

Percentage of Income Programs: How Well Do They Work?

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ABSTRACT

Pennsylvania utilities have been piloting Percentage of Income Programs (PIPs) for low-income customers who have exhibited a negative ability to pay their energy bills. These PIPs are structured so that low-income customers pay a fixed percentage of their income for utility services. It is hoped that the lower bill amounts will allow low-income customers to become regular billpayers, thus saving the companies money in reduced collection-related costs, while relieving the participating customers from threats of service termination, and improving the relationship between the utilities and their low-income customers.

This paper addresses the evaluation of five PIP programs: one full-scale program and four pilots. It compares the evaluation process used in each of these studies. The use of PIPs and other need-based pricing programs are on the rise and offer an opportunity for evaluators.

Background on Programs

The full-scale program is the Customer Responsibility Program (CRP) operated by The Philadelphia Gas Works (PGW). PGW is a municipally-owned gas utility and the Pennsylvania Public Utility Commission (PaPUC) does not regulate them. The CRP program is a payment assistance program designed to help low-income customers meet their gas consumption needs through a budget payment. This budget payment is generally based on household income. Any residential customer with gross household income at or below 150 percent of the federal poverty level is eligible to join CRP. The program is unrestricted as to the number of participants. As a condition of admission to the program, participants are required to pay five percent of their balance owed to PGW at the time of enrollment. Customers who qualify and choose to join the program commit to paying their budget amount on time each month. When eligible, they are required to apply for a federal Low-Income Heating Assistance Program (LIHEAP) grant and apply this grant to PGW. Participating customers are also required to pay excess usage charges if their usage exceeds that of buildings similar to theirs. Finally, participants are required to recertify for the program each year. As of July 1997, there were approximately 61,000 customers in the CRP program. This was approximately 12 percent of PGW's total residential customer base.

Independent of PGW's program, the PaPUC initiated a call for pilot demonstrations of PIPs for each of their major electric and gas utilities. Between 1993 and 1996, each PA utility designed and implemented a pilot demonstration with enrollments capped at between 500 to 1500 enrollees. Each utility's PIP followed a set of design guidelines for structuring the pilots, so that there are only minor variations in the program rules and implementation. Results are reported for two gas and three electric utilities, as shown in Table 1.

For all of the programs, the goals can be generalized to the following:

- to establish a better system for the treatment of low income customers;
- to encourage more responsibility in customers towards payment of their utility bills; and
- to increase revenues and decrease costs of service to low income customers.

The concept behind each of these goals is that customers are more likely to make consistent payments to utilities if the payments are more affordable. This more consistent payment behavior will mean that the utility receives an increase in revenue, while decreasing collection-related costs.

Table 1: Utility PIP Programs Evaluated

Utility	Stage of PIP Program	Fuel Type	Evaluation Report Source
Philadelphia Gas Works	Full-Scale	Natural Gas	Wirtshafter (1997)
Equitable Gas Company (Equitable)	Pilot	Natural Gas	(Peach et. al., 1996)
Metropolitan Edison Company (MetEd)	Pilot	Electric	Wirtshafter (1998a)
Pennsylvania Electric Company (Penelec)	Pilot	Electric	Wirtshafter (1998b)
Pennsylvania Power and Light (PP&L)	Pilot	Electric	(Cross, 1999)

PIP Evaluation Requirements

An evaluation of a PIP program is complex. In addition to a change in energy consumption analysis, one must assess change in payment revenues and collection related activities. Figure 1 helps describe the components needed in a PIP evaluation. For example, as a result of the change in pricing, participants may change their gas consumption. If the use goes down this is a benefit to the PIP program. However, if use increases, this is a cost to the program.

Figure 1: PIP Benefits and Costs

PIP Costs		PIP Benefits
<i>Increase</i>	Energy Consumption	<i>Decrease</i>
<i>Decrease</i>	Payment Amount	<i>Increase</i>
<i>Decrease</i>	LIHEAP Grants	<i>Increase</i>
<i>Increase</i>	Cost of Carrying Debt	<i>Decrease</i>
Administration Costs		Avoided Cost of Collection

Of primary concern to this analysis is the change in payment behavior. It is hoped that lower billing rates will result in customers making more payments. The total amount of those payments may be more or less than was previously collected, depending on how much of a discount is granted and the change in payment regularity. This analysis also tracks the LIHEAP grants and the cost of carrying debt. All of the PIPs require eligible customers to apply for grant funds. These funds are generally applied to the shortfall between the full bill amount and the PIP amount charged the customer.

PIP programs, not only hope to encourage monthly payments, but they require them to be made on time. If this happens, then the cost of carrying debt is reduced. Some of the evaluations calculate how the average amount of debt has change between the pre and post periods. The final components of the analysis involve the cost of operating the PIP and any reductions in utility operations that may occur. Including a PIP program as part of utilities' customer-service functions will require additional personnel and services. All of the utilities hired an administrator and other staff. They also required their field offices or contracted with community based organizations (CBO) to perform intake of applicants. To develop the PIP required a large commitment of time by program administrators and computer programmers. These start-up costs are not included in the assessment since they are already sunk and would not be required if the PIP were to be continued.

The introduction of a PIP program may have a positive impact on other customer costs. The principal cost savings should come from a reduction in the cost of collecting money from PIP participants.

If the PIP can keep customers out of arrears, than it can save the cost of sending notices and terminating service.

- Consumption Analysis—How does a customer’s energy use change after going from a bill that varies with amount used to one that sets a fixed rate independent of usage level?
- Payment Analysis—How do the number and amount of payments change after customers join the PIP?
- Cost Analysis--How do the utilities costs for fuel and operation, customer services, collection, program administration, and debt coverage change after implementation of the PIP.
- Cost/Benefit Analysis—Is the program cost-effective for the company to run?

Defining the Test Periods

Both the consumption and transaction analysis need to define a pre and post analysis period. Two approaches have been used, a specific period approach and a rolling period approach. Table 2 illustrates the difference in the two approaches. The specific period approach defines two specific yearlong periods, one pre and one post, and all participants and comparison households are analyzed using the consumption and payment in those specified periods. For example, from December 1993 to December 1994 is the pre-year and from December 1996 to December 1997 is the post-“participation” year. For Household 1, the post participant year represent their twenty-fourth through thirty-fifth months in the program, while Household 2, the post participant year is their seventh through eighteenth months in the program.

The rolling period approach defines a different analysis period for each household based on the day the person joined the program. Comparison households are given a pseudo starting date so that they can also be compared. For each household, 12 months prior to the join date up to the join date is the pre period. From the join date forward 12 months is designated the post period.

Table 2: Comparison of the Two Period Selection Approaches

Household 1 Joined PIP January 1, 1995		Household 2 Joined PIP May 1, 1996		
	Specific Period Approach		Rolling Period Approach	
	Pre-Period	Post Period	Pre-Period	Post Period
Household 1	12/1/93-12/1/94	12/1/96-12/1/97	1/1/94-1/1/95	1/1/95-1/1/96
Household 2	12/1/93-12/1/94	12/1/96-12/1/97	5/1/95-5/1/96	5/1/96-5/1/97

The problem with the specified period approach is that for programs that have operated for a number of years, the pre-period must either be far enough back in time to represent a period when no program existed, or the pre-program period must encompass a period in which customers were enrolled in the program. This means that either some households are dropped because there are no data for the pre-period, or some households are dropped because they already were enrolled in the program during the specified pre-period. Because the rolling approach uses each customer’s exact enrollment date as the pre-post cut-off, none of the participants need be excluded from the analysis for overlap issues. The rolling approach also makes it easier for one to examine customer performance two-years before and two-years after enrollment. The rolling approach does require a more sophisticated analysis routine, however.

Consumption Analysis

The consumption analysis checks to see the degree to which customers change their consumption behavior when given a flat rate that does not vary by quantity of energy used. The conventional wisdom is that customers will exploit the absence of a price signal by increasing the amount of energy they consume. This fear has prompted most PIP programs to include penalties for those increasing their usage above a certain threshold or incentives for those customers that successfully reduce their energy levels.

Because the consumption analysis methodology has been addressed in numerous weatherization studies, this paper will not elaborate on the results. The evaluations found a range of impacts from post enrollment increases up to 10 percent to post enrollment decreases of 3 percent. No obvious patterns exist to explain the differing results.

Payment Analysis

To evaluate the impact of the PIP on payment behavior, it is necessary to measure changes in the three areas: the amount of payments, the number of payments, and the timeliness of the payments. All of the utilities realized a significant improvement in the payment frequency after PIP enrollment. Customers increase the number of payments made. As they are now configured, making regular payments is a requirement to stay in the PIP. Most of the programs have very strict requirements so that any customer missing a second consecutive payment is dismissed from the program. Most enrollees find it difficult to meet this requirement. Table 3 shows the retention rate for the various utilities. Most of the programs lose more than 50 percent of their participants by the end of the second year. Approximately, one half of these are closed accounts, where the customer moves, dies, or where service is terminated. The programs also have different policies with respect to removal from the PIP programs. MetEd and Penelec strictly enforced the requirement that customers could not have two consecutive missed payments. The other utilities have less stringent requirements and/or do not enforce the provisions as strictly.

Table 3: PIP Retention Rates

	Total Number of Participants Enrolled	Number as of 12/97	Retention Rate
PGW	102,666	58,187	57% (36%) ¹
MetEd	1600	525	33%
PP&L	1870	626 ²	45% ³
Penelec	1333	406	30%

1. 21,245 of these customers were in default of program payment rules and would have been dropped if pilot rules applied.

2. As of 4/1/97

3. "Only 45% of cohort 1 and 2 joiners remained in OnTrack program 24 months after they joined. 30% of joiner accounts had closed and 25% had been dropped for missing payments or failing to recertify as eligible. (Cross 1999 p. 33).

Table 4 shows the number of payments made by the participants before and after they join the PIP. The good news is that many customers are now making regular payments. In general, customers are increasing payment frequency to more than ten payments per year.

The bad news is that these payments in total are less than they were before the program. Table 5 shows a comparison of the revenues collected from the customers in the pre and post periods. It is apparent that revenues drop in the year following enrollment as compared to the revenues received in the previous

year. Part of the change reflects differences in the calculation procedures. The PP&L result includes changes relative to payment amounts of a comparison group.

Table 4: Change in Payment Frequency

	Number of Payments in Pre Period	Number of Payments in Post Period	Change in Payments (Post to Pre)
PGW	6	10	4
Equitable	8	11	3
MetEd	7	10	3
Penelec	6	10	4

Table 5: Change in Payment Amounts

	Payment Amount in Pre-Period	Payment Amount in Post Period	Change in Payment Amount (Post to Pre)
PGW	\$573	\$553	-\$20
Equitable	\$845	\$736	-\$109
MetEd	\$622	\$620	-\$2
PP&L			-\$192 ¹
Penelec	\$558	\$380	-\$178

¹ This represents a weighted average of heating and general service customers in cohort 1 and 2 of Cross 1999. These figures include payment amounts relative to a comparison group.

Table 6 shows the change in energy assistance received by the utilities. All of the programs have a requirement that LIHEAP-eligible PIP participants apply for at least one grant made out to the utility. Many of the utilities did not penalize participants who failed to apply. PGW instituted an aggressive marketing campaign to encourage all of its low-income customers to enroll. More recently, they also imposed a penalty on those customers who were eligible for grants and failed to apply. The impact of this penalty does not show up in the analysis period shown in Table 6.

Table 6: Change in the Amount of Energy Assistance Grants Received

	Amount Assistance Grants in Pre Period	Amount of Assistance Grants in Post Period	Change in the Amount of Assistance Grants (Post to Pre)
PGW	\$122	\$168	+\$46
Equitable	\$153	\$232	+\$79
MetEd	\$43	\$6	-\$37
PP&L			-\$102 ¹
Penelec	\$88	\$5	-\$83

¹ This represents a weighted average of heating and general service customers in cohort 1 and 2 of Cross 1999. These figures include payment amounts relative to a comparison group.

Tracking the impact of the PIP on grant receipts is a tricky endeavor. Not only have there been changes in grant eligibility and grant size, but utilities have changed the ways that they encourage customers

to apply. It is unclear as to how much of the changes in the pre-post grant levels are attributable to the PIPs themselves.

Payment Analysis Evaluation Issues

There are several methodological issues that need to be addressed in calculating changes in payment behavior. One area of particular concern is the appropriate use of comparison groups. Unlike consumption analysis, where numerous studies already have explored most analysis nuances, we have little experience in analyzing transaction impacts. For example, weather differences are accepted as a major exogenous variable affecting consumption. Studies have therefore made use of normalization routines such as PRISM to control for weather. In the case of transactions, it is unclear how seasonal variations affect payment behavior. Most low-income customers are on budget plans so that their bills do not vary by weather variations. In Pennsylvania, payment may be more affected by the existence of a shut-off moratorium that limits the utility's ability to shut-off customers in the winter months, or by changes in federal entitlements.

Selection of a Comparison Group. Choosing the appropriate comparison group is also an issue. In a weatherization analysis, the subsequent-year's treatment group serves as a comparison for the current year's treatment group. The use of future enrollees as a comparison assumes that the two groups are similar in all factors, except that one group received treatment while the other did not. The analysis also assumes that treatment is independent from previous behavior trends, (that is a person's selection as a participant is not influenced by their behavior in the prior periods); and that no other exogenous variables affect one group differently from the other during the analysis period. Unfortunately, all of these assumptions are violated in the PIP case.

Both Wirtshafter (1997) and Cross (1999) noticed a significant drop in payments in the period just before joining the PIP. "The financial situation for some of the customers worsened enough in Period -1, (relative to Period -2) that they contacted a PGW representative and enrolled in the PIP, Wirtshafter (1997)." This observation of reduction in payment leading up to enrollment means that enrollment is not independent of previous payment behavior. Because there is a timing component to when a customer enrolls, it is not true that the changes in behavior of the treatment group in years Period -1 to Period +1 are similar to the changes in behavior of the comparison group in Period -2 to Period -1.

Self-selection into the PIPs makes designation of a control more difficult. There is a problem in comparing the group of customers from a pool who were motivated to join the PIP to the remaining households who took no action. In the PGW case, the size and duration of the program left an obvious division between participants and non-participants so that no comparison group could be found. Cross (1999) pulls his comparison group from those not enrolling, and acknowledges the possibility of self-selected differences between his treatment and comparison groups.

To establish a comparison group, Wirtshafter (1998a and 1998b) partitioned the eligible population into two separate groups. One group was not informed about the PIP, or referred to PIP by utility representatives. In theory, this should have produced a better comparison group, because it was not made up wholly of persons who were offered but rejected the opportunity to join. There was, however, still a self-selection issue in that some segments of the eligible group chose not to participate, particularly those customers in the higher incomes, where the PIP rate would be higher than the regular rate. The comparison group thus was a valid comparison of customers eligible to join PIP, and not one of those that actually joined.

With these problems in the specification of the comparison groups, none of the studies can fully attribute observed changes to program impacts. This is an area where improvements are needed in future studies.

Dealing With Transience. It is unclear how to deal with accounts that do not have a full year of values. For example, it is not clear how to project a half-year's record of payment behavior over a full-year (although this is commonly done with consumption analysis). For the majority of the analyses, analysts have only included cases where a full year of data is available. This presents a serious problem in that it excludes all transient customers including those who were disconnected either in the pre or post period. This also excludes anyone who moved during these periods, even though as Cross (1999) notes treating moves as an independent event biases the results. Those customers with the poorer paying record are more likely to move because of financial difficulties in paying their rent.

The behavior of the group appears to improve over time, but some of this change is due to transient customers who were poorer payers dropping out. Evaluators should use caution when making statements such as "Customers who stayed in CAP two years showed improved payment behavior", because any group of low-income customers who stayed at their addresses for two years probably also showed improvement over that time period. Cross (1999, p21).

The transient issue also makes it difficult to gauge the effectiveness of the PIP in keeping customers from disconnection. If a full-year of pre data is needed to be included in the analysis, all customers disconnected in the year prior to joining the PIP are excluded. Unless having a full year of data is a program requirement as it is in some programs, ignoring accounts with less than a full pre-year of data drops an important set of participants from the analysis.

There are few easy solutions to correct the transience issue. Evaluators can attempt to track participants from one location to another, though this method tends to locate customers who relocated for reasons other than non-payment of rent and utility bills. The latter group tends to change the billpayer name when re-registering for utility services.

Cost/Benefit Analysis

The largest amount of controversy about the performance of PIPs lies in the cost/benefit assessment. The studies measure costs differently. The evaluations have very different perspectives on the appropriate determination of cost-effectiveness.

Determination of Program Success

The ultimate purpose of all PIP evaluations is to determine if the program is cost-justified. However, in comparing the Equitable Gas to the four other studies evaluations, the measures used to determine cost-effectiveness differ greatly. Thus, though programs behaved quite similarly, the conclusions regarding cost-effective are vastly different. The discrepancy stems from the use of a cost-effective test used by Equitable in assessing their program. A test this author believes is invalid. Because this test has traditionally been the justification for the use of PIPs, we address this issue as our first priority.

The measure of cost-effectiveness to non-participants used by Peach et. al. and others is as follows. "If participants fully pay the variable (commodity) cost of energy plus at least some small contribution to fixed cost, the other customers will be better off. (Peach et. al. 1996)." Low-income advocates introduced the concept of "low-income rates set at variable costs" as a response to the large discounts being offered large industrial and commercial customers. Gas utilities faced with loss of a large customer justify giving discounts as long as the amount paid by the customer cover all of the variable costs and a portion of the fixed costs. As long as this occurs, other customers will be better off than they would if the customer left the system. This line of reasoning was extended to consideration of low-income households. The reasoning is that if low-income customers, who receive large amounts of gas under the winter moratorium and then are

shut off for the summer period for non-payment, make regular below-bill payments, the utility is better keeping them on during the summer. Because summer gas consumption is totally off-peak, any contribution above the variable cost of service is revenue that helps to contribute to fixed costs and lowers the obligations that other paying customers must make.¹

The problem with this line of reasoning is that PIP advocates, as signified by the Peach et. al quotation above, have extended the rationale to total service rather than the more limited argument over whether summer shut-offs are in other customers' economic interest. The analogy between large industrials and PIP participants fails because PIP customers do not have mobility to go elsewhere for their gas. Lower rates for industrials and even summer use for low-income are justified because those revenues would be lost to the system. A prudent utility would not offer discounts to its industrial customers unless the utility saw a realistic chance that the customer could actually leave. The possibility of low-income customers leaving the system or a utility removing them permanently has no basis. PIP customers cannot and do not leave the system. The segment of the low-income population with poor payment patterns has no options for getting gas service from other suppliers. Even when a customer's service is terminated, he or she does not really leave the system. These customers are either granted favorable re-entry provisions or they return using someone else's identity. Therefore, the load does not disappear. It remains regardless of the pricing scheme. Providing service to these customers, while collecting less revenue than could be collected under other approaches does not benefit other customers. Revenues are reduced and costs remain the same. If we are truly interested in benefiting good-paying customers, utilities must attempt to maximize the contributions that poor paying customer make towards their gas bills.² Regulators and utilities may choose to offer these PIP rates to low income customers for social policy purposes, but they are not cost-justified if they only meet the standard of cost-effective presented above.

The problem is compounded in Pennsylvania by the interpretation that only fuel prices and not other avoided costs such as billing, metering, and collection should be included in the equation. The Peach et. al. cost-effectiveness measure though invalid has become the determinant of whether programs are cost justified. Lowering the rate to an immobile sub-class of customers hurts the other customers. If a PIP program is truly to eliminate impacts on non-participants, then it is necessary to choose the pricing alternatives, which produces the largest net return. A valid economic comparison examines all of the revenue collected and costs to administer a PIP and compares those revenues and costs to those of the traditional pricing scheme and any other alternatives.

Comparative Costs as the Measure of Cost Effectiveness

An alternative, and more useful, performance criterion is a comparison of the PIP with other service options. For this test, we compare the revenues and costs associated with PIP with the revenues and costs of billing procedures used before there was a PIP. Revenues and costs for each option (PIP and previous billing procedures) are compared in order to determine which program generates the highest net revenue.

To facilitate the analysis, all costs and benefits are computed as incremental to the pre-PIP billing approach. For convenience, we classify these costs and benefits into six categories shown in Figure 1. The last three categories, which have not been previously discussed, will be discussed in detail below.

¹ This argument totally ignores the value of terminations as a payment incentive.

² We are not advocating that rates be raised to discriminatory levels where contributions significant exceed class costs of service. In some cases, lower rates may be economically justified. For instance, Cross (1999) argues that low-income residential users of gas or electricity with high loads deserve lower rates because each unit of consumption billed has a fixed charge built into it. Customers using more energy are therefore being charged for more fixed charges. This author cautions that without careful rate analysis balancing this fact against the higher demands for peak system capacity by these same customers, it is difficult to know if rates are too high or too low for low-income customers with large loads.

Incremental Annual Cost of Carrying Debt. In addition to the amount of payments made by each customer, it is important to measure the timing of these payments. Utilities maintain working capital to cover the lag between the time they bill a customer and they receive a payment. When customers owe money or just pay their bills late, the utility must cover this unpaid amount by increasing its working capital amount. The interest cost of carrying this debt is a cost that needs to be tracked in assessing the impact of the program. PIPs are supposed to lower a utility's costs by making payments on time, and thus lowering the utility's working capital requirement.

Most of the studies ignore this cost. The three studies by this author calculate the change in average overdue balance within each period. The average overdue balance measures, each day of the year, the total receivables that are more than 30 days past due. These daily values are summed and divided by 365 to obtain an annual average. The annual average is then subtracted from the starting value to derive a change in average arrearage over the year. This calculation indicates the change in the average past due amount for the year. The value multiplied by the interest rate shows the change in the cost of carrying this customer's arrearage over the entire year.

In addition, once a customer joins PIP, the utility gives the customer an earned discount (defined as the shortfall difference between the full bill and their PIP bill amount) each month. This earned discount is applied only after full payment of each bill. The cost of carrying this earned discount needs to be considered in the cost benefit analysis. In some utilities, the shortfall has been included into current rates so that money is accruing to pay for this shortfall and no carrying costs are incurred. For other utilities, the short fall is being accumulated to be recovered when the rates are recalculated. In this case, the carrying costs of the shortfall should be included.

Finally, some programs grant forgiveness of pre-program debt. For many utilities, the write-off of bad debt produces a positive benefit. The utility claims back the taxes paid on the assumed payment. This current payment is often larger in present value terms than the future recovery or repayment of a portion of the debt. Most utilities do not track their debt recovery close enough to know whether debt forgiveness produces a benefit or a cost. At worst, however, forgiveness does not represent a large cost for any utility.

Forgiveness can play a role as a payment incentive, however, there are issues. Cross (1999) believes that forgiveness was an important incentive for most customers. Wirtshafter (1996) finds that most participants do not attach as much importance to the forgiveness incentives. For MetEd/Penelec, less than ten percent of surveyed participants mentioned forgiveness as a benefit of the program. The figure was even smaller for PGW. For many the debt to the utility had reached a point where they had long ago given up on paying it back. This is illustrated by the fact that customers with the lowest amounts of debt were far more likely to mention forgiveness as a benefit.

Administrative Costs. Within the broad areas of PIP program operation costs, customer service operations costs, and collection costs, there are areas where PIP programs requires different personnel and service levels than required for regular customers. These on-going expenses have been found to be significant. Table 7 shows the change in administrative costs per customer. All of the programs expended a considerable amount of funds in getting the programs started. If another utility were considering whether to start a PIP, these start-up costs would be a major consideration. However, since the issue for the Pennsylvania pilots is whether the pilot PIPs should be extended into full-scale programs, the start-up costs are sunk and are not relevant to the analysis.

Costs that would continue if an existing PIP were to continue fall primarily into two areas: administrative and customer support. Each PIP has been required to hire a program administrator to run the program. This person and some assistants handle all of the calls from customers, track payment issues, coordinate with field offices or community based organizations (CBO) that offer outreach services, and prepare reports for management and regulators. A major cost of each of the PIPs involves customer

outreach. Each participant must fill out an intake form at a field office or CBO office. This information must be re-certified annually. In addition, the field offices and CBOs are used to contact customers who are about to be dismissed for non-payment.

Table 7: Change in Average On-going Administrative Costs for PIPs

	Number of Participants	Change in Average Administrative Cost
PGW	102,666	\$9
Equitable	6,975 ¹	\$83
MetEd	1600	\$99
PP&L	1870	\$90
Penelec	1333	\$58

1. No figure is given for total number. Value represents peak enrollment during study period, achieved in June of 1994.

Avoided Collection Costs. One of the important goals of PIPs is to reduce non-payment by customers and thus reduce the amount of collection activity required. If this is occurring, it is a benefit of the program and an estimate of the collection costs that are avoided should be calculated. To calculate these avoided collection costs, we can compare the number of collection activities required and the costs of each collection activity. ³

The analysis of collection impacts really comes down to measuring the results of customers who succeed in the PIP. There are no long-term savings in collection costs for customers who are removed from the PIP for non-payment. These customers end up back in traditional collection and do not end up saving any collection-related costs. The PIP serves as a means to postpone ultimate collection activities. Collection activity savings, therefore occur when a previously poor paying customer is reformed into a good payer upon joining the PIP. Counting up the number of these reformed customers and multiplying the number by the collection-related costs associated with serving them in the past gives us an avoided collection cost figure. Of course in reality, the analysis of collection costs faces the same issues facing payment analysis. If collection problems are cyclical or temporary, changes in behavior may be the result of these variations and not impacts of the PIP. To date, no methods have attempted to control for these variations, other than by using a comparison group to monitor relative changes in collection related costs over the same time periods.

Three of the evaluations calculate an avoided collection cost value. It is interesting to note that the traditional collection costs for PIP-like customer average less than \$40 per year. Therefore it is not possible for the savings for these collection costs, even should they all be saved for every participant to cover the extra administrative costs of the PIP. The savings calculated for MetEd, Penelec, and PGW were -\$15, +\$16, and +\$2 per participant, respectively.

Other Benefits. David Carroll (1993) notes that there are benefits “derived from the ability to maintain gas service including health and cleanliness, safety, and comfort, and the improved ability to meet other financial obligations because of reduced gas payments and arrearages”. Cross (1999) notes that income improvements are unlikely to be substantial enough to affect significantly anyone’s overall economic situation.

Net Impacts. Table 8 summarizes the net impacts of the program compared to if there had been no program and participants had remained in traditional billing.

³ Peach et. al. 1996, suggest that this “bottom up” method underestimates the value of collection savings because it ignores overhead and productivity factors. They use a “top down” approach which looks at the issue from a budgeting standpoint. While there may be difference in the bottom-up and top-down approaches, Peach’s approach must be rejected out-of-hand. His comparison assumes that a utility will either have traditional billing or it will have a PIP. The real option for utilities, and the scenario analyzed by all the other evaluations assumes the choices are traditional billing or traditional billing with a supplemental PIP.

Table 8: Net Impacts of PIP

	PGW	MetEd	PP&L ¹	Penelec
Increase in Revenue Collected	(\$1,721,816) ²	(\$3200)	(\$233,500)	(\$237,274)
Increase in Grants Collected		(\$59,000)	(\$124,248)	(\$110,639)
Incremental Annual Savings of Carrying Debt	\$655,241	(\$38,164)		(\$59,465)
CAP Incremental Costs	(\$734,423)	(\$158,248)	(\$109,260)	(\$76,616)
CAP Avoided Collection Costs	\$186,346	(\$23,329)		\$21,991
Total Benefit (Cost) of CAP Program	(\$1,614,652)	(\$282,128)	(\$467,000)	(\$462,003)

¹ Calculated based on cohorts 1 and 2

² Includes grants collected

Summary

When the Pennsylvania Public Utilities Commission initiated the PIP pilots, they envisioned four goals for the pilots. These goals are: 1) Benefit good-paying customers by providing a more effective approach for dealing with low-income payment problems than traditional collection; 2) Protect consumer health and safety by helping low-income customers maintain utility services; 3) Provide for affordable utility service by making available payment assistance to low-income customers; and 4) Establish that CAP is operated in a cost-effective and efficient manner. Now that the pilots are finishing their initial runs, it is a good time to assess how well have the programs met these goals.

Do the PIP pilots as currently designed benefit good paying customer? The program significantly helps the participants who make regular payments while in the PIP, characteristics that describe approximately only one-third to one-half of the participants. These customers are given large discounts in their bills and generous debt forgiveness. However, for all of the pilots examined, the vast majority of the utilities' good paying low-income customers are ineligible for the program. Since only customers with an arrearage were allowed in PIPs to begin with, only customers who were poor payers directly benefit from the discounted billing offered by the program. The utilities' good paying customers are being asked to increase their rates to help the poor paying customers get a larger discount. This inequity creates a negative incentive for good-paying low-income customers.

Does the PIP, as it is designed, protect consumer health and safety by helping low-income customers maintain utility service? Again, there may be isolated cases where the PIP improves a customer's health or safety. However, for the vast majority of customers, it is hard to make a case for health and safety improvements. Because Pennsylvania utilities adhere to a service-termination moratorium in the heating period and do not disconnect customers with known medical needs, service terminations do not generally impose any health or safety costs on customers. The evaluations, in contrast, find termination to be a positive tool for the utilities. Cross (1999) shows that the threat of termination and termination itself are an effective means for collecting revenues from non-paying customers. Both Cross (1999) and Wirtshafter (1998a, and 1998b) found that the PIPs have little impact on preventing service terminations. (This is largely because so few customers actually have their service terminated each year). Most of the participants who would likely face service termination fail to stay in the PIPs and therefore gain only temporary protection from termination. If we take the incremental costs of the PIP and divide it by the number of avoided terminations, Wirtshafter estimates that it costs the utilities between \$4900 and \$34,000 for every avoided termination. This can hardly be considered a cost-effective way to avoid terminations.

Does the PIP provide for affordable utility service by making payment assistance to low-income customers? The answer to this question is both yes and no. For the minority of PIP customers who remain active the answer is yes. For those removed from PIP the answer is no. However, for the vast majority of good paying low-income customers, the answer is no. These households struggle to make their payments each month. The PIPs increase their rates given that PIP administration, shortfall, and forgiveness are borne by paying customers. While the cross-subsidies of the pilot are insignificant, a full-scale program would likely have a noticeable affect on some households.

Does the current PIP operate in a cost-effective and efficient manner? On an ongoing basis, the PIP experiment costs the four utilities, PGW, MetEd, PP&L, and Penelec, and their ratepayers almost \$2.8 million a year more than the utilities would have spent had the traditional billing been in place. (This figure does not include the hundreds of thousands of dollars required to start-up the programs). Nor do we find the PIPs to be efficient. In order to operate them, the utilities have been required to create a new management system, billing system, and customer service structure. Running two systems in parallel is both costly and confusing to the customers.

The evaluations of the Pennsylvania PIP pilot programs and the full-scale program run by PGW show PIPs not to be cost-effective when compared to regular traditional billing. The programs as they are now configured are expensive to operate. Despite favorable payment discounts and debt forgiveness, less than half of the customers remain active in the programs. Of greatest concern is the inequity of the current arrangement, which provides benefits to only those customers who have not paid their bills in the past, at the expense of those that do. Many low-income households need help managing their energy bills, and new solutions must be found. Two solutions, a low-income rate for all eligible households and improvement to traditional collection practices, may be better alternatives.

If PIPs and other low-income pricing programs continue to be developed, the evaluation industry will need to set certain standards for what constitutes an acceptable evaluation. This paper notes several areas where better approaches will need to be developed if more exacting studies of performance and cost-effectiveness are required.

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