

Final Report

# Washington Low- Income Bill Assistance Program: Phase II, Impact Analysis

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# ***Executive Summary***

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PacifiCorp hired Quantec, LLC, to perform an evaluation of the Washington Low Income Bill Assistance Pilot Program. The Program was designed to address the difficulties faced by the Company's low-income customers in its Washington service territory (specifically, those having difficulties paying their electric bills). The Program reduced rates for enrolled participants meeting the income eligibility criteria. The evaluation of the Program was divided into two phases. Phase I (Process Evaluation) was completed in the summer of 2002; while Phase II (Impact Evaluation) is the primary focus of this report.

The evaluation objectives are as follows:

- Assess the process of delivering bill assistance services to low-income customers in the State of Washington
- Provide timely feedback regarding the delivery mechanism for possible roll out as a permanent program
- Assess the quality of the delivery process Estimate Program impacts on participants' arrears, disconnects, ability to pay bills, and energy burden
- Estimate the nonenergy benefits of the Program on participants' health, comfort, and other nonenergy benefits
- Assess the Program's discount design and its components
- Assess Program cost effectiveness

The Program is administered with the assistance of three Washington community action agencies: The Blue Mountain Action Council in Walla Walla (BMAC), the Northwest Community Action Center in Toppenish (NCAC), and the Opportunities Industrialization Center of Washington in Yakima (OIC). The agencies are responsible for Program outreach and the enrollment of participants.

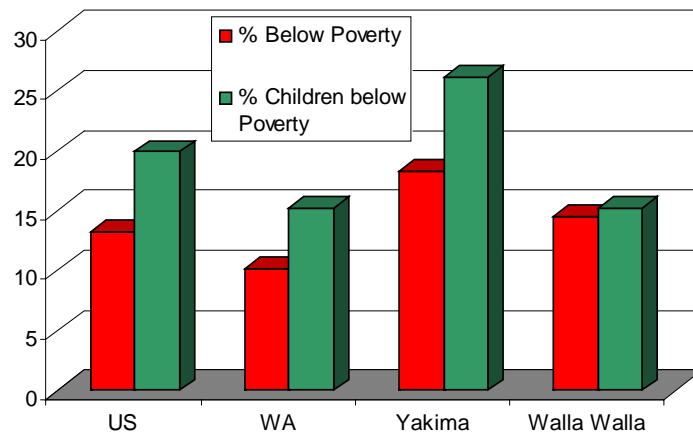
## **PacifiCorp Washington Low-Income Customers**

PacifiCorp serves customers in four Washington counties, the majority of which residing in Yakima and Walla Walla Counties.

We collected several census-based indices to assess the plight of the low-income population the Program is intended to serve. On average, the counties of Yakima and Walla Walla have more people per household, a lower median income, as well as a higher cost of living than the state of Washington and the United States overall. Figure ES.1 illustrates the cumulative impact of the

aforementioned factors upon poverty levels in Yakima and Walla Walla counties.

**Figure ES.1: Percent below Poverty**



The Program applied to the winter heating months (November through April), offering a three-tiered system of rate discounts in which those with a lower poverty level received a higher rate reduction. This system (Schedule 17) is shown in Table ES.1.

**Table ES.1: Schedule 17 Rate Discount**

| Income Tier                                | Discount (November through April)     |
|--------------------------------------------|---------------------------------------|
| Tier A. 0%-75% of Federal Poverty Level    | 3.5 cents per kWh for all kWh > 600   |
| Tier B. 75%-100% of Federal Poverty Level  | 2.355 cents per kWh for all kWh > 600 |
| Tier C. 101%-125% of Federal Poverty Level | 1.472 cents per kWh for all kWh > 600 |

As Table ES.2 shows, the majority of participants fell into the lowest-income tier.

**Table ES.2: Participation by Agency and Income Level**

| Agency       | Tier A       | Tier B       | Tier C     | Total        |
|--------------|--------------|--------------|------------|--------------|
| BMAC         | 702          | 363          | 231        | 1,296        |
| OIC          | 772          | 527          | 266        | 1,565        |
| NCAC         | 1,390        | 745          | 440        | 2,575        |
| <b>Total</b> | <b>2,864</b> | <b>1,635</b> | <b>937</b> | <b>5,436</b> |

Table ES.3 shows the annual goals and achievements of the three participating agencies. Overall, the Program served 76% of its targeted goal, while rates

varied by agency ranging from 53% (OIC) and 100% (BMAC). As evident in Table ES.4, a large number of eligible households remain to be served.

**Table ES.3: Participation Goals/Actuals by Agency and Income Level**

| Agency                   | Annual Goals | Program Year Actuals |              |              | Total Actual | Total Goal   | % Achieved |
|--------------------------|--------------|----------------------|--------------|--------------|--------------|--------------|------------|
|                          |              | 2000                 | 2001         | 2002         |              |              |            |
| BMAC                     | 432          | 432                  | 432          | 432          | 1,296        | 1,296        | 100%       |
| OIC                      | 984          | 206                  | 618          | 743          | 1,567        | 2,952        | 53%        |
| NCAC                     | 984          | 605                  | 984          | 984          | 2,573        | 2,952        | 87%        |
| <b>Total</b>             | <b>2,400</b> | <b>1,243</b>         | <b>2,034</b> | <b>2,159</b> | <b>5,436</b> | <b>7,200</b> | <b>76%</b> |
| <b>% of annual total</b> |              | 52%                  | 85%          | 90%          |              |              |            |

**Table ES.4: Eligible Population Served by County**

| County       | Annual Program Goals | Total Actual (2002) | Eligible Households | % Served   |            |
|--------------|----------------------|---------------------|---------------------|------------|------------|
|              |                      |                     |                     | At Goal    | Actual     |
| Yakima       | 1,416                | 1,175               | 18,112              | 8%         | 5%         |
| Walla Walla  | 984                  | 984                 | 4,398               | 22%        | 22%        |
| <b>Total</b> | <b>2,400</b>         | <b>2,159</b>        | <b>22,510</b>       | <b>11%</b> | <b>10%</b> |

## Results

During the period of study, PacifiCorp's Washington service territory experienced a substantial decrease in residential energy prices. Combined with the rate reductions due to Program participation, fundamental economic principles indicate that consumption should increase with a decline in price. Though consumption did increase for participants, the increase was not significantly different from zero and was much smaller than expected.

Energy burden, defined as the share of household resources needed to cover energy expenses, should also improve with rate decreases. As Table ES.5 indicates, this was the case for both participants and non-participants (comparison group). Participants, however, experienced twice the improvement of non-participants. As this Program centered on electricity, we analyzed electric energy burden in isolation. If benefits from LIHEAP and other assistance programs are included as resources in the computation of energy burden, the figures below will be reduced by approximately 12% in both the pre- and post-Program periods with no effect on the estimated Program impact.

**Table ES.5: Improvement in Electric Energy Burden**

| Group             | Energy Burden |      | Difference | % Decrease    |
|-------------------|---------------|------|------------|---------------|
|                   | Pre           | Post |            |               |
| Participants      | 6.9%          | 5.2% | 1.7%       | 25.00%        |
| Comparison        | 6.5%          | 5.7% | 0.8%       | 12.33%        |
| <i>Net Impact</i> |               |      |            | <i>12.67%</i> |

Arrearages improved for participants at an annual rate of \$55/year for the first year. Collection actions also decreased as a result of participation in the Program.

Cost-effectiveness analysis is customarily summarized using benefit-cost (B/C) ratios or net present values (NPVs). A B/C ratio of 1.0 is the “breakeven point” where benefits are just equal to the investment.

Cost-effectiveness tests for traditional demand-side management programs are fairly well defined (California Standard Manual). These tests apply properly to programs that are aimed at reducing energy consumption; they are not intended for programs that offer assistance to low-income customers through straight cash donations or rate discounts. To our knowledge, no such tests exist. What follows is our attempt at defining these tests from the utility, ratepayers, and societal perspectives.

As Table ES.6 shows, the Program is cost effective from the Utility’s perspective, with a B/C ratio of 1.31 and a NPV of \$331,252. The Company received \$1,080,377 in revenue from the surcharge and paid the same amount to provide bill discount and administer the Program. The Company’s collection costs decreased by \$331,252, which is reflected as a net benefit.

Revenue requirements declined by a \$331,252 reduction in the collection costs. However, in order for that to happen, the Program implementation costs of \$406,589 had to be incurred, leading to a net increase in revenue requirements of \$75,377. The amount of the received discount is a cross-class subsidy (transfer payment) and is not included in the analysis.

Finally, from a societal perspective, the benefits are similar except for the mobility costs reduction that is assessed from the combined client and Company’s perspectives. What our “societal” perspective does not show is the rather significant benefits accruing to clients in various forms. Not only are frequent moves expensive and inconvenient, they have other extremely serious effects, including increased school dropouts and inability to hold a job. Mobility can be especially hard for the elderly and families with children. Unfortunately, due to lack of time and funds, we did not investigate the change in mobility for this Program. We are certain, however, that the value is quite significant. Clearly a strong link exists between the inability to pay bills and becoming homeless. Avoidance of shutoff clearly has some serious health



implications. High energy burden can force low-income customers into making difficult decisions regarding their very limited funds. No information is available on the monetary impact of this undoubtedly important benefit. Life for low-income families can be overwhelming. On a day-to-day basis, critical needs compete over finite resources, and tradeoffs have to be made. Programs like this one are invaluable to people in need.

**Table ES.6: Cost Effectiveness Results**

|                          | Utility     | Ratepayers | Societal  |
|--------------------------|-------------|------------|-----------|
| <b>Benefits</b>          |             |            |           |
| Surcharge                | \$1,080,377 |            |           |
| Reduction in Arrears     | \$298,980   | \$298,980  | \$298,980 |
| Time Value               | \$19,484    | \$19,484   | \$19,484  |
| Reduction in Notices     | \$3,066     | \$3,066    | \$3,066   |
| Reduction in Collections | \$1,622     | \$1,622    | \$1,622   |
| Reduction in Shutoffs    | \$4,349     | \$4,349    | \$4,349   |
| Reduction in Mobility    | \$3,751     | \$3,751    | \$135,030 |
| Total Benefits           | \$1,411,629 | \$331,252  | \$462,531 |
| <b>Costs</b>             |             |            |           |
| Agency Admin             | \$350,731   | \$350,731  | \$350,731 |
| Utility Admin and Eval   | \$55,858    | \$55,858   | \$55,858  |
| Discount                 | \$673,789   |            |           |
| Total Costs              | \$1,080,377 | \$406,589  | \$406,589 |
| B/C Ratio                | 1.3         | 0.8        | 1.1       |
| NPV                      | \$331,252   | (\$75,337) | \$55,142  |

## Recommendations

It is our opinion that the Washington Low Income Bill Assistance Pilot Program is accomplishing its goals. It is cost effective, and benefits participants by decreasing arrears, collection actions, and electric energy burden, as well as having a minimal impact on consumption.

After conducting the various in-depth interviews and the focus groups during Phase I of this evaluation, the following issues emerged and merit further discussion:

1. **Income Tiering.** Participants were assigned to an income tier that determines the level of eligible discount. Although we believe that this component does add complexity to the Program delivery, staff interviewed indicated a willingness to deal with that complexity for the sake of increasing equity.
2. **Consumption Block.** Currently the Program only applies to consumption higher than 600 kWh. We believe that this design does not discourage large consumption. An alternative may be to set the

cut off for low and not allow for high consumption. Another alternative would be to provide an incentive that would reward participants for reducing their consumption even when they receive a bill discount.

3. ***Seasonality***. The Program applies only to the winter season. It was initially intended to benefit low-income families during their period of greatest need. We recommend that the Program be offered year-round. Removing the seasonality of the Program would have minimal impact on its costs, as nearly 70% of consumption occurs during the winter period, and would decrease overall Program complexity.
4. ***Length of Time***. Participants are allowed to receive the discount only for a limited period of time and are required to reapply annually. In an effort to again minimize overall Program complexity, we recommend that the participants remain in the Program for two years. At the end of the participation period, they would receive a reminder notice to reapply.
5. ***Program Implementation and Administration Costs***. The agencies administrative cost comprises approximately 30% of total Program costs (just over \$64 per participant). Since we have not analyzed these costs thoroughly as part of this evaluation, it is difficult to compare them to those incurred by other programs. Based on Quantec's recent evaluation experience, the closest program in terms of services offered is the California Alternative Rate for Energy, which allows \$12/participant for agency administrative expenses. However, it should be noted that this is a self-certifying program: the agencies do not need to verify income, they simply assist eligible clients in completing the paperwork. The decision to set the maximum at \$12 was also based on the fact that the signups should be "adjunct to the organization's other daily activities." Southwest Gas does not offer any type of fee for community organizations, nor does the Texas discount program. The Texas program involves automatic referral from a number of other avenues. Eugene Water and Electric Board paid (2002) St. Vincent de Paul approximately \$65 per Energy Share participant (energy assistance program). Finally, Oregon Energy Assistance cost per participant was computed at \$38. It is probably worthwhile to have the Company revisit this issue during this coming year of Program implementation. The Company may want to consider automatically enrolling clients who qualify other program such as food stamps and aid for dependent children. This is likely to significantly reduce the Program implementation costs.

# I. Introduction

The Washington Low-Income Bill Assistance Program is a PacifiCorp pilot endeavor designed to assist low-income families with their electricity costs. The Program, which began in February 2001 and continued in its pilot phase through April 2003, provided a discount on the electricity bill of up to 2,400 eligible customers per year.

The purpose of the Program was to address the difficulties that low-income families have paying the electric bill. For low-income families, energy costs can represent a significant proportion of expenses when compared to their total income (the percentage of a household's overall income spent on energy costs is referred to as the household's *energy burden*). As a result, families from low-income populations often have problems with late or missed payments, significant arrearage or debt amounts, and service terminations. The realities of everyday life, such as job loss, divorce, or illness, often exacerbate these problems.

According to the federal government, a family of four qualifies as low income (living at or below the poverty level) if its annual earned income is \$18,100 or less. Table I.1 uses national-level data to illustrate the grave financial circumstances of such a low-income household.

**Table I.1: Poverty Facts<sup>1</sup>**

|                                                                                                        |          |
|--------------------------------------------------------------------------------------------------------|----------|
| Family of four poverty income                                                                          | \$18,100 |
| Median fair market rent (rent)                                                                         | \$8,256  |
| Minimum cost to keep warm and secure (utilities)                                                       | \$1,944  |
| Two people taking the bus to work (transportation)                                                     | \$1,500  |
| With food stamps, minimum food cost (food)                                                             | \$1,301  |
| With some employer-provided coverage (health care)                                                     | \$1,347  |
| With subsidies, child care cost (child care)                                                           | \$4,200  |
| Remaining budget                                                                                       | -\$448   |
| <i>Not covered:</i> School supplies, insurance, clothes, household supplies, laundry, recreation, etc. |          |

The federal government has long provided aid to eligible families with high utility bills through direct payments to primary energy suppliers. This assistance is provided in both emergency (under threat of service termination) and high bill situations through the Low-Income Home Energy Assistance Program (LIHEAP). Yet LIHEAP funds are finite, and the plight of low-income families is such that there is no shortage of need for other sources of

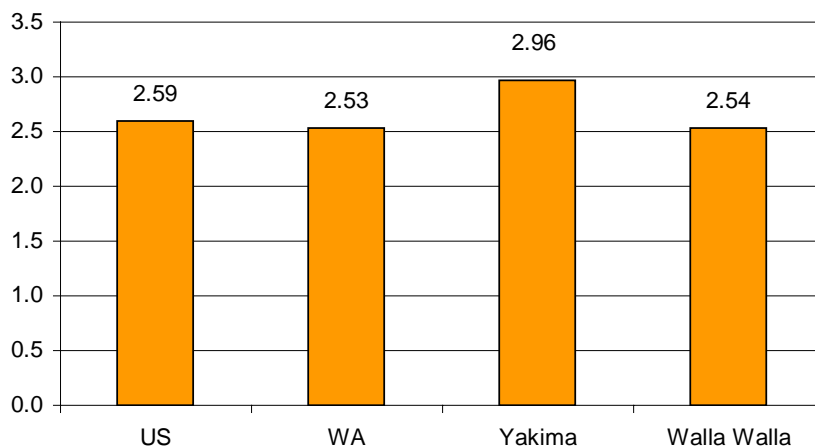
<sup>1</sup> <http://www.nccbuscc.org/cchd/povertyusa/tour2.htm>

assistance. Although energy-related problems are an issue for low-income families in general, the problem has particular relevance to low-income customers within the Company's Washington service territory.

Figures I.1 through I.6 describe the situation in Washington State and the Company's service territory (primarily Yakima and Walla Walla Counties).

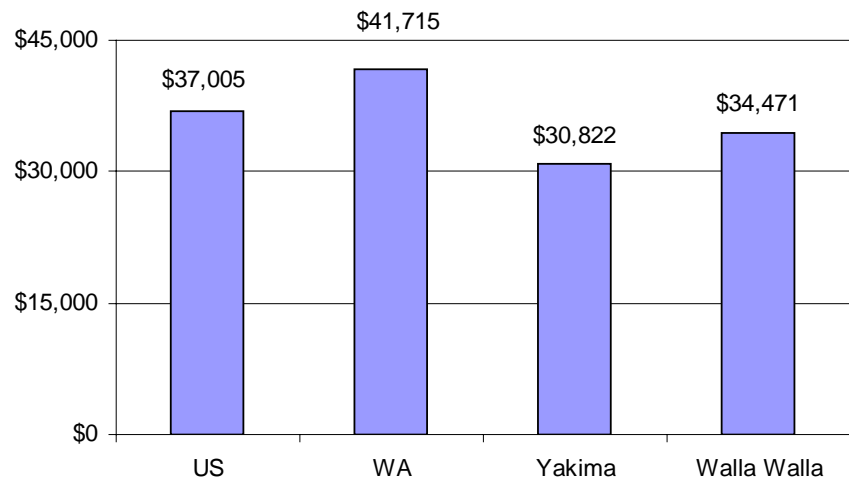
The large household size (Figure I.1) in Yakima County, the lower levels of income in both counties, and particularly high rates of poverty in Yakima County (Figures I.2 and I.3) show that there is a significant population in need of assistance. In addition, Figure I.4 shows that the cost of living in Yakima County is higher than the other regions. Figure I.5 shows that, in both Yakima and Walla Walla Counties, there are significant Spanish-speaking populations, which often poses added challenges to the agencies that serve them. Figure I.6 shows that the electricity cost burden on low-income households is more than twice that of median income households.<sup>2</sup> Finally, it merits mention that the Company's service territory, similar to the region in general, benefits from low electric rates.

**Figure I.1: Number of People per Household**

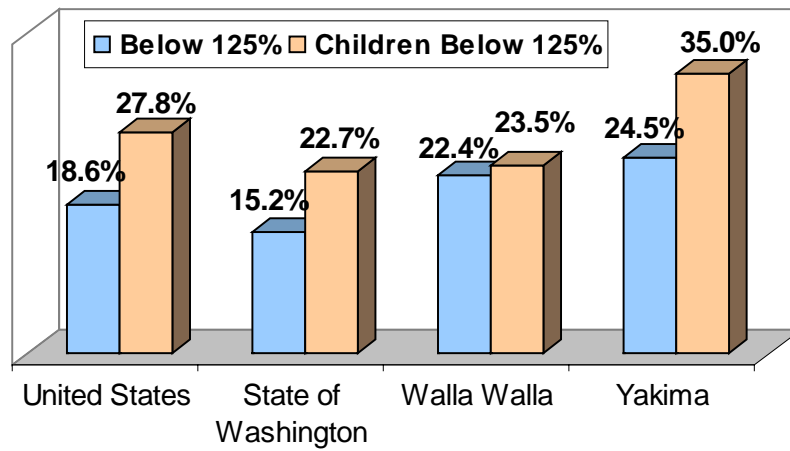


<sup>2</sup> As income is based on household size, the larger household size in Yakima County causes the poverty cutoff to be higher, bringing electric energy burden down somewhat.

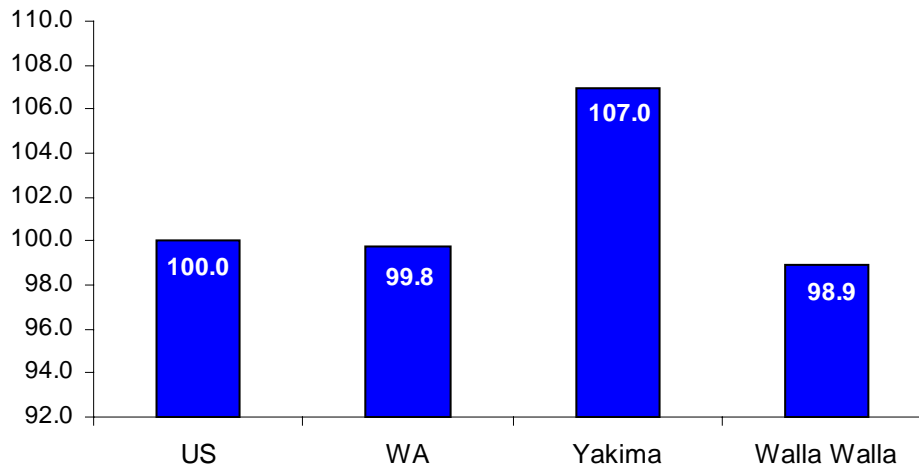
**Figure I.2: Median Income**



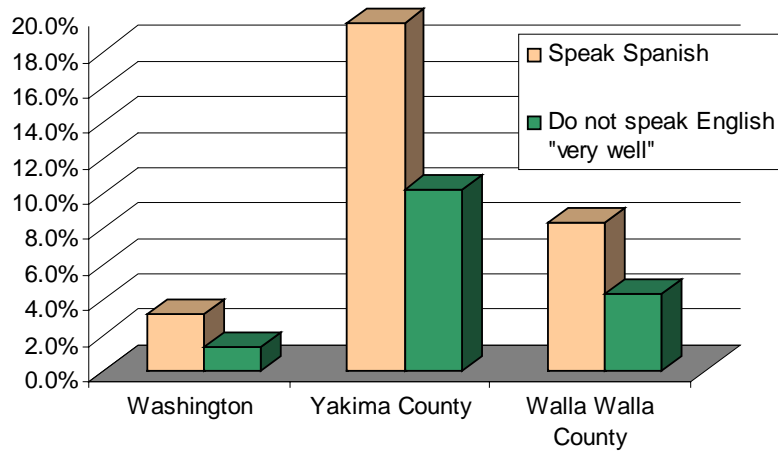
**Figure I.3: Share below 125% of Federal Poverty Level**



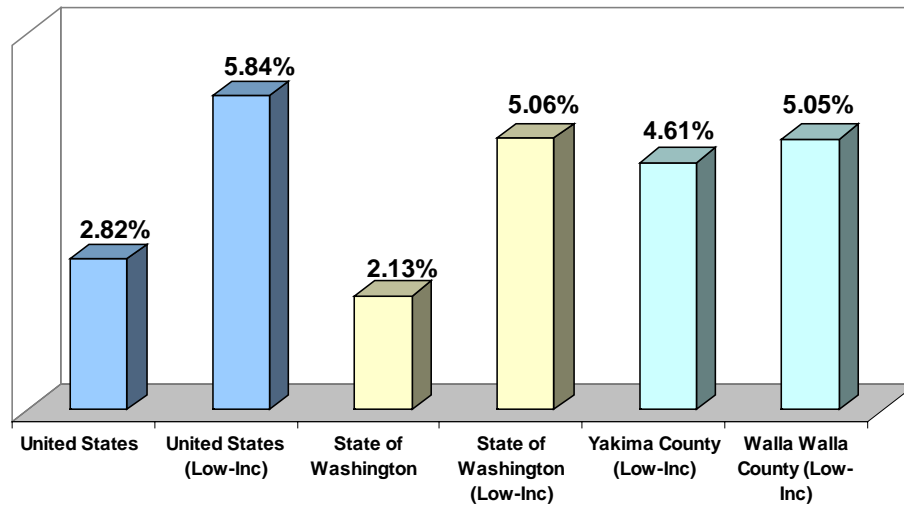
**Figure I.4: Cost of Living Index**



**Figure I.5: Spanish-Speaking Population**



**Figure I.6: Electricity Cost Burden**



## Program Description

The Program's origins lie in negotiations over a rate case that took place between the Company and advocacy groups who had long been urging the region's investor-owned utilities to create programs that provide bill assistance to low-income customers. In the process of creating a settlement, the utility agreed to work with interested parties to develop a proposal for a low-income bill assistance program, which turned into this pilot. Based on the evaluation of this pilot and approval of the Washington Utility and Transportation Commission (WUTC), the Program may become a long-term offering to customers in the entire Washington service territory.

The Company administered the pilot with the assistance of three Washington community action agencies (CAAs): The Blue Mountain Action Council (BMAC) in Walla Walla, the Northwest Community Action Center (NCAC) in Toppenish, and the Opportunities Industrialization Center of Washington (OIC) in Yakima. The primary functions of the agencies were Program outreach and the enrollment of participants. After recruiting participants and verifying their eligibility, the agencies provided a list of certified customers to the Company, which then applied the discount to their bills.

The Program applied only to the winter heating months (November through April), offering a three-tiered system of rate discounts in which those with a lower poverty level received a greater rate reduction. This system (Schedule 17) is shown in Table 1.2.

**Table 1.2: Schedule 17 Rate Discount**

| Income Tier                                | Discount (November through April)     |
|--------------------------------------------|---------------------------------------|
| Tier A. 0%-75% of Federal Poverty Level    | 3.5 cents per kWh for all kWh > 600   |
| Tier B. 75%-100% of Federal Poverty Level  | 2.355 cents per kWh for all kWh > 600 |
| Tier C. 101%-125% of Federal Poverty Level | 1.472 cents per kWh for all kWh > 600 |

Funding for the Program comes from a surcharge to all other customers in the Company's service territory. The surcharge (defined in Schedule 91) varies by the class of customer; for most residential customers, the charge is \$0.23 per month. The Program ended on April 30, 2003, while the schedule for the surcharge will terminate on December 31, 2003.

As Table 1.3 shows, the majority of participants fell into the extremely low-income tier.

**Table 1.3: Participation by Agency and Income Level**

| Agency       | Tier A       | Tier B       | Tier C     | Total        |
|--------------|--------------|--------------|------------|--------------|
| BMAC         | 702          | 363          | 231        | 1,296        |
| OIC          | 772          | 527          | 266        | 1,565        |
| NCAC         | 1,390        | 745          | 440        | 2,575        |
| <i>Total</i> | <i>2,864</i> | <i>1,635</i> | <i>937</i> | <i>5,436</i> |

## Evaluation

The evaluation objectives are as follows:

- Assess the process of delivering bill assistance services to PacifiCorp's low-income customers in the State of Washington
- Provide timely feedback regarding the delivery mechanism for possible roll out as a permanent program
- Estimate Program impacts on:
  - Arrears
  - Ability to pay bills
  - Number of disconnects
  - Energy burden
- Assess Program cost effectiveness
- Assess effectiveness of Program design



## Overall Approach

Our approach consists of two phases.

***Phase I. Process Evaluation*** (completed in the summer of 2002), the purpose of which was to assess the Program as planned and as delivered. This included the following:

- Review available Program documents and filings
- Conduct in-depth interviews with Program staff and other interested parties
- Conduct focus groups with participants

***Phase II. Impact Evaluation*** (the current phase), the objective of which is to measure the Program impact on customers' arrears, shutoffs, disconnections, energy consumption, and energy burden. The following is a list of the activities conducted:

- A billing analysis using a census of participants
- Affordability and energy burden analysis
- A cost-effectiveness analysis



## II. Data Collection

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### Phase I

The Phase I (process evaluation) data collection consisted of the following activities:

- Advisory Group interviews
- Agency interviews
- Participant focus groups
- Collecting census data
- Collecting preliminary Program data
- Collecting information from other bill assistance programs

Interviews and focus groups were used to assess Program design and delivery. These data were also used to estimate the need for the Program, the effectiveness of different measures, and the overall potential for the Program to be cost effective. Following the initial agency interviews in March 2002, Quantec conducted follow-up interviews in February 2003.

### Phase II

The Phase II (impact analysis) data collection consisted of the following activities:

- ***Follow-up agency interviews***, to assess whether the findings from the initial interviews have persisted throughout the Program's pilot phase.
- ***Collect Program data***, which involved combining several forms of data (some electronic, some non-electronic). Additionally, the electronic data took several forms and included:
  - Participant PacifiCorp account number
  - Program entry date
  - Participant income tier

Account numbers for those that participated in only one year of the Program were forwarded to PacifiCorp in order to be matched with billing data.

- **Collect census data** to determine the share of the population under 125% of the Federal Poverty Level in order to identify the unserved population.
- **Collect billing data** for the period of January 1, 2000, to early May of 2003. Data were collected on:
  - Payment
  - Usage
  - Billing rate
  - Bill amount
  - Collection actions
  - Billing rate changes

## Agency Interviews

Quantec spent a considerable amount of time seeking input and opinions from the three CAAs that promote the Program and certify income eligibility. The goal of these interviews was to gather information about the Program from those who are most involved in its day-to-day operation. Members of the evaluation staff first conducted an informal visit to each of the agencies early in March 2002. Quantec staff returned in early April, primarily to conduct the focus groups, though there was also further interaction with agency staff members. In late April, the project manager conducted follow-up interviews with each agency's program director to discuss findings and clarify any misunderstandings regarding Program implementation. Quantec conducted follow-up interviews with agency staff members in early 2003 to record any changes in administrative procedures and to determine whether there had been any shift in their general sentiments about the offering.

### ***III. Findings from Process Evaluation***

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The current section highlights the findings from Phase 1 as they relate to the current evaluation.

#### **Program Design**

As part of Phase 1, Quantec conducted interviews with staff members and low-income experts in April 2002 to gather their views on the Program's design and assess the mechanisms for Program administration. The interviews focused on the merits of several elements of the Program's design, including its use of income tiers to determine the rate discount and its application of the discount only to consumption beyond 600 kWh. While there were differences of opinion regarding the relative value of these characteristics, the predominant feeling was that the Program was well suited to mitigate the plight of the low-income community in the Company's Washington service territory. A comprehensive summary of these interviews is presented in the Phase 1 Summary Report.

Quantec conducted a series of follow-up interviews in February 2003 to gauge whether the maturation of the Program had resulted in any new approaches to administration or in insights among CAA program directors. Although these interviews showed that the CAAs had streamlined many of their procedures for marketing and enrollment, the final year of the pilot had not produced any significant changes in how the agencies were running the Program or in its unanimously positive reception by the agencies' directors.

#### **Changes in Energy Usage**

Although this issue is most relevant to the current phase of the evaluation, we took advantage of the focus groups conducted in conjunction with Phase I to question participants about the Program's possible effect on their behavior with respect to the use of electricity.

One concern that arose in our interviews was that the discount might simply encourage participants to use more electricity. While there were a few in the focus groups who admitted that they used more electricity than normal due to the bill reduction, all claimed that the increase was only enough to make the home more comfortable. Furthermore, the vast majority (more than 90%) of the participants in the focus groups remarked that their participation in the Program had elevated their level of consciousness and that they tended to be much more conservative in the consumption of electricity.

Forty-five percent of the participants claimed to have reduced their electricity consumption. Another 45% reported that their consumption had remained the same. Table III.1 shows the number and percentage of participants who claimed to exhibit different behavioral changes. Seventy-five percent reported receiving information on improving home energy efficiency through the program. A small number of participants mentioned receiving help with weatherization since joining the Program, and a few others mentioned that they had already signed up and were waiting to receive help with weatherization. Owners of manufactured and older houses expressed their great desire for weatherization measures.

**Table III.1: Behavioral Changes**

| Behavior                                                   | Frequency | Percent |
|------------------------------------------------------------|-----------|---------|
| <b>Decreasing Consumption</b>                              |           |         |
| Turned lights off more often                               | 62        | 90%     |
| Lowered thermostat settings                                | 37        | 54%     |
| Washed clothing in colder water                            | 42        | 61%     |
| Lowered water heater temperature                           | 27        | 39%     |
| Took shorter showers                                       | 32        | 46%     |
| Replaced older appliances with energy-efficient appliances | 11        | 16%     |
| Used heater/furnace fewer hours per day                    | 20        | 29%     |
| Installed fluorescent light bulbs                          | 34        | 49%     |
| Weatherized their home                                     | 21        | 30%     |
| <b>Increasing Consumption</b>                              |           |         |
| Turned lights on more often                                | 2         | 3%      |
| Raised thermostat settings                                 | 4         | 6%      |
| Washing clothing in warmer water                           | 8         | 12%     |
| Raised water heater temperature                            | 6         | 9%      |
| Took longer showers                                        | 4         | 6%      |
| Installed additional appliances (not replacements)         | 14        | 20%     |
| Used heater/furnace more hours per day                     | 29        | 42%     |

## Changes in Bill Payments

We also used the focus group discussions to provide a preliminary assessment of Program impact on payment behavior.

Several of the participants in the focus groups remarked that they have always paid the full balance of their electric bill. For those who have had difficulty paying the entirety of their bill, the Program has enabled them to pay off a larger portion, and in many cases has allowed them to pay the bill in its entirety each month. As shown in Table III.2, 40% of the focus group participants reported being able to pay a larger portion of their bill each month (an additional 14% paid all of their bill prior to participating).

**Table III.2: Ability to Pay Larger Bill Portions**

| Response                                 | Frequency | Percent     |
|------------------------------------------|-----------|-------------|
| Yes                                      | 27        | 40%         |
| No                                       | 16        | 22%         |
| Paid 100% of bill prior to participation | 9         | 14%         |
| Don't Know                               | 5         | 7%          |
| N/A*                                     | 12        | 17%         |
| <b>Total</b>                             | <b>69</b> | <b>100%</b> |

\* No response was provided.





## IV. Impact Findings

As Table IV.1 shows, the Agencies were able to meet roughly three fourths of their participation goals. Much of this is due to a late start in the 2000 Program year, though OIC continued to struggle in meeting their targets.<sup>3</sup> There remains a large, untapped number of eligible, low-income households, as illustrated in Table IV.2.

**Table IV.1: Participation Goals/Actuals by Agency and Income Level**

| Agency                   | Annual Goals | Program Year Actuals |              |              | Total Actual | Total Goal   | % Achieved |
|--------------------------|--------------|----------------------|--------------|--------------|--------------|--------------|------------|
|                          |              | 2000                 | 2001         | 2002         |              |              |            |
| BMAC                     | 432          | 432                  | 432          | 432          | 1,296        | 1,296        | 100%       |
| OIC                      | 984          | 206                  | 618          | 743          | 1,567        | 2,952        | 53%        |
| NCAC                     | 984          | 605                  | 984          | 984          | 2,573        | 2,952        | 87%        |
| <b>Total</b>             | <b>2,400</b> | <b>1,243</b>         | <b>2,034</b> | <b>2,159</b> | <b>5,436</b> | <b>7,200</b> | <b>76%</b> |
| <b>% of annual total</b> |              | 52%                  | 85%          | 90%          |              |              |            |

**Table IV.2: Eligible Population Served by County**

| County       | Annual Program Goals | Total Actual (2002) | Eligible Households | % Served   |            |
|--------------|----------------------|---------------------|---------------------|------------|------------|
|              |                      |                     |                     | At Goal    | Actual     |
| Yakima       | 1,416                | 1,175               | 18,112              | 8%         | 5%         |
| Walla Walla  | 984                  | 984                 | 4,398               | 22%        | 22%        |
| <b>Total</b> | <b>2,400</b>         | <b>2,159</b>        | <b>22,510</b>       | <b>11%</b> | <b>10%</b> |

In addition to the rate discount, nearly 60% of the participants received other forms of energy assistance (e.g., LIHEAP). The average assistance amount received from these programs was \$264.

### Impact Assessment

In conducting assessments of the impacts of conservation programs, traditionally evaluators have used “quasi-experimental design.” Using this approach, the behavior of the Program participants is compared to that of a similar group of nonparticipants (comparison group). The purpose is to estimate “what would have happened in the absence of the Program.” Rarely,

<sup>3</sup> In discussions with OIC, several issues were mentioned as contributors to the low participation rate: 1) high staff turnover, 2) client mistrust, and 3) the agency’s decision to stop taking applications because they did not want to get money from the utility for a relatively few months of service. This year, they are planning more outreach for early sign up and awareness.

however, in low-income evaluations is an appropriate comparison group readily available; utilities almost never have access to income data on their customers. Lacking a true comparison group, we were constrained to using data on participants, but from time periods prior to their actual Program participation, as a means of comparison. Because few participants were enrolled in the Program for more than one year, there were more than sufficient data to follow this approach, which we explain in more detail below.

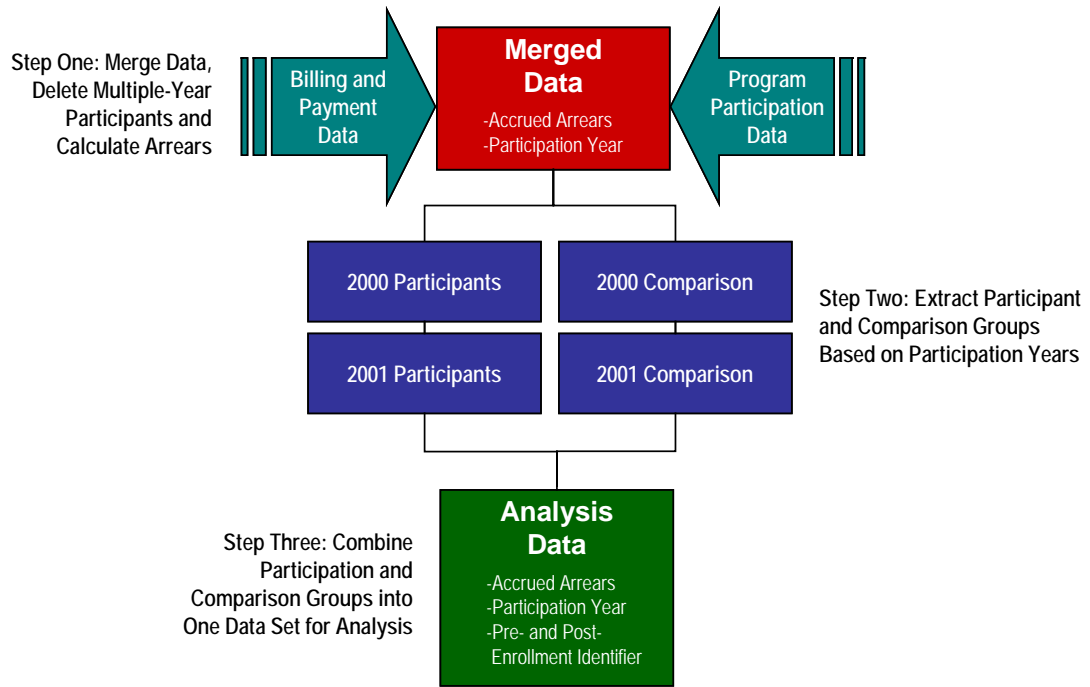
There were three steps to the preparation of the data for this approach, as illustrated in Figure IV.1. The first step was to merge the Program data with utility billing records. The utility data were used for the information on energy consumption and to calculate the accrual of arrears in the periods prior to and following Program participation. Note that the available data provided no information on the actual level of arrears for participants. Instead, arrears were set to zero starting at the beginning of the pre-Program year and then calculated based on the accrual of the difference between the amount paid and the amount due during that pre year.

For the 2000 Program participants, the comparison group was selected from the 2001 and 2002 participants. Similarly, for the 2001 participants, the comparison group was selected from the 2002 customers. No comparison group was available for the 2003 Program. All participants and comparison groups were combined into one dataset for overall analysis of Program impacts.<sup>4</sup>

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<sup>4</sup> Each household had a participation year as well as before and after years included in the analysis. However, for any two households, the actual year of participation may have been different; that is, for one household the participation year might have been 2001, with 2000 and 2002 as pre- and post- years, while for another the participation year was 2002, with 2001 and 2003 as pre- and post-years.

**Figure IV.1: Approach to Participant and Comparison Groups**



The program participation data were used to identify the participant and comparison groups, as well as their income tiers. Because the approach used participants as the comparison group, a key step in this approach was to eliminate participants who were enrolled in multiple years, who would have confounded the results. Fortunately, there were few multiple-year participants. As displayed in Table IV.3, this eliminated less than 23% of the available sample.

**Table IV.3: Repeat Participation**

| Years                | Count | Percent |
|----------------------|-------|---------|
| 2000 and 2001        | 313   | 9.0%    |
| 2000 and 2002        | 39    | 1.1%    |
| 2001 and 2002        | 296   | 8.5%    |
| 2000, 2001, and 2002 | 130   | 3.7%    |
| No Repeats           | 2,716 | 77.7%   |

**Energy Consumption Impact.** The impact of the Program on energy consumption was estimated using participants with adequate billing data.<sup>5</sup>

<sup>5</sup> Participants that increased or decreased their consumption by 50% or more were removed from the analysis as impacts of that magnitude were assumed to be caused by non-programmatic circumstances, leaving 1,443 participants with adequate billing data.

Energy consumption (kWh) was weather normalized using the Princeton Score Keeping Method (PRISM). As Table IV.4 shows, the Program participants increased consumption slightly while the comparison group's consumption remained static throughout the study period.<sup>6</sup> This is in line with focus group responses and fundamental economic tenets.<sup>7</sup>

**Table IV.4: Program Impacts on Annual kWh Usage**

| Income Tier       | Usage         |               | Difference | % Difference |
|-------------------|---------------|---------------|------------|--------------|
|                   | Pre           | Post          |            |              |
| A                 | 17,294        | 17,342        | 56         | 0.3%         |
| B                 | 17,028        | 17,408        | 369        | 2.3%         |
| C                 | 17,218        | 17,345        | 131        | 0.8%         |
| <b>Overall</b>    | <b>17,180</b> | <b>17,365</b> | <b>186</b> | <b>1.1%</b>  |
| Comparison        | 17,051        | 17,008        | -42        | -0.2%        |
| <b>Net Impact</b> |               |               |            | <b>1.3%</b>  |

**Improved payment patterns.** Payment behavior was analyzed to examine the effects of the Program on payments made by participants. Any change in participants' payment behavior was then compared to the change in nonparticipants' to establish the *net* effects. As shown in Table IV.5, nearly half of participants had an average arrearage of \$0 in the year prior to participation. This figure is somewhat confounded by the receipt of LIHEAP payments that can result in a temporary surplus at the end of the year, affecting the overall average.

**Table IV.5: Average Accrued Arrears in Year Prior to Participation**

| Arrears Category   | Percent | Cumulative Percent |
|--------------------|---------|--------------------|
| No Arrears         | 46%     | 46%                |
| \$1 to \$50        | 23%     | 70%                |
| \$50 to \$100      | 12%     | 82%                |
| \$101 to \$200     | 11%     | 93%                |
| \$201 to \$500     | 6%      | 99%                |
| Greater than \$500 | 1%      | 100%               |

<sup>6</sup> Neither impact is significantly different from zero.

<sup>7</sup> One of the key tenets of economics is the Law of Demand which states that, all other things being equal, an increase in price will lead to a decrease in demand and *vice versa*. Given a wealth of economic analysis that puts the short-run price elasticity of demand for electricity at 0.1 to 0.3 (see for example Houthakker and Taylor (1970), who report a short-run estimate of 0.13) and an average rate decline for participants of nearly 20%, one would expect that the increase in demand would have been larger (2% to 6%).

Arrears decreased significantly for Program participants. In the year prior to receiving the reduced rate, participants increased their arrears by an average of \$59. During the post period, the participants' accumulation of debt decreased by \$52 (for a \$111 decrease in arrears). The comparison group accumulated \$22 during the pre year while decreasing their accumulation by \$34 in the post (for a \$56 decrease in arrears). The evaluation question is: "what would have happened in the absence of the Program?" The behavior of the comparison group is supposed to resemble the participants' in the absence of the Program, therefore we estimated net program impacts to be the difference between the two groups – \$55.

**Table IV.6: Arrears Impact**

|                                    | Impact                     |
|------------------------------------|----------------------------|
| <b>Participants</b>                |                            |
| First year                         | \$59                       |
| Second Year                        | -\$52                      |
| Difference (Gross Arrears Impact)  | <b>\$111</b>               |
| <b>Comparison</b>                  |                            |
| First Year                         | \$22                       |
| Second Year                        | -\$34                      |
| Difference (Gross Arrears Impact)  | <b>\$56</b>                |
| Net Arrears Impact per Participant | <b>\$111 - \$56 = \$55</b> |

***Decreased electric energy burden.*** Energy burden is defined as:

$$\frac{\text{EnergyCost}}{\text{Income}}$$

Therefore, change in energy burden is measured as:

$$\frac{\Delta \text{EnergyCost}}{\Delta \text{Income}}$$

This general definition, therefore, requires tracking energy usage, energy prices, income, and other assistance.

Unfortunately, due to the diverse potential components of both the numerator and the denominator, this equation is not as simple as it appears. Both energy cost and income pose some interesting computational challenges. The expanded equation for the change in energy burden has the following form:

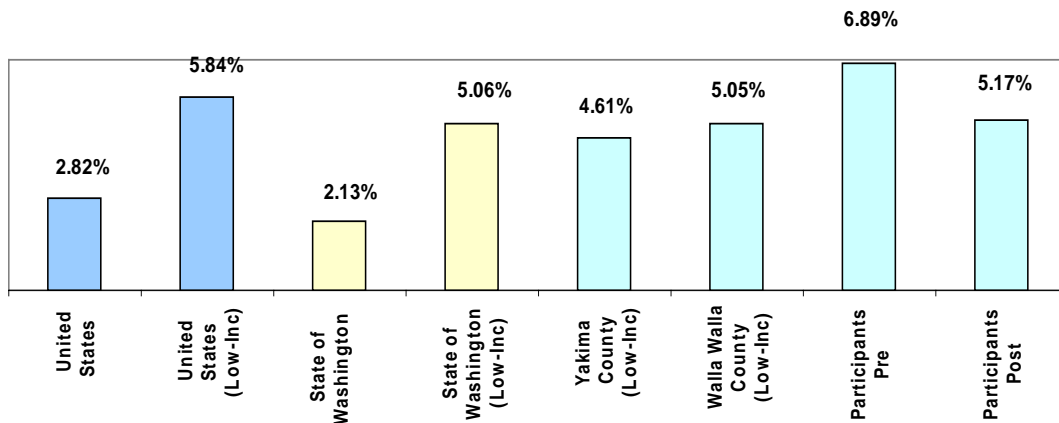
$$\frac{\Delta(\text{EnergyConsumption} * \text{Price})}{\Delta(\text{EarnedIncome} + \text{Subsidies})}$$

Therefore, energy burden critically depends on energy prices. Declines in energy consumption may be more than offset by rising energy prices. The

reverse is also true: increased (or stagnant) consumption may be more than offset by decreased rates (as is the case in the current analysis).

Energy burden can be defined in several different ways, each using some measure of income and energy consumption. Given the rate-based nature of this Program, it is appropriate to allow rates to vary as well as consumption. However, since the Program should have no impact on income, we hold income constant. To determine the impacts of participation on energy burden, we compared the energy-driven portion of customers' bills prior to and following programmatic rate changes. As this Program centered on electricity, we analyzed electric energy burden in isolation. Figure IV.2 shows that participants had higher energy burden prior to Program participation than other low-income households both nationally and locally. As Table IV.7 illustrates, electric energy burden improved dramatically for participants at all income levels, particularly at the very-low income level. The burden on non-participants also lessened somewhat, as rates overall declined throughout the study period, yielding a net decrease in the electric energy burden on Program participants of 12.7%.<sup>8</sup> As mentioned above, nearly 60% of the participants also received other forms of energy assistance (e.g., LIHEAP). Even when the impact of additional LIHEAP payments is figured in, the overall all reduction in energy burden for participants is still just slightly under twice the reduction for the comparison group.

**Figure IV.2: Electric Energy Burden**



<sup>8</sup> Actual income was not available beyond the income tier. Electric energy burden calculations were based on assumed income levels at the maximum level allowed by tier (using the average household size of 2.75). This likely causes the actual burden to be understated; however, as these income levels were used consistently across the pre and post periods, Program impacts will be unaffected.

**Table IV.7: Improvement in Electric Energy Burden**

| Income Tier       | Energy Burden |      | Difference  | % Difference |
|-------------------|---------------|------|-------------|--------------|
|                   | Pre           | Post |             |              |
| A                 | 8.2%          | 6.1% | 2.1%        | 25.5%        |
| B                 | 6.5%          | 4.9% | 1.7%        | 25.4%        |
| C                 | 5.3%          | 4.1% | 1.2%        | 23.1%        |
| All Participants  | 6.9%          | 5.2% | 1.7%        | 25.0%        |
| Comparison        | 6.5%          | 5.7% | 0.8%        | 12.3%        |
| <i>Net Impact</i> |               |      | <i>0.9%</i> | <i>12.7%</i> |

**Decreased shutoffs.** To study the impacts of Program participation on shutoffs, participants were classified based on payment behavior during the pre- and post-participation periods. Behavior was classified as “normal” or “problematic” (no shutoffs or shutoffs). Table IV.8 illustrates the behavioral pattern of participants and shows the average number of shutoffs annually before and after participation (for those with shutoffs during the period).

**Table IV.8**  
**Average Annual Shutoffs by Group**

| Category                   | Participant     |                    |             | Comparison      |                    |             |
|----------------------------|-----------------|--------------------|-------------|-----------------|--------------------|-------------|
|                            | No. in Category | Avg. No. Incidents |             | No. in Category | Avg. No. Incidents |             |
|                            |                 | Pre                | Post        |                 | Pre                | Post        |
| Problematic to Normal      | 109             | 1.0                | 0           | 20              | 0.9                | 0           |
| Problematic to Problematic | 8               | 1.2                | 1.0         | 1               | 1.8                | 1.8         |
| <i>Total<sup>9</sup></i>   | <i>117</i>      | <i>1.02</i>        | <i>0.07</i> | <i>21</i>       | <i>0.96</i>        | <i>0.09</i> |

The average annual number of shut-offs for participants declined from 1.02 during the pre-participation period to 0.07 during the post-participation period,<sup>10</sup> which represents a 93% decline. This is slightly higher than the 91% decrease for the comparison group.<sup>11</sup>

## Cost-Effectiveness Analysis

Program benefits are measured in terms of revenue collected through the surcharge, improved payment behavior, reduced costs for non-payment in terms of time value of money, and reduced collection and termination costs.

<sup>9</sup> Totals are for those with shutoffs in the pre-participation period.

<sup>10</sup> This period varies by participant due to the availability of billing data. Rates have been annualized to allow comparison across individuals and groups and represent averages for only those that had shutoffs prior to participation.

<sup>11</sup> The difference is not statistically significant.

## Surcharge Collections

The funding for the Program comes from a bill surcharge. We included that amount as a “benefit” from the Company perspective. Program costs (revenue loss, agency/utility administration costs, and evaluation) balance out against the surcharge. Through June 2003, the surcharge has resulted in the collection of \$1,285,213, and collections will continue through 2003. There is currently \$204,836 remaining in the account.<sup>12</sup> The remaining balance is due to participation rates being lower than the program was designed to accommodate.

## Reduction in Arrears

As discussed above, Program participation leads to a first-year reduction in annual arrears of \$55 (Program annual savings of \$298,980).

One expense that all businesses experience is the time value of money. A dollar collected today is worth more than a dollar collected tomorrow. Therefore, when an initiative reduces the length of time it takes a corporation to collect its outstanding debts, benefits arise in accordance with the amount of debt and reduction in the time period that the debt is outstanding.

We used the arrears impact to determine the decrease in the carrying costs for the Company. This likely understates the actual impact as the company incurs carrying costs as soon as the debt is incurred (as opposed to 30 to 60 days later when the debt goes into arrears).

Unpaid balances are usually written off and added to the utility’s expenses. If paid on time, these balances represent a benefit to the utility and its ratepayers. We opted for the use of PacifiCorp’s cost of capital as the appropriate rate for valuing this reduction in outstanding balances as this is the rate that represents the cost of obtaining funds. The earlier collection of debt eliminates the need for such acquirement, thereby saving the utility their weighted cost of capital. The calculations of the aggregate benefit for the utility for reducing outstanding debt are illustrated in Table IV.9. The \$55 average reduction in the daily account balance per participant over approximately two years (one before and one after Program participation) saved the company approximately \$4.30 per participant. However, since payments to the utilities have been experiencing two- to three-month delays, the \$4.30 annual amount was reduced to approximately \$3.58 over a ten-month period. Over the 5,436 participants during the three-year pilot, total savings near \$20,000 in the first year.

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<sup>12</sup> Any funds remaining in the account could be either rolled over into a continuation of the Program or refunded to ratepayers in the form of a future rate care, depending on the decision of the WUTC.



**Table IV.9: Annual Carrying Cost Savings Due to Program**

|                                                  | First Year  |
|--------------------------------------------------|-------------|
| Decrease in Average Daily Balance                | \$55.00     |
| Decrease in Annual Carrying Cost per Participant | \$4.30      |
| Adjusted to 10-Month Period                      | \$3.58      |
| Aggregate Decrease for all 5,436 Participants    | \$19,484.00 |

### Reduction in Collections Costs

Utilities often incur significant costs attempting to collect debt from customers. These collection activities include phone calls, letters, customer visits, and collections agencies' costs.

Based on a billing analysis of participants with adequate billing data, changes in several collection procedures were analyzed. These include the following:<sup>13</sup>

- Generating notices
  - Cut off
  - Past due
  - Reminder
- Assignment to collection
- Termination (resulting in account closure)
- Shut-off (for a duration of two or more days)

Aggregate programmatic impacts result from extrapolating average annual changes in collection activities to the aggregate participant population of 5,436. Table IV.10 displays the extrapolated aggregate annual decline in incidents (e.g., for the Program as a whole, the number of cutoff notices dropped by 1,152 annually, the product of 0.212 and 5,436<sup>14</sup>). The per-incident estimated cost figures for cutoff, past due, reminder, and final notices are then used to assess the associated cost savings.

### Collection Agencies

One significant cost associated with collections is the assignment of the debt to a credit agency. In a study conducted for Columbia Gas of Ohio,<sup>15</sup> the average commission cost was estimated at 33.5% on collecting only 20% of the referred debt. As Table IV.10 also shows, a total of 11 fewer cases were

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<sup>13</sup> The analysis was based on consistent periods before and after participation. For example, if 20 months of billing data were available prior to participation and ten months after, the analysis was truncated at ten months pre and post participation. The incidence rate was adjusted post analysis to yield annual values.

<sup>14</sup> A cutoff notice seldom results in an actual shutoff. Also, a single individual could have received multiple notices.

<sup>15</sup> Monte de Ramos, K. (2002).

referred to collection agencies during participation in the Program. We estimated the total *net* impact to be \$1,622.<sup>16</sup>

## Shutoffs

In determining the cost savings to the Company from reduced shutoffs, we reviewed the filed schedules with the Washington Utilities and Transportation Commission. For PacifiCorp, the estimated cost to reconnect a customer during business hours is \$20.<sup>17</sup> The total savings due to the Program, then, is estimated at \$4,349.

**Table IV.10: Annual Savings Associated with Program Participation**

| Incident               | Annual Decline per Participant | Aggregate Annual Decline | Per-Incident Cost | Total Annual Cost Savings |
|------------------------|--------------------------------|--------------------------|-------------------|---------------------------|
| Cutoff Notices         | 0.212                          | 1,152                    | \$0.75            | \$864                     |
| Final Notices          | 0.54                           | 2,935                    | \$0.75            | \$2,202                   |
| Assigned to Collection | 0.002                          | 11                       | \$407             | \$1,622                   |
| Shutoff                | 0.04                           | 217                      | \$20              | \$4,349                   |
| <i>Total</i>           |                                |                          |                   | <i>\$9,037</i>            |

## Other Benefits

Other benefits of low-income energy assistance programs include reduced levels of economic stress on the participating customers, reduced mobility and homelessness, and increased health and comfort.

**Reduced Mobility.** When energy costs are high, household funds are diverted from other uses, including food, medical care, and rent. In some cases, high energy bills may force occupants to move out of their current dwelling either to lower energy costs or to avoid paying an energy bill. In other cases, they may be evicted for inability to pay their rent or for having services disconnected. Not only are frequent moves expensive and inconvenient, they have other extremely serious effects, including increasing school dropouts and inability to hold a job. Energy assistance programs lower the energy

<sup>16</sup> The average debt of these accounts was \$407, for a total of \$4,425 (the actual number of foregone collections is slightly less than 11). Absent the Program, this amount would have been referred to an agency and approximately 20% would have been recovered (\$885). The collection agency would have charged about a third in commission fees, leaving \$590 in the Company's accounts. How much of the decrease in the amount of referral would actually be collected is very difficult to tell at this point. We assumed that half would be collected without referral to a collection agency (\$2,212). To summarize, we estimated that the amount collected with the Program to be \$2,212 and without the Program to be \$590, for a net annual impact of \$1,622.

<sup>17</sup> Washington Schedule 300 (Issued September 14, 2001). This estimate is significantly lower than other studies (Colton, 1994).

vulnerability of the participating low-income families and their forced mobility.<sup>18</sup> Mobility can be especially hard for the elderly and families with children. The value of reduced mobility can be as high as \$1,460 per household.<sup>19</sup> In another national study, the cost of moving for low-income families was found to be between 10% and 20% of annual income.<sup>20</sup> These costs include moving expenses, rental deposits, bank fees, telephone connections, etc.

Unfortunately, due to lack of time and funds, we did not investigate the change in mobility for this Program. We are certain, however, that the value is quite significant. We decided to follow a conservative approach of assuming only \$700 per move.<sup>21</sup> Further, we assumed only about 15% reduction in mobility.<sup>22</sup> This represents the societal benefit of reduced mobility.

Often when a customer moves, the utility has to read the meter prior to assigning a new account. Therefore, the benefit to the utilities of reduced mobility is estimated at \$3,751.<sup>23</sup>

***Reduced Homelessness.*** Clearly a strong link exists between the inability to pay bills and homelessness. In a study of homelessness in Philadelphia, 7.9% of persons living in emergency shelters indicated that utility termination was the reason for their homelessness. Respondents to a homelessness study in Northern Kentucky indicated that utility shutoff was among the primary causes of homelessness.<sup>24</sup> No further information was available on attempts to quantify this impact.

***Improved Health.*** Avoidance of shutoff clearly has some serious health implications. High energy burden can force low-income customers into making difficult decisions regarding their very limited funds. No information is available on the monetary impact of this undoubtedly important benefit.

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<sup>18</sup> Khawaja (2001). In Indiana, as a result of participating in the REACH program, the participants received energy education that lowered their energy consumption by 12.5%, reduced their mobility by 52%, and reduced school absences by 18%.

<sup>19</sup> Oak Ridge (2002).

<sup>20</sup> Howat and Oppenheim (1999).

<sup>21</sup> This is less than the midpoint for the Oak Ridge study and in line with Skumatz and Dickerson (1998).

<sup>22</sup> Extremely conservative given the 52% found in Khawaja (2001). Furthermore, a study by the National Social Science and Law Center found that roughly 12% of the total population changed residences every year, while the low-income customer proportion was 23%. (Colton, 1994) We used the 23% and assumed that 15% of those, or approximately 3.5% of the total, witness reduced mobility.

<sup>23</sup> Based on avoiding roughly 188 shutoffs at a cost of \$20 each.

<sup>24</sup> Howat and Oppenheim (1999).

**Decreased Stress.** Life for low-income families can be overwhelming. On a day-to-day basis, critical needs compete over finite resources, and tradeoffs have to be made. Programs like this one are invaluable to people in need.

## Program Costs

Program costs are based on the number of participants enrolled. For each enrollee, the agency receives \$64.52 from PacifiCorp.<sup>25</sup> Based on aggregate enrollment of 5,436, Program costs for agency administration are currently \$350,731. PacifiCorp has also incurred internal administrative and evaluation costs totaling \$55,858 through May 2003 for aggregate administrative costs of \$406,589. It should be noted, however, that the evaluation cost is not an ongoing component of Program implementation. Therefore, future Program economics should look even better than this analysis implies. Also, the Program has collected \$1,285,213 and granted credits of \$673,789 through May 2003. There is currently \$204,836 remaining in the account. The credits represent a cost from the utility perspective as they are lost revenue, however they are a transfer from a societal perspective. Administrative and Program implementation costs total 38% of expenditures. It should also be mentioned that the \$64.52 was based on what NCAC was paid to implement the LIHEAP program, divided by the number of participants (excluding those who did not qualify), then reduced by about \$20/head because the agency did not actually have to handle any money transfer.

## Results

Cost-effectiveness analysis is customarily summarized using benefit-cost (B/C) ratios or net present values (NPVs). A B/C ratio of 1.0 is the “breakeven point” where benefits are just equal to the investment. Values above 1 indicate a profitable investment (the larger the values the more profitable the investment). A positive net present value indicates that the project is a

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<sup>25</sup> Other programs have substantially lower agency administration costs. For example, the CARE program in California allows \$12/participant for agency administrative expenses. This “capitation” fee was determined as being fair by the utilities and agencies. Note, however, that that program is a self-certifying: the agencies do not need to verify income, they simply assist eligible clients in completing the paperwork. The decision to set the maximum at \$12 was also based on the fact that the signups should be “adjunct to the organization’s other daily activities.” Southwest Gas does not offer any type of fee for community organizations, nor does the Texas discount program. In fact, the respondent from the Texas Legal Services commented that they do not offer a “bounty.” On the other hand, Eugene Water and Electric Board paid (2002) St. Vincent de Paul approximately \$65 per Energy Share participant (energy assistance program). EWEB is now putting out the program for bid to lower that amount. Finally, Oregon Energy Assistance agency cost per participant was computed at \$38.

profitable investment (again, the larger the values the more profitable the investment).

Cost-effectiveness tests for traditional demand-side management programs are fairly well defined (California Standard Manual). These tests apply properly to programs that are aimed at reducing energy consumption. They are not intended for programs that offer assistance to low-income customers through straight cash donations or rate discounts. To our knowledge, no formal such tests exist. What follows is our attempt at defining these tests from the utility, ratepayers, and societal perspectives.

As Table IV.11 shows, the Program is cost effective from the Utility's perspective, with a B/C ratio of 1.31 and a NPV of \$331,252. The Company received \$1,080,377 in revenue from the surcharge and paid the same amount to provide bill discount and administer the program. The Company's collection costs decreased by \$331,252, reflected as a net benefit.

Revenue requirements declined by a \$331,252 reduction in the collection costs. However, in order for that to happen, the Program implementation costs of \$406,589 had to be incurred, leading to a net increase in revenue requirements of \$75,337. The amount of the received discount is a cross class subsidy (transfer payment) and is not included in the analysis. Finally, from a societal perspective, the benefits are similar except for the mobility costs reduction (please see discussion above).

**Table V.11**  
**Cost-Effectiveness Results**

|                          | Utility          | Ratepayers        | Societal        |
|--------------------------|------------------|-------------------|-----------------|
| <b>Benefits</b>          |                  |                   |                 |
| Surcharge                | \$1,080,377      |                   |                 |
| Reduction in Arrears     | \$298,980        | \$298,980         | \$298,980       |
| Time Value               | \$19,484         | \$19,484          | \$19,484        |
| Reduction in Notices     | \$3,066          | \$3,066           | \$3,066         |
| Reduction in Collections | \$1,622          | \$1,622           | \$1,622         |
| Reduction in Shutoffs    | \$4,349          | \$4,349           | \$4,349         |
| Reduction in Mobility    | \$3,751          | \$3,751           | \$135,030       |
| Total Benefits           | \$1,411,629      | \$331,252         | \$462,531       |
| <b>Costs</b>             |                  |                   |                 |
| Agency Admin             | \$350,731        | \$350,731         | \$350,731       |
| Utility Admin and Eval   | \$55,858         | \$55,858          | \$55,858        |
| Discount                 | \$673,789        |                   |                 |
| Total Costs              | \$1,080,377      | \$406,589         | \$406,589       |
| <b>B/C Ratio</b>         | <i>1.3</i>       | <i>0.8</i>        | <i>1.1</i>      |
| <b>NPV</b>               | <i>\$331,252</i> | <i>(\$75,337)</i> | <i>\$55,142</i> |



## V. Recommendations

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After conducting the various in-depth interviews and the focus groups during Phase I of this evaluation, the following issues emerged as most important:

1. ***Income Tiering***. Participants were assigned to an income tier that determines the level of eligible discount.
2. ***Consumption Block***. Currently the Program only applies to consumption higher than 600 kWh.
3. ***Seasonality***. The Program applies only to the winter season (November – April).
4. ***Length of Time***. The participant is allowed to receive the discount only for a limited length of time. Participants currently need to reapply annually.
5. ***Other Services (Holistic Program)***. Would the Program benefit from the administration of other services, such as energy education?<sup>26</sup>

In general, participants felt that equity – the fair provision of benefits to the Program’s target population – was the single most important criterion. In addition, there was a strong preference for continuing to use income tiers and encouraging a more holistic Program design.

One key point that came out of our Phase I interviews was that the primary benefit of working through the CAAs is their experience in providing a variety of services to their target population. With that in mind, one area where participants would benefit would be a more formal link between the bill assistance and the other services that the CAAs provide.<sup>27</sup> This was verified through the interviews as well as the analysis conducted with the Advisory Group. Access to other services would likely lead to greater benefits across all elements of Program impacts.

Participants would also benefit greatly from more formal, standardized energy education, weatherization, and budget counseling. Though focus groups indicate that participants have had access to some of these services, in some cases as a direct result of their participation in the Program, a formal and systematic means of seeing that as many participants as possible are referred to these other services, perhaps as part of the enrollment process, would ensure that the benefits of participation go beyond the monthly discount. It

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<sup>26</sup> Increased energy education would likely increase administrative costs.

<sup>27</sup> Currently, the services offered to the bill assistance participants differ across agencies and by caseworker. A more formal link may increase the opportunities available to clients.

would likely lead to decreased electricity consumption, decreased arrears, decreased electric energy burden, and decreased collection actions.

### **Income Tiers**

Allocating participants into income tiers that determine their eligible discount seems to be a popular Program component. It is clear that members of the lowest income tier experienced the smallest increase in consumption and the largest decrease in electric energy burden. The tiered approach appears to be meeting its goal of targeting those with the greatest need. However, using a single tier would decrease Program complexity and administrative burden, possibly decreasing administrative cost and allowing more to be served under the current budget.

Despite the fact that it does complicate Program delivery, it was believed by most to have significant impact on equity (those most in need receive highest discount available). The advisory group chose to maintain the current approach in order to provide the most benefit to those who were in greatest need.

### **Seasonal Component**

Currently the Program is available in the winter season only. We explored the possibility of expanding the offering to a year-round program. While it was believed to not add to Program complexity, it was also believed to not significantly impact cost effectiveness or equity. This raises the question of whether this element of the design belongs in the Program at all. Consumption during the non-Program months represents only 30% of the total, indicating that the impact on participants (and cost to the utility) of increasing the Program to year-round would be minimal, while decreasing programmatic complexity.

The advisory group chose to maintain the seasonality component for two reasons. First, the group pointed out that the original design for a year round program had been changed to a seasonal program to address the period of the year when the highest need occurred and when the impact of the program would be most beneficial. Second, at least one of the CAAs pointed out that they liked being able to keep the program as distinct from LIHEAP as possible. What was important to them was being able to qualify potential participants through the summer, before LIHEAP began, so that when the fall came, the Program could start right off.

### **Consumption Blocks**

Currently, the discount only applies to consumption levels exceeding 600 kWh. We explored the possibility of changing the Program to apply the discount to all consumption levels. While such a change would reduce Program complexity, the majority of the interviewees did not consider it to be



a significant enough factor to warrant further consideration for service-wide expansion of the offering. Similar to the seasonal component, our analysis raises the question of whether this element of the design belongs in the Program.

During the winter months, consumption averages over three times the 600 kWh cutoff, indicating that the impact of decreasing (or eliminating) the block would be minimal. However, to increase the conservation incentive, making the cutoff a maximum as opposed to a minimum (e.g., apply the rate reduction to all consumption below 1,000 kWh/month) is appropriate.

While recognizing the benefit of encouraging more careful consumption, the advisory group chose not to adopt the consumption block recommendation because it could significantly reduce the assistance to households who are likely to have no ability or resources to improve the energy efficiency of their structures. The number of households participating in the Program far outpaces the ability of the agencies to provide energy efficiency services in a given year. Furthermore, many households do not own the structures in which they live and so cannot control whether or not such work is performed.

### **Time Limit**

Currently there is no limit imposed on the length of time a participant may stay on the discounted rate. They are, however required to reapply annually. We discussed with our interviewees the option of imposing some time limit with certain exceptions for elderly, handicapped, and people with fixed incomes. While appealing to various stakeholders, the complexity of tracking specific time periods was deemed too formidable for the agencies at this point.

The advisory group chose not to change the time limit constraint. They felt that it would not provide as much economy as theorized. The fact that more than half of the customers in the program were not repeat participants suggests that qualifying a household for two years might result in paying out benefits in a second year when that household would not have requested them, denying another qualified household as a result. A second consideration was that there is only so much funding for implementation and for direct service, depending on how that is disbursed, all the funding might be used in one year, leaving nothing for the next. This exacerbates the funding roller coaster ride that complicates staffing and doing outreach for these programs.

### **Other Issues**

**Marketing.** The principal concern with marketing is increasing the awareness among members of the target population who have no relationship with the agencies.

Our recommendation is that the agencies, perhaps in collaboration with the Advisory Group, develop a standardized outreach system. This could help OIC to increase enrollments.

***Client Intake.*** In terms of the process, the demands on both agency and participants for enrollment appear to be reasonable. There were no indications from the focus groups that there had been any difficulty in complying with each agency's enrollment requirements, nor have the agencies' staffs registered any complaints with the participation requirements. During the initial interviews there was an indication of widespread variation in the specific methods employed at the agency level. During follow-up interviews, there was a strong indication that these processes had been somewhat streamlined and standardized across CAAs.

As with the marketing efforts, our recommendation is that the CAAs should develop a standardized procedure for client intake, specifically one that maximizes the inclusion of the non-LIHEAP client.

## Appendix A. References

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