namely, the FERC Order 636, will offer LDCs, including PGW, the ability to release capacity on short notice if deemed appropriate by the LDC." If this proves to be true, we would agree with PGW that, even in the short run, the variable cost of gas should include demand charges.

CLS also suggests that the appropriate cost amount to be used for the analysis is one that accounts for the actual costs of gas during the analysis year. Thus, if the GCR includes a component that is recovering for higher costs in a previous time period, the average commodity cost should be lower than the current rate. Alternatively, if the GCR component includes a reimbursement to customers for lower than expected costs in a previous time period, the average commodity cost should be higher than the current rate.

Customer Service Component of Variable Cost

The incremental cost of serving customers also is subject to the same short-run/long-run distinction as the commodity cost of gas. In the short run, PGW would not be able to change its level of staffing if it chose to terminate all low-income customers who cannot pay 100% of their bills. In fact, it might need to add staff to complete the required terminations and to staff customer service departments to handle the complaints associated with the terminations. Thus, in the short run, all customer service costs are fixed costs.

In the long run, PGW will be able to reduce its meter-reading staff, its customer service staff, and its collections staff. Thus, in the long run, the variable cost of servicing EAP customers should include program costs (intake, recertification, and other contacts), meter-reading costs, customer service operations costs, and the expected collection costs associated with EAP customers. The program cost can be estimated from the EAP experience. The meter-reading and customer service operations costs can be estimated from historic cost of service data. The collections costs can be estimated from historic cost of collections adjusted for reduced collections required due to higher agreement compliance by EAP customers.

Summary of Components of Variable Cost

To summarize:

Short-run variable costs include:

- The commodity cost of gas

Long-run variable costs include:

- The commodity cost of gas
- Demand charges
- EAP program operations costs
- Customer meter-reading costs
- Customer service operations costs
- Collections costs

In both measures, we explicitly reject the concept that uncollectible expenses should be included in a variable cost of service measure. EAP uncollectibles (EAP bill – EAP payments) would be relevant if we were examining how the required EAP payment compares to the variable cost of service. However, we are directly comparing the amount actually paid by EAP customers to the variable cost of service. In this context, the charge for uncollectibles relates to nonpayment of fixed, not variable costs.

In addition, we explicitly reject the inclusion of costs of the Conservation Works Program and the Special Conservation Program in the variable cost analysis. First, these expenditures should be viewed as long-run investments – designed to reduce consumption over time. Second, in most cases, the benefits of the program should accrue to PGW. Under EAP, the customer's bill is fixed, based on income. Thus, if the customer uses less gas because of a conservation program, it merely reduces the shortfall between the fully embedded cost of service and the EAP bill. In a few cases, the bill will be reduced to the point where it is no longer in the customer's interest to participate in EAP. Thus, a few customers will reap financial benefits from the consumption reduction. But, in most cases, PGW will reap the benefits.

In the long-run variable cost analysis, we reject the argument that avoided costs of termination should offset some of the variable costs of service. Under the scenario presented, the termination would be a one-time expense, while the elements included in the long-run variable cost estimate would be incurred on an annual basis.

Table 6-1 presents a summary of the costs included in the short-run and long-run variable cost of service.

**Table 6-1
Summary of Short Run and Long Run Variable Cost Estimates³**

Variable Cost Measure	Cost Component	Estimated Dollars per Mcf	Special Notes
Short-Run Variable Cost	Commodity Cost of Gas	\$2.12	If FERC Order 636 results in the flexibility required to release capacity, this measure should include demand charges
Long-Run Variable Cost	Commodity Cost of Gas	\$2.12	Note: GCR includes retrospective adjustments for the actual costs of gas.
	Demand Charges	\$1.47	Note: GCR includes retrospective adjustments for the actual costs of gas.
	Program Operations	\$0.13	Includes actual costs incurred in FY 1992 by Customer Activities, Customer Review Unit, and Information Systems. With a larger EAP program, the costs per Mcf are expected to fall.
	Meter-Reading Costs	\$0.05	Includes Meter-Reading and Customer Accounting
	Customer Service Costs	\$0.04	Customer Relations
	Collections Costs	\$0.10	Includes actual costs for 15K EAP participants for FY 1992. A mature program may have lower average costs if nonpayers are dismissed from the program
	TOTAL LONG-RUN VARIABLE COSTS PER MCF		\$3.91

PGW suggests that a higher long-run variable cost is appropriate. At a minimum, they propose that the costs should include \$3.59 for the commodity cost and \$1.03 for nonfuel expense, including \$0.54 for the Conservation Works Program and \$0.17 for the Special Conservation Program. In addition, PGW suggests that three other costs are relevant:

- A charge for installations and operations and maintenance of approximately \$0.50 per Mcf.
- An administrative and general costs allocation of \$0.50.

³The nonfuel costs were developed by allocating EAP expenses over the total amount of fuel consumed under EAP. One reader pointed out that the nonfuel costs would vary by customer, not by total consumption. We agree. However, the data are not available in that format and the impact of using this approach is small since nonfuel costs account for only \$0.32 of the \$3.91 estimated as the long run variable cost.

- A charge for write-off of EAP uncollectibles (the difference between the EAP bill and the amount paid by customers)

We believe that these are important numbers to be considered in setting the final EAP rate. However, we do not believe that they are consistent with the concept of variable cost.

Applying the Variable Cost of Service Test

The best way to examine whether the EAP customers meet the variable cost of service test(s) is to examine the first set of tables in Section 4 – those that include all customers for whom usage and payment data were available. Table 4-11 shows that, on average, EAP customers used 125.4 Mcf of gas. The short-run variable cost estimate for this gas is \$265.84, and the long-run variable cost estimate for this gas is \$490.31. EAP customers paid an average of \$558 for the service used. Thus, during the EAP year, EAP customer payments were greater than both the short-run and long-run variable cost of gas.

Usage during the EAP analysis year was lower than average because the weather was warmer. Under the EAP program, the customer is protected from increases in the gas bill because of fluctuations in the need for gas. Given the rigid nature of EAP billings, two alternative scenarios should be considered.

- First Scenario – Would the variable cost of gas be covered if customers used 10% more gas than they did during the analysis year (approximately a normal weather year)? Under such a scenario, usage would be about 137.9 Mcf. The short-run variable cost of gas would be \$292.34, and the long-run variable cost would be \$539.18. Under this scenario, EAP customers would still cover both the short-run and long-run variable cost of gas.
- Second Scenario – Would the variable cost of gas be covered if customers used 20% more gas than they did during the analysis year (a cold winter)? Under such a scenario, usage would be about 150.5 Mcf. The short-run variable cost of gas would be \$319.06, and the long-run variable cost would be \$588.45. Under this scenario, EAP customers would still cover the short-run variable cost but would not cover the long-run variable cost of gas.

We emphasize again that we consider this test to examine the question of whether the EAP is preferable to service termination for all low-income customers who cannot pay 100% of their bills. That the EAP meets five of the six tests outlined above does not necessarily imply that it is working as well as it should or that it is an improvement over the existing array of programs.

6.2 Comparison of EAP to Alternative Collection and Payment Strategies

The second measure of interest is the comparative cost of service. Do customers contribute more net revenue to the company under the EAP than they do under the alternative set of programs? The information presented in Sections 4 and 5 furnishes the data to answer this question.

Gross Payment Comparisons

It is clear from the base year/EAP year analysis (Tables 4-14 to 4-21) that customers behave differently under EAP than they did under the previous set of collections programs. EAP customers make payments more consistently and are much more likely to maintain their agreements. An important question, however, is whether this behavioral change translates into additional revenue for PGW.

Looking at the entire population of EAP customers, it is clear that the EAP participants did not contribute as much as they did in the base year. Total payments under EAP were 13% lower than they were during the previous year (Table 4-19). Cash payments by customers were 21% lower under EAP than they were during the base year. The payment coverage rate did not fall significantly, but that was mainly the result of reduced gas usage because of the warm weather during the EAP year.

However, some subgroups of the EAP population did increase the amount that they paid under the EAP program. The 8% of income group did not achieve the same level of program success as the other income groups (53% current after 12 months compared to 74% of the 5% of income group – Table 4-5a). However, this group did increase their total payments under EAP by 18%, including a 12% increase in cash payments. One important reason that the average payment fell under EAP is that this group was a smaller part of the EAP population than was expected.

Similarly, customers who receive energy assistance grants during the EAP year increased their average total payments to PGW. Another important reason that the average total payments fell under EAP is that customers did not assign enough energy assistance grants to PGW. Only 49% of customers assigned grants to PGW (Table 4-9) and, on average, they received 0.71 grants. Since almost all EAP participants had outstanding arrears, the potential average number of grants that could have been received was close to 2. The average EAP participant received \$167 in grants – but could have received closer to an average of \$500.⁴

The information available from the EAP Potential group/Comparison group analysis generally confirms these findings. In addition, it appears from this analysis that all low-income payment program customers increased their utilization of assistance grants during the EAP year. Thus, the pre-/postanalysis outlined above may actually be biased in favor of the EAP program.

Net Payment Comparisons

It is not only the total amount of payments collected that is important but also the costs associated with collecting the payments. In Section 5, we review the other benefits and costs associated with the EAP program. Those data are useful in assessing the net difference between the EAP and the existing payment programs.

For this analysis, we consider only the benefits and costs accruing to PGW (Table 5-3). The data presented in that table suggest that the net cost savings associated with the EAP program range from -\$4 to \$35 per customer. The difference between total payments under EAP and total payments in the base year is \$86. Thus, we estimate that the net difference between payments under EAP and payments under the alternative programs is between \$51 and \$90 annually (between \$4 and \$8 per month).

⁴Almost all of the customers who have participated in EAP qualify for both LIHEAP and the maximum CRISIS grant.

Summary of Comparative Cost of Service Analysis

A series of findings can be derived from this analysis.

- In both gross and net terms, the EAP participants did not contribute as much under EAP as they did under the existing set of programs.
- Changes in the existing program operations may have further widened the gap between the EAP and the existing set of programs, since receipt of energy assistance has increased for non-EAP customers.
- The 8% of income group actually increased their total payments and their cash payments.
- There is substantial potential for EAP customers to receive additional assistance grants to cover some of the difference between the EAP and the existing programs.⁵

Using this measure, one would suggest that, if the EAP program cannot be improved, the existing set of programs is financially superior to the EAP.⁶ However, there may be important nonfinancial reasons why the EAP is preferable, particularly given the dramatic reduction in the level of service terminations required under the EAP (Tables 5-1 and 5-2).

6.3 Assessment of the Amount that EAP Participants Can Afford to Contribute

There is no easy way to define affordability. In one sense, if an individual cannot make required gas payments, it is up to that individual to alter budgetary priorities so that he/she can make required payments. However, it is clear that our society generally agrees that people should be able to live at a certain minimum standard. In that context, a basic necessity is unaffordable if its cost, summed with the costs of all other necessities, exceeds total income.

To look at the question of affordability, we will consider some alternative indicators. First, compare the base year to the EAP year. One could argue that the total amount paid by the customer during the base year is the amount that is "affordable." The purpose of the EAP, then, is merely to recognize that the level of payment made during the base year is all that the customer can afford and that the customer's payment agreement should merely formalize that payment level. For example, customers in the 5% of income group paid an average of \$421 in cash during the base year and only \$267 during the analysis year. Moreover, the average EAP bill for the year was only \$278. From this first affordability perspective, the EAP is not asking that customer for enough in cash payments — the customer can afford to pay more toward his/her gas bill.

An alternative discussion of affordability suggests that, by examining the behavior of customers during the base year period, we can see that the amount they were required to pay was not affordable. Table 5-4 shows that, during the base year, 26% of EAP participants had their service

⁵Subject to the availability of assistance grant dollars.

⁶See Section 7 for options for improving the program.

terminated. Moreover, the average shutoff period was 41 days. One could argue that, if these customers could afford to pay the amount that was asked, they would not have allowed themselves to have service terminated for this period.

Additional information is furnished by the behavior of customers in the different percent-of-income categories. Over 70% of the customers in the 5% of income group were able to maintain their agreements, while closer to 50% of the 8% of income group were able to maintain their agreements. This suggests that the 5% of income group is not being "pushed" to the same level of "affordability" as the 8% of income group.

However, service termination statistics do not show the same level of dispersion. In the base year, 29% of EAP participants at the 5% payment level had at least one nonpayment service termination, while 27% of EAP participants at the 8% payment level had a service termination. In the EAP year, 10% of EAP participants at the 5% payment level had at least one nonpayment service termination, while 14% of those at the 8% payment level had a termination. While this distribution shows the same general tendency as the agreement compliance statistics (lower-income households have more "affordable" payment levels), the dispersion is not as significant.

Finally, one can use the data furnished by the Grier Partnership. Using survey data, they found that almost 50% of low-income households had less than \$0 remaining after subtracting essential nongas expenditures. From this perspective, many EAP participants are contributing more than they can afford to contribute.

It is probably appropriate to utilize all of these indicators in making an assessment of the affordability of the current EAP payments levels. Agreement compliance rates increased dramatically, and nonpayment service terminations decreased dramatically as a result of the EAP. The question a policy-maker must address is, "What level of adversity strikes an appropriate balance between the need to have a credible collections tool (i.e., service termination) and the desire to avoid the social problems caused by service termination?"

6.4 Summary of Economic Assessments of the EAP

Three measures were developed to examine the economic feasibility of the EAP: a variable cost of service measure, a comparative measure, and an affordability measure. Each furnished useful information regarding the performance of EAP, including:

- Under all scenarios, payments by EAP customers cover the short-run variable cost of gas. Under some scenarios, EAP customers cover the long-run variable cost of gas. As currently operated, during cold winters the EAP is expected to fall short of the long-run variable cost of gas.
- In both gross and net terms, the EAP, as currently operated, did not perform as well as the existing array of payment programs and collections actions. The EAP did increase payments for some subgroups of the low-income population (e.g., the 8% of income group). In addition, we note that there is substantial room for improvement within the current EAP guidelines (see recommendations in Section 7).

- The EAP is more affordable for customers than is the existing array of payment programs. A significant drop in the nonpayment service termination rate and a significant increase in the agreement compliance rate occur under EAP. It appears that the higher-income groups are being "pushed to a higher level of affordability" than are the lower-income groups. No clear evidence is found regarding the impact if payment levels were raised for some groups.

Each of these measures represents an information point for the Gas Commission in considering the economic and operational feasibility of the EAP. They show how the EAP compares to the existing programs and to the alternative of service termination. In addition, they show how the EAP reduces the level of service termination compared to existing programs. We emphasize that these measures are meant to furnish general input to the policy decision and that none of the measures in themselves furnish a complete answer regarding economic feasibility.

Section 7

Options and Recommendations

The Philadelphia Gas Commission is considering alternatives that will furnish a long-term solution to the low-income payment problem for PGW's low-income customers. The EAP is one of these alternatives. A number of other possibilities could also be pursued.

In this report, we have focused on the EAP pilot, with some reference to how the EAP compares to the current program. However, in making recommendations on whether to implement the EAP, it is important for the Gas Commission to consider what the other choices are available and how they might compare to the EAP.

We begin the section by furnishing a general outline on the range of options facing the Gas Commission – including the implementation of an improved EAP. We continue with a discussion of the factors that would result in selection of different types of options, and we finish with a discussion of how the EAP could be improved if the Gas Commission chooses to implement a full-scale EAP.

7.1 Options for Working with Low-Income Customers

The Philadelphia Gas Commission is considering alternatives for working with low-income customers because, over time, a segment of the low-income population has found it very difficult to pay its gas bills and maintain gas service. This is not a problem that is unique to Philadelphia, nor is it a problem that is limited to areas with a particular set of programs or shutoff restrictions in place. All public service commissions and utilities face the difficult question of whether they should serve customers who truly cannot afford to pay the retail rate for gas service. However, the problem is more serious for PGW because its low-income customers make up a larger share of the PGW customer base than is true for most other utilities.

In examining alternatives, three general classes of options appear appropriate for consideration.

- Improve the Existing Set of Programs – PGW has a number of programs already in place that give a low-income customer additional time to pay bills, including the 5%-2% plan and the 20% down plan. PGW also works with the LIHEAP, CRISIS, and UESF programs that furnish both energy supplements and crisis assistance to low-income customers. One option is to try to improve those programs to meet the needs of low-income customers.

- Implement an Improved EAP on a Full-Scale Basis – The EAP program has been successful at meeting certain goals and shows promise of being able to improve if modifications are made. A second option is to move from the current set of programs to a full-scale EAP for all low-income customers.

- Return to an Aggressive Collections Approach -- Some parties are convinced that the restrictions on service termination have caused low-income customers to use available funds for other purposes. A third option is to eliminate most restrictions on service terminations.

The EAP pilot furnishes data on the first and second options since we have explicitly compared the EAP to the existing set of programs. Though the EAP pilot does not offer much insight into the third option, it is appropriate to list it as one of the choices that the Gas Commission may wish to consider.¹

7.2 Choosing Among Low-Income Program Options

This report furnishes detailed information on the performance of EAP and on how the EAP compares with the existing collections system. It is our assessment that the current system and the EAP are comparable in the dollars that they collect for PGW. Further, we expect that some minor modifications (in particular, raising the required EAP payment amounts) would result in the two programs' performing financially at about the same level.²

Given this result, it is our conclusion that the choice of collections systems should be based more on an assessment of the ability of low-income customers to pay, rather than on the economic evidence from this pilot. More directly, the decision should rest on the Philadelphia Gas Commission's appraisal of the appropriate role for a municipal utility in helping to meet the needs of low income customers.

There are three directions the Gas Commission may wish to consider. They are:

- Improvement of the current system of programs.
- Move to a full-scale EAP program for all low-income customers.
- Move to an aggressive collections system.

¹Two other types of programs have been implemented by a number of utilities. They both represent variations of the EAP in that they are programs that allow the customer to pay less than the full amount of the retail gas bill. They are:

- Lifeline Rates -- This program would offer a fixed percentage reduction in the bill for each verified low-income customer (similar to the discount for senior citizens).
- Negotiated Payment Agreements -- Under this program, an intake worker would itemize the customer's income and expenses and then negotiate a payment level with the customer based on certain guidelines.

²There is one exception to this statement. To date, we have found that the EAP did not "induce" a substantial amount of participation among customers who otherwise would have been paying their full bill. As low-income customers become more familiar with the program, it is possible that there will be additional participation by low-income customers who have been making full payments. For this group of customers, the EAP is clearly more expensive than the existing set of programs.

While these are not the only options available, they are the ones that appear most appropriate given the current status of PGW's low-income payment problems.

Option 1: Try to improve the current system if the belief is that:

- With the existing array of programs, customers can afford to pay their utility bills.
- Customers occasionally have difficulty paying their bills and that a generous repayment plan (such as the 5%-2% plan) is required to get the customer back on the right track.
- It is important to try to minimize the health and safety problems caused by service termination.

Option 2: Move to a full-scale EAP if the belief is that:

- Even with the existing assistance programs, low-income customers simply cannot afford to pay their utility bills.
- It is appropriate for the utility to differentiate rates for residential customers based on income level.
- It is important to try to minimize the health and safety problems caused by service termination.

Option 3: Move to an aggressive collections system if the belief is that:

- All customers should pay the fully embedded cost of their gas service.
- It is not important for a municipal utility to try to minimize the health and safety problems caused by service termination.

Given our experience with this pilot, our experience with research we have conducted for other utilities, and our review of national studies, we feel confident that we can anticipate the likely results of each collections strategy.

- Option 1: Current System Improvements – The current system can be improved in a number of ways. However, it is unlikely that these improvements would result in full payment by low-income customers. Improvements could be expected to reduce the growth of arrears and reduce the annual write-offs, but a substantial number of customers would remain in difficulty and would continue to have growing arrears over time.
- Option 2: Full-Scale EAP – The EAP can be improved in a number of ways, although, on average, one could expect that the program will continue to result in payments that are less than the fully embedded cost of gas. In exchange, a large share of the low-income customers will have their gas

service problems "solved." Still, some customers will continue to have difficulties and will continue to be a problem for collections.

- Option 3: Aggressive Collections – We have no direct evidence on how this strategy would work in Philadelphia. From examination of shutoff statistics in other areas, we expect that the average write-off for PGW would decline, in part because low-income customers who cannot pay would not receive service. It can be argued that, under this scenario, average costs would actually increase for customers still on the system because fixed costs would have to be spread over a smaller customer base. Nevertheless, we do not believe that the evidence exists to prove or disprove this contention.

In general, then, each option can be expected to yield some benefits and to have some costs. No system will eliminate the low-income payment problem and no system will eliminate the costs associated with collections and write-offs, yet each system puts an emphasis on solving one particular aspect of the problem:

- In improving the current system, PGW would be attempting to reduce arrears while also maintaining the low-income customer's individual responsibility for payment of the full gas bill.³
- In moving to a full-scale EAP, PGW would be attempting to "solve" payment difficulties for as many low-income customers as possible and would be willing to realize write-offs to do so.
- By moving to an aggressive collections approach, PGW would be attempting to minimize delivery of service that low-income customers cannot afford.

In the end, the choice made by the Gas Commission will be a practical and philosophic one, rather than an economic one.

7.3 Recommended Improvements in the EAP Program

From our perspective, the EAP could be improved in three ways. The classes of improvements are:

- 1) Improvements that would increase the amount that each customer contributes toward his/her bill.
- 2) Improvements that increase the likelihood that the customer will maintain the EAP agreement.

³From this analysis, it appears that arrearage forgiveness changes the timing rather than the amount of writeoffs.

- 3) Improvements that would reduce the amount of fuel used by customers so that the EAP payments will cover a greater portion of the EAP bill.

The following recommendations are targeted to the achievement of these three goals.

Recommendation 1 – Change Payment Parameters

In comparing the EAP to the current program, average customer payments fell dramatically for the 5%-of-income group, while they actually increased for the 8%-of-income group. As a result, the 8%-of-income group was much less successful on the program than was the 5%-of-income group.

We recommend changing the payment level to 7% of income for all groups. We examined the impact of this change.

- Under the current system (5%, 7%, 8%) the groups are being asked to pay approximately 65%, 95%, and 140% of the amounts that they had paid in the previous year.
- If all groups were asked to pay 7%, they would be paying 90%, 95%, and 125% of the amounts that they had paid in the previous year.

Obviously, this would be expected to reduce the "success rate" of the 5%-of-income group. However, they are still being asked to pay less than they were in the previous year.

Recommendation 2 – Improve the Rate of Assignment of Assistance Grants

On average, EAP customers received less than \$200 in assistance grants, while they were eligible for as much as \$500. Customers who enrolled in EAP when the assistance grant seasons were open had a much higher rate of participation than did those who enrolled during the months when LIHEAP was not available. This suggests several possible improvements:

- Negotiate with the State LIHEAP office the right to submit LIHEAP applications for customers who enrolled in EAP during the months when LIHEAP was not available.⁴
- Set initial EAP payment agreements so that they are due for recertification during months when LIHEAP is available.
- Make LIHEAP participation a program requirement, with dismissal if grant applications are not completed.

⁴This appears unlikely given the current state LIHEAP plan and the status of LIHEAP funding.

It is clear that PGW could realize a significant reduction in the shortfall associated with this program if more grants were obtained. Any of the three approaches would result in some improvement.

Recommendation 3 – Limit the Low-Income Customer's Choices

One problem with the EAP was that customers always had the option of reverting to a 5%-2% plan. In many cases, the 5%-2% plan was selected because the customer's "cure" amount was more than the required 5% down-payment for the 5%-2% plan. Yet, the 5%-2% was never in the customer's interest in the long run. Given this finding, we recommend the following changes in the EAP.

- Eliminate the 5%-2% plan: The EAP can replace the 5%-2% plan completely. The terms of the EAP could be that the customer pays the minimum of 7% of income or budget plus 2% of arrears. In effect, this formula combines the EAP and the 5%-2% plan.
- Eliminate concept of multiple agreements: Under EAP, the payment level should be affordable to the customer. A "cure" provision is in place if the customer misses one or more payments. There is no reason to allow the customer to start a new agreement – since there is a system for restoring the old agreement.
- Shorten the default period: The agreement break should occur after two missed payments. It is understandable that an individual could be late with a payment. However, after missing two payments, it is clear that a customer is either choosing not to pay or is having difficulty paying. In either case, the customer should receive attention immediately.
- Shorten the winter restrictions period: Restrictions on service termination need to be limited to the shortest possible period. If customers are to "learn" to work within the EAP system, the number of missed EAP payments must be limited so that the customer has some chance to "cure." If the period with restrictions on service terminations is too long, the customer will be able to accumulate an EAP debt that he/she will not be able to "cure."

Recommendation 4 – Improve the Customer Support Systems

In the previous recommendation, we discussed program rules that would make the EAP rules "tougher." To balance these rules, and make them implementable, we recommend some changes that make agreement maintenance easier for participating customers.

- Allow customers to renegotiate agreements: The purpose of the EAP is to request an affordable amount. If the customer's income falls or the number of household members increases, the customer must be able to renegotiate an affordable payment amount.

- Set up a "catastrophe" fund: In any system, there will be customers who fall through the cracks and will be unable to "cure" their agreements. A special fund will be needed to help those customer "cure" their broken EAP agreements. It may be possible to ask UESF for funds for this purpose. Alternatively, this may be part of a limited write-off pool that PGW is allocated each year. In either case, careful records should be kept regarding use of this fund by specific customers, with specific limits placed on its use.

Recommendation 5 – Separate the EAP Program Staff from the Collections Department

The EAP is quite different from other collections activities. The EAP attempts to work "cooperatively" with the customer, while collections necessarily uses an "adversarial" approach. It is very difficult for a collections department staff person to develop the skills required for the two very different approaches to collections.

Some other utilities are using or are considering using a separate program staff to manage their low-income payment programs. This has the dual benefit of both giving the customer more support and making it clear that, if the customer fails on the program, he/she will have to return to the "adversarial" relationship with the collections department.

Recommendation 6 – Improve Recertification Procedures

Customers do not appear to respond to recertification notices. In part, changes such as elimination of other options may improve recertification. Other options for improving recertification include:

- Making it easier to recertify by taking qualifying information over the telephone. (Note: This may compromise the verification requirements.)
- Reducing the number of recertifications required by making each EAP agreement last for two years.
- Moving more swiftly to terminate service for customers who fail to respond to recertification notices.

We do not have significant data on the recertification problem and expect that there are other options for improvement.

Recommendation 7 – Improve Conservation Efforts

Once a customer has been enrolled in EAP, large consumption bills are the responsibility of PGW rather than of the customer.⁵ In many cases, high consumption results from serious structural defects in the property.

PGW has implemented the conservation works program to reduce usage among all EAP customers who have usage above the average. However, there is a limit to the amount that can be spent under this program. Where very serious usage problems exist, the customer is referred to other funding sources. Serious delays can result in funding housing improvements for these customers and, in the interim, PGW's shortfall costs can be very large.

In such a situation, PGW could save money by removing limits placed on repairs. A case-by-case analysis would be required to justify such exceptions.

4.4 Acting on Recommendations

If the Philadelphia Gas Commission chooses to move to a full scale EAP, there is a significant amount of additional work for PGW and the EAP Advisory Committee to make the EAP work as well as possible.

In a number of areas, the actions that are required to improve the program are clear. For recommendations #1, #3, and #5, there seems to be general agreement on what must be done. However, there will be substantial costs for PGW to implement these changes. While these are expected to result in savings over the long run, they will add costs in the short-run.

In other areas, especially related to assignment of LIHEAP grants, development of a catastrophe fund, and improvement of recertification procedures, it is not clear how to resolve the problems that were identified in the pilot. PGW and the EAP Advisory Committee will have to work together to develop cost-effective and workable solutions.

⁵Customers are responsible for excess usage over the base year. However, there is little or no evidence of systematic increases in usage by customers. Further, the excess usage process is very expensive to implement.