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**STATE OF INDIANA
BEFORE THE
INDIANA UTILITY REGULATORY COMMISSION**

FILED

MAY 28 2004

INDIANA UTILITY
REGULATORY COMMISSION

CAUSE NO. 42590

VERIFIED JOINT PETITION OF INDIANA GAS)
COMPANY, INC., SOUTHERN INDIANA GAS)
AND ELECTRIC COMPANY, AND THE BOARD)
OF DIRECTORS FOR UTILITIES OF THE)
DEPARTMENT OF PUBLIC UTILITIES OF THE)
CITY OF INDIANAPOLIS, AS SUCCESSOR)
TRUSTEE OF A PUBLIC CHARITABLE TRUST,)
d/b/a CITIZENS GAS & COKE UTILITY,)
FOR APPROVAL OF AN ALTERNATIVE)
REGULATORY PLAN WHICH WOULD)
ESTABLISH A UNIVERSAL SERVICE PROGRAM)

Direct Testimony and Exhibits

Of

Roger D. Colton

On behalf of
Citizens Action Coalition of Indiana
Indianapolis, Indiana

May 28, 2004

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1 Q. PLEASE STATE YOUR NAME AND ADDRESS.

2 A. My name is Roger Colton. My address is 34 Warwick Road, Belmont, MA 02478.

3

4 Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

5 A. I am a principal in the firm of Fisher Sheehan & Colton, Public Finance and General
6 Economics. In that capacity, I provide technical assistance to a variety of federal and state
7 agencies, consumer organizations and public utilities on rate and customer service issues
8 involving telephone, water/sewer, natural gas and electric utilities.

9

10 Q. FOR WHOM ARE YOU TESTIFYING IN THIS PROCEEDING?

11 A. I am testifying on behalf of the Citizens Action Coalition of Indiana, Inc. (CAC).

12

13 Q. PLEASE DESCRIBE YOUR PROFESSIONAL BACKGROUND.

14 A. I work primarily on low-income utility issues. This work involves not only rate and
15 customer service work, but involves the design and implementation of low-income energy
16 assistance programs as well. At present, I am working on various projects in the states of
17 New Hampshire, New Jersey, Georgia, Pennsylvania, Michigan, Missouri, Louisiana,
18 Arkansas and Florida. My clients include state agencies (e.g., the New Hampshire Public
19 Utilities Commission, the Pennsylvania Office of Consumer Advocate, the New Jersey
20 Division of Ratepayer Advocate), federal agencies (e.g., the U.S. Department of Health and
21 Human Services), community-based organizations (e.g., Partnership for Community Action
22 (Atlanta), Delaware ACORN), and private utilities (e.g., Empire District Electric Company,
23 Entergy Services Corporation, Missouri Gas Energy).

1 **Q. PLEASE DESCRIBE WHERE YOU HAVE HELPED DESIGN LOW-INCOME**
2 **RATE AFFORDABILITY PROGRAMS?**

3 A. I have helped design rate affordability programs nationwide. My work for the Maine Public
4 Utilities Commission led to the adoption of that state's Electric Lifeline Program. I worked
5 for the New Hampshire Public Utilities Commission to design that state's tiered discount
6 program. My work with the New Jersey Division of Ratepayer Advocate (RPA) and the
7 Maryland Office of Peoples Counsel (OPC) contributed directly to the design of those
8 state's Universal Service Fund (USF) and Electric Universal Service Program (EUSP),
9 respectively. I have worked with the Pennsylvania Office of Consumer Advocate (OCA) to
10 help design the universal service programs for each Pennsylvania natural gas utility, and am
11 currently working with OCA on the Pennsylvania Power & Light (PP&L) program. My
12 work with Washington Gas Light Company led to the design of that Company's Residential
13 Essential Services Rate (RESRate) in Washington D.C. My work with the Missouri Office
14 of Peoples Counsel led to the design of Empire District Electric Company's Experimental
15 Low-Income Program (ELIP) and led to the design of Missouri Gas Energy's Experimental
16 Low-Income Rate (ELIR). My work with the Colorado Energy Assistance Foundation
17 (CEAF) formed the basis of the system benefits charge that the Colorado legislature recently
18 enacted.

19
20 **Q. HAVE YOU EVER PUBLISHED ON PUBLIC UTILITY REGULATORY**
21 **ISSUES?**

22 A. Yes. A list of my publications is included as Appendix A.

1 **Q. HAVE YOU EVER TESTIFIED BEFORE THIS OR OTHER UTILITY**
2 **COMMISSIONS?**

3 A. Yes. A list of proceedings in which I have appeared as an expert witness is included in
4 Appendix A as well.

5
6 **Q. PLEASE EXPLAIN THE PURPOSE OF YOUR TESTIMONY TODAY.**

7 A. The purpose of my testimony today is four-fold:

8 ➤ First, I examine the benefits that can be expected to flow from a rate
9 affordability assistance program such as that proposed by Petitioners to assess
10 whether a program structure such as that proposed will deliver a systemwide
11 benefit.

12 ➤ Second, I examine the structure and operation of the universal service
13 program proposed by Petitioners in this proceeding to assess whether the
14 program is a substantively reasonable approach to delivering rate affordability
15 assistance;

16 ➤ Third, I propose improvements to the structure and operation of the program
17 which enhance the benefits to customers enrolled in the program, those
18 customers not enrolled in the program, the Petitioners, and the State of
19 Indiana;

20 ➤ Finally, I examine some of the program funding details involved with
21 delivering the rate affordability benefits in the manner proposed by the
22 Petitioners.

1 In sum, I conclude that the universal service program proposal advanced by the
2 Petitioners has some shortcomings, and can be improved in several key respects. I
3 conclude further, however, that the proposed program, overall, is substantively
4 reasonable, will deliver systemwide benefits to the customers of each of the three
5 Petitioners, and involves a reasonable funding mechanism.

6
7 **PART 1: THE BENEFITS OF THE PROPOSED RATE AFFORDABILITY PROGRAM.**

8 **Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?**

9 A. The purpose of this section of my testimony is to assess what benefits the proposed rate
10 affordability program will generate for the Petitioners and their remaining customers.
11 First, I will consider the direct benefits of the program. Second, I will consider the
12 induced benefits of the program.

13
14 **A. The Direct Benefits of a Rate Affordability Program.**

15 **Q. WHAT IMPACT DO UNAFFORDABLE HOME ENERGY BURDENS HAVE ON**
16 **THE PAYMENT PATTERNS OF LOW-INCOME CUSTOMERS?**

17 A. I have studied the payment patterns of low-income customers and found them to be
18 adversely affected by the inability-to-pay occasioned by unaffordable home energy
19 burdens. While the notion that payment-troubled customers are disproportionately low-
20 income is commonly accepted conventional wisdom,¹ remarkably little empirical data has
21 been collected to verify or to challenge that conventional wisdom.

¹ This is not to say that all low-income customers are payment-troubled, nor that all payment-troubled customers are low-income. It is merely to say that low-income customers are disproportionately payment-troubled.

1 We know that national data reported by the U.S. Census Bureau indicates that the
2 proportion of households in arrears at any given point in time is substantially higher for
3 the low-income population than it is for the population as a whole. One 1995 Census
4 study, for example, reported that while 9.8% of non-poor families could not pay their
5 utility bills in full, 32.4% of poor families could not do so. According to the Census
6 Bureau, while 1.8% of non-poor families had their electric and/or natural gas service
7 disconnected for nonpayment within the previous year, 8.5% of poor families suffered
8 this same deprivation.²

9
10 There is corroborative information from the states. One 1998 Illinois report, for example,
11 indicated that while 44.5% of LIHEAP-assisted natural gas customers were in arrears,
12 only 28.9% of “general households” were. An analysis by the staff of the New
13 Hampshire Public Utilities Commission estimated that 35% of the low-income electric
14 customers entering that State’s Electric Assistance Program (EAP) entered the program
15 with arrears. The Pennsylvania Public Utilities Commission found that 40% of that
16 state’s low-income customers were “payment troubled” at any particular point in time.

17
18 In addition, in a report that I just completed looking at energy assistance recipients, I
19 found that the adverse impacts of “energy poverty,” or inability-to-pay, are related to the
20 energy burdens of low-income households.³

21

² U.S. Census Bureau (November 1995). *Extended Measures of Well-Being*, Publication No. P70-50RV, Government Printing Office: Washington D.C.

³ Roger Colton (June 2004). *Paid but Unaffordable: The Consequences of Energy Poverty in Missouri*, National Low-Income Energy Consortium: Washington D.C.

1 Q. PLEASE EXPLAIN WHAT YOU FOUND IN YOUR OWN STUDIES OF THE
2 RELATIONSHIP BETWEEN INCOME AND PAYMENT-TROUBLED STATUS?

3 A. In 2002, I used data from Iowa to assess the relationship between income and payment-
4 troubled status. I have attached that study as Appendix B to this testimony.⁴ My inquiry
5 found that, in Iowa, over the 46-month period of April 1998 through January 2002, while,
6 on average, 24% of all energy assistance accounts were in arrears, only 12% of total
7 accounts were in arrears during the same time period.⁵

8
9 In addition to simply being in arrears, my study of Iowa accounts revealed additional
10 patterns that identify the needs that would be directly addressed by the low-income rates
11 proposed in this proceeding. For example, I tracked the relationship between energy
12 assistance accounts in arrears and total population accounts in arrears by month.⁶ I found:

13 Graphing the monthly ratio of the proportion of energy assistance accounts in
14 arrears to the proportion of the total population in arrears reveals a seasonal
15 variation that is not evident in the annual data. Clearly, energy assistance
16 customers fall into arrears at a faster rate than does the total population during the
17 winter months. While the ratio of energy assistance customers in arrears to the
18 total population accounts in arrears hovers around the 2.0 mark for most of the
19 non-heating season, the ratio sees consistent increases during the winter heating
20 months, up to 3.0 or more. In October 1999, for example, 10.6% of all customer
21 accounts were in arrears while 21.7% of low-income accounts were (a ratio of
22 2:1). By March 2000, the proportion of all customer accounts in arrears had
23 fallen to 8.0% while the proportion of low-income accounts in arrears had risen to
24 26.2% (a ratio of 3.3).
25

⁴ I do not offer this study for purposes of establishing the financial impacts considered in that study. Accordingly, I have not included the somewhat voluminous appendices to that study. I offer Appendix B for its discussion of the relationship between income, winter weather, and payment-troubles.

⁵ Roger Colton (May 2002). *Payment-Problems, Income Status, Weather and Prices: Costs and Savings of a Capped Billed Program*, WeatherWise USA: Pittsburgh (PA). (hereafter referred to as *Winter Payment Problems*).

⁶ The ratio is created by placing the proportion of energy assistance accounts in arrears in the numerator and the proportion of total customer accounts in arrears in the denominator. The ratio does not provide any information about the total number of accounts in arrears. It merely tells you the *relative* rate at which accounts are in arrears. If

1 (Winter Payment Problems, at 4 – 5). I found finally that “just as clear as the increased
2 rate of energy assistance accounts going to arrears during the winter heating months is the
3 extent to which these customers clear their accounts (relative to the total population) in
4 the non-heating months. The peaks in the ratio occurred in the heating months of each of
5 the four winter periods graphed.” (Id., at 5).

6
7 **Q. DID YOU FIND THAT THE PROPORTION OF ACCOUNTS IN ARREARS WAS**
8 **THE ONLY WAY IN WHICH LOW-INCOME STATUS AFFECTS UTILITY**
9 **PAYMENT-TROUBLES?**

10 A. No. In that same study, I found that not only were there more energy assistance
11 customers in arrears, but also that energy assistance customers in arrears have a higher
12 level of arrears than do customers in arrears from the customer base as a whole. I found
13 also that winter weather causes a faster increase in the incidence of arrears within the
14 energy assistance population than is caused in the total customer base as a whole. Again,
15 the full study, absent appendices, is attached to this testimony. I have no reason to
16 believe that these conclusions are applicable only to Iowa. I believe them to be equally
17 applicable to Indiana.

18
19 **Q. WOULD THE PETITIONERS' PROPOSED RATE AFFORDABILITY**
20 **PROGRAM ADDRESS THE PAYMENT PROBLEMS ASSOCIATED WITH AN**
21 **INABILITY TO PAY?**

the resulting ratio is 2.0, that tells you that energy assistance recipients are in arrears at a rate twice as high as the population as a whole.

1 A. Yes. That rate schedules, themselves, can in fact improve collections and generate a range
2 of savings to the utility offering the rate has been confirmed by impact evaluations of other
3 low-income rates. For example, the impact evaluation of the Columbia Gas Company
4 (Pennsylvania) Customer Assistance Program (CAP) -- Pennsylvania's low-income rates are
5 generally referred to as CAP -- found that the company's CAP customers had 61% fewer
6 disputes, 53% fewer *new* payment agreements, and 67% fewer credit hold requests. In
7 addition, the Columbia Gas impact evaluation found further that, for CAP customers,
8 cancellation of payment plans was reduced by 69%, termination notices declined by 48%,
9 and shutoff orders were printed 74% less often.⁷

10
11 **Q. IS THERE A SECOND COMPANY THAT HAS FOUND SIMILAR RESULTS?**

12 A. Yes. Equitable Gas (Pennsylvania) found the same thing with respect to its Energy
13 Affordability Program (EAP). The Equitable Gas evaluation found that there is a net
14 administrative *cost* to the low-income rate of \$15.13 after one year of operation.⁸ Like
15 many initiatives, however, with higher administrative costs in earlier years, the evaluation
16 found further that the participants who stayed on the rate for a second year (70% of the
17 participants) return a \$12.87 *savings* in Year 2. By the end of Year 3, the total savings had
18 completely paid off the costs from the first year and yielded a total net advantage of \$10.61
19 per customer.⁹ The Equitable Gas evaluation found that, based on administrative costs
20 alone:

21 . . . for each 100 customers entering EAP, the 65% retained for three years
22 would return \$689.65 in net administrative cost reduction (65 x \$10.61). For

⁷ *Final Pilot Evaluation, Columbia Gas (PA) Customer Assistance Program (CAP)*, at 13, A&C Enercom Inc. (November 1996).

⁸ *Impact Assessment of the Equitable Gas Company Energy Assistance Program*. H.Gil Peach and Associates (September 1996)

⁹ Equitable Gas, at 96.

1 those who remain in EAP, these savings would increment over future
2 years.¹⁰

3 The Equitable Gas evaluation found additional *total* benefits (not just administrative
4 savings) to nonparticipating ratepayers as well through application of a "net back" analysis.
5 Net back recognizes that the revenue gained by a utility through its credit and collection
6 efforts is only the total revenue collected *minus* the costs of collection. Hence, if a utility
7 collects \$100, but spends \$40 in the process of collection, the utility's "net back" is only \$60
8 (for a net back rate of 0.60).

9
10 The Equitable Gas evaluation found that the utility experienced a net back ratio (NBR)¹¹ of
11 0.91 for low-income customers without the Equitable Gas rate affordability program. The
12 evaluation then found that those who fully participate in one year of EAP show an NBR of
13 1.41. Those with two full years of EAP show essentially the same performance, with an
14 NBR of 1.37. Both of these results are quite favorable compared to the 1989 Reference
15 Group with its NBR of 0.91.¹²

16 The evaluation then translated these ratios into "dollars returned" (to other ratepayers).
17 Without the program, the evaluation found, "a customer who would have been billed \$1,368
18 at the standard residential rate would have created a shortfall of \$684 from the standard
19 residential rate, not including the increased cost of collection."¹³ The evaluation then found

¹⁰ Equitable Gas, at 96.

¹¹ A net back rate of greater than 1.0 means that the company is not only collecting all of its current bill, but is collecting part of the arrears owed by the customer as well. Hence, the company is collecting *more* than its bill for current usage. A net back rate of less than 1.0 means the customer is never paying his or her bill for current usage and is, as a result, falling further and further into arrears.

¹² Equitable Gas, at 115 -- 116.

¹³ Equitable Gas, at 112.

1 that EAP succeeds in recovering (in the sum of customer payments plus grants) dollars
2 which would otherwise not have been received by the utility:

3
4 For those in EAP for one full year, this amount is \$262. For those who
5 remain in EAP for a second year there is an additional \$206. These added to
6 a total of \$468 for each customer who is retained in the program for two full
7 years.¹⁴

8
9 The evaluation concludes: "This means that EAP is not only revenue neutral, but revenue
10 positive in relation to the comparison situation for which it was designed."

11
12 **Q. IS THERE A THIRD COMPANY THAT HAS FOUND SIMILAR RESULTS?**

13 A. Niagara-Mohawk Power Company (New York) also offers its low-income customers an
14 affordable rate.¹⁵ The Niagara-Mohawk initiative involves energy efficiency services and a
15 negotiated bill payment, which can be below the "cost of energy" (what Equitable Gas
16 referred to as the "standard rate"). Niagara-Mohawk tested four different groups. Group 3
17 and Group 4 had an affordable payment plan as a component of the services delivered.

18
19 According to the evaluation of the Niagara-Mohawk initiative: "Group 3 and 4 participants
20 almost doubled the total number of payments to the utility during the post-treatment period
21 compared to the pre-treatment period (from 426 to 849 payments for Group 3; from 368 to
22 792 payments for group 4). In contrast, Group 1 actually decreased the number of payments
23 made and Group 2 increased the total number slightly (from 404 to 446 payments)."¹⁶

24 Neither Group 1 nor Group 2 had an affordable payment plan. The Niagara-Mohawk

¹⁴ Equitable Gas, at 116.

¹⁵ Merillee Harrigan (1992) *Evaluating the Benefits of Comprehensive Energy Management for Low-Income, Payment-Troubled Customers*, Alliance to Save Energy: Washington D.C.

¹⁶ Niagara-Mohawk, at 47 – 48.

1 evaluation found further that the Company benefited from these increased payments. The
2 evaluation found:

3
4 Corresponding to the average dollars per month, the total customer dollars
5 paid to the utility also increased for the three treatment groups. Again,
6 Group 2 payments increased slightly from \$844 to \$895. Group 3 on the
7 average increased its payment from \$883 to \$1174 and Group 4 increased
8 from \$968 to \$1188.¹⁷

9 Unfortunately, Niagara-Mohawk undertook its efforts during a time when fuel assistance
10 dollars were being substantially cut back and fuel assistance dollars dropped for the program
11 participants. Nonetheless, despite this drop in fuel assistance funding, the evaluation found:

12 The increase in amount of customer dollars, despite the drop in receipt of
13 assistance dollars, resulted in an increase in total dollars paid to the utility of
14 \$31 for Group 3 and \$91 for Group 4, compared with *decreases* in total
15 dollars of \$26 for Group 1 and \$102 for Group 2.¹⁸ (emphasis added).

16
17 **Q. IS THERE ANY FINAL COMPANY YOU CAN CITE WHICH HAS FOUND**
18 **SIMILAR RESULTS FROM A BROAD-BASED UNIVERSAL SERVICE**
19 **PROGRAM?**

20 A. National Fuel Gas Distribution Company (New York) operates what it calls its Low-Income
21 Rate Assistance (LIRA) program.¹⁹ The impact evaluation of the NFG program developed a
22 mathematical model for calculating whether the program was cost-beneficial to the
23 company (and thus to nonparticipants). The impact evaluation refers to the fact that "the
24 cost effectiveness model measured cash in-flows and out-flows with and without the LIRA
25 program over time."²⁰ The impact evaluation stated further that: "cash flows were computed

¹⁷ Niagara-Mohawk, at 48.

¹⁸ Niagara-Mohawk, at 49.

¹⁹ *National Fuel Gas (PA) Low-Income Rate Assistance (LIRA) program*. Barakat & Chamberlin (March 1999).

²⁰ National Fuel Gas, at 23.

1 using collected revenue, billed revenue, collection expenses, and carrying charges for both
2 the participants and the nonparticipants." ²¹

3
4 Part of this model recognized that only \$939 of each \$1,276 bill is paid before LIRA. Under
5 LIRA, however, the impact evaluation found low-income customers pay \$772 of each \$811
6 bill. According to the National Fuel Gas evaluation:

7 "Several indices were selected as robust measures of the impact of the
8 program. These included change in the number of payments made, change
9 in the percentage of bill paid, change in the amount paid, change in the
10 number of disconnections, and change in the amount of outside aid received
11 by participants . . . The program has been successful in moving most of the
12 indices in the *right* direction."

13
14 (emphasis in original). The impact evaluation reported the following "list of changes in the
15 right direction":

- 16
17 ➤ The number of payments made by the participants increased by 30% (an average of
18 2.2 payments per participant);
- 19
20 ➤ The percentage of the bill paid per participant increased by 10%;
- 21
22 ➤ The number of service disconnections decreased by "slightly over 80%."

23
24 The National Fuel Gas impact evaluation reported that:

25
26 the [net present value] of the participant's pre-program cash flow was computed
27 at (\$3,805,936). This means that, had the program not existed (pre conditions
28 remained the same), NFG would have been expected to under collect over \$3.8
29 million (present valued over the next five years). Based on the post program
30 conditions, NFG is still expected to under collect, but only by approximately
31 \$2.3 million. In other words, the program's gross impact is an improvement in
32 collections of \$1.5 million (nearly a 40% improvement over the next five
33 years).²²

34 The impact evaluation concluded that "this indicates a cost-effective endeavor."

²¹ National Fuel Gas, at 23.

1
2 **Q. HAVE YOU PERSONALLY STUDIED THE IMPACT OF UNIVERSAL**
3 **SERVICE PROGRAMS ON THE PAYMENT PROBLEMS ASSOCIATED WITH**
4 **INABILITY TO PAY?**

5 A. Yes. In October 2003, I completed an analysis for Missouri Gas Energy which examined
6 the impact of that company's Experimental Low-Income Rate (ELIR) on various aspects
7 of low-income payment patterns. Missouri Gas Energy operated a fixed credit program
8 for low-income natural gas heating customers. I have attached a complete copy of that
9 report as Appendix C to this testimony. In that report, I found as follows:

10 Based on the above data, the following conclusions are proffered with respect to the
11 payment impacts generated by the Missouri Gas Energy Experimental Low-Income
12 Rate (ELIR):

- 13
- 14 ➤ ELIR improved the completeness of bill payment, as measured by the incidence
15 and level of arrears.
- 16
- 17 ➤ ELIR improved the promptness of bill payment, as measured by a weighted
18 arrears ("bills behind") statistic.
- 19
- 20 ➤ While ELIR did not improve the regularity of bill payment as measured by a
21 payments-per-bill statistic, ELIR did improve the extent to which payments made
22 reduced account balances to \$0.
- 23
- 24 ➤ ELIR improved the "automaticness" of bill payment, as measured by collection
25 activities and returned checks.
- 26
- 27 ➤ ELIR did not induce an increase in consumption amongst customers receiving
28 fixed credits.
- 29

30 **Q. BASED ON YOUR DISCUSSION ABOVE, WHAT DO YOU CONCLUDE WITH**
31 **RESPECT TO THE BENEFITS ARISING FROM THE PROPOSED NATURAL**
32 **GAS UNIVERSAL SERVICE PROGRAM?**

²² National Fuel Gas, at 20. The \$1.5 million is a five year total on a net present value basis.

1 A. I conclude that directing rate affordability assistance to low-income customers is a
2 reasonable response to the need for low-income rate relief. I conclude further that the
3 proposed universal service program offered by the Petitioners would make natural gas
4 bills more affordable to low-income Indiana customers, would improve payment patterns,
5 and reduce the business and social costs of inability-to-pay.

6
7 **Q. HOW DOES THIS PROCESS OF ADDRESSING LOW-INCOME PAYMENT**
8 **TROUBLES TRANSLATE INTO BENEFITS FOR OTHER RATEPAYERS**
9 **THROUGH REDUCED COST OF SERVICE?**

10 A. Providing rate affordability assistance to low-income customers is not simply a social
11 welfare program. It is also a way to help the Petitioners rationalize their overall
12 collection efforts. No utility has the ability to direct collection efforts to all customers in
13 arrears. There simply is not the staff and resources to do so. Whether it involves field
14 collection visits or personal collection contacts, reducing the extent to which collection
15 efforts need to be directed at low-income customers will allow the Petitioners to redirect
16 those collection efforts to other accounts in arrears, residential or otherwise. As a result,
17 the Petitioners will experience a decreased cost of service that will be passed on to all
18 ratepayers.

19
20 In addition to the direct reduction of expenses associated with nonpayment, these expense
21 reductions help postpone future base rate cases. Each month and year for which such a
22 rate case is postponed, even before savings are quantified and allocated among customer
23 classes, yields substantive benefits to all customers, irrespective of their class.

1
2 **B. The Induced Benefits to All Ratepayers.**

3 **Q. DO ALL CUSTOMERS DERIVE BENEFITS FROM A UNIVERSAL SERVICE**
4 **PROGRAM?**

5 A. Yes. One well-accepted tenet of utility ratemaking is that certain expenses incurred by a
6 public utility are for “public goods.” Due to the nature of public goods, all customers
7 receive benefits from public goods and, accordingly, the costs of such goods are spread
8 over all customer classes. Each end user makes a financial contribution to the utility’s
9 delivery of public goods. The “public goods” doctrine is applied in a variety of settings
10 as a justification to spread designated utility costs over all customer classes. Fire
11 hydrants and streetlights, for example, have been found to be public goods. Subway
12 service has been found to be a public good. The basic telecommunications network has
13 been found to be a “public good” as a justification for spreading network costs over all
14 customer classes.

15
16 **Q. DO COMMERCIAL AND INDUSTRIAL CUSTOMERS DERIVE BENEFITS**
17 **FROM THESE PUBLIC GOODS?**

18 A. A product can represent a “public good” even though the direct service is provided to an
19 individual. For example, businesses do not go to school, individuals do. Businesses do
20 not go to doctors, individuals do. Businesses do not place their children in day care,
21 individuals do. Despite this, in each of these instances, the direct benefits to business
22 from the affordable provision of these “public goods” have been documented. Affordable

1 health care and child care are all akin to affordable home energy in their nature as public
2 goods which provide direct and substantial benefits to business as well as individuals.
3

4 **Q. WOULD ALL CUSTOMER CLASSES DERIVE BENEFIT FROM THE**
5 **PETITIONERS' UNIVERSAL PROGRAM IN PARTICULAR?**

6 A. Yes. For example, child care is an important analogy to affordable energy because of the
7 direct benefits it has been found to provide to business. The Committee on Economic
8 Development²³ has quantified the beneficial impacts to business from reducing the causes
9 of employee absenteeism and employee turnover associated with unaffordable child care.

10 According to the Committee:

11 Many businesses also find that helping parents meet their child care needs
12 can potentially reduce absenteeism and employee turnover. The 1990
13 *National Child Care Survey* (NCCS) found that 15 percent of the mothers
14 in its sample who worked outside the home reported losing some time
15 from work (including arriving late, leaving early, or having to take a full
16 day off) during the previous month because of a failure in their regular
17 child care arrangement. Studies have found that employee turnover
18 produces disruption and inefficiency in the work environment and that the
19 cost of replacing employees is high. For example, Merck & Co., Inc.
20 found that it costs. . . about 75 percent of salary to replace a clerical or
21 technical employee. It also found that it may take considerable time to fill
22 a vacant position and an average of 12.5 months for a new employee to
23 become adjusted to the job.²⁴
24
25

26 **Q. HOW DOES THIS RELATE TO AFFORDABLE HOME ENERGY?**

²³ CED is a national business-academic partnership. One objective of CED is "to unite business judgment and experience with scholarship in analyzing the issues and develop recommendations to resolve the economic problems that constantly arise in a dynamic and democratic society." *Objectives of the Committee for Economic Development*. The Research and Policy Committee of the CED is directed under the organization's bylaws to "initiate studies into the principles of business policy and of public policy which will foster the full contribution by industry and commerce to the attainment and maintenance" of the objectives of the organization.

²⁴ Research and Policy Committee (1993). *Why Child Care Matters: Preparing Young Children for a More Productive America, A Statement by the Research and Policy Committee of the Committee for Economic Development*, at 1, Committee for Economic Development: New York.

1 A. There is a direct relationship between the offer of a natural gas affordability program and
2 economic benefits to local commercial and industrial customers. For example:

- 3 ➤ Turnover costs business money. We know that unaffordable home energy bills
4 lead to the frequent mobility of households.²⁵
5
- 6 ➤ Time missed due to family care provision costs business money. We know
7 that unaffordable home energy leads to more frequent childhood illnesses.
8
- 9 ➤ Time missed due to lack of employee productivity and employee illness costs
10 business money. We know that the inability to stay warm due to unaffordable
11 home energy bills leads to increased illnesses.²⁶
12

13 In sum, we know that increasing employee productivity directly contributes to the
14 increased profitability of firms. We know that with low-wage employees, in particular,
15 unaffordable home energy directly contributes to lowered productivity. Increased
16 personal illness, increased employee turnover, and increased family care responsibilities
17 are but three of the factors contributing to lower employee productivity. The provision of
18 affordable energy through Petitioners' proposed universal service program positively
19 affects each of these productivity factors.
20

21 **Q. PLEASE DESCRIBE THE SPECIAL BENEFITS THAT THE UNIVERSAL**
22 **SERVICE PROGRAM PROVIDES TO SMALL BUSINESSES IN PARTICULAR.**

23 A. As elsewhere, small business fills a unique role in the Indiana economy. Small business
24 disproportionately offers employment opportunities to Indiana residents who have limited
25 employment skills. Small firms disproportionately pay wages that do not allow a
26 household to economically exist without public assistance.

²⁵ Roger Colton. "A Road Oft Taken: Unaffordable Home Energy Bills, Forced Mobility, and Childhood Education in Missouri," 2 *Journal of Children and Poverty* 23 (1996).

²⁶ Apprise, Inc. (2004). *National Energy Assistance Survey: Final Report*, National Energy Assistance Directors Association (NEADA): Washington D.C.

1
2 **Q. WHAT DO YOU CONCLUDE BASED ON THIS INFORMATION?**

3 A. There is a reciprocal relationship between small businesses and low-wage employees.
4 On the one hand, without small business offering low-wage employment, many of the
5 persons who are employed in such establishments would not find job opportunities. On
6 the other hand, without the low-wage employee, many of the small businesses that
7 produce goods and services within Indiana would not be able to economically survive.
8 The small business establishments providing low-wage employment would not be able to
9 survive if they were required to pay higher wages.
10

11 **Q. CAN YOU CHARACTERIZE SMALL BUSINESS EMPLOYMENT AND WAGE**
12 **LEVELS?**

13 A. Yes. Overall, small establishments account for more than 70% of employment in retail
14 trade. This is significant because three times as many working poor families (as
15 compared to non-poor families) are in service occupations (20.1% vs. 7.4%), while nearly
16 one-and-a-half as many working poor (compared to non-poor) families have workers who
17 are in the wholesale/retail trade occupations (19.2% vs. 12.3%).²⁷ Overall, the median
18 hourly wage of primary earners in working poor families (\$7.55) is less than half the
19 median wage of primary earners in families with incomes above 200% of poverty
20 (\$16.67).
21

²⁷ Gregory Acs, Katherin Ross Phillips, and Daniel McKenzie (May 2000). *Playing by the Rules but Losing the Game: America's Working Poor*, The Urban Institute: Washington D.C. This publication can be found at the following web site: <http://www.urban.org/workingpoor/playingtherules.html>.

1 **Q. HAVE YOU CONSIDERED THE EMPLOYMENT PRACTICES IN INDIANA IN**
2 **PARTICULAR?**

3 **A. Yes. The number of small businesses in Indiana paying poverty level wages is**
4 **substantial. I first consider retail establishments as one example. Retail establishments are**
5 **often the type of small business that benefits from paying low wages to employees. I also**
6 **consider certain service establishments, particularly involving eating and drinking**
7 **establishments and traveler accommodations.**

8
9 As Schedule RDC-1 shows, nearly 80,000 Indiana workers in general merchandise stores
10 earned only \$14,549 in 2001 and \$15,367 in 2002; nearly 60,000 workers in Indiana's
11 food and beverage stores earned only \$15,340 in 2001 and \$15,885 in 2002. Turning to
12 service occupations, more than 200,000 Indiana workers earned only \$10,567 in 2001
13 and \$10,791 working in food service and drinking establishments, while roughly 20,000
14 Indiana workers earned only \$14,574 in 2001 and \$14,999 in 2002 in travelers
15 accommodations.

16
17 In contrast, 150% of the Federal Poverty Level for a 3-person household in 2001 was
18 \$21,945 while 150% of Poverty Level for a 4-person household was \$26,475. Schedule
19 RDC-1 presents data obtained from the U.S. Department of Labor's Bureau of Labor
20 Statistics.

1 **Q. HOW IS THIS OBSERVATION RELEVANT TO AN INQUIRY INTO THE**
2 **EXTENT TO WHICH THE PROPOSED UNIVERSAL SERVICE PROGRAM**
3 **BENEFITS SMALL BUSINESSES?**

4 A. The observation is directly relevant. The reason small businesses can offer low-wage
5 employment to so many of their employees is because of the external programs that are
6 available to help fill the wage gap. One analysis reports, for example, that:

7 . . . employers who pay poverty wages are effectively being subsidized by
8 taxpayers through government assistance programs (e.g., food stamps, Earned
9 Income Tax Credit) which help many low-wage employees survive . . .
10 [B]usinesses that pay poverty wages indirectly rely on government assistance
11 programs to make up the difference between these wages and what it costs their
12 employees to live.²⁸

13
14 The same analysis applies to these Petitioners. The small businesses that pay poverty wages
15 indirectly rely on Petitioners' willingness to make up the difference between those wages
16 and what it costs the employees to live. Requiring all customer classes to help pay for the
17 proposed universal service programs which respond to the inability-to-pay resulting from
18 the payment of low wages is simply one mechanism to have the customer classes which
19 benefit from the universal service program pay some part of the cost of that program.
20

21 **Q. IS THERE ANY FINAL INDUCED BENEFIT THAT YOU HAVE**
22 **DOCUMENTED IN YOUR WORK ON LOW-INCOME ENERGY ISSUES?**

23 A. Yes. Work that I performed for Entergy Services Corporation (looking at the mid-South
24 states of Arkansas, Louisiana, Georgia and Texas) found that energy assistance is a
25 significant contributor to economic development. Because energy assistance contributes

²⁸ Karen Kraut, Scott Klinger and Chuck Collins (2000). *Choosing the High Road: Businesses that Pay a Living Wage and Prosper*, at 14, 16, Responsible Wealth: Boston (MA).

1 to additional disposable income within the low-income population, it helps drive
2 additional job creation, income generation, and economic activity.

3
4 In my report looking at the Entergy Service Corporation service territory, I
5 found:²⁹

6 The distribution of energy assistance first creates economic activity for the
7 Entergy states through the direct delivery of benefit dollars. In addition to
8 the dollars of cash benefits, however, the delivery of energy assistance will
9 also free up household dollars that would have been devoted to the costs
10 arising from the payment and behavior consequences of energy bill
11 unaffordability. These dollars, too, can then instead be spent (and circulated)
12 in the local economy.

13
14 * * *

15 While the discussion of the economic impacts of energy assistance looks at
16 economic benefits on a statewide basis, in fact, the economic impacts provide
17 particular advantage to low-income communities. Existing research indicates
18 that low-income households tend to shop at local retail establishments. For
19 food in particular, low-income households tend to shop at small, local food
20 stores. Moreover, not only are low-income *households* more likely to shop
21 locally, but the *businesses* serving low-income households are more likely to
22 shop locally as well. It is clear, therefore, that not only will the provision of
23 energy assistance provide income and employment to low-income
24 households, but the earnings and employment that are delivered to such
25 households will likely be spent, retained and recirculated within the low-
26 income community as well.

27
28 The delivery of energy assistance in the four Entergy states accomplishes far
29 more for those states than simply helping low-income residents avoid arrears
30 on home energy bills and preventing the potential loss of home energy
31 service due to nonpayment. The delivery of home energy assistance also
32 serves as a substantial economic stimulant for the economies of the Entergy
33 states.
34

²⁹ Roger Colton (August 2003). *The Economic Impacts of Home Energy Assistance: The Entergy States*. Entergy Services Corp: Little Rock (AR).

1 **Q. WHAT DO YOU CONCLUDE FROM THIS DISCUSSION?**

2 A. The conclusion that marches forward is that all customer classes will benefit from the
3 proposed universal service program. Commercial and industrial customers, as well as
4 small businesses, will gain direct benefits from the proposed program.

5
6 **C. The Particular Benefits to Health Care Providers.**

7 **Q. HAVE YOU CONSIDERED THE IMPACTS THAT THE PROVISION OF**
8 **AFFORDABLE HOME ENERGY MIGHT HAVE ON HEALTH CARE**
9 **PROVIDERS IN PARTICULAR?**

10 A. Yes. It is a long-established tenet of health care delivery that it is less expensive to *keep*
11 someone healthy than it is to *get* someone healthy once they have become ill. This is
12 particularly true for low-income households. Due to their tendencies to be uninsured,
13 low-income households exhibit several characteristics that impose high costs on the
14 health care system:

- 15 ➤ First, low-income households tend not to use primary care providers as their
16 source of health care. These households tend to instead use emergency care
17 facilities as their primary health care provider. The use of such facilities is
18 one of the most expensive ways to obtain health care, thus driving up costs not
19 only to the household, but also to the health care industry itself.
- 20 ➤ Second, low-income households tend to postpone obtaining immediate
21 medical care. As a result, small medical problems become large medical
22 problems before health care is sought. This, too, drives up the cost of care
23 both to the household and to the health care industry itself.

➤ Third, low-income households tend to be a disproportionate source of uncompensated care to the health care industry. This uncompensated care comes in part from the presence of bad debt. It comes in part from the provision of care which the industry knows up-front will yield no payment.

Q. IS THERE A DOCUMENTED RELATIONSHIP BETWEEN UNAFFORDABLE HOME ENERGY BILLS AND AN INCREASED INCIDENCE OR INTENSITY OF HEALTH CARE PROBLEMS AMONG LOW-INCOME HOUSEHOLDS?

A. Yes. Research has found that unaffordable home energy contributes to precisely the types of high cost health care behavior that I identify above. A June 2000 report for the Iowa Department of Human Rights (the agency which administers LIHEAP in Iowa), for example, found that unaffordable home energy costs exacerbate low-income health care problems.³⁰ According to the Iowa research:

More than one of every five respondents to the *Iowa LIHEAP Energy Survey* (20.9%) reported going without medical care to pay for heating bills. Going without medical care may include not seeking medical assistance when it is needed, not filling prescriptions for medicine when the doctor has prescribed them, and/or not taking prescription medicines in the dosage ordered by the doctor.

* * *

Buying medicine is an avoidable expense, but the long-term effects may be disastrous to the person who has deferred that expense. Failure to obtain medical treatment for an illness may lead to increased poor health, increased medical bills later on, and loss of wages from not being able to go to work. It is also possible that failure to obtain medical treatment for an illness will lead to problems later on. Going without medical care as a strategy to ensure the heating bill gets paid has serious implications for particularly vulnerable groups of Iowans. As with the lack of food, children, the elderly, and the disabled will be particularly affected.³¹

³⁰ Joyce Mercier, et al. (June 2000). *Iowa's Cold Winters: LIHEAP Recipient Perspective*, at 14 – 16, Iowa Department of Human Rights: Des Moines (IA).

³¹ *Id.*, at 15.

1 The Iowa DHR reported:

- 2 ➤ More than one-in-six households with children under age six (16.7%) went
- 3 without medical care to pay their heating bills.
- 4 ➤ Nearly one-in-five households with seniors (19.1%) went without medical
- 5 care to pay their heating bills.
- 6 ➤ Nearly one-in-four households with a disabled member (24.6%) went without
- 7 health care to pay their heating bills.
- 8 ➤ More than one in five wage earners (27.2%) went without medical care in
- 9 order to pay their heating bill.

10
11 **Q. IS THERE OTHER DATA THAT DOCUMENTS HOW UNAFFORDABLE**
12 **HOME ENERGY CONTRIBUTES TO A REDUCTION IN HEALTH SEEKING**
13 **BEHAVIOR WITHIN THE LOW-INCOME POPULATION?**

14 A. Yes. The Congressionally-funded National Energy Assistance (NEA) survey for the
15 National Energy Assistance Directors Association (NEADA) documented results similar
16 to the Iowa survey.³² The NEA, released in April 2004, reported that:

- 17 ➤ 22% of energy assistance recipients went without food for at least one day;
- 18 ➤ 38% of LIHEAP recipients went without medical or dental care;
- 19 ➤ 30% went without medicine or took medicines in a dosage less than that
- 20 which was prescribed.

³² Apprise, Inc. (April 2004). *The National Energy Assistance Survey: Final Report*, National Energy Assistance Directors Association: Washington D.C.

1 According to the NEA survey, 21% of LIHEAP recipients reported that they became sick
2 because their home was too cold. Indeed, 14% reported an illness that resulted in either a
3 doctor's visit or hospital visit because their home was too cold.

4
5 So, too, does a study that I performed for the National Low-Income Energy Consortium
6 (NLIEC) in the State of Missouri find these same results.³³ My research found that high
7 energy bills facing low-income households not only force those households to avoid
8 doctor and dentist appointments, but those high bills also force households to skip taking
9 prescribed medicines or to take medicines in dosages less than that prescribed. My
10 Missouri study will be publicly released by NLIEC in the second week of June 2004.

11
12 **Q. ARE THERE OTHER BEHAVIOR CONSEQUENCES ARISING FROM HOME**
13 **ENERGY THAT HAVE DIRECT IMPACTS ON THE HEALTH OF LOW-**
14 **INCOME HOUSEHOLDS?**

15 A. Yes. In 2002, the National Bureau of Economic Research (NBER) documented that low-
16 income households reduce their nutritional intake during high energy cost winter
17 months.³⁴ This research reports that: "poor parents and their children outside the South
18 spend and eat less food during cold weather temperature shocks. We surmise that existing
19 social programs fail to buffer against these shocks."

20

³³ Roger Colton (June 2004). *Paid but Unaffordable: The Consequences of Energy Poverty in Missouri*, National Low-Income Energy Consortium: Washington D.C.

³⁴ Jayanta Bhattacharya (June 2002). *Heat or Eat? Cold Weather Shocks and Nutrition in Poor American Families*, National Bureau of Economic Research: Cambridge (MA).

1 The Iowa survey, which I previously discussed, found a similar direct impact on hunger
2 and nutrition. According to the Iowa survey:

- 3 ➤ More than one-in-ten seniors (10.5%) went without food for at least one day
4 because of high energy bills.
- 5 ➤ Nearly one-in-ten households with children under age six (9.1%) went without
6 food for at least one day because of high energy bills.
- 7 ➤ Nearly one-in-five households with a disabled person (18.4%) went without
8 food for at least one day because of high energy bills.
- 9 ➤ Nearly one-in-eight wage earners (within the LIHEAP population) (11.5%)
10 went without food for at least one day because of high energy bills.

11 The Iowa report noted in particular:

12 Good nutrition and diet, i.e., starting with an adequate food supply in the home, is
13 important in promoting good health and reducing chronic disease for conditions
14 ranging from preventing low birth weight to weight reduction, diabetes mellitus,
15 cardiovascular disease, and dietary intervention in cancer prevention and control.

16 * * *

17
18
19 What occurs in the child's early life affects his/her growth and development. A
20 hungry child cannot concentrate in school and is more vulnerable to sickness and
21 poor health than a child with an adequate diet.³⁵
22

23 The Iowa reported noted with respect to the elderly that "the relationship between
24 skipping meals and increased medical needs is clearly shown since a poor diet or lack of
25 adequate nutrition significantly increases hospital stays and direct medical costs." Again,
26 both the National Energy Assistance survey and my Missouri research documented
27 similar results.

³⁵ *Iowa's Cold Winters*, *supra*, at 11 – 13.

1 **Q. HAS THE DELIVERY OF HOME ENERGY AFFORDABILITY ASSISTANCE**
2 **EVER BEEN FOUND TO IMPROVE THE HEALTH AND HEALTH-SEEKING**
3 **BEHAVIORS OF LOW-INCOM E HOUSEHOLDS?**

4 **A. Absolutely. Energy affordability programs have been directly tied to improvements in**
5 **low-income health care outcomes. Indeed, previous research regarding the non-energy**
6 **benefits of low-income weatherization programs has identified the prevention of illness**
7 **as one primary non-energy benefit generated. For example, one researcher reports that**
8 **“households with sufficient and continuous heating may tend to experience fewer colds**
9 **and other illnesses per year.”³⁶ Skumatz reports that “one in fourteen households may**
10 **have had one fewer sick day per year” after participating in a low-income weatherization**
11 **program.**

12
13 These findings by Skumatz have been corroborated elsewhere. A study of Niagara-
14 Mohawk’s low-income assistance program confirmed the role that energy assistance can
15 play in preventing bad health. That evaluation reported a 69% reduction in the number of
16 persons who perceived having health problems caused by their home being too cold
17 (from 36% to 11%).³⁷

18
19 Most recently, the 2004 National Energy Assistance (NEA) survey found that making
20 home energy more affordable is a mechanism that improves the health of low-income
21 households.

³⁶ Lisa Skumatz. (March 2001). *Non-Energy Benefits (NEBs): Recognizing and Measuring All Net Program Benefits*, Skumatz Economic Research Associates: Superior (CO).

1 **Q. WHAT DO YOU CONCLUDE?**

2 A. I conclude that promoting affordable home energy to low-income households through the
3 provision of energy affordability assistance generates substantive health-related benefits
4 to low-income households and to the health care industry that serves them. Supporting
5 home energy affordability programs is in the enlightened self-interest of health care
6 providers.

7
8 **Q. DO YOU HAVE A CONCLUDING OBSERVATION ABOUT THE DIRECT AND**
9 **INDUCED BENEFITS GENERATED BY A HOME ENERGY AFFORDABILITY**
10 **PROGRAM?**

11 A. There are really two lessons to be learned from the research I discuss above. First, the
12 provision of rate affordability assistance such as that proposed by Petitioners without
13 question generates induced benefits that accrue to the advantage of all customers in the
14 state. Second, it is important to remember that while it is easy to quantify the costs of rate
15 affordability programs, it is much more difficult to quantify the benefits (both direct and
16 induced). Nonetheless, these direct and induced benefits combine to deliver real benefits
17 to all customer classes.

18
19 **PART 2: A SUBSTANTIVE PROGRAM REVIEW.**

20 **Q. PLEASE EXPLAIN THE INDIANA UNIVERSAL SERVICE PROGRAM AS**
21 **YOU UNDERSTAND IT.**

³⁷ Merillee Harrigan (1992). *Evaluating the Benefits of Comprehensive Energy Management for Low-Income, Payment-Troubled Customer. Final Report on Niagara Mohawk Power Partnership Pilot*, Alliance to Save Energy: Washington D.C.

1 A. Petitioners propose to adopt a tiered discount program for income-eligible natural gas
2 heating customers. The tiered discount, which Petitioners propose to have range from
3 35% to 55%³⁸ of participants' bills depending on the ratio of household income to
4 Federal Poverty Level, will be provided to customers who have enrolled in the federal
5 Low-Income Home Energy Assistance Program (LIHEAP). Enrolled customers will
6 receive the tiered discount on their bill. The LIHEAP benefits the customers would
7 otherwise have been credited with will be used to offset the first dollars of discount
8 provided. If a customer receives a \$400 discount, in other words, that customer's \$250
9 LIHEAP benefit would, in effect, be used to pay dollars \$1 - \$250, with alternative
10 funding sources being used to fund the difference between the full discount and the
11 LIHEAP benefit. Only basic LIHEAP grants are used as a funding source. Crisis funds
12 (used to help pay arrears) plus any emergency funding releases will still be paid directly
13 to the customer or on the customer's behalf. In effect, there are three eligibility criteria
14 for the tiered discount program: (1) that the customer be income-eligible for LIHEAP; (2)
15 that the customer enroll in LIHEAP; and (3) that the customer be the customer of record
16 on a residential gas service account.

17
18 **Q. WHAT IS THE BASIC MECHANISM FOR DETERMINING THE**
19 **SUBSTANTIVE REASONABLENESS OF A RATE AFFORDABILITY**
20 **PROGRAM?**
21

³⁸ Citizens Gas, Indiana Gas, and SIGECO all propose a three tier structure. Citizens proposes a discount of 35%, 40% and 45% while Indiana Gas and SIGECO propose a 45%, 50% and 55% discount.

1 A. The basic tool to use in determining the affordability of home energy bills is to use
2 energy burdens as a benchmark. A household's home energy burden is simply the home
3 energy bill as a percentage of income. A household with an energy bill of \$1,000 and a
4 gross annual income of \$6,000, in other words, would have a home energy burden of
5 16% ($\$1,000 / \$6,000 = 0.16$). A household with an energy bill of \$500 and a gross
6 annual income of \$5,000 has an energy burden of 10% ($\$500 / \$5,000 = 0.10$).
7 Deciding to use energy burdens as the benchmark of affordability, of course, does not
8 answer the question of what energy burden should be considered "affordable." As a
9 general rule, I use 6% of income as the benchmark of affordability for total home energy
10 bills. The New Hampshire PUC has adopted this benchmark as its guideline for the
11 state's Electric Assistance Program. New Jersey's Board of Public Utilities has also used
12 6% as its benchmark of affordability for total home energy bills. New Jersey splits its
13 6% into separate electric and natural gas components. It assigns a customer
14 responsibility of 3% of income to each. Questions of what energy burdens are affordable
15 and what burdens cross the line into unaffordability do not present an opportunity for
16 hard and fast responses. Affordable percentages are often moved up in response to
17 budget constraints. In those instances, the goal is to not to achieve an "affordable" bill but
18 rather simply to achieve a "more affordable" bill.

19
20 **Q. HAVE YOU EXAMINED THE PROPOSED TIERED DISCOUNT PROGRAM**
21 **TO DETERMINE WHETHER IT IS SUBSTANTIVELY REASONABLE IN**
22 **LIGHT OF THE RESULTING HOME ENERGY BURDENS?**
23

1 A. Yes. I conclude that, with some adjustments, the proposed discount is substantively
2 reasonable as an affordability strategy. With the adjustments in the discount levels I
3 propose below, so long as customers have consumption that does not substantially exceed
4 the average bill reported by each of the respective Petitioners, the discounts result in
5 reasonable energy burdens for households.

6
7 **Q. WHAT ADJUSTMENTS DO YOU PROPOSE TO MAKE TO THE**
8 **PETITIONERS' DISCOUNT LEVELS?**

9 A. Citizens Gas proposes discount levels of 35%, 40% or 45% for low-income eligible
10 customers. In contrast, Petitioners IGC and SIGECO propose discount levels of 45%,
11 50% or 55% off the natural gas bill. The discounts vary depending on household size and
12 income (presumably as amalgamated into Poverty Level).³⁹ I propose that two changes
13 be adopted.

14 ➤ First, I propose that the discounts be tied to income rather than to Poverty
15 Level.

16 ➤ Second, I propose that the discounts for each company be adjusted so that they
17 better accomplish the task of moving natural gas bills toward affordable home
18 energy burdens. I propose discounts of 25%, 40% and 50% for Citizens Gas.
19 I propose discounts of 35%, 50% and 60% for IGC and SIGECO.

20 I will explain the rationale for each of these changes within the discussion that follows.

21 **Q. PLEASE EXPLAIN THE AFFORDABILITY ANALYSIS YOU PRESENT.**

³⁹ Federal Poverty Level is a measure of household income adjusted for household size. In 2004, 100% of the Federal Poverty Level for a household with one person is \$9,310 while 100% of Federal Poverty Level for a household with two persons is \$12,490.

1 A. The attached schedules allow me to track the impact that the proposed discounts will
2 have on the affordability of natural gas bills to low-income consumers as measured by
3 energy burdens. I have set the benchmark of affordability at four percent (4%) of
4 income. I then consider the impacts of the discount on 48 “baskets” of low-income
5 natural gas customers. I divide low-income customers into eight income ranges. I further
6 divide low-income customers into six ranges marked by the percentage that their natural
7 gas bills are of the average natural gas bill. This six-by-eight array yields 48 different
8 “baskets ” of low-income customers. Cell #1 in the array, for example, is the customer
9 with an income of less than \$2,000 and a natural gas bill at or below 50% of the average
10 gas bill. Cell #16 captures the customer with income of between \$4,000 and \$5,999 with
11 a natural gas bill of between 101% and 125% of the average. Cell #35 captures the
12 customer with income between \$10,000 and \$11,999 with a natural gas bill between
13 126% and 150% of the average bill. Income distribution is based on Indiana LIHEAP
14 data provided by the federal LIHEAP office. Bill distributions are based on the U.S.
15 Department of Energy’s Residential Energy Consumption Survey (RECS) for the East
16 North Central Census Division (of which Indiana is a part). I used the average bill
17 provided in the direct testimony of each Petitioner. Each set of schedules shows a
18 “before” and an “after” energy burden by income level and consumption as a percentage
19 of the average. Each set also allows me to estimate the total program costs given differing
20 discount tiers.

1 **Q. PLEASE DESCRIBE YOUR PRESENTATION OF DATA WITH RESPECT TO**
2 **THE PROPOSED TIERED DISCOUNTS.**

3 A. I present my analysis below in three parts.

4 ➤ First, I examine the pre-discount affordability of each of the three Petitioners.

5 This discussion assumes average non-discounted energy bills.

6 ➤ Second, I examine the post-discount affordability for each Petitioner. This
7 discussion uses the discount tiers that I propose to substitute for each
8 Petitioner.

9 ➤ Third, I compare my proposed discount tiers to those proposed by the
10 Petitioners to assess whether my proposals are reasonably cost neutral.

11 My analysis presents one analysis for Citizens Gas Company and a separate combined
12 analysis for Indiana Gas and SIGECO.

13
14 **Q. WHAT DID YOU FIND WITH RESPECT TO THE PRE-DISCOUNT**
15 **AFFORDABILITY?**

16 A. Schedule RDC-2 presents the non-discounted energy burden for Citizens Gas Company.
17 This analysis assumes an average annual natural gas bill of \$950 as presented by
18 Company witnesses Sawyers (page 17). Schedule RDC-2 shows that no basket of
19 customers with consumption greater than 75% of the average Citizen Gas bill has an
20 affordable home energy burden. For households with incomes of \$4,000 or less, and
21 consumption of at least 75% of the company average, annual burdens begin at almost
22 30% of income and increase as incomes go down. Only 1,502 of the 15,700 LIHEAP
23 recipients have energy burdens of 6% or less. Only customers with energy bills of 50%

1 of the Company's average consistently reach an energy burden of 4% or less. Even then,
2 only those customers with annual incomes of \$10,000 or more reach those energy
3 burdens. Customers with income of \$12,000 and above can reach the 4% energy burden
4 at 51 – 75% of the average bill.

5
6 Schedule RDC-3 presents the same information for IGC/SIGECO. Schedule RDC-3
7 presents data based on an average energy bill of \$838 as presented by Company witness
8 Petitt (page 8). Schedule RDC-3 shows that no basket of customers with consumption
9 greater than 75% of the average IGC/SIGECO bill has an affordable home energy
10 burden. For households with incomes of \$4,000 or less, and consumption of 75% of the
11 company average, annual burdens begin at almost 25% of income and increase as
12 incomes go down. Only 865 of the 21,200 LIHEAP recipients have energy burdens of 4%
13 or less. Only customers with energy bills of 50% of the Company's average consistently
14 reach an energy burden of 4% or less. Even then, only those customers with annual
15 incomes of \$10,000 or more reach those energy burdens. Again, customers with income
16 of \$12,000 or more can reach 4% at 51 – 75% of the average bill.

17
18 **Q. WHAT IMPACT DOES THE PROPOSED RATE DISCOUNT HAVE ON THE**
19 **AFFORDABILITY OF NATURAL GAS?**

20 **A.** Schedule RDC-4 presents the affordability impact of the rate discounts as I propose them
21 to be implemented for Citizens Gas. My analysis finds that when household energy
22 consumption is within a +/- 25% band around the average consumption, the Company's
23 proposed tiered discount, as I propose somewhat adjusting, does a reasonably good job,

1 given limited funding, of reducing bills to an affordable burden except at the very lowest
2 income tiers. I propose discount tiers of 50% for customers with incomes of \$6,000 and
3 below; of 45% for customers with incomes of \$6,000 to \$12,000; and of 25% for
4 customers with incomes of \$12,000 or more. As Schedule RDC-4 shows, the proposed
5 discount results in the greatest affordability impacts within the range of consumption
6 between 76% and 125% of the average consumption. The discount increases the number
7 of customers with burdens of 4% or less to 2,150. The number of customers with burdens
8 of 6% or less reaches 5,866. Households with consumption in that range and incomes as
9 low as \$8,000 have energy burdens of as low as 6%. Schedule RDC-4 shows that
10 households with incomes greater than \$6,000 (representing 55% of the LIHEAP
11 population) have natural gas burdens of 4% and 9% given bills at between 75% and
12 125% of average. Even households with incomes of between \$4,000 and \$6,000 have
13 discounted energy burdens of between 8% and 11% (given bills between 75% and 125%
14 of the average). Only when income falls below \$4,000 do energy burdens get wildly out
15 of hand. 82% of Indiana's LIHEAP population has an income of \$4,000 or more.

16
17 Schedule RDC-5 presents the affordability impact of the rate discounts as I propose them
18 to be implemented for IGC/SIGECO. My analysis finds that so long as customer
19 consumption is within a +/- 25% band around the average, the Company's proposed
20 tiered discount, as I propose somewhat adjusting, does a reasonably good job, given
21 limited funding, of reducing bills to an affordable burden except at the very lowest
22 income tiers. I propose discount tiers of 60% for customers with incomes of \$6,000 and
23 below; of 50% for customers with incomes of \$6,000 to \$12,000; and of 35% for

1 customers with incomes of \$12,000 or more. As Schedule RDC-5 shows, as with
2 Citizens, the proposed discount results in the greatest affordability impacts within the
3 range of consumption between 76% and 125% of the average consumption. The discount
4 increases the number of customers with burdens of 4% or less to 7,518. Households with
5 consumption in that range and incomes as low as \$6,000 have energy burdens of as low
6 as 5%. Schedule RDC-5 shows that households with incomes greater than \$4,000 have
7 natural gas burdens of 3% to 8% given bills at between 75% and 125% of average.
8 Again, as with Citizens, only when income falls below \$4,000 do energy burdens get
9 wildly out of hand.

10
11 There is no question but that there are outliers in the analysis, both above and below these
12 relatively affordable ranges. As natural gas bills climb substantially above the average,
13 the energy burdens get correspondingly more unaffordable. As energy bills drop more
14 substantially below the average, the energy burdens become less unaffordable.⁴⁰ The
15 target population, however, with bills in the range between 75% and 125% of average
16 bills, demonstrates reasonable bill affordability improvement.

17
18 **Q. CAN YOU EXPLAIN THE COST DIFFERENCE BETWEEN YOUR PROPOSED**
19 **TIERED DISCOUNTS AND THOSE DISCOUNTS PROPOSED BY THE**
20 **PETITIONERS?**

⁴⁰ The Petitioners have done well to propose to treat customers with bills substantially above the average with energy efficiency in addition to providing rate affordability relief. This not only improves affordability, but reduces the cost of the program as well for those customers. Given limited funds, it would appear that the probable use of those avoided dollars of discount will be to allow additional program participants.

1 A. Yes. I present the data for Citizens and for IGC/SIGECO in separate schedules.
2 Schedule RDC-6 a comparison of my estimated costs of the proposed discounts given the
3 Company's proposed tiers (page 1 of 2) and given my proposed tiers (page 2 of 2). As
4 you can see, using my costing methodology, the change in tiers results in a relatively
5 minor cost change (of less than \$200,000). One should note that the Company's cost
6 estimation methodology and my cost estimation methodology yield virtually identical
7 results (\$6.080 million estimate by Citizens compared to my estimate of \$6.020 million).
8
9 Schedule RDC-7 presents the same data for IGC/SIGECO. Schedule RDC-7 (page 1 of
10 2) presents the cost of the proposed discount given the IGC/SIGECO tiers. Schedule
11 RDC-7 (page 2 of 2) presents the cost of the discount given my proposed tiers. As with
12 Citizens, the change in tiers results in a relatively minor total cost change (of roughly
13 \$210,000). My cost estimate for a full year program is somewhat lower than that
14 presented by Company witness Petitt in his direct testimony (page 16) (cost of full year
15 discount is \$9.76 million).⁴¹
16

17 **Q. WHY DO YOU PROPOSE TO ADJUST THE DISCOUNT TIERS?**

18 A. The goal of the tiered discount is to adjust bills so that they reasonably approximate
19 affordable home energy burdens given the amount of money there is to spend. The
20 proposed adjustments make some modest improvement in the affordability of natural gas
21

⁴¹ If one uses the same methodology as used by Citizens (i.e., multiplying the average bill by an assumed discount level), use of an average discount of 55% for IGC/SIGECO would yield a full year cost of \$9.78 million. It is not clear, however, why Petitt would use the upper tier in calculating the cost of the IGC/SIGECO program and use the middle tier for the Citizens program. I believe the \$9.76 million figure presented by Petitt on page 16 of his direct testimony for Vectren overstates the cost of a full year discount.

1 at the lowest income tiers while not doing damage to energy burdens for households with
2 higher incomes. Moreover, as I note above, we can accomplish these purposes while
3 keeping the total cost of the program within a narrow range of the cost estimate originally
4 advanced by each of the Petitioners.

5
6 **Q. ARE YOU CONCERNED ABOUT THE HIGHER BURDENS FOR CUSTOMERS**
7 **WITH BILLS MORE THAN 25% ABOVE THE AVERAGE?**

8 A. These high energy burdens absolutely concern me. Without a program that is
9 substantially more complex than that proposed by the Petitioners, however, it is not
10 possible to target the benefits sufficiently precisely to address the energy burden
11 problems of those higher use customers. Also, my concern about those higher use
12 households is mitigated to a degree because of the Petitioners' proposals to target those
13 high-use customers with energy efficiency investments. The Petitioners' proposed
14 program design does not ignore the special needs of these high-use households.

15
16 **Q. CAN YOU EXPLAIN THE BENEFITS OF THE ENERGY EFFICIENCY**
17 **MEASURES DIRECTED TOWARD THE HIGH-USE CUSTOMERS?**

18 A. All three Petitioners have proposed to direct weatherization services toward portions of
19 the population served by the proposed universal service program. I agree with the
20 testimony of Citizens Gas witness Sawyers when he states that "weatherization treatment
21 will result in lower gas bills for customers and decrease the need for a sizable subsidy in
22 subsequent years." (Sawyer Direct, at 13). While Mr. Sawyer states that "Citizens has
23 targeted EAP customers with high usage for weatherization since the 2000 heating

1 season,” he does not explain the targeting mechanism for the weatherization funded
2 through this universal service program. I propose that all three Petitioners target their
3 weatherization services toward customers that have consumption that falls at or above
4 125% of the average annual bill identified by the respective company witnesses (Citizens:
5 \$950; IGC/SIGECO: \$838).

6
7 **Q. WHAT AFFORDABILITY IMPACT WILL THAT TARGETING GENERATE?**

8 A. Schedule RDC-8 (page 1 of 2) presents the affordability improvement for customers with
9 pre-treatment usage of 125% of the Citizens average natural gas bill. In testing the
10 improvement in affordability, I adopt Mr. Sawyer’s statement that “Citizens’
11 weatherization program has generated savings at an average rate of 35% or higher.”
12 (Sawyers, at 14). Schedule RDC-8 (page 1 of 2) shows that the weatherization measures
13 will bring energy burdens down to an affordable level for customers with incomes of
14 more than \$12,000.⁴² Even households with incomes of \$8,000 to \$10,000 will have
15 energy burdens of only 6% rather than between 9% and 10% on a pre-weatherization
16 basis.

17
18 Schedule RDC-8, page 2 of 2, presents the same information for IGC/SIGECO. With
19 these two Petitioners, the impact of the weatherization will be to bring significantly
20 greater rate affordability to the high usage households with incomes as low as \$4,000.

21

⁴² While these Schedules show consumption as being at 125% of the average or more, this is done simply as a way of maintaining consistency. The entire point of the weatherization is to reduce consumption below those pre-weatherization levels.

1 These households will be paying an energy burden of 7% of income, rather than the 10%
2 to 11% pre-weatherization burdens.

3
4 **Q. DOES WEATHERIZATION GENERATE IMPROVEMENTS IN PAYMENT**
5 **PATTERNS?**

6 A. The increased affordability of bills achieved through weatherization generates improved
7 bill payment patterns. Schedule RDC-9, for example, presents the natural gas company
8 bill payment impacts generated by Pennsylvania's Low-Income Usage Reduction
9 Program (LIURP). As you can see, across the board for Pennsylvania's natural gas
10 utilities, delivery of the usage-reduction services resulted in substantial improvements in
11 low-income bill payment practices. Indeed, a payment rate of less than 100% in this
12 Schedule means that customers are not paying their entire current bill. A payment rate of
13 more than 100% means that customers are not only paying their entire current bill, but
14 they are also retiring some or all of their arrears.

15
16 **Q. PLEASE EXPLAIN WHY YOU PROPOSE TO CHANGE THE BASIS OF THE**
17 **DISCOUNT TIERS FROM USING POVERTY LEVEL TO USING STRAIGHT**
18 **INCOME LEVELS?**

19 A. Let me first note again what Poverty Level is. Poverty Level is a measure of income
20 taking into account household size. What Poverty Level captures, for example, is the fact
21 that a four-person household living with a gross annual income of \$12,000 is "poorer"
22 than a two-person household living with a gross annual income of \$12,000.

1 Given that observation, it might first appear that it would be most reasonable to adjust the
2 discount tiers based on Poverty Level rather than income levels. The design of rate
3 affordability programs, however, does not work in quite that fashion. The question you
4 have to ask is what are you trying to accomplish by differentiating the discount tiers with
5 which to begin. Presumably, the reason to differentiate discount tiers is to make home
6 energy bills more affordable for those customers receiving the higher discount.

7
8 Given that observation, adjusting discount tiers by Poverty Level only make sense if, in
9 addition to differentiating discount tiers, the program design contemplates an approach
10 tiered to what percentage of income is deemed to be “affordable.” If the program design
11 posits, for example, that households with incomes at 0 – 50% of Poverty Level will pay
12 4% of their income for home energy, while households with incomes at 100 to 150% of
13 Poverty will pay 8% of income, it makes sense to differentiate the discount by Poverty
14 Level. In the absence of that tiered approach to affordability, however, the tiering of
15 discounts should be differentiated on the basis of income alone. If, as I suggest is
16 appropriate in a simplified program such as that proposed by the Petitioners, affordability
17 is to be measured against a constant energy burden (4%), adding household size provides
18 no additional targeting advantage to the discount which is offered. Without a tiering of
19 affordability by Poverty Level, household size is simply not used in the equation.

1 **Q. DO YOU OBJECT TO THIS TYPE OF TIERING BASED ON INCOME ALONE?**

2 A. No, not if done correctly. This type of tiering is precisely what we did in the design of
3 the New Hampshire Electric Assistance Program (EAP). The New Hampshire EAP is a
4 tiered discount program that I designed for the NHPUC.

6 **Q. CAN YOU SUMMARIZE YOUR CONCLUSIONS FROM THIS SECTION?**

7 A. Although the tiered discount programs offered by the Petitioners in this proceeding has
8 shortcomings, the proposals are substantively reasonable. The modifications I propose
9 do not change either the nature or the scope of the program. Indeed, the costs of the
10 programs, as I estimate them given my modifications, are roughly equal on an annual
11 basis to the cost estimates presented in the Petitioners' direct testimony.

13 I should note, by the way, that this result is not happenchance. My goal in this proceeding
14 was not to consider how I would design a rate affordability program if I were developing
15 such a program from scratch. My objective was, instead, to determine whether what the
16 Petitioners designed and proposed is reasonable and determine what modifications, if
17 any, would improve the program. Recognizing that this is a pilot program and, hopefully,
18 a first step towards a more comprehensive program in the future, I conclude that the
19 Petitioners' proposals are certainly within a range of reasonable program designs as
20 measured against objective determinations of reasonableness. However, the programs
21 can be further enhanced by modifying as discussed above.

1 **PART 3. PROGRAM DESIGN ISSUES.**

2 **Q. WHAT IS THE PURPOSE OF THIS PART OF YOUR TESTIMONY?**

3 A. In this section of my testimony, I recommend several modest changes to the proposed
4 program design to ensure that the program generates benefits for low-income customers
5 as well as all other customers. These recommendations are in addition to the three
6 recommendations above: (1) to adopt modest revisions in the discount tiers; (2) to base
7 the discounts on income alone rather than on Poverty Level; and (3) to target
8 weatherization to customers with usage at or above 125% of the average usage for each
9 respective Petitioner.
10

11 **Q. PLEASE EXPLAIN YOUR FIRST PROGRAM DESIGN MODIFICATION?**

12 A. The proposed natural gas rate discount program must have either a mechanism allowing
13 Indiana LIHEAP recipients to “opt out” of the program, or it must provide a mechanism
14 allowing for the customers to recapture their LIHEAP benefit in the event that the amount
15 of the discount is less than the amount of the discount to be received through the
16 universal service program. While it is not likely that substantial numbers of LIHEAP
17 recipients will experience natural gas bills low enough to result in a discount less than the
18 LIHEAP benefit, neither are the potential numbers small. Schedule RDC-10 presents the
19 average bill for Citizens as well as for IGC/SIGECO. The Schedule then shows what
20 bills would be given different proportions of the average. 11% of all customers fall into
21 the basket with bills that are at 50% or less of the total average bill. An additional 21%
22 of customers fall into the basket with bills at 51 – 75% of the total average. Low-income
23 customers should not receive *less* assistance than that which they would receive without

1 the discount. In the event that the discount amount is less than the LIHEAP benefit,
2 customers should either be allowed a choice not to participate or should be credited with
3 the difference of their total LIHEAP benefit. The three Petitioners must keep auditable
4 records allowing for the necessary tracking to ensure that customers receive no less under
5 this program than they would otherwise have received under LIHEAP.

6
7 **Q. PLEASE DESCRIBE THE SECOND OPERATIONAL MODIFICATION YOU**
8 **PROPOSE.**

9 A. The proposed discount should be provided on an annual basis rather than on a going
10 forward basis after the date the household applies for energy assistance. At its core, this
11 recommendation is also designed to ensure that households do not receive fewer benefits
12 than would be received had they simply received a LIHEAP benefit with which to begin.
13 Under federal law, a LIHEAP benefit received in Program Year 2004 cannot be used to
14 pay energy costs incurred in Program Year 2005 (or later).⁴³ As a result, unless discounts
15 are applied retroactively to the beginning of the LIHEAP year, a household that applies
16 for (and receives) LIHEAP late in the heating season runs the risk of not being able to
17 spend its LIHEAP benefit before the end of the Program Year. A household that receives
18 a LIHEAP benefit in March, for example, cannot apply that benefit against the next
19 winter heating season's bill. Instead, the benefit would need to be applied before the end
20 of September. September bills would, of course, only reflect August usage. Assume our
21 hypothetical March LIHEAP applicant qualifies to receive a discount of 50% off his or

⁴³ The LIHEAP Program Year is the federal fiscal year. It runs from October 1 of one year through the following September. At the state level, however, the program year is much shorter. The program year ends May 31 of each year. The starting date is set each year by the state Department of Social Services. It changes each year based on a variety of factors.

1 her natural gas bill. This hypothetical household receives a \$250 LIHEAP benefit. For
2 this household to receive its entire benefit, it would need to have a natural gas bill for the
3 six months April through September of \$500, or somewhat over an average of \$80 per
4 month ($\$500 \times 0.50 = \250). This might be possible, but it seems unlikely. Obviously, a
5 household receiving a discount of less than 50% would need to have even a higher
6 monthly bill in order to receive their entire LIHEAP benefit. A household receiving a
7 40% discount, for example, would need to have a natural gas bill of \$625 during the six
8 months April through September, or somewhat more than \$100 per month on average. A
9 household receiving a discount of 25% would need to experience a six month bill of
10 \$714, or nearly \$120 per month.

11
12 **Q. DO YOU OFFER THE TWO PROPOSALS ABOVE SIMPLY AS GOOD**
13 **POLICY?**

14 **A.** No. They are required by federal law as well. Under the federal statute, LIHEAP benefits
15 cannot simply be paid to a utility. Moreover, a utility may not simply take part of a
16 customer's LIHEAP benefit and use it to pay the discount actually provided to a different
17 customer. In order to resolve these problems, the utility will need to credit a discount
18 from the beginning of the year, irrespective of the month in which a household applies for
19 LIHEAP.⁴⁴

20

⁴⁴ One should note, of course, that both the Company's cost estimate and my own assume that customers are billed for an entire year of discounts. Adopting this approach, therefore, would not increase the total cost of the program.

PART 4. PROGRAM FUNDING.

Q. WHAT IS THE PURPOSE OF THIS SECTION OF YOUR TESTIMONY?

A. In this section of my testimony, I consider the program funding mechanism proposed by the Petitioners. Assessing the reasonableness of the funding mechanism is different from assessing the reasonableness of the program costs. I have previously indicated that my cost estimate for the program is reasonably close to the cost estimates produced by the Petitioners. In addition, I have previously indicated that I believe that the program delivers benefits to all customers (and, accordingly, that the proposal to allocate costs to all customer classes is reasonable). In contrast, this section addresses specific cost recovery issues.

Q. WHAT IS THE FIRST COST RECOVERY ISSUE YOU WISH TO ADDRESS?

A. Petitioners indicate in the testimony of witness Sawyer that they will track the administrative costs of implementing the tiered discount program for purpose of determining future cost recovery. The Commission should make clear from the beginning that the only costs, administrative or otherwise, that are subject to recovery through a universal service charge are *incremental* program costs. Incremental program costs are costs that would not be incurred in the absence of the program.

Administrative costs, in particular, are often non-incremental in nature. Assume, for example, that Citizens Gas devotes all or part of the time of two customer service representatives to the implementation of its tiered discount program. Because of the reduced number of credit and collection activities the company is experiencing (whether

1 it be Citizens, IGC or SIGECO), these customer service representatives have been able to
2 absorb the new tiered discount activities without increasing their time, and without need
3 of the company to increase its staffing levels. While the company clearly has incurred an
4 embedded cost for the program in this scenario, there is no *new* cost. The cost of the two
5 existing customer service representatives has already been included in rates. To allow the
6 company to collect the costs associated with these customer service representatives
7 through the universal service charge would be to allow a double recovery of costs. Even
8 if the company adjusted its cost of service downward to remove these customer service
9 representatives, the effect of this action is simply to switch costs out of base rates and
10 into the universal service charge. I do not object to allowing a utility to collect its
11 reasonable, direct incremental costs of program administration through a universal
12 service charge. It is imperative, however, that the Commission make clear up front that
13 only direct, incremental costs will be recoverable through the universal service charge.
14

15 **Q. DOES THIS ISSUE OF INCREMENTAL COSTS APPLY TO ANY OTHER**
16 **ASPECT OF THE UNIVERSAL SERVICE PROGRAM?**

17 **A.** Yes. It applies with equal force to program start-up costs. The amortization of
18 reasonable, incremental program start-up costs over a reasonable period of time is not an
19 unreasonable request. Merely because a staffperson devotes time to the program,
20 however, does not make the cost of that staffperson a recoverable cost. Costs that are not
21 incremental in nature are already included in rates. Only direct, incremental start-up
22 costs should be recovered through the universal service charge. Incremental costs are
23 costs that would not have been incurred in the absence of the program.

1
2 **Q. DO YOU HAVE A SECOND COST RECOVERY ISSUE?**

3 A. Yes. A similar, albeit not identical issue, relates to the recovery of bad debt costs.

4 Petitioners propose to track all reductions in bad debt expense and to share any expense
5 reduction on a 50/50 basis with the universal service fund. I will address that issue
6 further below.

7
8 The issue I raise here involves the extent to which the three Petitioners are already
9 recovering part of their low-income rates through their bad debt expense. The extent to
10 which low-income discounts have already been included in a bad debt expense, those
11 expenses should be backed out of any assignment of costs to the universal service fund.

12
13 Let me illustrate. Assume that all LIHEAP recipients have a total revenue base of \$10
14 million for Whiteacre Utility Company. Of that \$10 million, Whiteacre has a bad debt
15 rate of eight percent (8%), or \$800,000. That debt expense of \$800,000 expense is
16 currently embedded in existing rates. The company collects that \$800,000 from all other
17 ratepayers. Now assume further that Whiteacre agrees to provide a 50% discount to its
18 LIHEAP customers. The company receives compensation for its 50% discount from a
19 universal service fund. This is the proposal that now been placed before the Commission
20 by Petitioners. In this instance, Whiteacre overcollects its revenue requirement from its
21 LIHEAP customers. The company's sources of revenue include the following:

- 22 ➤ It receives \$5.0 million from the universal service fund (50% discount from a
23 \$10.0 million bill to LIHEAP customers).

➤ It receives \$800,000 in compensation for bad debt expense in base rates (\$10.0 million total revenue x bad debt rate of 8%).

➤ It receives \$4,600,000 in customer payments (\$5.0 million billed revenue reduced by an assumed 8% bad debt rate).

As can be seen, in this situation, the Company receives \$10.4 million of money for a revenue requirement of only \$10.0 million. The \$400,000 overpayment arises because Whiteacre has double-collected on the bad debt component of the discount that it is *assured of receiving* by the very nature of the cost recovery mechanism. It receives that money once through the bad debt allowance in base rates. It receives the same money again through the universal service charge.

Q. HOW SHOULD THIS BE ADDRESSED?

A. It is clear from the testimony of witnesses Sawyer and Petitt that all three Petitioners are capable of calculating a bad debt rate for their LIHEAP recipients. The cost recovery that the Petitioners receive from the universal service fund should be reduced by that rate. If the LIHEAP bad debt rate is 8%, in other words, the Petitioners should be allowed to receive 92% of its discounts from the universal service fund. If the LIHEAP bad debt rate is 12%, the Petitioners should be permitted to receive only 88% of the delivered discount from the universal service fund. It should be reasonably easy to establish the bad debt rate attributable to the LIHEAP population.

1 **Q. WHAT IS YOUR ESTIMATE OF THE LIHEAP BAD DEBT RATE?**

2 A. While I propose that the Commission allow each Petitioner to establish its own bad debt
3 rate applicable to LIHEAP customers, it is possible to make some reasonable estimates of
4 what that rate will be. Citizens Gas has indicated that it has 16,000 LIHEAP recipients
5 with an average bill of \$950. It thus has total revenue from its LIHEAP customers of
6 \$15,200,000 ($16,000 \times \$950 = \$15,200,000$). Citizens Gas testified that it expects a 35%
7 to 55% reduction in low-income customer write-off accounts, equalling \$270,000 to
8 \$420,000. Projecting backwards, that means that Citizens Gas estimates a total write-off
9 for its low-income customers of roughly \$770,000 ($\$270,000 / 0.35 = \$771,429$ and
10 $\$420,000 / 0.55 = \$763,636$). A bad debt expense of \$770,000 on a revenue base of
11 \$15,200,000 yields a bad debt rate of 5.1%.

12
13 Assuming that the bad debt rate for the LIHEAP customers of Citizens Gas is, in fact,
14 5.1%, for all the reasons I outline above, that company should be permitted to recover
15 only 94.9% of its discounts through the universal service charge.

16
17 Similarly, IGC/SIGECO have 21,200 customers with an average bill of \$838. Those
18 companies thus have total revenue from their LIHEAP customers of \$17,765,600. While
19 IGC/SIGECO testify that they expect a \$745,936 reduction in bad debt expense, these
20 companies do not provide an estimate of what proportion of the total low-income bad
21 debt that represents. A similar calculation thus cannot be made for IGC/SIGECO.

1 **Q. HOW DOES THIS DIFFER FROM THE COST SHARING MECHANISM THAT**
2 **THE PETITIONERS PROPOSE IN THEIR DIRECT TESTIMONY?**

3 A. They are two entirely different issues. Company witness Sawyers estimates that the
4 discount will *reduce* the bad debt expense by somewhere between 35% and 55%. He
5 proposes that this cost savings be split with the Company 50/50, thus providing an
6 additional revenue source to the universal service fund of between \$135,000 and
7 \$210,000 each year. If, however, there is a zero reduction in bad debt expense, there
8 would be no savings to share. In contrast to this expense savings (which Mr. Sawyers
9 addresses), I am talking about the issue of allowing the company to recover only its
10 incremental program costs. Whether or not Citizens experiences an expense savings,
11 5.1% of its discount will be a non-incremental expense. If Citizens is allowed to recover
12 that through the universal service fund, it will be double-recovering costs.

13
14 **Q. IS THERE ANY PARTICULAR ASPECT OF THIS CALCULATION YOU WISH**
15 **TO EMPHASIZE?**

16 A. Yes. The calculation of this cost offset, as well as the calculation of the bad debt rate that
17 will be used as the basis for calculating bad debt savings, should be a bad debt rate
18 specific to LIHEAP customers. It should not involve an overall residential bad debt rate.
19 It is reasonable to expect the bad debt rate specific to LIHEAP customers to be
20 substantively different from that of residential customers as a whole.

1 **Q. DO YOU OBJECT TO THE COMPANY’S PROPOSAL TO SHARE ONLY HALF**
2 **OF THE NET BAD DEBT SAVINGS WITH THE UNIVERSAL SERVICE FUND**
3 **ON A YEAR-BY-YEAR BASIS?**

4 **A.** I do not believe that this is an unreasonable proposal. Ultimately, not only low-income
5 customers, but all systemwide customers, will benefit from the low-income discount
6 program. I do not believe that it is unreasonable to allow the Company to pocket half of
7 the net reductions in bad debt as an incentive for it to operate this tiered discount program
8 on an effective and efficient basis.

9
10 **Q. DO YOU HAVE ANY FINAL COST RECOVERY PROPOSAL TO MAKE?**

11 **A.** Yes. Reductions in bad debt expenses will not be the only expense savings that the tiered
12 discount program will generate. As I discuss in detail above, experience with other
13 programs has found that low-income rate affordability programs generate substantial
14 savings in expenses ranging from credit and collection expenses to the reduced working
15 capital associated with reductions in arrears. I do not believe that any of the three
16 Petitioners have the cost accounting mechanisms in place at this time to allow a
17 reasonable determination to be made of the expense savings that will be generated by the
18 tiered discount programs. The Pennsylvania Public Utility Commission, in adopting its
19 low-income Customer Assistance Programs (CAPs) has directed that the programs be
20 funded, in part, from the expense savings generated by the programs. Through a series of
21 natural gas rate cases in which I participated, several Pennsylvania utilities have
22 developed an approach that calculates these expense savings on a capitated basis.

1 It is reasonable for the Indiana Commission to adopt a similar policy on both counts. It is
2 reasonable for the Commission to direct that the discounts be paid in part by the expense
3 savings generated by the program. Moreover, it is reasonable for the three Petitioners to
4 work with Citizens Action Coalition, the Department of Social Services, the Commission
5 staff, and other interested parties, to develop a capitated expense savings estimate. This
6 capitated expense savings estimate will be used as an offset to future claims for
7 reimbursement from the universal service fund.
8

9 I propose that the Indiana Commission adopt the Pennsylvania PUC's cost recovery
10 policy. Section 69.266 of the CAP Policy Statement provides that:

11 In evaluating utility CAPs for ratemaking purposes, the Commission will
12 consider both revenue and expense impacts. Revenue impact
13 considerations include a comparison between the amount of revenue
14 collected from CAP participants prior to and during their enrollment in
15 CAP. CAP expense impacts include both the expenses associated with
16 operating the CAPs as well as the potential decrease of customary utility
17 operating expenses. Operating expenses include the return requirements
18 on cash working capital for carrying arrearages, the cost of credit and
19 collection activities for dealing with low-income negative ability to pay
20 customers, and uncollectible accounts expense for writing off bad debt for
21 these customers.
22

23
24 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

25 **A.** Yes it does.

Schedule RDC-1

	General Merchandise		Food and Beverage Stores		Clothing Stores		Food Service and Drinking Places		Traveler Accommodations	
	2001	2002	2001	2002	2001	2002	2001	2002	2001	2002
Number establishments	1,016	1,094	2,444	2,356	1,060	1,023	9,735	9,982	798	818
Number employees	78,606	77,262	57,477	54,621	14,665	14,824	201,612	203,304	21,278	19,908
Average annual pay	\$14,549	\$15,367	\$15,340	\$15,885	\$12,198	\$12,387	\$10,567	\$10,791	\$14,574	\$14,999

Schedule RDC-2

Citizens Gas Non-Discounted Burdens	Percent of Average Bill					
	0-50%	51-75%	76-100%	101-125%	126-150%	151%+
Under \$2000	48%	59%	83%	107%	131%	143%
\$2,000 - \$3,999	16%	20%	28%	36%	44%	48%
\$4,000 - \$5,999	10%	12%	17%	21%	26%	29%
\$6,000 - \$7,999	7%	8%	12%	15%	19%	20%
\$8,000 - \$9,999	5%	7%	9%	12%	15%	16%
\$10,000 - \$11,999	4%	5%	8%	10%	12%	13%
\$12,000 - \$14,999	4%	4%	6%	8%	10%	11%
\$15,000+	3%	4%	6%	7%	9%	10%

Schedule RDC-3

IGC/SIGECO Non-Discounted Burdens	Percent of Average Bill					
	0-50%	51-75%	76-100%	101-125%	126-150%	151%+
Under \$2000	42%	52%	73%	94%	115%	126%
\$2,000 - \$3,999	14%	17%	24%	31%	38%	42%
\$4,000 - \$5,999	8%	10%	15%	19%	23%	25%
\$6,000 - \$7,999	6%	7%	10%	13%	16%	18%
\$8,000 - \$9,999	5%	6%	8%	10%	13%	14%
\$10,000 - \$11,999	4%	5%	7%	9%	10%	11%
\$12,000 - \$14,999	3%	4%	5%	7%	9%	9%
\$15,000+	3%	3%	5%	6%	8%	8%

Citizens Gas Discounted Burdens	Percent of Average Bill					
	0-50%	51-75%	76-100%	101-125%	126-150%	151%+
Under \$2000	24%	30%	42%	53%	65%	71%
\$2,000 - \$3,999	8%	10%	14%	18%	22%	24%
\$4,000 - \$5,999	5%	6%	8%	11%	13%	14%
\$6,000 - \$7,999	4%	5%	7%	9%	11%	12%
\$8,000 - \$9,999	3%	4%	6%	7%	9%	10%
\$10,000 - \$11,999	3%	3%	5%	6%	7%	8%
\$12,000 - \$14,999	3%	3%	5%	6%	7%	8%
\$15,000+	2%	3%	4%	5%	7%	7%

Schedule RDC-5

IGC/SIGECO Discounted Burdens	Percent of Average Bill					
	0-50%	51-75%	76-100%	101-125%	126-150%	151%+
Under \$2000	17%	21%	29%	38%		50%
\$2,000 - \$3,999	6%	7%	10%	13%	15%	17%
\$4,000 - \$5,999	3%	4%	6%	8%	9%	10%
\$6,000 - \$7,999	3%	4%	5%	7%	8%	9%
\$8,000 - \$9,999	2%	3%	4%	5%	6%	7%
\$10,000 - \$11,999	2%	2%	3%	4%	5%	6%
\$12,000 - \$14,999	2%	3%	4%	5%	6%	6%
\$15,000+	2%	2%	3%	4%	5%	5%

Schedule RDC-6
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Cost of Citizens Proposed Discount Tiers	Percent of Average Bill						Total Dollars Spent						Total Annual Dollars
	0-50%	51-75%	76-100%	101-125%	126-150%	151%+	0-50%	51-75%	76-100%	101-125%	126-150%	151%+	
Under \$2000	45%	45%	45%	45%	45%	45%	\$18,810	\$44,888	\$65,835	\$76,950	\$56,430	\$61,560	\$324,473
\$2,000 - \$3,999	45%	45%	45%	45%	45%	45%	\$48,906	\$116,708	\$171,171	\$200,070	\$146,718	\$160,056	\$843,629
\$4,000 - \$5,999	45%	45%	45%	45%	45%	45%	\$101,574	\$242,393	\$355,509	\$415,530	\$304,722	\$332,424	\$1,752,152
\$6,000 - \$7,999	40%	40%	40%	40%	40%	40%	\$80,256	\$191,520	\$280,896	\$328,320	\$240,768	\$262,656	\$1,384,416
\$8,000 - \$9,999	40%	40%	40%	40%	40%	40%	\$43,472	\$103,740	\$152,152	\$177,840	\$130,416	\$142,272	\$749,892
\$10,000 - \$11,999	40%	40%	40%	40%	40%	40%	\$26,752	\$63,840	\$93,632	\$109,440	\$80,256	\$87,552	\$461,472
\$12,000 - \$14,999	35%	35%	35%	35%	35%	35%	\$17,556	\$41,895	\$61,446	\$71,820	\$52,668	\$57,456	\$302,841
\$15,000+	35%	35%	35%	35%	35%	35%	\$11,704	\$27,930	\$40,964	\$47,880	\$35,112	\$38,304	\$201,894
													\$6,020,768

Schedule RDC-6
(page 2 of 2)

Cost of Colton Proposed Discount Tiers: Citizens	Percent of Average Bill						Total Dollars Spent						Total Annual Dollars
	0-50%	51-75%	76-100%	101-125%	126-150%	151%+	0-50%	51-75%	76-100%	101-125%	126-150%	151%+	
Under \$2000	50%	50%	50%	50%	50%	50%	\$20,900	\$49,875	\$73,150	\$85,500	\$62,700	\$68,400	\$360,525
\$2,000 - \$3,999	50%	50%	50%	50%	50%	50%	\$54,340	\$129,675	\$190,190	\$222,300	\$163,020	\$177,840	\$937,365
\$4,000 - \$5,999	50%	50%	50%	50%	50%	50%	\$112,860	\$269,325	\$395,010	\$461,700	\$338,580	\$369,360	\$1,946,835
\$6,000 - \$7,999	40%	40%	40%	40%	40%	40%	\$80,256	\$191,520	\$280,896	\$328,320	\$240,768	\$262,656	\$1,384,416
\$8,000 - \$9,999	40%	40%	40%	40%	40%	40%	\$43,472	\$103,740	\$152,152	\$177,840	\$130,416	\$142,272	\$749,892
\$10,000 - \$11,999	40%	40%	40%	40%	40%	40%	\$26,752	\$63,840	\$93,632	\$109,440	\$80,256	\$87,552	\$461,472
\$12,000 - \$14,999	25%	25%	25%	25%	25%	25%	\$12,540	\$29,925	\$43,890	\$51,300	\$37,620	\$41,040	\$216,315
\$15,000+	25%	25%	25%	25%	25%	25%	\$8,360	\$19,950	\$29,260	\$34,200	\$25,080	\$27,360	\$144,210
													\$6,201,030

Schedule RDC-7
(page 1 of 2)

Cost of Discounts at IGC/SIGECO Proposed Tiers	Percent of Average Bill						Cost of Discount						
	0-50%	51-75%	76-100%	101-125%	126-150%	151%+	0-50%	51-75%	76-100%	101-125%	126-150%	151%+	Total Cost
Under \$2000	55%	55%	55%	55%	55%	55%	\$26,870	\$64,123	\$94,047	\$109,925	\$80,611	\$87,940	\$463,516
\$2,000 - \$3,999	55%	55%	55%	55%	55%	55%	\$69,863	\$166,719	\$244,521	\$285,804	\$209,590	\$228,643	\$1,205,141
\$4,000 - \$5,999	55%	55%	55%	55%	55%	55%	\$145,101	\$346,263	\$507,852	\$593,593	\$435,302	\$474,874	\$2,502,984
\$6,000 - \$7,999	50%	50%	50%	50%	50%	50%	\$117,253	\$279,808	\$410,385	\$479,671	\$351,759	\$383,737	\$2,022,614
\$8,000 - \$9,999	50%	50%	50%	50%	50%	50%	\$63,512	\$151,563	\$222,292	\$259,822	\$190,536	\$207,858	\$1,095,582
\$10,000 - \$11,999	50%	50%	50%	50%	50%	50%	\$39,084	\$93,269	\$136,795	\$159,890	\$117,253	\$127,912	\$674,205
\$12,000 - \$14,999	45%	45%	45%	45%	45%	45%	\$26,382	\$62,957	\$92,337	\$107,926	\$79,146	\$86,341	\$455,088
\$15,000+	45%	45%	45%	45%	45%	45%	\$17,588	\$41,971	\$61,558	\$71,951	\$52,764	\$57,561	\$303,392
													\$8,722,521

Schedule RDC-7
(page 2 of 2)

Cost of Colton Proposed Discount Tiers: IGC/SIGECO	Percent of Average Bill						Cost of Discounts						Total Cost
	0-50%	51-75%	76-100%	101-125%	126-150%	151%+	0-50%	51-75%	76-100%	101-125%	126-150%	151%+	
Under \$2000	60%	60%	60%	60%	60%	60%	\$29,313	\$69,952	\$102,596	\$119,918	\$87,940	\$95,934	\$505,653
\$2,000 - \$3,999	60%	60%	60%	60%	60%	60%	\$76,214	\$181,875	\$266,750	\$311,786	\$228,643	\$249,429	\$1,314,699
\$4,000 - \$5,999	60%	60%	60%	60%	60%	60%	\$158,291	\$377,741	\$554,020	\$647,556	\$474,874	\$518,045	\$2,730,528
\$6,000 - \$7,999	50%	50%	50%	50%	50%	50%	\$117,253	\$279,808	\$410,385	\$479,671	\$351,759	\$383,737	\$2,022,614
\$8,000 - \$9,999	50%	50%	50%	50%	50%	50%	\$63,512	\$151,563	\$222,292	\$259,822	\$190,536	\$207,858	\$1,095,582
\$10,000 - \$11,999	50%	50%	50%	50%	50%	50%	\$39,084	\$93,269	\$136,795	\$159,890	\$117,253	\$127,912	\$674,205
\$12,000 - \$14,999	35%	35%	35%	35%	35%	35%	\$20,519	\$48,966	\$71,817	\$83,942	\$61,558	\$67,154	\$353,957
\$15,000+	35%	35%	35%	35%	35%	35%	\$13,680	\$32,644	\$47,878	\$55,962	\$41,039	\$44,769	\$235,972
													\$8,933,210

Schedule RDC-8
(page 1 of 2)

Post Discount/Post-Weatherization Burdens: Citizens Gas	Pre-Weatherization Discounted Burden		Post-Weatherization Discounted Burden	
	126 – 150%	151% and over	126 – 150%	151% and over
Under \$2000	72%	78%	47%	51%
\$2,000 - \$3,999	24%	26%	16%	17%
\$4,000 - \$5,999	14%	16%	9%	10%
\$6,000 - \$7,999	11%	12%	7%	8%
\$8,000 - \$9,999	9%	10%	6%	6%
\$10,000 - \$11,999	7%	8%	5%	5%
\$12,000 - \$14,999	6%	7%	4%	4%
\$15,000+	6%	6%	4%	4%

Schedule RDC-8
(page 2 of 2)

Post Discount/Post-Weatherization Burdens: IGC/SIGECO	Pre-Weatherization Discounted Burden		Post-Weatherization Discounted Burden	
	126 – 150%	151% and over	126 – 150%	151% and over
Under \$2000	52%	57%	34%	37%
\$2,000 - \$3,999	17%	19%	11%	12%
\$4,000 - \$5,999	10%	11%	7%	7%
\$6,000 - \$7,999	8%	9%	5%	6%
\$8,000 - \$9,999	6%	7%	4%	5%
\$10,000 - \$11,999	5%	6%	3%	4%
\$12,000 - \$14,999	5%	5%	3%	3%
\$15,000+	4%	5%	3%	3%

Schedule RDC-9

Bill Payment Impact for Natural Gas Space Heating Customers with Arrearages: Pennsylvania LJURP		
	Percent of Bill Paid Pre-Period	Percent of Bill Paid Post Period
Columbia Gas	69%	133%
Equitable Gas		
National Fuel Gas	96%	125%
PECO Gas	68%	133%
PG&W	96%	106%
Peoples Gas	99%	106%
T.W. Phillips		
UGI Gas	89%	115%
SOURCE: Pennsylvania PUC Evaluation of 1992 LJURP Program Results (1995).		

Schedule RDC-10

	Avg Bill	Percent of Average Bill					
		0-50%	51-75%	76-100%	101-125%	126-150%	151%+
Citizens Gas bills	\$950	\$475	\$594	\$831	\$1,069	\$1,306	\$1,425
IGC/SIGECO bills	\$838	\$419	\$524	\$733	\$943	\$1,152	\$1,257
DOE bill distribution data /a/	100%	11%	21%	22%	20%	12%	12%
/a/ East North Central Census Division.							

CERTIFICATE OF SERVICE

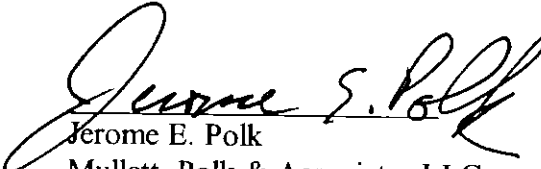
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COLTON TESTIMONY EXPERIENCE

1988 - PRESENT

CASE NAME	ROLE	CLIENT NAME	TOPIC	JURIS.	DATE
I/M/O Washington Gas Light Company	Witness	Office of Peoples Counsel	Low-income gas rate	Maryland	03
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I/M/O Philadelphia Gas Works	Witness	Office of Consumer Advocate	Universal service	Pennsylvania	02
I/M/O Washington Gas Light Company	Witness	Office of Peoples Counsel	Rate design	Maryland	02
I/M/O Consumers Illinois Water Company	Witness	Illinois Citizens Utility Board	Credit and collection	Illinois	02
I/M/O Public Service Electric & Gas Rates	Witness	Division of Ratepayer Advocate	Universal service	New Jersey	01
I/M/O Pennsylvania-American Water Company	Witness	Office of Consumer Advocate	Low-income rates and water conservation	Pennsylvania	01
I/M/O Louisville Gas & Electric Prepayment Meters	Witness	Kentucky Community Action Association	Low-income energy	Kentucky	01
I/M/O NICOR Budget Billing Plan Interest Charge	Witness	Cook County State's Attorney	Rate Design	Illinois	01
I/M/O Rules Re. Payment Plans for High Natural Gas Prices	Witness	Cook County State's Attorney	Budget Billing Plans	Illinois	01
I/M/O Philadelphia Water Department	Witness	Office of Public Advocate	Credit and collections	Philadelphia	01
I/M/O Missouri Gas Energy	Witness	Office of Peoples Counsel	Low-income rate relief	Missouri	01
I/M/O Bell Atlantic-New Jersey Alternative Regulation	Witness	Division of Ratepayer Advocate	Telecommunications universal service	New Jersey	01
I/M/O T.W. Phillips Gas and Oil Co.	Witness	Office of Consumer Advocate	Ratemaking of universal service costs	Pennsylvania	00
I/M/O Peoples Natural Gas Company	Witness	Office of Consumer Advocate	Ratemaking of universal service costs	Pennsylvania	00
I/M/O UGI Gas Company	Witness	Office of Consumer Advocate	Ratemaking of universal service costs	Pennsylvania	00
I/M/O PFG Gas Company	Witness	Office of Consumer Advocate	Ratemaking of universal service costs	Pennsylvania	00
Armstrong v. Gallia Metropolitan Housing Authority	Witness	Equal Justice Foundation	Public housing unity allowances	Ohio	00
I/M/O Bell Atlantic-New Jersey Alternative Regulation	Witness	Division of Ratepayer Advocate	Telecommunications universal service	New Jersey	00

CASE NAME	ROLE	CLIENT NAME	TOPIC	JURIS.	DATE
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I/M/O UtilCorp Merger with Empire District Electric	Witness	Missouri Dept. of Natural Resources	Merger impacts on low-income	Missouri	00
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I/M/O Public Service Co. of Colorado	Witness	Colorado Energy Assistance Foundation	Natural gas rate design	Colorado	00
I/M/O Avista Energy Corp.	Witness	Spokane Neighborhood Action Program	Low-income energy affordability	Washington	00
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I/M/O PECO Energy Company	Witness	Office of Consumer Advocate	Universal service	Pennsylvania	00
I/M/O National Fuel Gas Distribution Corp.	Witness	Office of Consumer Advocate	Universal service	Pennsylvania	00
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CERTIFICATE OF SERVICE

The undersigned hereby certifies that copies of the foregoing document have been served upon the following by first class, United State mail, postage prepaid on May 28, 2004:

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**PAYMENT-PROBLEMS, INCOME STATUS, WEATHER AND PRICES:
COSTS AND SAVINGS OF A CAPPED BILL PROGRAM**

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May 2002

With low-income utility customers facing home energy burdens of 15% of income and more, it comes as no surprise that many of those customers cannot afford to pay their bills in a full, timely and regular basis. As a result, not only do the low-income customers face the social and economic deprivations associated with their inability-to-pay, but the utilities that provide service to them incur the business expenses associated with that inability-to-pay as well. These business expenses include not only the costs of carrying arrears, but the costs of charge-offs and the cost of collections as well.

Irrespective of the unaffordability of home energy during "normal" times, one additional question is whether low-income customers, and the companies that serve them, can beneficially insulate these customers from the vagaries of weather and price-induced spikes in annual and seasonal home energy bills. After the confluence of cold weather and a fly-up in natural gas prices during the 2000/2001 winter heating season in much of the nation, an increasing number of industry observers recognize the harms that arise from extraordinary changes in bills accompanying spikes in price and/or temperature.

Programs directed toward low-income customers are both more likely to reach customers that have accounts in arrears and more likely to reach customers with higher levels of arrears than are programs directed to the residential population as a whole. While the notion that payment-troubled customers are disproportionately low-income is commonly accepted conventional wisdom,¹ remarkably little empirical data has been collected to verify or to challenge that conventional wisdom.

National data reported by the U.S. Census Bureau indicates that the proportion of households in arrears at any given point in time is substantially higher for the low-income population than for the population as a whole. One 1995 census study, for example, reported that while 9.8% of non-poor families could not pay their utility bills in full, 32.4% of poor families could not do so. According to the Census Bureau, while 1.8% of non-poor families had their electric and/or natural

¹ This is not to say that all low-income customers are payment-troubled, nor that all payment-troubled customers are low-income. It is merely to say that low-income customers are disproportionately payment-troubled.

gas service disconnected for nonpayment, 8.5% of poor families suffered this same deprivation.² Unfortunately, systematic information on the arrears of low-income customers is not collected on a state level basis.³

The discussion below seeks to answer several questions: (1) are payment-troubles truly centered in the low-income population? (2) is there a relationship between the incidence and extent of payment troubles and temperature and/or price factors? (3) can a utility that introduces a program to insulate low-income customers from the fly-up of bills hope to recoup all or some substantial part of the cost of such a program through offsetting expense savings.

To develop answers to these questions, the discussion below focuses on data from Iowa.⁴ Iowa not only reports monthly data on arrears, the disconnection of service, limited collection activities, and write-offs, but reports much of this data specifically for energy assistance recipients. The availability of information for “energy assistance” recipients allows for a comparison of that low-income population to the population as a whole.⁵

The discussion below is broken into four parts:

- **Part 1** considers the relationship between payment-troubled status and low-income status.
-
- **Part 2** considers the relationship between various indicators of payment-troubled status, winter temperatures (measured by heating degree days), and natural gas prices.
- **Part 3** considers the expense incurred by a utility associated with nonpayment of residential energy accounts. This section applies per-unit costs to each step in a collection process.
- **Part 4** considers the financial impact to a utility from instituting a program that would control the exposure of low-income customers to changes in temperature and prices.

² U.S. Census Bureau, *Extended Measures of Well-Being: 1992*, P70-50RV (November 1995).

³ There is sporadic corroborative information from the states. One 1998 Illinois report, for example, indicated that while 44.5% of LIHEAP-assisted natural gas customers were in arrears, only 28.9% of “general households” were. Department of Energy and Community Affairs, *Residential Energy Costs and Assistance in Illinois: The 1997 – 98 Winter*, at 6, Springfield (IL). So, too, has an analysis by the staff of the New Hampshire Public Utilities Commission estimated that roughly 35% of the low-income *electric* customers entering the Electric Assistance Program (EAP) entered the program with arrears. As a general rule, estimates place the average number of customers in arrears at any given point in time at around 12% of the total customer base.

⁴ A supplement to the report will include brief analyses based on New Jersey and Maryland data. Because of the limitations of this data, however, that data is not included in this main report.

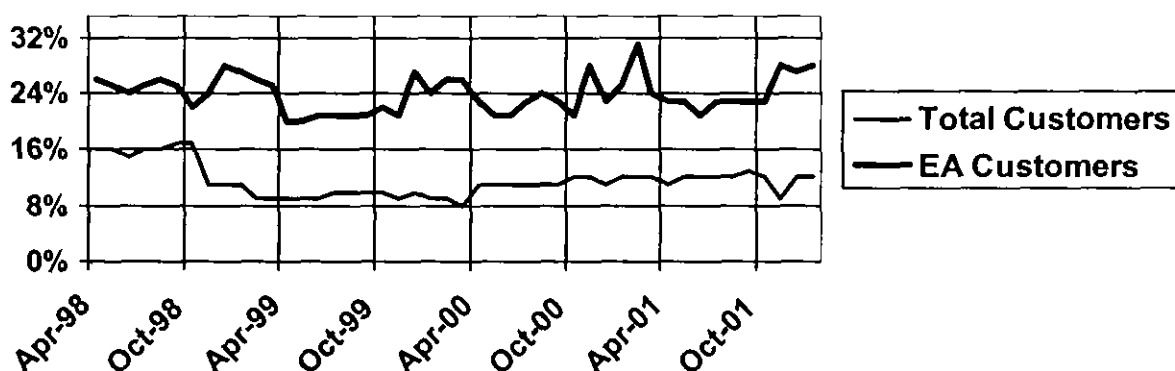
⁵ Even Iowa, however, does not systematically track low-income customers. Only low-income customers identified also as fuel assistance recipients are included in the “low-income” population.

PART 1.
THE RELATIONSHIP BETWEEN INCOME AND PAYMENT-TROUBLES

The Iowa Utility Board systematically collects information on the incidence of arrears for low-income customers. Under the Iowa reporting system, a “low-income” customer is identified by the receipt of energy assistance through the federal Low-Income Home Energy Assistance Program (LIHEAP). Even in Iowa, however, LIHEAP reaches somewhat less than 20% of the state’s total eligible population. As a result, this information is limited both by the fact that customers self-select into the population of energy assistance recipients and by the fact that the energy assistance population “misses” 80% and more of the total low-income population. Nonetheless, the Iowa data is the best there is nationwide.

The percentage of energy assistance accounts in arrears consistently and substantially exceeds the percentage of accounts in arrears in the total customer base in Iowa. The figure below presents information over a 46 month period (April 1998 through January 2002). While, on average, 24% of all energy assistance accounts were in arrears over that time period, only 12% of total accounts were in arrears.

**Percentage of Accounts in Arrears:
Energy Assistance and Total Customers
(Iowa)**



While there is some variation by year, the overall proportions are remarkably consistent over time. The data were examined using twelve month periods. Each period began immediately following the winter heating season (April) and extended through the next March. In this way, each winter heating season was kept intact as a study period.

The metric used to measure “accounts” is the proportion of accounts in arrears rather than the number of accounts. The number of accounts identified as “energy assistance” recipients varies on a month to month basis rather than being consistent throughout the year. The absolute number of accounts in arrears, therefore, does not provide a meaningful number.

Within this framework, the proportions of accounts in arrears on an annual basis were as follows:

Proportion of Accounts in Arrears: Total Customer Base and Energy Assistance Recipients (Iowa)		
Study period	Total Accounts	Energy Assistance Accounts
April 1998 – March 1999	14%	25%
April 1999- March 2000	9%	22%
April 2000 – March 2001	11%	24%
April 2001 – January 2002	12%	24%

As can be seen, on a monthly basis, the proportion of energy assistance accounts in arrears is twice as high (or more) (22% vs. 9%; 24% vs. 11%; 24% vs. 12%) as the proportion of total accounts in arrears. While this ratio had dropped since April 1999, the drop can be attributed to a modest increase in the proportion of non-low-income accounts in arrears (from 9% to 12%) rather than to a decrease in the proportion of energy assistance accounts in arrears.

It is possible to track the relationship between energy assistance accounts in arrears and total population accounts in arrears by: (1) creating a ratio, (2) placing the proportion of energy assistance accounts in arrears in the numerator, and (3) placing the proportion of total customer accounts in arrears in the denominator. It is necessary, however, to be very careful about understanding what this tells you. The ratio does *not* indicate how many accounts of either population are in arrears. It merely tells you the *relative* rate at which customers in each population are in arrears. If the ratio is 2.0, in other words, then energy assistance recipients are in arrears at a rate twice as high as the population as a whole.⁶

Graphing the monthly ratio of the proportion of energy assistance accounts in arrears to the proportion of the total population accounts in arrears reveals a seasonal variation that is not evident in the annual data. Clearly, energy assistance customers fall into arrears at a faster rate than does the total population during the winter months. While the ratio of energy assistance customers in arrears to the total population accounts in arrears hovers around the 2.0 mark for most of the non-heating season,⁷ the ratio sees consistent increases during the winter heating months, up to 3.0 or more. In October 1999, for example, 10.6% of all customer accounts were

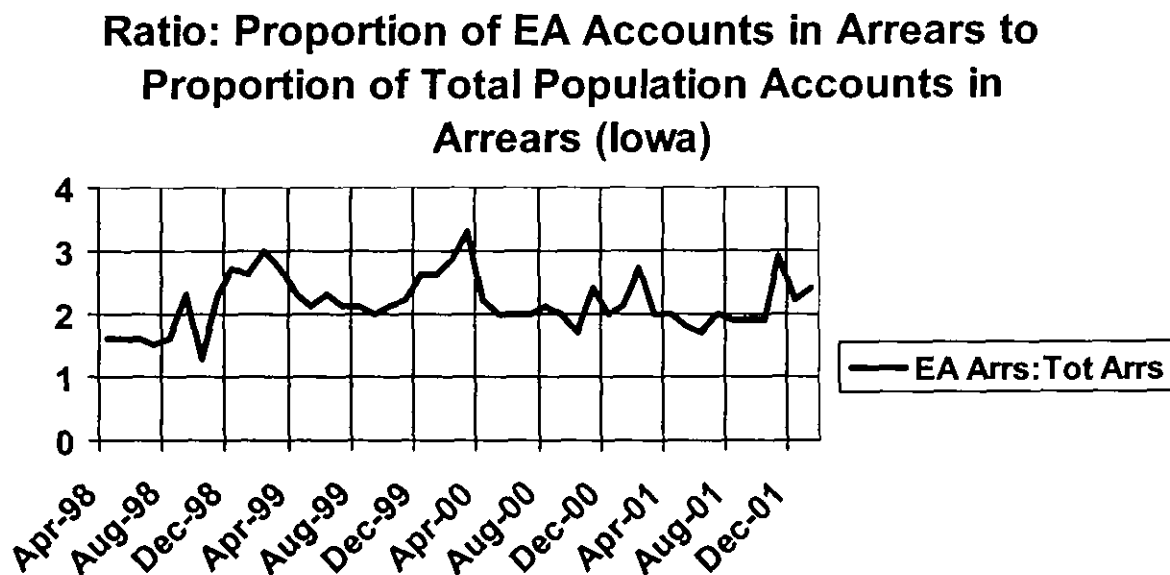
⁶ It does not say that twice as many energy assistance customers are in arrears. Merely that the *rate* at which they fall into arrears is twice as high as the total population.

⁷ Again, remember that this does not mean that the arrears are constant. It merely means that if the proportion of total population in arrears increases from 10% to 13%, the proportion of energy assistance recipients in arrears has increased at the same rate (from 20% to 26%), leaving a constant ratio of 2.0.

in arrears while 21.7% of low-income accounts were (a ratio of 2.1). By March 2000, the proportion of all customer accounts in arrears had fallen to 8.0% while the proportion of low-income accounts in arrears had risen to 26.2% (a ratio of 3.3). In contrast, during the 2000 – 2001 heating season, the proportion of energy assistance accounts in arrears had increased from 23% (December) to 25% in February. Non-low-income accounts, however, were similarly higher than normal (11% and 12% for December and February respectively), and thus the ratio did not reveal the same variability as in prior years. The purpose of the figure below is to show *relative* rates of arrears, not absolute rates.

Just as clear as the increased rate of energy assistance accounts going into arrears during the winter heating months is the extent to which these customers clear their accounts (relative to the total population) in the non-heating months. The peaks in the ratio occurred in the heating months of each of the four winter periods graphed.⁸

Interestingly, the disparity between the energy assistance population and the total customer population was not as high in the 2000 – 2001 winter heating season (with its high costs) as it was in other years. This can be attributed to two factors. First, as mentioned above, the rate at which total population accounts were in arrears increased, thus narrowing the typical disparity between energy assistance and total population accounts. Second, the higher 2000/2001 winter heating costs were met with a release of additional federal heating assistance benefits. Indeed, the decline in energy assistance accounts in arrears between December 2000 and April 2001 as additional aid was made available is readily evident in the graph below.



⁸ Note that data for the 2001 – 2002 winter heating season is not complete. The most recent data available is through January 2002.

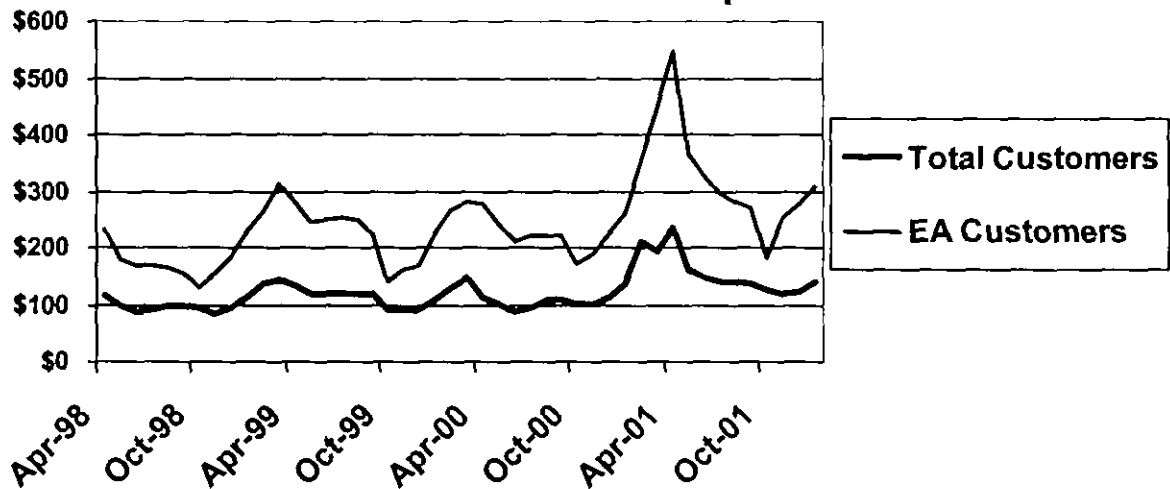
In addition to looking at the *number* of accounts in arrears, it is necessary, also, to look at the *extent* to which accounts are in arrears. The average arrears for energy assistance recipients in Iowa are between \$200 and \$300 year-round, about twice the level of the total population. It is possible to see the impact of the payment of LIHEAP benefits early in the winter season, as total average arrears (of accounts in arrears) decrease. It is also possible to see the seasonal increase in the arrears experienced by energy assistance recipients.

Importantly, as well, is the increase in arrears (for both energy assistance recipients and the total population) that occurred in the 2000- 2001 winter heating season. While for energy assistance recipients, the previous four year high in level of arrears (for those customers with arrears) was about \$300 (in April 1999 and April 2000 respectively), the average arrears for energy assistance accounts in arrears skyrocketed to more than \$500 in the winter of 2001. So, too, did the average arrears of the total population in arrears see increases to more than \$200 in the 2000 – 2001 winter heating season.

Note two additional observations about these 2000 – 2001 winter arrears. First, the level of arrears corresponded to a higher proportion of accounts that were in arrears. In Iowa, in other words, it was true that the high bills of the 2000 – 2001 winter heating season resulted in more customers being behind on their bills. In addition, these customers were *further* behind on their bills than in previous years. Moreover, the level of arrears did not come *back* down to pre-2000/2001 winter heating season levels during the subsequent twelve months. The average arrears for the total population never did come back to the \$100 level before beginning another increase in the 2001/2002 winter season. The energy assistance arrears were reduced in the non-heating season, but were already back up to \$300 in January 2002, a level not previously reached (before the 2000/2001 heating season) since April 1998.

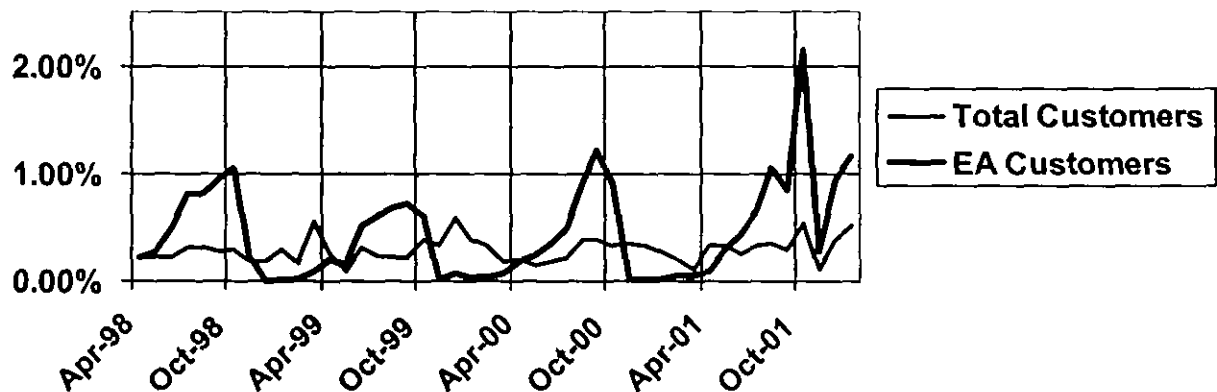
The relationship between temperatures, prices and arrears will be discussed in greater detail below.

Revenue per Accounts in Arrears (Iowa) Energy Assistance and Total Population



The unprecedented level of accounts in arrears, as well as the historically high level of arrears (on a dollars per account in arrears basis) has two direct impacts on a utility. First, these arrears have led to a fly-up in the number of energy assistance accounts written-off as uncollectible. While Iowa does not separately track the *dollars* of write-off for energy assistance accounts, given the higher level of arrears on a per account basis, it is reasonable to conclude that the dollars of write-off showed a spike similar to the spike in the number of accounts written off.

Percentage of Accounts Written Off as Uncollectible: Energy Assistance and Total Customers (Iowa)



The monthly spikes in the number of accounts written off is perhaps somewhat misleading because of regulatory constraints placed on the disconnection of service during the winter months (which would prevent the termination of service accompanied by a subsequent write-off). The high bills during the 2000/2001 winter heating season, however, and the increased incidence and level of arrears accompanying those bills, did have a substantive impact on the total average annual rate at which accounts were written off during the following year. On an annual basis, the proportion of energy assistance accounts written off reached nearly 0.8% during the months following the 2000/2001 winter heating season. This was more than twice the write-off rate for the previous two years (in terms of number of accounts written off) and nearly twice the previous four year high from the April 1998 through March 1999 period. Even the increase for the total population (from .26% to .35%) represented a 35 increase in the proportion of accounts written-off as uncollectible.

Proportion of Accounts Written-Off as Uncollectible: Total Customer Base and Energy Assistance Recipients (Iowa)		
Study period	Total Accounts	Energy Assistance Accounts
April 1998 – March 1999	0.27%	0.42%
April 1999- March 2000	0.30%	0.31%
April 2000 – March 2001	0.26%	0.37%
April 2001 – January 2002	0.35%	0.79%
46 month average	0.29%	0.46%

One reason for the spike in uncollectible accounts is the spike in the proportion of accounts disconnected for nonpayment resulting from the 2000/2001 winter heating season. Iowa does not track the number of disconnects separately for energy assistance accounts and for the total population. Only the total number of disconnections is reported.

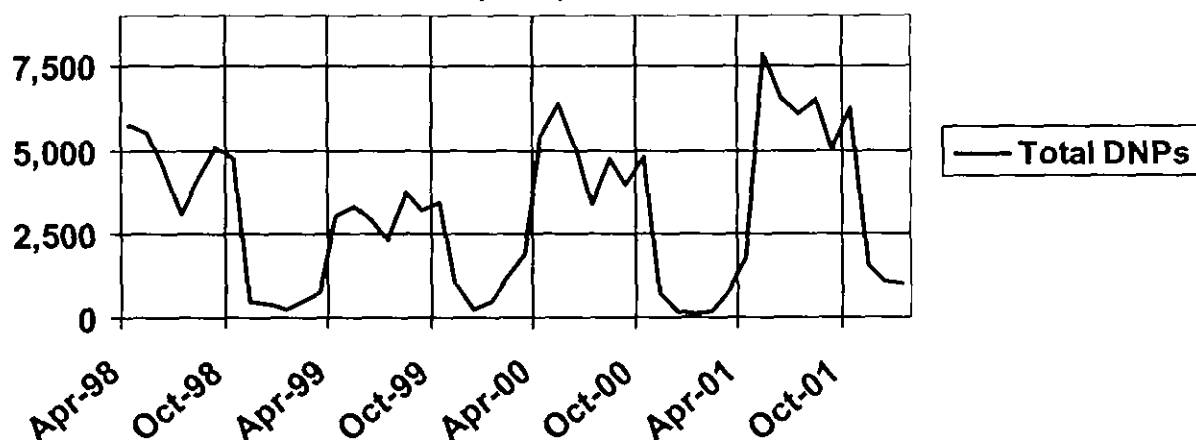
Not surprisingly, Iowa utilities disconnected a substantively higher number of accounts after the 2000/2001 winter heating season. The number of disconnections per month never fell below 5,000 during the warm weather months following the 2000/2001 winter heating season. This is particularly significant given the observation that in prior years, the number of disconnections per month rarely even *reached* those heights.

It was not merely warm weather terminations that were affected by the incidence and level of arrears resulting from the 2000/2001 winter heating season. The number of terminations during the opening months of the 2001/2002 winter season was unprecedented in scope. The total number of service terminations during the December/January time period for each year for the prior four years was as follows:

Total Iowa Service Disconnections (December/January)			
1998 - 1999	1999 - 2000	2000 - 2001	2001 - 2002
652	712	283	2,142

The 2,142 accounts for which service was terminated in December 2001 and January 2002 was seven times as many terminated accounts as in the corresponding time period one year earlier. It was 30% higher than the total number of accounts terminated in the December/January time period for the past three years *combined*.

**Total Number of Accounts Terminated for Nonpayment
Energy Assistance and Total Customers
(Iowa)**



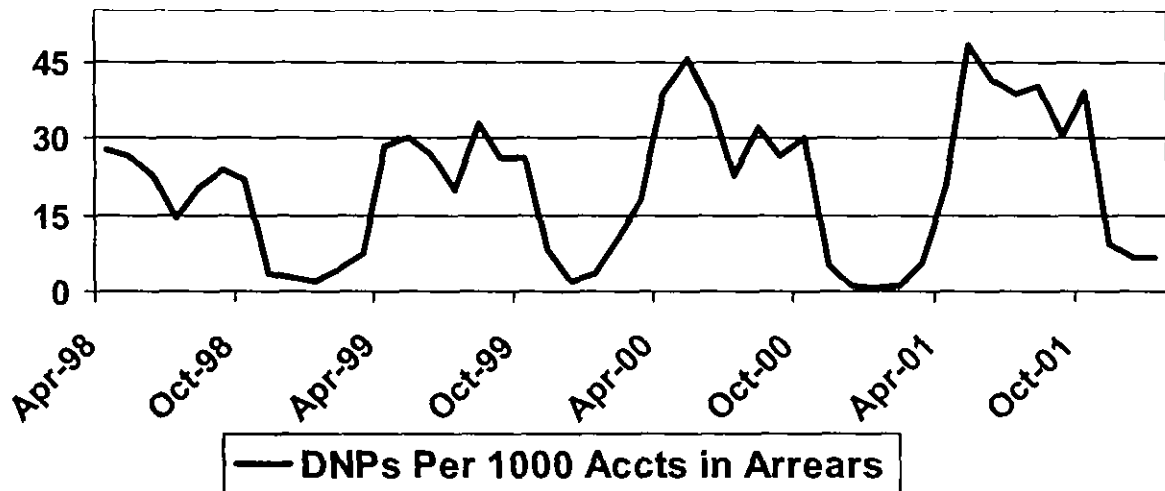
It would be wrong to conclude that the high winter bills of the 2000/2001 winter heating season resulted only in an increase in the total number of accounts experiencing a service termination. *That* observation might result merely from the fact that a larger number of accounts was in arrears after that winter heating season. In fact, the implications go beyond that result.

The figure below translates the number of service disconnections into a rate of disconnection per 1,000 accounts in arrears. Converting the number of disconnections into a rate per 1,000 accounts in arrears factors out the increased number of accounts in arrears. As the figure below shows, Iowa utilities disconnected customers in arrears at a far faster rate than had historically been the case.

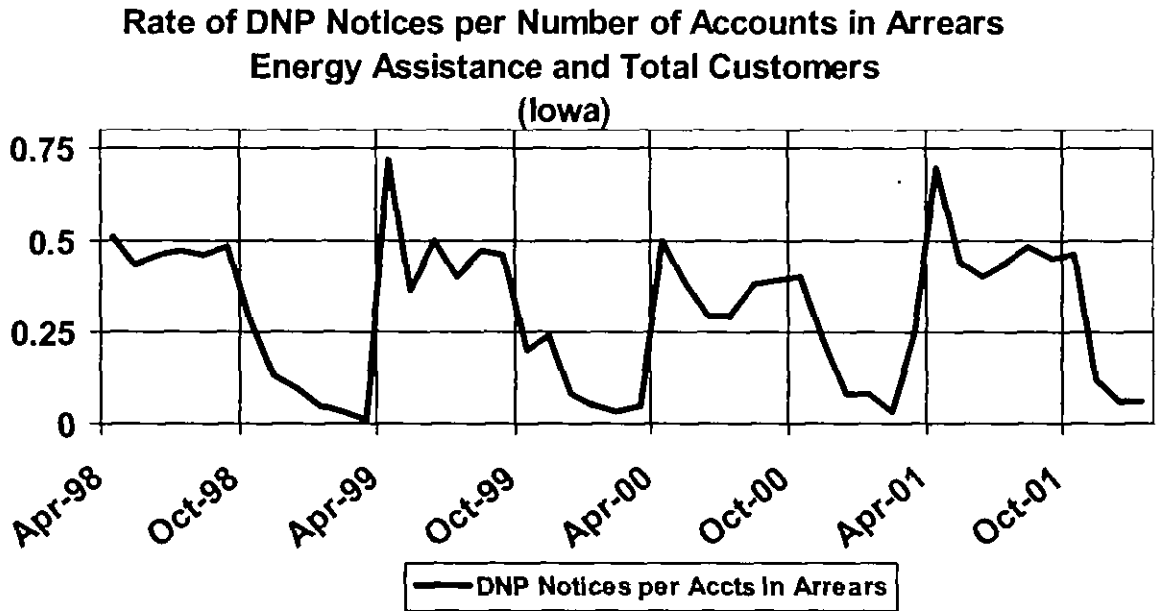
Assuming that Iowa utilities did not make a conscious policy choice to disconnect customers under circumstances that would not have resulted in a disconnection in a prior year, what this figure tells us is that after the 2000/2001 winter heating season, a far greater number of customers had dug themselves into an arrears hole which they could not climb out of prior to the termination of service. The rate of service terminations during the warm weather months after the 2000/2001 winter heating season never fell below 30 disconnections per 1,000 accounts in

arrears. In contrast, while the 30-per-1000 rate had been reached in occasional months in the previous four years, that rate of service termination had never been reached and sustained over a period of months as was experienced in 2001.

**Ratio: Disconnects for Nonpayment (DNP) per
1,000 Accounts in Arrears (Iowa)**



The graph below indicates that it is *not* the case that more customers were entering the collection cycle. While the number of disconnect notices for each account in arrears was somewhat less in the time period of April 2000 through March 2001, the number of notices per accounts in arrears was relatively constant between the other three collection cycles (98-99, 99-00 and 01-02). The conclusion must be, when looking at each of these figures in conjunction with each other one, that when customers entered the collection cycle after the 2000/2001 winter heating season, they were less able to extract themselves and were, therefore, more likely to proceed to an ultimate termination of service.



In summary, several conclusions march forward from the data presented above:

- Low-income customers (as identified through the receipt of fuel assistance) have a higher incidence of arrears than does the population as a whole;
- In addition to this higher incidence of arrears, energy assistance customers in arrears have a higher level of arrears than do customers in arrears from the customer base as a whole.
- Winter weather causes a faster increase in the incidence of arrears within the energy assistance population than is caused in the total customer base as a whole.
- Winter weather marked by high bills caused by temperature and/or price spikes has the impact of driving both the incidence of arrears and the level of arrears disproportionately higher in the energy assistance population than in the customer base as a whole.
- The higher proportion of accounts in arrears, coupled with the higher dollar level of arrears (for those customers having arrears) results in an increase in the number of accounts written-off as uncollectible. While dollars of uncollectible are not reported in Iowa, it is assumed that the higher dollar level of arrears for customers in arrears will result in a higher rate of uncollectible dollars as well. The rate of write-off in the energy assistance population can be twice as high as in the total customer base as a whole.

- The higher incidence of arrears, when coupled with the higher level of arrears, arising from price fly-ups results in an increase in the number of disconnections.
- In addition to higher numbers of disconnection, the higher incidence of arrears, when coupled with the higher dollar level of arrears (for those customers having arrears), resulted in a higher rate of disconnections per thousand accounts having arrears. A higher rate of customers in arrears, in other words, were so deeply in arrears, they could not retire their arrears (or at least retire their arrears to an extent sufficient to avoid the termination of service).

A closer look at the relationship between payment troubles, price and temperature, will be presented in the next section.

PART 2.

THE RELATIONSHIP BETWEEN PRICE, TEMPERATURE AND PAYMENT-TROUBLES

This section seeks to provide insights into the relationship between various indicators of payment-troubled status, energy assistance recipients, and two specific factors that can increase bills to those recipients in any given month or year (price and weather). The search for such a relationship using publicly available data is complicated by a variety of factors.

First and foremost is the complete absence of data. Most states do not report data on the incidence of service terminations or on either the number of accounts in arrears or dollars of arrears on a regular basis. Those few states that do publish information do not generally distinguish between the total residential population and the low-income residential population. The state of New Jersey reports data on arrears and disconnects but does not break-out data by customer class. The New Jersey data thus includes residential, commercial, industrial and institutional data all in one number. The states of Missouri and Pennsylvania collect certain information on arrears and collection activities but accords that data confidential status. The state of Colorado has quarterly reporting requirements, but has either allowed utilities to engage in a systematic non-compliance over time or has lost or destroyed all but the most recent months of data. The state of Maryland annually reports data on the winter heating season, but neither collects nor reports data on a total annual or on a monthly basis.

Most states, however, simply do not compile data on collections or payment-troubles for residential customers generally, let alone for low-income residential customers in particular.

Having said that, it is possible to apply basic some analytic tests to data obtained for the state of Iowa. The Iowa Utilities Board reports on a monthly basis:

- The number of energy assistance accounts in arrears;
- The level of arrears for energy assistance accounts in arrears;

- The number of disconnect notices issued to energy assistance accounts;
- The number of energy assistance accounts written-off (but not the dollars of write-off); and
- The number of residential disconnections for nonpayment (but not the number of energy assistance accounts disconnected for nonpayment).

While Iowa also reports the total number of residential accounts and energy assistance accounts on a monthly basis, it does not report total revenue for either population. As a result, monthly bills cannot be calculated. The monthly Iowa reports were obtained for April 1998 through January 2002 (the most recent available), a period of 46 months.

Four measures of payment-troubled status were selected or developed as indicators of the impact of price and/or temperature on energy assistance recipients in Iowa. These included:

- The proportion of energy assistance accounts in arrears;
- The dollars of arrears for accounts in arrears;
- The rate of disconnections for nonpayment (DNP) per thousand accounts in arrears;⁹ and
- The index of the number of energy assistance accounts written-off to the total number of energy assistance accounts.

The rational for, and significance of, selecting each one of these indicators was explained in detail in Part 1 above.

Each of these indicators was obtained for the four years used in this study. In addition, within each year, three data points were selected to consider the impacts at different points in the year. The three months selected included:

- April, the month immediately following the winter heating season (and the close of the winter shutoff moratorium);
- July, the middle of the non-heating season when, perhaps, any residual effects of the heating season may have been played out; and

⁹ Again, this data was available for the total residential class, not for energy assistance recipients specifically.

- October, the month immediately preceding the next winter heating season, when presumably the effects of the *preceding* season would be at their lowest (and the effects of the coming season would not yet have begun to accumulate).

These twelve variables were the dependent variables used in the inquiry.

	April	July	October
Dollars of arrears per EA account in arrears			
Percent of EA accounts in arrears			
Ratio: EA accounts written off to total number of EA accounts			
Disconnects for nonpayment per 1,000 accounts in arrears			

Two independent variables were selected for consideration. Since average monthly revenue was not available, for either residential customers generally or for energy assistance customers in particular, the factors affecting bills as directly controlled by a capped bill program were selected as the independent variables:

- Temperature; and
- Price

Each of these variables will be explained in the specific section discussing their application.

A simple R^2 analysis was performed for each relationship. An R^2 indicates the “tightness” of the fit of two sets of data. A high R^2 (one approaching 1.0) indicates that changes in the dependent variable are closely explained by changes in the independent variable. A low R^2 indicates that the movements in the two variables are random (or that they, at the least, are not associated with each other). An R^2 does *not* establish causation. It cannot be said, in other words, that a high R^2 demonstrates that the movement in the independent variable *causes* the movement in the dependent variable. It merely indicates that there is an association or relationship.

Temperature

Temperature was measured through the use of Heating Degree Days (HDDs). Heating degree days for the state of Iowa, as reported by the National Weather Service, National Oceanographic and Atmospheric Administration (NWS/NOAA), were obtained for November 1997 through January 2002. The HDDs metric selected for use was the sum of the HDDs in the months of each heating season (November through March) of each year. Each HDD metric was regressed against the twelve dependent variables explained in detail above.

The following R^2 s resulted:

	April	July	October
Dollars of arrears per EA account in arrears	0.935	0.731	0.485
Percent of EA accounts in arrears	0.005	0.501	0.738
Ratio: EA accounts written off to total number of EA accounts	0.639	0.012	0.655
Disconnects for nonpayment per 1,000 accounts in arrears	0.426	0.690	0.344

The following conclusions are reached based upon these results:

- There is a strong association between the dollars of arrears for energy assistance accounts at the end of the heating season and the temperatures experienced during the heating season. The strength of that association remains even during the middle of the non-heating season (with a correlation coefficient of 0.73). While the strength understandably wanes the further in time the customers get from the winter heating season, there is a moderately strong association as late as the subsequent October.
- Similarly, there is a moderately strong relationship between the proportion of energy assistance customers in arrears at the selected months and the sum of the heating degree days during the heating months of November through March. While the R^2 began at close to 0.0 for the month of April, it increased to 0.501 for July to 0.730 for the month of October. These data reveal an association between the proportion of accounts in arrears and the extent of Heating Degree Days.
- There is a moderately strong relationship between the proportion of energy assistance accounts written off as uncollectible and the temperature in the preceding heating season. While the relationship virtually disappears during the month of July, it ranges from 0.63 to 0.65 for the months of April and October.
- There is also a moderately strong relationship between the rate at which accounts in arrears experience a disconnection for nonpayment and the temperature in the preceding heating season. The rate of disconnection is measured by the number of disconnections per 1,000 accounts in arrears. The relationship grows stronger from April to July before beginning to relax.

Each of these conclusions is consistent with the narrative discussion of the Iowa data presented in Part 1 of this paper. The conclusions are not of mere theoretical significance. Indeed, they will be used as direct inputs into the discussion of the financial impacts of a capped bill program.

Prices

Prices were measured using actual natural gas bills for the state of Iowa derived from data reported by the Energy Information Administration of the U.S. Department of Energy (EIA/DOE). The Natural Gas Monthly published by EIA/DOE provided data for both the total residential gas consumption¹⁰ and gas prices.¹¹ The average monthly number of customers was

¹⁰ Gas deliveries by customer class are provided in Table 15.

obtained for Iowa from the EIA/DOE Natural Gas Annual.¹² Dividing total consumption by average customers provided a monthly consumption which, when multiplied by the average price yields a monthly natural gas bill. Bills were calculated for November 1997 through January 2002. The price metric selected for use was the sum of the natural gas bills for the months of November through April of each heating season (for example, November 1997 through April 1998). These annual metrics was regressed against the twelve dependent variables explained in detail above.

The following R²s resulted:

	April	July	October
Dollars of arrears per EA account in arrears	0.950	0.669	0.854
Percent of EA accounts in arrears	0.001	0.613	0.854
Ratio: EA accounts written off to total number of EA accounts	0.817	0.048	0.599
Disconnects for nonpayment per 1,000 accounts in arrears	0.329	0.768	0.351

The relationships found between these billing metrics and the payment outcome indicators are even stronger than the relationship between temperature and the payment outcome metrics. This is not surprising, of course, since price, standing alone, was not used in the analysis, but rather total bills. The data for total bills would include, as implicit input factors, both price and temperature.

The following conclusions are reached based upon these results:

- There is a strong association between the dollars of arrears for energy assistance accounts at the end of the heating season and the bills experienced during the heating season. The association in April (marked by a coefficient of 0.95) is quite strong. While the strength understandably wanes somewhat in July (0.67) as customers get from the winter heating season, there is still a strong association as late as the subsequent October (0.85).
- There is a moderately strong relationship between the proportion of energy assistance customers in arrears at the selected months and the sum of the heating degree days during the heating months of November through March. While the R² began at close to 0.0 for the month of April, it increased to 0.613 for July to 0.854 for the month of October. These data reveal an association between the proportion of accounts in arrears and the size of the natural gas bills in the prior winter heating season.
- There is a very strong relationship between the proportion of energy assistance accounts written off as uncollectible in April and the bills incurred in the preceding

¹¹ Gas prices by month are provided in Table 21.

¹² The average monthly number of customers is provided in individual tables for each state. Iowa data is provided in Table 57.

heating season. While the relationship virtually disappears during the month of July, it ranges from 0.82 to 0.60 for the months of April and October.

- There is also a moderately weak relationship between the rate at which accounts in arrears experience a disconnection for nonpayment in April and the bills in the preceding heating season. The rate of disconnection is measured by the number of disconnections per 1,000 accounts in arrears. The relationship grows much stronger for the month of July (up to an R^2 of 0.77) before beginning to relax in October.

In sum, the relationships that are documented above are consistent with the narrative discussion in Part 1. The impacts of temperature and price on bills have a substantive impact on payment outcomes for energy assistance recipients. The issue which is thus presented is whether a program directed toward controlling impact of the two factors of temperature and price can generate real financial savings to a sponsoring utility.

PART 3. THE COST OF NONPAYMENT.

The last building block to be examined before considering the financial impacts of a capped bill program involves assessing the costs associated with nonpayment. The cost of non-payment of a residential utility bill generally consists of three separate components:

- The cost of collecting the past-due bill (collection costs);
- The cost of obtaining replacement revenue (either internally or externally) for the time the billed revenue goes uncollected; and
- The cost of revenue ultimately written off as uncollectible.

The discussion below will separately consider each of these components.

Cost of Collection

The cost of collecting unpaid bills depends on both the collection interventions that are put into play and the point in time at which the interventions are activated. Little collection activity occurs within the first 30 days after a bill is first rendered. This occurs for three reasons:

- The billed revenue is not overdue; or
- The size of the receivable is not sufficiently large to cost-justify incurring collection expenses; and/or
- The age of the receivable is not sufficiently old to place the receivable at risk of long-term non-collection or eventual uncollectability.

The longer a receivable ages, the more that subsequent bills will pancake on top of the oldest arrears¹³ and the greater the long-term risk accrues of eventual uncollectability. On a per account basis, therefore, an older arrears imposes greater costs in three ways:

- It generates a larger number of dollar lag days giving rise to working capital expense;
- It generates more intense (and thus more expensive) collection interventions; and
- It creates high levels of charge-offs.

Reducing both the level and age of arrears, therefore, should result in direct dollar savings to the utility experiencing the reductions.

In reaching this conclusion, resource expenditures that are not avoided altogether but that are redirected to other productive tasks are considered to be “saved” in this analysis. If a half-time full time equivalent (0.50 FTE) can be moved from collecting 90-day old residential arrears to performing other productive work, the labor cost associated with that 0.50 FTE is deemed a “savings” to the collection activities of a company.

Collection Timeline

Assuming a bill is rendered on day 1 of a collection timeline, and is due on Day 20, significant intervention costs begin to accrue to the utility at around Day 40. The following interventions occur along the collection timeline:

- ❑ If a customer-initiated in-bound calls occurs, it will generally occur before the due date of the second bill;
- ❑ An out-bound collection call will happen within ten days of the date of the second bill (which first contains the Bill 1 arrears);
- ❑ A written disconnect notice is issued within ten days of the out-bound reminder telephone call;
- ❑ A written disconnect notice generally generates a response by the customer. If a payment is not made, an in-bound call is handled;
- ❑ A field disconnection notice is delivered within ten to fourteen days of the presumed receipt of the written disconnect notice;

¹³ For an arrears to be 90-days old, the immediately two preceding bills must be in arrears in their entirety. A 30-day or 60-day arrears will not be paid prior to the 90-day arrears being retired.

- ❑ A service termination occurs within three days of the delivery of the field disconnection notice;
- ❑ If service is reconnected, the reconnection generally occurs within one day of the service termination;
- ❑ Write-offs are presumed to occur at day 180 after the initial bill.

The collection time line is as follows:

A TYPICAL COLLECTION TIME LINE AND COSTS				
	<u>Days from Bill Date</u>			
	1 - 30	31 - 60	61 - 90	91 - 150
Bill #1 rendered	Day 1			
Bill past due	Day 21			
In-bound call	Day 25 (\$8)			
Out-bound call		Day 40 (\$5)		
Written DNP notice		Day 50 (\$0.50)		
In-bound query		Day 53 (\$8)		
Deliver DNP notice			Day 64 (\$35)	
Disconnect service			Day 67 (\$40)	
Reconnect service			Day 68 (\$45)	
Final bill issued			Day 74 (\$6)	
Write-off				Day 180
Total cost	\$8.00	\$13.50	\$126.00	\$0.00

The costs presented in this time line are rounded to eliminate any sense of false precision. Clearly, also, individual utilities may differ based on individual company costs, procedures, and time lines. Individual customers not only may, but are likely, to deviate from the norm as well.

The Collection Intervention Costs

Assuming that an account traverses the entire range of collection interventions once, that account will cause a utility to incur nearly \$150 in costs exclusive of any final write-off amount.¹⁴ Of the total collection costs, 85% (\$126 of \$147.50) are incurred in the period running from 60 to 90 days after a bill is first issued. Keeping an arrears from entering the 61 – 90 day age bucket will thus provide a substantial cost savings to a utility. However, the bulk of the costs arise from an account entering the active disconnect process. Even if an account enters the 61 – 90 day age bucket, therefore, unless the arrears progresses to the beginning of field services, substantial savings will not arise from collection savings.

The Cost of Replacement Revenue

Whenever a utility bills a dollar of revenue without collecting it, that utility will incur a cost of money associated with the unpaid bill. The cost of money will manifest itself in one of two ways. Either:

- The utility will *procure* money to replace the unpaid revenue (external sources); or
- The utility will use *internal cash* to replace the unpaid revenue (internal sources).

In the first instance, the company will incur a cost at the weighted rate of return. Since working capital is a capital expense for ratemaking purposes, the equity portion of the return will have an income tax component associated with it.¹⁵ In the second instance, in the absence of the need to use the internally-generated cash to meet cash working capital needs, the company would have presumably have invested that cash. Again, the cost consequence of the unpaid revenue is thus quantified at the rate of the weighted cost of capital (grossed up for taxes).

A customer will bring two revenue components into play in any given month:

- The unpaid arrears from prior months' bills;¹⁶ and
- The bill for current usage.

¹⁴ The derivation of cost figures is presented in Attachment A.

¹⁵ Since arrears are a relatively permanent aspect of a utility's operations, the working capital reserve is a part of the company's permanent capital requirements. Accordingly, the funds procured from an external source are costed out at a company's weighted cost of capital.

¹⁶ This unpaid arrears may be \$0, but to maintain some conceptual consistency, the presence of unpaid arrears must be recognized in all instances. To try to distinguish between a customer with "no arrears" and a customer with an arrears of \$0 leads to difficulty in application.

The Cost of Arrears

The unpaid arrears will fall into the various aging buckets that a company maintains. For purposes of analysis, the discussion below will assume that a company has three aging buckets: (1) 30-day arrears; (2) 60-day arrears; and (3) 90+-day arrears.

The working capital costs imposed by arrears are based on the number of revenue lag days created by the arrears. The revenue lag days represent the incremental number of days that a bill remains unpaid from the day the bill is first rendered. The days from the day a bill is rendered to an on-time payment is supplied by assumption (15 days, assuming that bills are paid three-quarters of the way through a 20-day payment period). The incremental lag days are then calculated by placing the arrears at the mid-point of each aging bucket.

- A 30-day arrears thus adds 20 days to the initial billing period (the final five days of the payment period plus one-half of the 30-day arrears period).
- A 60-day arrears adds 30 more incremental days (the final 15 days of the 30-day arrears period plus one-half of the 60-day arrears period);
- A 90-day arrears adds 105 more days. Since the 90-day bucket is open-ended, it is unreasonable to assume that the arrears fall within the first 30-days of this age bucket. This analysis supplies the age of 90+-day arrears by taking the arrears out to one-month short of the time at which they are written off as uncollectible (at Day 180). This process adds the final 15 days of the 60-day arrears period plus the 90 more days to 150 days).

The dollar lag days are computed by multiplying the dollars in arrears times the incremental lag days for that month. The dollar lag days are then multiplied by a daily cost of capital to determine the working capital expense.

The table below presents the working capital expense associated with arrears within any given month.

	Bill Date to Due Date	30-Day Active	60-Day Active	90-Day Active
Arrears	\$100	\$100	\$100	\$100
Incremental Age	15	20	30	105
Dollar Lag Days	1,500	2,000	3,000	10,500
Annualized Weighted Return	8.5%	8.5%	8.5%	8.5%
Gross Up Factor for Taxes	40.0%	40.0%	40.0%	40.0%
Weighted Return (GUFT)	11.9%	11.9%	11.9%	11.9%
Days per Year	365	365	365	365
Daily Return (GUFT)				
Working Capital	\$0.46	\$0.62	\$0.93	\$3.29
Annualizing Factor	12	12	12	12
Annualized Working Capital	\$5.56	\$7.42	\$11.14	\$39.45
WC per \$1,000 Receivables	\$55.58	\$74.16	\$111.41	\$394.48

Per \$1000 0.0326%

It is important to note that the working capital expense is not additive, but incremental. With 60-day arrears appearing on a July bill, for example, the working capital associated with those dollars in the month they were billed would have been determined in May. The working capital associated with them when they were 30-day arrears would have been calculated in June. The working capital expense above is presented on a dollars-per-arrears (\$000) basis.

The working capital expense for a particular company for a particular month would thus need to be determined as follows (in a hypothetical illustration):

	Bill Date to Due Date	30-Day Active	60-Day Active	90-Day Active	Total
WC per \$1,000 Receivables	\$55.58	\$74.16	\$111.41	\$394.48	
Dollars of receivables	\$30,000,000	\$3,600,000	\$2,000,000	\$6,700,000	
Receivables (\$1000 increments)	30,000	3,600	2,000	6,700	
Working capital	\$1,667,277	\$266,970	\$222,818	\$2,643,006	\$4,800,071

The Cost of Current Bills

Current bills in any particular month must be divided into two buckets. The first bucket captures those bills that are paid by the due date. The second bucket captures those bills that are not paid by the due date and thus will be reflected as 30-day arrears in the next month. Both buckets are limited to those dollars that are eventually paid and do not proceed to charge-off.

The significance of the two buckets is simply that dollars in the first bucket are assumed to be paid before the due date. The working capital associated with these current bills thus includes only those days between the billing date and the payment date. In contrast, the dollars that proceed to become arrears go full-term, and thus have a full 20-days of working capital associated with them. For current bills that eventually become arrears, the incremental days of

working capital are recognized and calculated in the working capital calculations relating to arrears.

On a per \$1,000 basis, the working capital associated with current bills not subject to eventually being charged-off is as follows:

Bill Date to Due Date

Current bill not in arrears	\$100
Incremental Age	15
Dollar Lag Days	1,500
Annualized Weighted Return	8.5%
Gross Up Factor for Taxes	40.0%
Weighted Return (GUFT)	11.9%
Days per Year	365
Daily Return (GUFT)	
Working Capital	\$0.46
Annualizing Factor	12
Annualized Working Capital	\$5.56
WC per \$1,000 Receivables	\$55.58

The significance of this calculation lies in the ability to reduce the incremental age of the current bill at the time it is paid in the current month. The same calculation, assuming that bills are paid at Day 10 rather than Day 15, would result in the following cost determination:

Bill Date to Due Date

Current bill not in arrears	\$100
Incremental Age	10
Dollar Lag Days	1,000
Annualized Weighted Return	8.5%
Gross Up Factor for Taxes	40.0%
Weighted Return (GUFT)	11.9%
Days per Year	365
Daily Return (GUFT)	0.0308%
Working Capital	\$0.31
Annualizing Factor	12
Annualized Working Capital	\$3.70
WC per \$1,000 Receivables	\$37.02

As can be seen, reducing the bill payment date from Day 15 to Day 10 would save nearly \$20 per \$1,000 of current receivables.

The Cost of Charge-offs

The final cost component to be considered is the cost of charge-offs. The first out-of-pocket cost of charge-offs is the rate at which bills are to be written-off. Charge-offs have both a prospective and a retrospective component to them.

- The prospective component consists of applying the charge-off rate to all future bills rendered for current usage;
- The retrospective component consists of applying the charge-off rate to the arrears that are brought into the program.

While by its nature, the prospective rate will be repeatedly applied (as each month's current usage is billed), the retrospective component involves a one-time application to the arrears that exist on the books as arrears at the beginning of the program. Data does not exist to disaggregate the rate of charge-off based on the age of arrears.

The rate of charge-off differs depending on the age of arrears. Experience counsels that 95% of 30-day arrears are collectable, 90% of 60-day arrears are collectable, and 85% of 90+-day arrears are collectable. As an arrears ages, only the incremental charge-off should be considered. Under the circumstances identified above, the incremental charge-off rate is five percent for each age bucket.

In addition to the charged-off revenue itself, the working capital associated with carrying bills until they are finally charged-off is an expense to be considered. Some portion of each age bucket of arrears will proceed along the collection time line until it is charged off. By having those bills paid in a particular month, rather than proceeding to charge-off, a utility would avoid the working capital from the point in time in question to the date of charge-off. Thus, for example, the time remaining until charge-off would be as follows by age bucket:

- Current receivables: 165 days
- 30-day arrears: 145 days
- 60-day arrears: 115 days
- 90+-day arrears: 10 days

If a company has \$100 in current receivables, 2.5% of which will eventually be charged-off (at day 180), then having the entire \$100 paid in Month 1 will avoid \$0.13 in future working capital simply for the charge-off amount. A 30-day arrears of \$100 would result in an avoided working capital of \$0.11 simply for the charge-off amount. The calculation translating this into a cost per \$1,000 of receivables is set forth below:

	Bill Date to Due Date	30 Day Active	60 Day Active	90 Day Active
Charge-off Working Capital				
Maximum Age of Charge Off	180			
Potential charge-off rate	2.5%			
Potential Charge Off Dollars	\$2.50	\$2.50	\$2.50	\$2.50
Days Remaining until Charge Off	165	145	115	10
Dollar Lag Days	413	363	288	25
Potential Working Capital	\$0.13	\$0.11	\$0.09	\$0.01
Annualizing Factor	1	1	1	1
Annualized Working Capital	\$0.13	\$0.11	\$0.09	\$0.01
WC per \$1,000 Receivables	\$52.14	\$45.68	\$36.06	\$3.09

Summary and Conclusions

In summary, the costs associated with nonpayment can be categorized into three elements:

- The cost of collection, which involves the expenses associated with interventions which the utility triggers in response to nonpayment;
- The cost of replacing the revenue that is billed but not collected. This cost arises whether the company generates its replacement revenue externally or internally; and
- The costs of charge-offs. This expense involves both the charge-off itself and the working capital associated with the billed revenue carried to the charge-off date.

PART 4:

THE FINANCIAL IMPACTS OF A CAPPED BILL PROGRAM

One response to bill volatility involves programs called a Capped Bill program. Under a Capped Bill program, the participant pays the same bill amount each month for twelve months. An external party –the company that designed and is promoting a Capped Bill program is called WeatherWise USA—acquires financial instruments that pay the participants' bills above the monthly capped bill amount. Bills may increase due to changes in weather or to changes in price. In the event of *lower* bills driven by milder temperatures or an energy price drop, the participant receives a refund at the end of the program year.

The data presented above have been combined into a model that considers the financial impact of a capped bill program. The model considers the change in costs to the utility that might arise from the implementation of a capped bill program. Based on the discussion in Parts 1 and 2 above, the cost savings are estimated assuming three alternative scenarios. Each scenario is an alternative way of considering how a capped bill program might eliminate the impacts of dramatic changes in bills attributable to temperature and/or prices. The three alternatives are:

- **Scenario #1:** Assuming that the energy assistance population will act in the same way as the residential population as a whole;
- **Scenario #2:** Assuming that the energy assistance population in the 2000/2001 heating season instead acted in the same fashion as the energy assistance population in the 1998/1999 heating season, a season in which price and temperature did not play a factor; and
- **Scenario #3:** Assuming that the energy assistance population in the 2000/2001 heating season acted in the same fashion as the energy assistance population acted in the 2000/2001 non-heating season, a time period in which price and temperature did not play a factor in affecting bills.

Results of each of the alternative scenarios are discussed separately below. Each scenario assumes that the capped bill program has 10,000 participants and that the program cost is \$100 per participant. Except to the extent that the number of participants might have an impact on the program cost per participant, the analysis of savings on a per participant basis will not be affected by the total number of program participants.

The analysis in this paper does not consider the working capital changes associated with changes in the current payment of bills for current usage.

Scenario #1: Acting as the Residential Customer Class Acts

Scenario #1 tests the financial impacts of a capped bill program that will generate payment outcomes for the energy assistance population that reflect the payment outcomes of the residential population as a whole. Under these conditions, the capped bill program will generate offsetting cost savings of roughly \$75 (\$74.48) per participant.¹⁷ These savings go to offset a program cost of \$100 per participant.

The savings come primarily in three areas:

- Avoided charge-offs (\$359,181)
- Avoided working capital associated with month-to-month arrears (\$197,312); and
- Avoided collection costs (\$132,948).

¹⁷ This is not to say that each participant generates program savings. But the sum of the savings divided by the total number of program participants yields the savings per participant.

While the costs of disconnecting service are substantially higher than the collection costs associated with 30-day to 60-day arrears, the number of accounts that move into the disconnection cycle is not sufficient to generate substantial dollar reductions.¹⁸

In contrast, while the costs of collection are relatively low on a per unit of collection basis, the number of accounts subject to collection are sufficiently high to make this part of a company's cost incursion a source of potentially substantial savings.

The calculation of the savings attributable to modifying energy assistance recipient payment outcomes such that they reflect the payment outcomes of the residential population as a whole is set forth in Appendix 1.

Scenario #2: Acting as the Energy Assistance Recipient Population Acts in a Typical Heating Season (and beyond)

Scenario #2 tests the financial impacts of a capped bill program that will generate payment outcomes for the energy assistance population that reflect the payment outcomes of the energy assistance population in a typical heating season (compared to the 2000/2001 heating season). The typical heating season used (where the HDDs approach normal on both a monthly and annual basis) is the 1998/1999 heating season. Under this approach, the impacts of the weather and price are factored out by looking at the behavior of the energy assistance population during a year in which those factors were not in play.

Under these conditions, the capped bill program will generate offsetting cost savings of roughly \$24 (\$24.08) per participant. These savings go to offset a program cost of \$100 per participant.

The savings come primarily in three areas:

- Avoided charge-offs (\$131,827)
- Avoided working capital associated with month-to-month arrears (\$19,685); and
- Avoided collection costs (\$48,795).

The difference in payment outcomes as reported between years are an insufficient basis upon which to build an argument that a capped bill program will generate substantive savings. The reduction in both the percentage of accounts in arrears and the level of arrears per account from 1998/1999 to 2000/2001 resulted in reduced collection costs of tens of thousands (not hundreds of thousands) of dollars. The number of shutoffs for nonpayment, as well as the total collection

¹⁸ Because of limitations in data, there is no way to determine the number of accounts that go through some portion, but not all, of the disconnect process. The avoided collection costs exclude any part of the disconnect process. To the extent, for example, that there are accounts that may receive a disconnect notice delivered via a field visit, but that do not experience an actual disconnection of service, there are costs that are not included in this model.

activities, are largely (albeit not entirely) driven by the number of accounts in arrears, not by the level of arrears. The proportion of accounts in arrears, however, is one of the factors with the least strong relationship to temperature and total monthly bill size.

As can be seen, the factor with the largest decrease in savings potential (moving the Scenario #1 to Scenario #2) is the month-to-month avoided working capital associated with arrears. Neither the proportion of energy assistance accounts in arrears nor the level of arrears shows a substantial decline from a “bad” year to a “typical” year. The fall off in working capital savings from Scenario #1 to Scenario #2 was more than 90 percent.

The calculation of the savings attributable to modifying energy assistance payment outcomes such that they reflect the payment outcomes of energy assistance recipients in a year with typical prices and temperature is set forth in Appendix 2.

Scenario #3: Acting as the Energy Assistance Recipient Population Acts in the Non-heating Season

Scenario #3 tests the financial impacts of a capped bill program that will generate payment outcomes for the energy assistance population that reflect the payment outcomes of the energy assistance population in the non-heating season. The payment outcomes in the time period November 2000 through October 2001 were compared to the average payment outcomes for the August through October 2000 time period. Under this approach, the impacts of the weather and price are factored out by looking at the behavior of the energy assistance population during a time period in which those factors are not in play.

Under these conditions, the capped bill program will generate offsetting cost savings of more than \$30 (\$30.14) per participant. These savings go to offset a program cost of \$100 per participant.

The savings come primarily in three areas:

- Avoided charge-offs (\$171,922)
- Avoided working capital associated with month-to-month arrears (\$25,392); and
- Avoided collection costs (\$63,635).

Improving payment outcomes for energy assistance recipients subsequent to a winter heating season when bills are affected by increases due to price and or temperature spikes to reflect the payment outcomes of the non-heating season prior to the price spikes will provide a moderate basis for the conclusion that a capped bill program would generate offsetting cost savings. As with other Scenarios of payment outcomes, the primary reduction in utility expenses will occur in the area of avoided charge-offs. Avoided collection costs are noticeably higher than simply

improving payment outcomes to a typical year's level for energy assistance recipients. Working capital savings do not provide a substantial contribution to the offsetting savings.

The calculation of the savings attributable to modifying energy assistance payment outcomes such that they reflect the payment outcomes of energy assistance recipients in the non-heating season is set forth in Appendix 3.

SUMMARY AND CONCLUSIONS

Offering a program that will control low-income exposure to payment outcomes associated with spikes in bills caused by temperature and/or price changes will generate expense savings to the utility that will offset program costs in whole or part. Elements of cost savings will include:

- Foregone collection expenses, including the avoided need to disconnect service for nonpayment;
- Avoided working capital expense; and
- Avoided charge-offs.

The extent to which a capped bill program will generate offsetting savings depends on how the elimination of price and temperature variability will affect low-income payment outcomes. There is no question, based on the discussion above, that low-income customers experience payment outcomes to a utility that are less favorable to a utility than the residential class as a whole. Low-income customers:

- Have a higher proportion of accounts in arrears;
- Have a higher level of arrears on a per account basis;
- Fall more deeply into arrears faster during the heating months;
- Have a higher proportion of accounts written-off as uncollectible;
- Have a higher proportion of accounts in arrears proceed all the way to the disconnection of service.

A capped bill program can help a utility to control these payment outcomes (and thus the expenses associated with these payment outcomes). A capped bill program can:

- Generate \$75 in savings per participant if low-income outcomes are reduced to the level of payment outcomes for the total population;

- Generate \$20 in savings per participant if low-income payment outcomes can be held constant at the non-heating month levels through subsequent high bill months;
- Generate \$30 in savings per participant if low-income payment outcomes can be held constant at the levels of a year that has normal temperature and natural gas prices.

ATTACHMENT A

Cost Component	Outbound Calls	Inbound Call	Field Collection	Visit	Mailed Notice	Disconnect	Reconnect	Final bill
Set-up costs	\$0.00	\$0.00	\$6.00		\$0.00	\$6.00	\$6.00	\$6.00
Labor minutes	8	15	30		0	30	50	0
Completion rate	80%	100%	100%		100%	100%	100%	100%
Adjusted labor minutes	10	15	30		0	30	50	0
Annual salary	\$30,000	\$30,000	\$40,000		\$0	\$40,000	\$40,000	\$0
Salary per hour	\$15.00	\$15.00	\$20.00		\$0.00	\$20.00	\$20.00	\$0.00
Productivity factor (6hrs:8hrs)	0.75	0.75	0.75		0.75	0.75	0.75	0.75
Adjusted salary per hour	\$20.00	\$20.00	\$26.67		\$0.00	\$26.67	\$26.67	\$0.00
Loaded benefits	35%	35%	35%		35%	35%	35%	35%
Direct labor cost	\$4.50	\$6.75	\$18.00		\$0.00	\$18.00	\$30.00	\$0.00
Vehicle cost	\$0.00	\$0.00	\$8.50		\$0.00	\$8.50	\$8.50	\$0.00
Materials	\$0.68	\$1.01	\$0.00		\$0.15	\$0.00	\$0.00	\$0.00
Mail cost	\$0.00	\$0.00	\$0.00		\$0.35	\$0.00	\$0.00	\$0.00
Post-action collections	\$0.00	\$0.00	\$0.00		\$0.00	\$5.18	\$0.00	\$0.00
Total cost	\$5.18	\$7.76	\$32.50		\$0.50	\$37.68	\$44.50	\$6.00

**The Impact of Missouri Gas Energy's
Experimental Low-Income Rate (ELIR)
On Utility Bill Payments by Low-Income Customers:
Preliminary Assessment**

October 2003

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CHAPTER 1:

INTRODUCTION

This study looks at whether low-income Missouri Gas Energy (MGE) customers receiving energy assistance benefits through the Company's Experimental Low-Income Rate (ELIR) improve their payment patterns relative to low-income customers that do not receive such benefits. Assuming such improvement does in fact occur, the study then examines whether the cost of obtaining such improvement is reasonable given the results.

THE UNAFFORDABILITY OF MISSOURI'S WINTER HOME ENERGY BILLS

The observation that Missouri winters present high and unaffordable home energy bills to low-income households comes as no surprise. "Affordability" in this regard is measured by customer home energy burdens. A home energy burden is simply the household's home energy bill divided by household income. A household with an annual home energy bill of \$1,500 and an annual income of \$6,000 would therefore have a home energy burden of 25% ($\$1,500 / \$6,000 = 0.25$).

Home energy is a crippling financial burden for low-income Missouri households. Data from the National Home Energy Affordability Gap study reports that Missouri households with incomes of below 50% of the Federal Poverty Level pay 38% or more of their annual income simply for their home energy bills. Home energy unaffordability, however, is not simply the province of the very poor. Bills for households between 50% and 100% of Poverty take up 13% of income. Even Missouri households with incomes between 150% and 185% of the Federal Poverty Level often have energy bills above the percentage of income generally considered to be affordable.

TABLE 1
MISSOURI RESIDENTIAL ENERGY BURDENS: BY POVERTY LEVEL

	Poverty Level of Missouri Households				
	Below 50%	50- 74%	75 - 99%	100 – 124%	125 – 149%
Total home energy burden	38.0%	15.4%	10.9%	8.5%	7.0%

National Home Energy Affordability Gap: Missouri Fact Sheet (April 2003).

These, of course, are *average annual* burdens. Winter home energy bills as a percent of winter income impose much higher burdens.

Existing sources of energy assistance do not adequately address the energy affordability gap in Missouri. Actual low-income energy bills exceeded affordable energy bills in Missouri by nearly \$273 million at 2001/2002 winter heating fuel prices. In contrast, Missouri received a gross allotment of federal energy assistance funds of \$38.7 million for Fiscal Year 2003. Some of those funds will be used for administrative costs, weatherization, and other non-cash assistance.

One impact of the unaffordability of home energy service is the nonpayment of bills. Previous research by the Iowa Department of Human Rights (DHR), however, which is the agency administering LIHEAP in Iowa, found that bill nonpayment is perhaps not even the most significant of the adverse impacts of unaffordable winter home energy bills. A DHR study of Iowa LIHEAP recipients found that:¹

- Over 12 percent of Iowa LIHEAP recipients went without food to pay their home heating bill. Projected to the total participating LIHEAP population, that meant that about 7,600 low-income households (representing 20,000 Iowa citizens) went without food at times as a result of unaffordable home heating bills.
- More than one-in-five went without medical care to pay for heating bills. This included not seeking medical assistance when it was needed, not filling prescriptions for medicine when a doctor had prescribed it, and/or not taking prescription medicines in the dosage ordered by the doctor.
- Almost 30 percent reported that they did not pay other bills, but did not elaborate as to which bills were not paid. In addition to not paying other bills, many low-income households incurred debt in order to pay both their home heating bills and other basic necessities. They borrowed from friends and/or neighbors or used credit cards to pay for food and other necessities.

Recognizing both the payment problems and health and safety dangers of the lack of home energy during cold weather months, MGE adopted its Experimental Low-Income Rate (ELIR). Through ELIR, MGE provides fixed monthly credits toward MGE bills based on the Poverty Level for a participating customer. Customers with incomes of below 50% of the Federal Poverty Level were entitled to receive a monthly fixed credit of \$40, while customers with incomes of between 50% and 150% of Poverty were entitled to a credit of \$20 per month. ELIR participants were selected from customers that received federal fuel assistance through the Low-Income Home Energy Assistance Program (LIHEAP). The ELIR initiative was confined to a single geographic region. This allows MGE to compare the payment profile of energy assistance recipients

¹ Joyce Mercier, Cletus Mercier and Susan Collins (June 2000). *Iowa's Cold Winters: LIHEAP Recipient Perspective*, Iowa Department of Human Rights: Des Moines (IA).

receiving ELIR credits to those energy assistance participants not receiving ELIR in an effort to isolate the impacts of the ELIR credit.

The discussion that follows is based on data from the first 21 months of the program's operation (December 2001 through August 2003). Data from the beginning and ending months (November 2001 and September 2003) was too limited to be useful and was excluded from the analysis.

CHAPTER 2:

THE PAYMENT IMPACTS OF THE EXPERIMENTAL LOW-INCOME RATE (ELIR)

The questions presented in this preliminary assessment are two-fold:

- Does the Experimental Low-Income Rate (ELIR) reduce utility payment troubles and improve payment practices; and
- If so, is the expenditure of money on this improvement reasonable given the results?

If the answer to the first question is “no,” of course, the second line of inquiry becomes moot.

In assessing the payment impacts associated with ELIR, comparisons are made below between three populations:

- The population of MGE customers receiving ELIR credits (hereafter known as the ELIR population);
- A population of MGE customers that have received fuel assistance (and thus are known to be low-income) but that do not receive ELIR credits (hereafter known as the EA population); and
- A population of customers from the general customer base chosen irrespective of income or receipt of energy assistance (hereafter known as the NOEA population).

Data was obtained on customer bills, customer payments, and customer collection history from December 2001 through August 2003. The collection activities ranged from reminder collection letters to the disconnection of service for nonpayment. The “count” of customers in any given month for the three populations was based on the number of bills issued. The number of customers in each population was roughly equal over the course of the project period to date (Table 2).

TABLE 2
NUMBER OF BILLS RENDERED FOR THREE STUDY POPULATIONS
MISSOURI GAS ENERGY EXPERIMENTAL LOW-INCOME RATE

	Dec '01	Mar '02	Jun '02	Sep '02	Dec '02	Mar '03	Jun '03	Aug '03
ELIR population	632	682	706	637	586	559	511	484
EA population	642	689	705	837	579	552	496	455
NOEA population	735	780	834	805	775	751	718	695

NOTE: Selected months

The timing of a bill or payment was designated using the Company's "revenue month." In addition, customer usage data (in units of energy) was provided monthly. Arrears were calculated both at the time a bill was issued (i.e., did a balance at the time a bill was posted exceed the amount of the bill) and at the time a payment was received (i.e., did a balance remain after a payment was posted). While ELIR credits were recorded as a "payment" on the Company's books, they were not considered "payments" within this analysis unless otherwise explicitly noted.

The fixed credit that the ELIR program provided to each customer represented a discount of roughly 30% of a participant's bill on a monthly basis (Table 3). Over the course of the 21 months for which data is available, the program provided a credit of \$212,192 toward a combined customer bill of \$774,072. No arrearage forgiveness was provided as a component of the program. Customers that participated in the program were subject to the same credit and collection procedures that are directed to all other customers, irrespective of income or energy assistance status.

Because of these substantial bill credits, one additional issue to be examined below involves whether the increased energy assistance can be associated with increased usage on the part of ELIR recipients. The concern to be addressed by this inquiry is whether ELIR participants use their fixed credits to increase consumption beyond that which would otherwise occur. If this occurs, the credit is subsidizing increased usage rather than increasing the affordability of MGE bills by reducing the home energy burden for ELIR participants.

TABLE 3
ELIR FIXED CREDITS IN DOLLARS
AND AS PERCENT OF TOTAL MONTHLY BILL

	ELIR Bills	ELIR Fixed Credits	Credit as Percent of Bill
December 2001	\$42,523	\$0	0%
January 2002	\$56,560	\$16,556	29%
February 2002	\$57,012	\$8,538	15%
March 2002	\$54,084	\$0	0%
April 2002	\$48,687	\$16,676	34%
May 2002	\$42,733	\$15,332	36%
June 2002	\$43,437	\$0	0%
July 2002	\$39,878	\$27,605	69%
August 2002	\$28,026	\$11,885	42%
September 2002	\$25,732	\$11,035	43%
October 2002	\$25,160	\$10,516	42%
November 2002	\$29,081	\$9,002	31%
December 2002	\$33,202	\$10,212	31%
January 2003	\$35,221	\$9,812	28%
February 2003	\$35,013	\$9,612	27%
March 2003	\$32,093	\$9,625	30%
April 2003	\$27,268	\$9,771	36%
May 2003	\$32,652	\$9,536	29%
June 2003	\$30,208	\$9,276	31%
July 2003	\$28,250	\$8,787	31%
August 2003	\$27,250	\$8,416	31%
Total	\$774,072	\$212,192	27%

DEFINING THE “EFFECTIVENESS” OF ELIR

Low-income energy assistance program administrators have struggled for years over how to define when a program has been “effective.” The question that presents itself is what level of improvement in payment patterns indicates a “successful” program.

This assessment bases its notions of “effectiveness” on a comparison of the extent to which, if at all, the treatment population (i.e., those receiving ELIR credits) move their bill payment profile toward the bill payment profile of residential customers as a whole. This definition of “success” is inherent with the notion of “affordability.”

The stated purpose of ELIR is to make natural gas bills affordable to low-income customers. “Affordability” is defined in terms of “energy burdens” as described above. An affordable total home energy burden (including all home energy end uses) is generally considered to be six percent (6%) of household income.² In contrast, an affordable home heating burden is generally considered to be two percent (2%) of household income.³ The fixed credits provided to ELIR customers were designed to reduce the annual natural gas bills to affordable levels given these boundaries on “affordability.”

Reducing bills to an affordable level has a direct impact on how program impacts should be evaluated. The assumed effect of reducing a home energy bill to an affordable level is to remove income as a determinant of payment practices.⁴ If affordability is not a factor, low-income payment practices should reflect the payment practices of the population generally. As with the general population, the payment history will not be perfect. Some customers will forget to pay. Others will have competing debts or financial obligations. Others will simply be deadbeats. Without bill unaffordability as a contributing cause, however, the payment profile of the ELIR population should demonstrate two discernible characteristics:

- The ELIR payment profile should be better than the payment profile of the low-income non-ELIR population (i.e., the EA population for this program); and

² A household’s total shelter burden should not exceed 30% of income to be affordable. A household’s total home energy bill should not exceed 20% of the total shelter burden. Putting these two “rules” together yields a total home energy burden of six percent (6%) ($20\% \times 30\% = 6\%$).

³ While heating consumption is generally greater than electric consumption (in terms of BTU’s of energy used), electric bills generally comprise two thirds of a household’s total home energy bill. Heating bills (including hot water) comprise the other one-third. One-third of an affordable energy burden of 6% is two percent (2%).

⁴ One shortcoming in this assumption is that payment practices may well reflect not simply the *level* of income, but the “fragility” of income as well. See e.g., National Fuel Funds Network (March 2002). *A Fragile Income: Deferred Payment Plans and the Ability to Pay of Working Poor Utility Customers*, National Fuel Funds Network: Washington D.C.

- The ELIR payment profile should be comparable to the payment profile of the customer population as a whole (irrespective of household income status).⁵

In sum, the notion of “affordability” provides a litmus test to use in measuring the effectiveness of the ELIR initiative. Having received ELIR fixed credits, do the payment practices of ELIR customers improve from those experienced by low-income customers not receiving the credits so as to reasonably reflect the payment practices of customers as a whole (irrespective of income)?

EMPIRICALLY MEASURING A PAYMENT PROFILE

While many people believe the only test for payment troubles involves the presence (as well as the aging) of arrears, this evaluation rejects that approach. While the assessment below obviously considers arrears an important indicator of payment troubles, it is not the only aspect of a payment profile. Instead, the discussion below examines the multiple facets of customer payment. The inquiry below will consider the following payment attributes:

- A measurement of *complete* payment of bills;
- A measurement of *prompt* payment of bills;
- A measurement of *regular* payment of bills; and
- A measurement of “*automaticness*” of payment of bills.

The indices proposed below recognize that while MGE is most concerned with the completeness of bill payment received (a \$100 payment toward a \$100 bill is better than a \$50 payment toward a \$100 bill), there are other attributes of bill payment, as well, that should be recognized. These include promptness (timely payment is better than late payment), regularity (12 payments of \$100 are better than two payments of \$600), and “automaticness” (a payment received without utility collection effort is better than a payment coming in response to collection activity). All four of these attributes can be measured.

The Completeness of Bill Payment

The most common indicator of whether complete payment has been received from a utility customer involves measuring both the incidence and extent of arrears. The

⁵ This is different from saying the low-income population should reflect the non-low-income population. The low-income population should reflect the total customer base, comprised of both low-income and non-low-income customers.

incidence of arrears considers the proportion of the total population in arrears. The extent of arrears considers the size of arrears at any given point in time. For this evaluation, arrears were calculated as of the date that a bill was rendered. The presence of arrears was determined by examining whether the posting of a bill for current usage yielded a balance due that was larger than the bill for current usage. If a \$50 bill for current usage resulted in a total balance of \$85, in other words, the account was deemed to have been carrying a \$35 arrears.

The alternative to examining arrears at the time of a bill is to consider whether arrears remain on an account at the time a bill *payment* is posted. This approach was not used for several reasons. First, some ELIR customers make multiple payments in a month. Arrears at the time of any one payment, therefore, would misstate the level of arrears the customer was carrying from month-to-month. Second, many payments for ELIR customers represent energy assistance payments. These payments are not intended to be tied to any particular monthly bill. While a \$300 energy assistance payment in November may yield a bill credit the following month, that bill credit does not accurately represent the affordability of winter home energy bills to that customer. Third, the question with arrears is not what arrears exist at any given point in time, but rather what arrears are carried from one month into the next month. That determination can only be made by looking at the arrears appearing on the next month's bill. Finally, while every account, by definition, has a bill each month, not every account has a payment each month. Examination of the arrears appearing on bills thus uses the fullest range of available data.

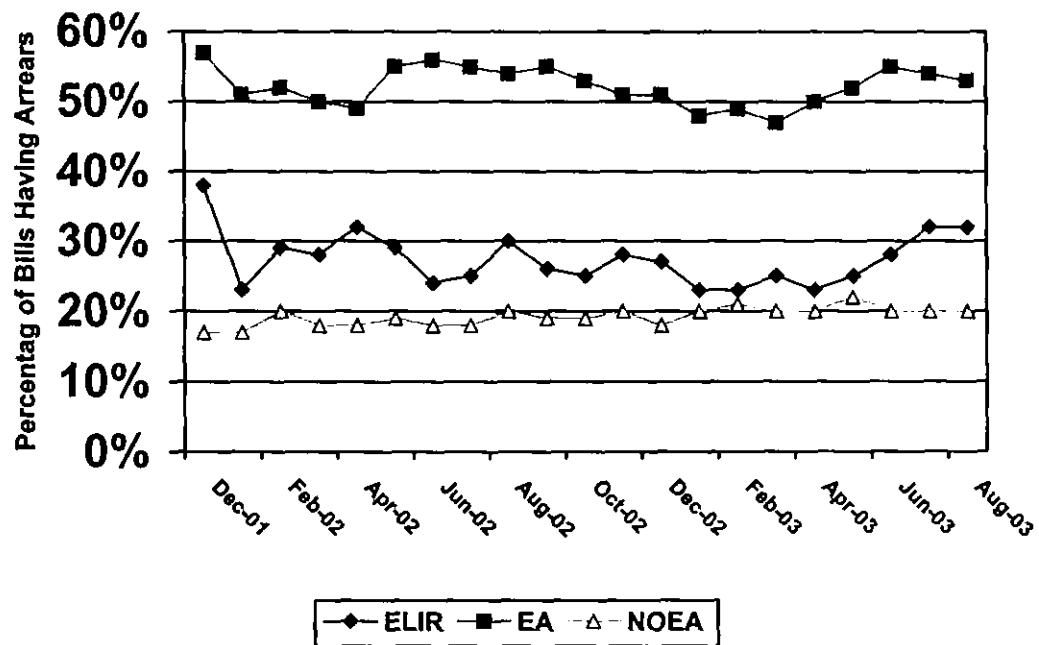
The incidence of arrears: The provision of ELIR fixed credits appears to substantively reduce the incidence of arrears in the low-income population. Figure 1 below presents a comparison of the percentage of bills having arrears in any given month. Again, it is assumed that every account receives one, but only one, bill in a given month. The number of bills thus reflects the number of accounts in each population in each month.

An average of 27% of the ELIR population carries arrears in any given month, compared to the average of 52% of the EA population. While the ELIR fixed credits have the effect of reducing the incidence of arrears in the low-income population, it fails to accomplish two objectives. First, the seasonal variability in low-income arrears remains. Unlike the NOEA population, for whom the incidence of arrears ranges from a maximum of 21.9% of the population to a minimum of 17.1% of the population over the 21 month period, the ELIR population has arrears running from 22.9% to 38.1% of the population.

In addition, the ELIR fails to completely reduce the incidence of arrears amongst fixed credit recipients to the level of arrears in the population as a whole. It appears evident that the ELIR credits *reduce* the incidence of arrears within the low-income population

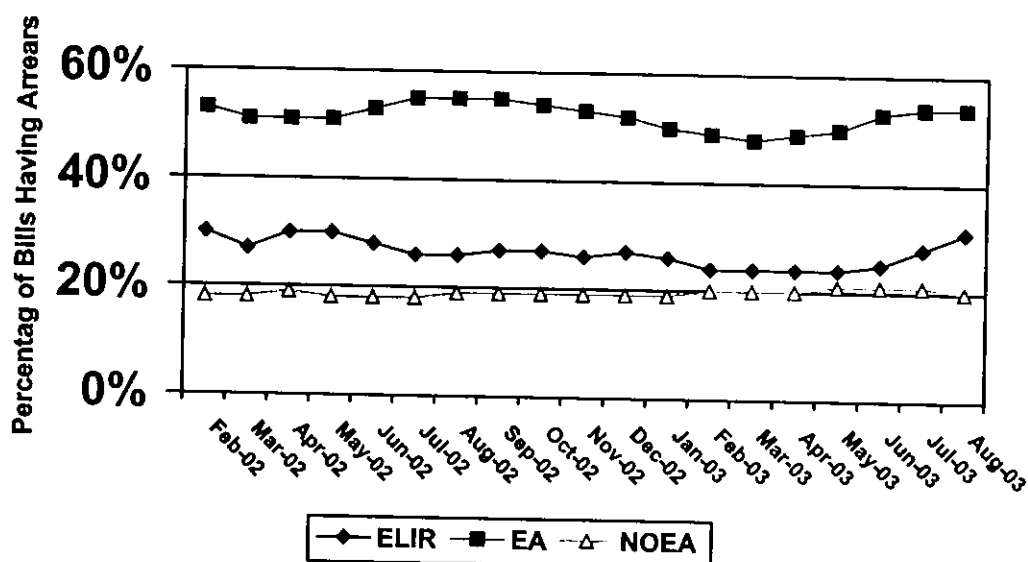
by nearly half. While somewhat over one-in-four ELIR participants have arrears, however, only one-in-five customers in the general population have arrears.

Figure 1
Incidence of Arrears for ELIR, EA and NOEA Populations



Looking at the three-month average arrears presented in Figure 2 helps to smooth out some of the variability. Figure 2 indicates that ELIR has helped to reduce the incidence of low-income arrears, and has helped to keep that incidence of arrears down over the course of the program period. The reason for the increase in arrears for both the EA population and ELIR population in July and August 2003 is beyond the purview of this evaluation.

Figure 2
Incidence of Arrears: ELIR, EA and NOEA
Populations: 3-Month Average



Level of arrears: In addition to considering how many accounts are in arrears, it is important to consider the extent to which each account is in arrears as well (Figure 3). The average dollar of arrears is computed based only on those accounts having arrears. No trimming of arrears was performed either. Hence an account with an arrears of \$0.50 was treated the same as an account with arrears of \$50. In addition to reducing the number of customers with *any* arrears, the ELIR program helped reduce the level of arrears as well. Arrears within the low-income population was reduced from an average of \$173 in the EA population to only \$104 in the ELIR population, a reduction of 40% ($[\$173 - \$104 = \$69 / \$173 = 0.40]$).

Figure 3
Average Dollars of Arrears in the ELIR, EA and NOEA
Populations

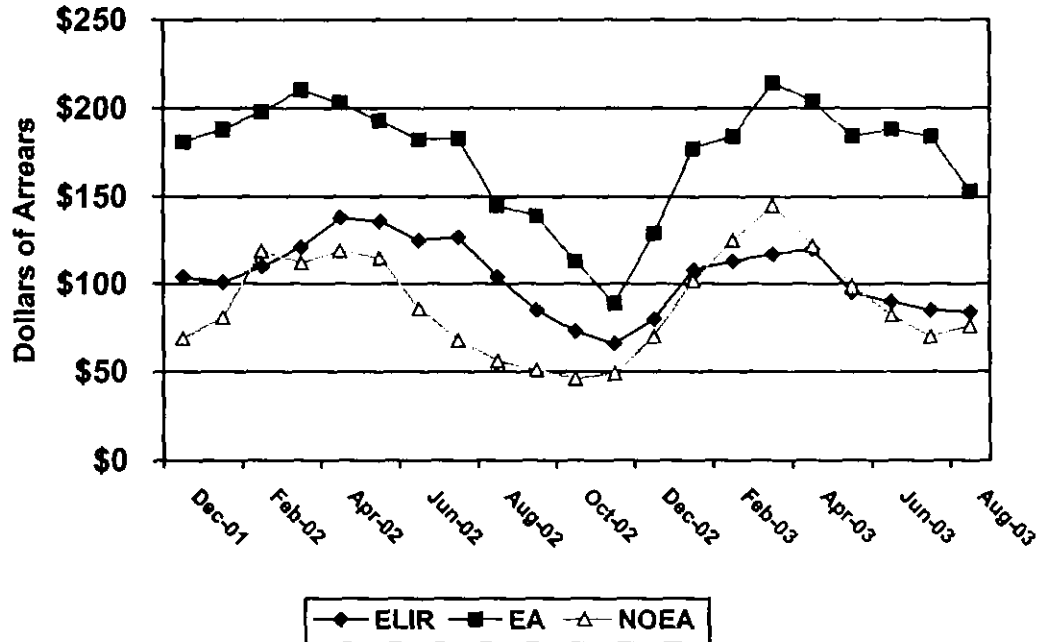
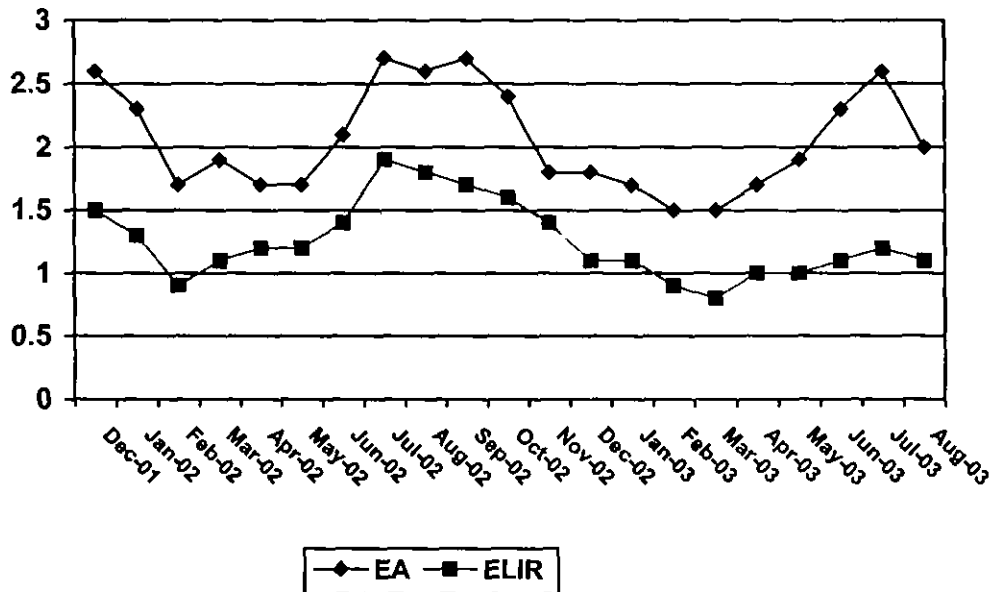


Figure 4 directly presents the success of ELIR in meeting the affordability objective articulated above. Given affordable bills, we have previously posited, ELIR participants should exhibit a payment profile equivalent to the population as a whole. Figure 4 presents an index of the ratio of the low-income dollars of arrears (for the ELIR and EA population) to the total population (NOEA) level of arrears. If the ELIR index is 1.0, the level of ELIR arrears (in dollars) is exactly equal to the level of the NOEA level of arrears on a per account basis. If the index is 2.0, the level of ELIR arrears is twice the level of NOEA arrears. Figure 4 indicates that for the last ten months of the program, the ELIR population has exhibited an almost identical level of performance to that of the population as a whole ((NOEA). In contrast, the EA population carries arrears between 1.5 and 2.5 times higher than the population as a whole.

Figure 4
Index of Low-Income Dollars of Arrears
to Total Population Arrears



The “Promptness” of Bill Payment.

The promptness of bill payment considers not merely whether a customer pays his or her utility bill in full, but whether the customer pays his or her utility bill on time as well. If a utility renders a bill for \$100, that company wants a customer to pay the bill by the due date as well as paying the bill in full. Bill promptness is measured by the use of a “weighted arrears” statistic called “bills behind.”

The use of “weighted arrears” as a mechanism to assess payment outcomes is based on a foundation first provided by the Bureau of Consumer Services (BCS) of the Pennsylvania Public Utilities Commission. According to a 1983 BCS analysis, contrary to the argument by that state’s utility companies, the Pennsylvania winter shutoff moratorium did not result in an increase in the number of unpaid bills, or the amount of unpaid bills, that would have existed in the absence of a moratorium. The BCS study reported that:

Average overdue bills are at a low in November and rise to a high point in March or April. The apparent relationship of this pattern to Public Utility Commission regulations is obvious. That is, arrears are greatest at the end of the Commission’s winter termination restrictions (December 1 to March

31 of the following year) and have been reduced to their lowest point immediately prior to the introduction of those restrictions for the following year. This pattern is consistent with the assertion put forward by utilities that they would be able to control arrearages if there were no winter termination restraints. However, the seasonal fluctuations are substantial only for heating accounts. Arrearages for non-heating accounts show only minor seasonal fluctuations. A comparison of [the data] suggests a simple explanation for this difference, that is, that the size of arrearages is related to the size of monthly bills. Heating customers' bills grow radically in the winter and so do their arrearages. Non-heating customers' bills change very little seasonally and their arrearages follow suit. In other words, if the assertion that winter termination restraints invite nonpayment were correct, then non-heating arrearages should show the same seasonal pattern of variations as do heating arrearages. That they do not casts substantial doubt on the assertion that PUC winter termination restraints are responsible for willful non-payment and consequent collection problems.⁶

This Pennsylvania report introduces the notion that any assessment of arrears must control for the impact of monthly bills. The BCS report is consistent with the BCS recommendation, often stated, to use a "weighted arrears" or "bills behind" statistic to factor out the impact of increased arrears caused by factors other than nonpayment.

BCS explains that its "bills behind" statistic "permits comparisons to be drawn between companies by eliminating the effects of different customer bills on arrearages." Without such a measure, "the interpretation of average arrearages, either over time or in comparison between companies, presents some difficulties."⁷

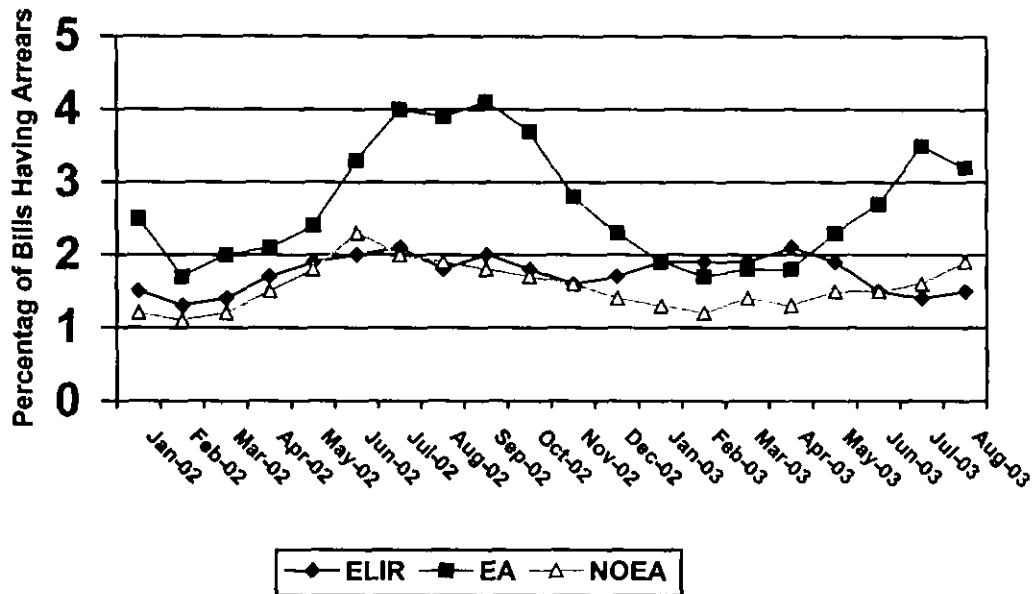
A similar analysis was performed for this evaluation. Figure 5 shows the number of average "bills behind" by month starting with January 2002 and continuing through August 2003.⁸

⁶ Joseph Farrell (1983). *Utility Payment Problems: The Measurement and Evaluation of Responses to Customer Nonpayment*, at 19, Pennsylvania Public Utility Commission: Harrisburg, PA

⁷ *Id.*

⁸ The need to have a prior month's bill precluded including a weighted arrears statistic for December 2001. No current bill was available for November 2001.

Figure 5
Weighted Arrears ("Bills Behind") for
EA, ELIR and NOEA Populations



While the arrears discussion immediately above might seem to indicate that all three sets of customers (ELIR, EA, NOEA) stopped making payments to some extent during the winter heating season, the bills behind statistic reveals that this conclusion is misleading. The ELIR and NOEA populations have substantially similar payment patterns over the course of each year. What MGE has succeeded in doing for the ELIR population is taking the volatility out of the payment profile of program participants. While the EA population falls multiple bills behind during the summer months (reflecting a continuing high level of arrears through the warm weather months) (see Figure 3), the ELIR population is more successful in paying down its arrears so that even during those low bill months, the population in arrears stays only one or two bills behind at any given time.

Figure 6
Index of Low-Income "Bills Behind"
to Total Population "Bills Behind"

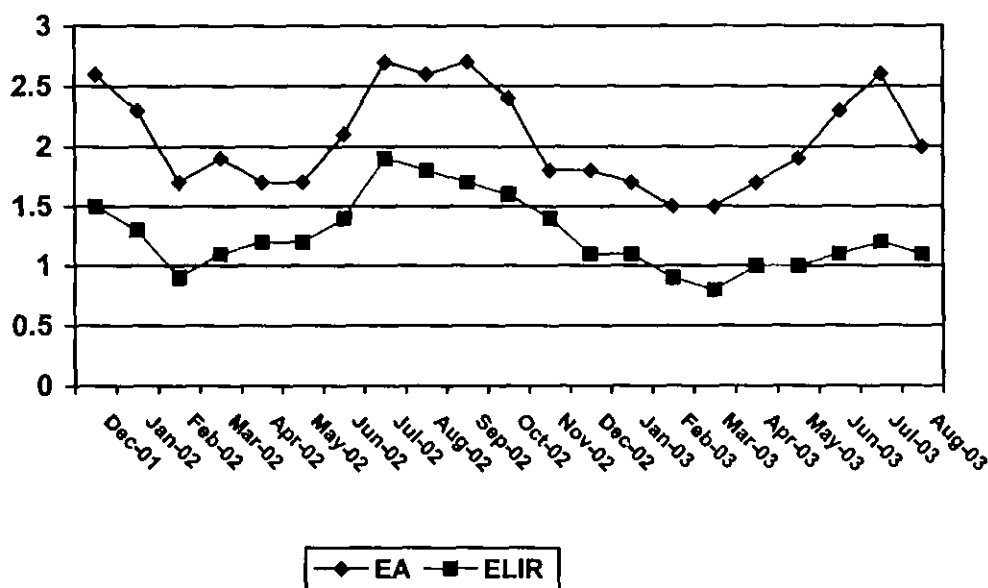


Figure 6 again shows the relationship between the two low-income populations and the population as a whole. An ELIR index of 1.0 indicates that the number of “bills behind” for the ELIR population is identical to the number of “bills behind” for the population as a whole. An ELIR index of 1.5 indicates that the number of bills behind for the ELIR population is 1.5 times higher than the number of bills behind for the population as a whole. Figure 6 indicates that ELIR is succeeding in improving the low-income payment performance so that it reflects the population as a whole (irrespective of income). This level of performance, and the improvement in performance for the ELIR population, is evident in Figure 6.

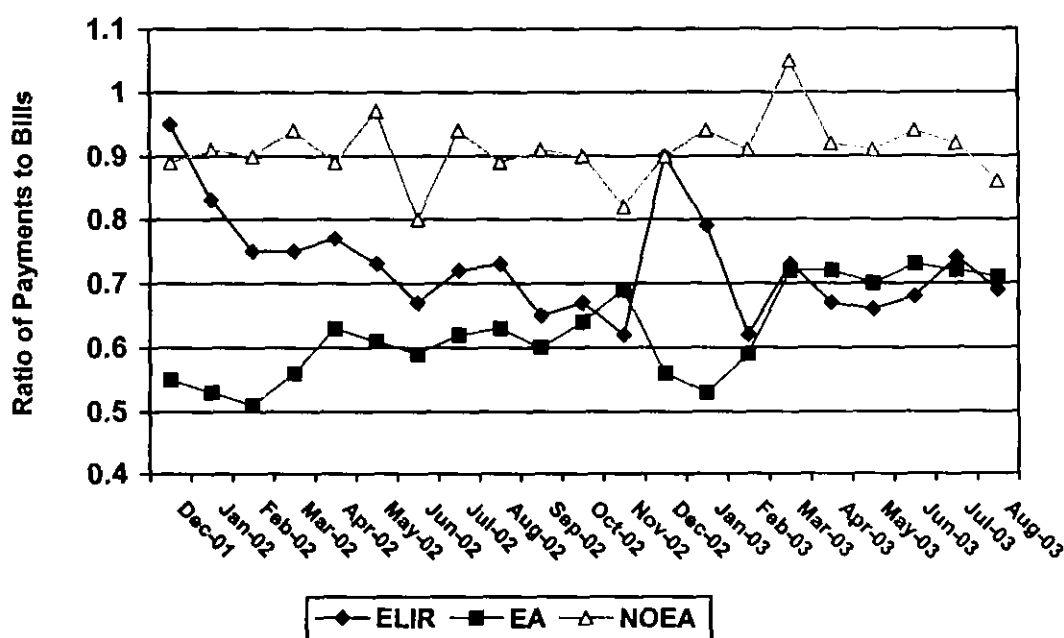
The Regularity of Bill Payment

An examination of the regularity of bill payment measures a different aspect of a customer’s payment profile than does an examination of customer arrears. A customer may maintain a relatively low level of arrears by paying multiple months of bills on an infrequent basis. An examination of January arrears, for example, does not distinguish between the customer that has made his or her last twelve monthly payments on time and in full, the customer that has made \$0 in payments during August through October (perhaps waiting for the annual

LIHEAP benefit to pay off those arrears), and the customer who makes three payments over the year of amounts equal to the total annual bill. While the “bills behind” statistic has a regularity of payment implicit in it, the regularity of payments can be directly measured.

Payment-to-bill index: The regularity of payments can be measured by indexing the total number payments to the total number of bills rendered each month. A payment-to-bill ratio of 1.0 means that for every bill that is rendered, exactly one payment has been received. More meaningful is to conclude that for every ten (10) bills rendered, ten (10) payments have been received. A payment-to-bill ratio of 0.8 means that for every ten bills rendered, eight payments have been received.

Figure 7
Payment-to-Bill Ratio by Month
for ELIR, EA and NOEA Populations



The payment-to-bill ratio does not consider the size or “completeness” of a payment. Measuring the completeness of payment is accomplished through other aspects of the customer payment profile. The regularity of bill payment is considered important because of the generally accepted proposition that if “some” payment is made on an account in any given month, there is an increased likelihood that the customer will be able to make a future payment sufficient to reduce the account balance to \$0. The April bill is easier to

pay in full, in other words, if the customer has made *some* payment toward the March bill, even if that March payment is only a partial payment.

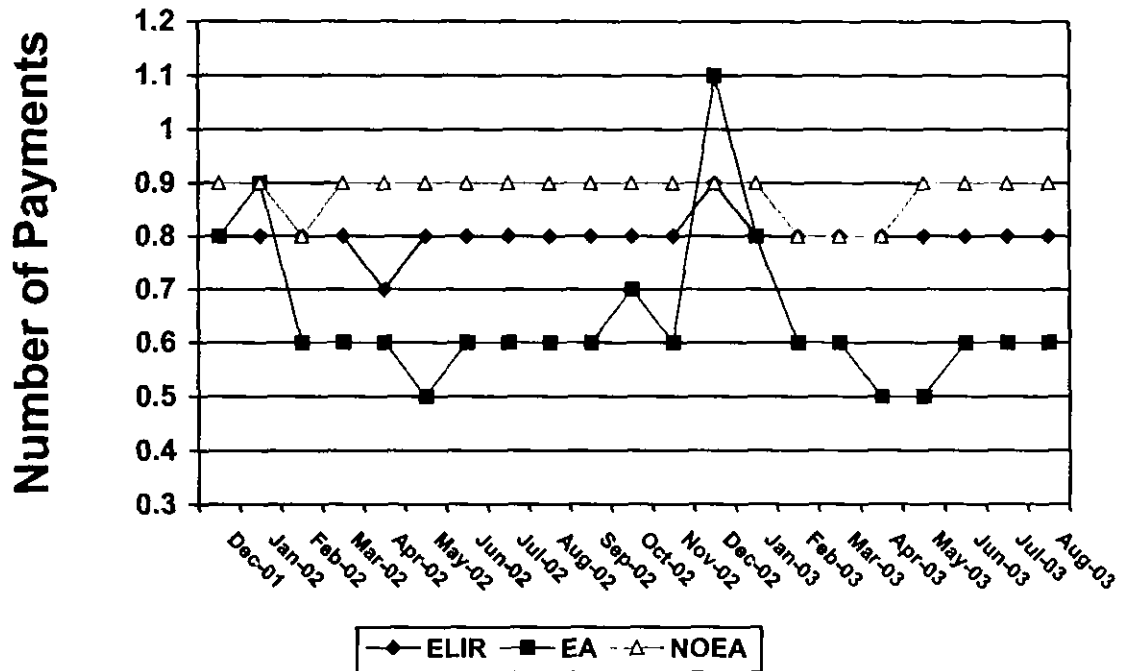
Figure 7 shows that ELIR customers do not have a consistently better payment-to-bill ratio than the EA population. While ELIR customers began with payment-to-bill ratios of close to 0.8, that “regularity” performance deteriorated through the program period. Why and how ELIR customers can maintain their performance on arrearage indicators while showing deterioration in payment regularity deserves future study.

Payments resulting in \$0 balances: Given the deterioration in the payment-to-bill ratio of ELIR participants, an inquiry into the extent to which those payments that *are* being made succeed in clearing the customer’s account becomes more important. Figure 8 shows an index of the number of accounts on which monthly payments were made to the number of accounts on which such payments reduced the account balance to \$0. If the index is 1.0, 100% of the payments reduced the balance to \$0. If the index is 0.5, 50% of the payments reduced the account balance to \$0. Accounts on which no payments were made in a month are not included in this analysis. A \$0 balance includes those accounts having credit balances.

While the payment-to-bill index indicates a deterioration in the regularity of payments by ELIR customers, Figure 8 shows that ELIR customers have exhibited a remarkable consistency in using their payments to clear their accounts of arrears. While nearly 80% of all ELIR payments result in a \$0 balance on the account,⁹ only 60% of EA payments result in the account being free of arrears.

⁹ Again, remember that a credit balance is deemed to be a \$0 balance for purposes of this index.

Figure 8
Ratio of Payments Yielding \$0 Balance by Month
for EA, ELIR and NOEA Populations



The index in Figure 8 does not indicate how many payments have been made. The extent of payments is discussed above. Figure 8 demonstrates, however, that not all payments are equal. While Figure 7 would appear to indicate that the payment performance of EA and ELIR participants is virtually identical in the months of January 2003 through August 2003 (and, indeed, they are from a regularity of payment perspective), Figure 8 shows that those ELIR payments far more frequently reduce account balances to \$0. Far more EA payments, in other words, are partial payments than are ELIR payments.

Figure 8 shows that the failure of low-income customers to bring their accounts current through a monthly payment in a particular month is not even necessarily bad news from the perspective of MGE. The Figure demonstrates that the Company's customers will make "some" payment on their accounts, even if the payment is only in partial satisfaction of their total outstanding arrears. If the index of payments resulting in a \$0 balance is 0.4, in other words, what this means is that while 40% of the payments made

reduced account balances to \$0, 60% of the households making payments made their payments even though the account still had a balance remaining after the payment.¹⁰

Finally, it is interesting to see how the LIHEAP benefits flow through this data. The jump in payments resulting in a \$0 balance in December might at first seem counter-intuitive. It would not be immediately evident, in other words, why the number of customer payments resulting in a \$0 balance amongst EA customers would actually *increase* when the higher-cost cold weather months came around. The explanation lies with LIHEAP. LIHEAP payments made in November and December reduce total balances for recipients to the point where an increased number of those recipients can zero out their account balance in that month or in the ensuing month.

The “Automaticness” of Bill Payment.

The final set of metrics involves measuring the extent to which bill payments are made without resort to collection activity on the part of the company. The need to initiate collection activity in response to bill nonpayment is evidence first of a risk of possible long-term nonpayment (and write-off). As arrears become older and larger, the risk of the need ultimately to write-off the revenue as uncollectible increases. These write-offs directly increase a utility’s cost of service. In addition, as arrears become older and larger, the need increases for a company to incur out-of-pocket collection expenses. Again, the result is an increase in the cost of service.

Nonpayment shutoffs (NPSOs) amongst all accounts: The disconnection of service for nonpayment (referred to by MGE as a nonpayment shutoff, or, NPSO) is considered by most to be the ultimate collection device by a natural gas utility. An NPSO not only costs the utility money in direct out-of-pocket expenses, however, but it also increases the likelihood that the arrears underlying the NPSO will be lost to uncollectibles as well as costs the utility money in lost revenue that would have been generated from sales that would have occurred during the time the customer was off the system.

Nonpayment shutoffs are measured using two different indices. The first index considers NPSOs per 100 bills rendered each month. A bill is used as the proxy for each separate account. This ratio of NPSOs per 100 bills permits an examination of the relative rate of NPSOs within the three study populations (the ELIR population, the low-income population, and the population as a whole) at any given point in time as well as over and within a period of time.

¹⁰ The amount due for budget billing customers is the budget billing amount, not the bill for current usage.

Figure 9
Ratio of NPSOs to Total Accounts
for EA, ELIR and NOEA Populations

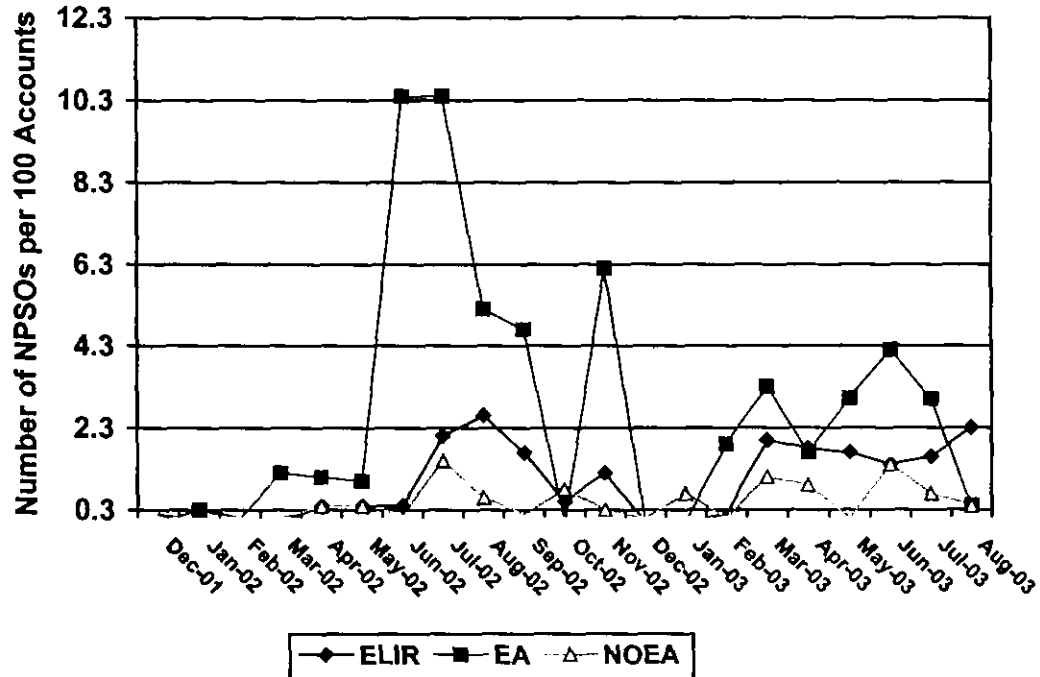
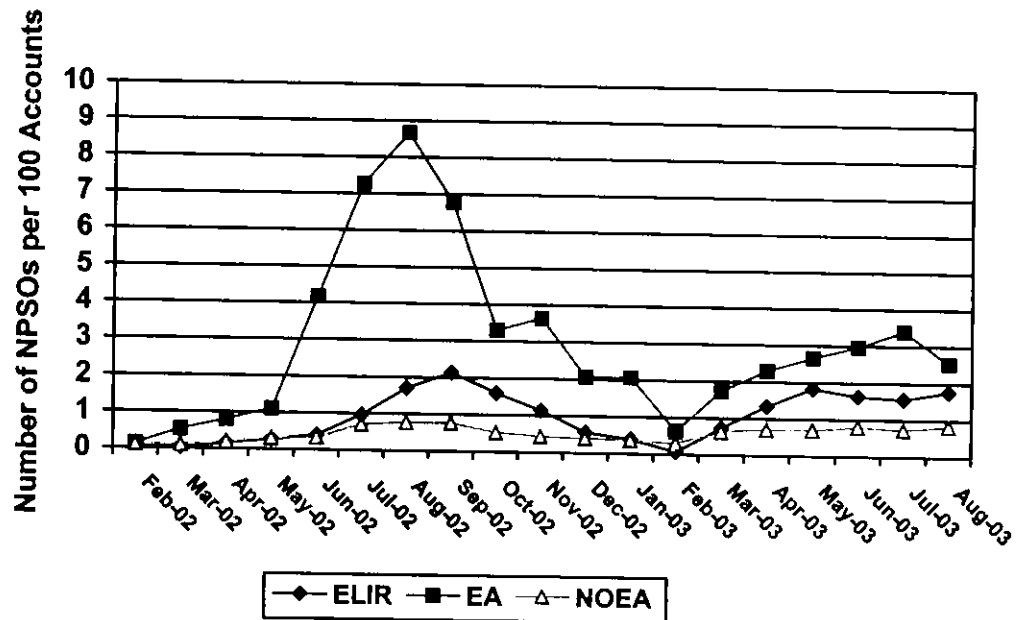


Figure 9 shows that ELIR has reduced the rate of NPSOs within the ELIR population well below that of the low-income population that does not receive ELIR credits. Over the 21-month period, ELIR reduced the overall rate of service terminations for nonpayment by 65%, from 2.8 per 100 accounts to only 1.0 per 100. Indeed, Figure 10, which presents the same data except on a three-month rolling average basis, shows the relationship even more clearly.

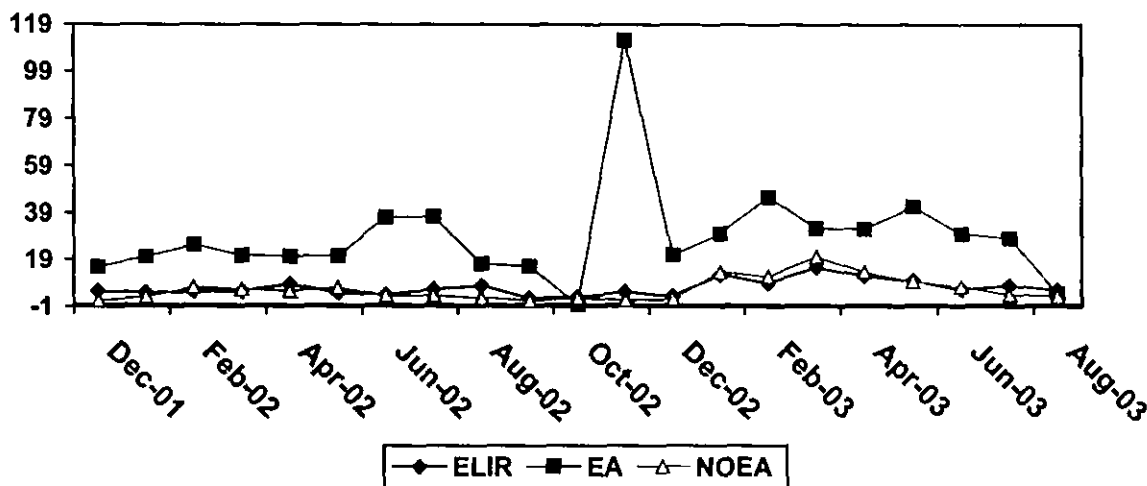
While the rate at which accounts are disconnected for nonpayment within the EA population is at or above 2-in-100 for 13 of the 19 months for which 3-month rolling average data is available, the three month rolling average not once ever reaches 2-in-100. Indeed, the rate at which EA customers are disconnected for ELIR customer for nonpayment reaches 3-in-100 on a three month rolling average basis in eight of the 21 months of data.

Figure 10
Ratio of NPSOs to Total Accounts
for EA, ELIR and NOEA Populations
on a 3-Month Rolling Average



Collection letters per 100 accounts: A “low-level” activity by the Company undertaken to collect past due accounts is the generation of a collection letter. While the expense of each letter is not great, the quantity generated contributes to their overall cost. For example, with an average number of EA accounts of roughly 700, the Company generated more than 3,100 collection letters in a 21-month period. The Company generated 891 collection letters for its ELIR population in the same time period.

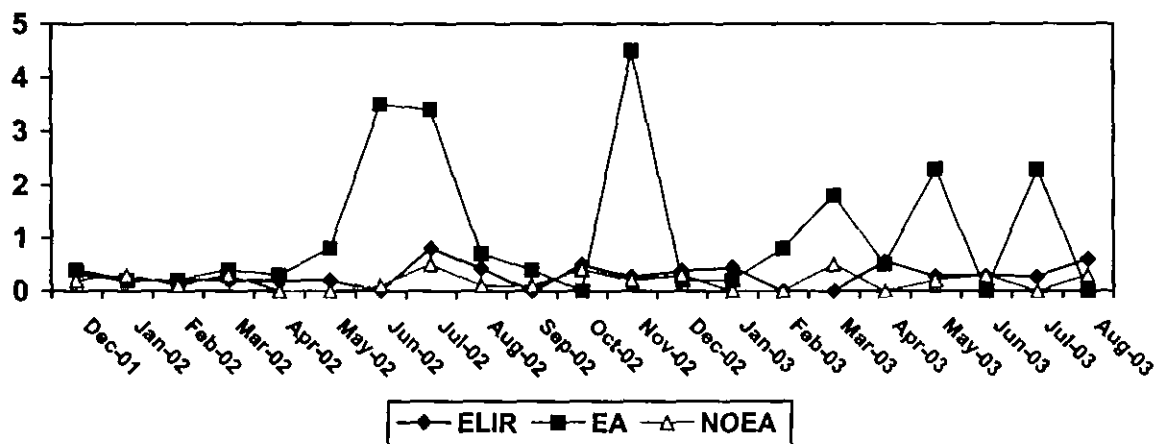
Figure 11
Collection Letters per 100 Accounts
for EA, ELIR and NOEA Accounts



The data in Figure 11 demonstrates that while the ELIR population experienced 7.1 collection letters per account on an average monthly basis, the NOEA (total population irrespective of income) experienced a rate of collection letters of only 6.4 per 100 accounts. These both stand in sharp contrast to the collection rate of 29.0 collection letters per 100 accounts within the low-income, non-ELIR (EA) population. As can be seen, the ELIR program reduced the generation of collection letters by more than 75%.

Returned checks for insufficient funds: The final collection activity tracked for purposes of this evaluation involves the incidence of checks that are returned to the company due to the lack of sufficient funds. Figure 12 presents the data. ELIR succeeds in bringing the rate at which the low-income population issues returned checks down to the level of the overall population. While the general population produced 0.2 returned checks for every 100 payments made to the company, the ELIR population produced 0.3 returned checks per 100 payments. In contrast, the low-income population not receiving ELIR produced 1.1 returned checks for every 100 payments. ELIR appears to have reduced the incidence of returned checks within the low-income population by more than 70%.

Figure 12
Returned Checks per 100 Payments
for NA, ELIR and NOEA Populations



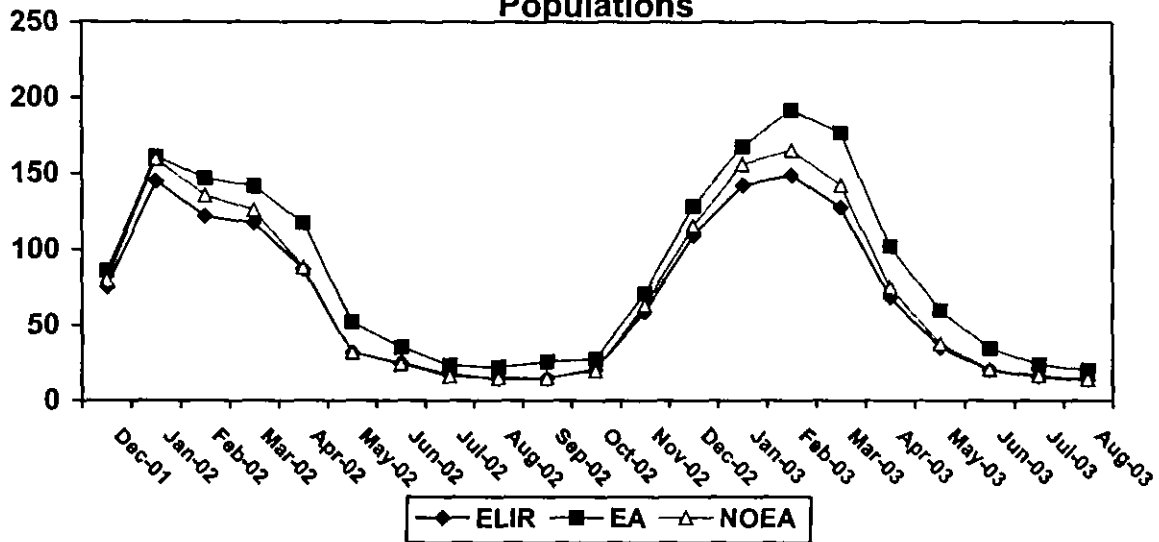
A CONSIDERATION OF USAGE IMPACTS

The grant of fixed credits to the ELIR population does not appear to provide an incentive for those customers to systematically increase their energy consumption. Figure 13 presents the monthly consumption data. While the EA population has a total average monthly consumption of 86 therms per month, the ELIR population has a total average consumption of 68 therms. The ELIR population has consumption that is roughly 20% lower than the EA population. The consumption of the ELIR population is much closer to the total population average monthly usage of 72 therms than to the comparable low-income population not receiving ELIR credits.

The consumption for the ELIR and EA populations was tested for statistical significance at the 0.05 level. With an average consumption of 86 therms (RSE = 0.92), the EA population had a statistically significant *higher* consumption than did the ELIR customers, who had an average consumption of 68 therms (RSE=0.81).

It cannot be concluded that the MGE ELIR program resulted in an increase in consumption relative to those customers not receiving ELIR fixed credits.

Figure 13
Average Monthly Usage for EA, ELIR and NOEA
Populations



SUMMARY OF PAYMENT IMPACTS

Based on the above data, the following conclusions are proffered with respect to the payment impacts generated by the Missouri Gas Energy Experimental Low-Income Rate (ELIR):

- ELIR improved the completeness of bill payment, as measured by the incidence and level of arrears.
- ELIR improved the promptness of bill payment, as measured by a weighted arrears (“bills behind”) statistic.
- While ELIR did not improve the regularity of bill payment as measured by a payments-per-bill statistic, ELIR did improve the extent to which payments made reduced account balances to \$0.
- ELIR improved the “automaticness” of bill payment, as measured by collection activities and returned checks.
- ELIR did not induce an increase in consumption amongst customers receiving fixed credits.

CHAPTER 3:

THE FINANCIAL IMPLICATIONS

OF MGE'S EXPERIMENTAL LOW-INCOME RATE (ELIR)

Having found that the ELIR program generates substantial payment benefits for the participant population, this section of the analysis turns its attention to an examination of whether those changes in the payment profiles of ELIR participants can be achieved at a reasonable cost to the customer base.

IDENTIFYING THE COSTS OF NONPAYMENT

The building blocks to be used in considering the financial impacts of the ELIR program involve assessing the costs associated with nonpayment. The cost of non-payment of a residential utility bill generally consists of three separate components:

- The cost of collecting the past-due bill (collection costs);
- The cost of obtaining replacement revenue (either internally or externally) for the time the billed revenue goes uncollected; and
- The cost of revenue ultimately written off as uncollectible.

The discussion below will separately consider each of these components.

The Cost of Collection

The cost of collecting unpaid bills depends on both the collection interventions that are put into play and the point in time at which the interventions are activated. Little collection activity occurs within the first 30 days after a bill is first rendered. This occurs for three reasons:

- The billed revenue is not overdue; or
- The size of the receivable is not sufficiently large to cost-justify incurring collection expenses; and/or
- The age of the receivable is not sufficiently old to place the receivable at risk of long-term non-collection or eventual uncollectability.

The longer a receivable ages, the more subsequent bills will pancake on top of the oldest arrears¹¹ and the greater the long-term risk accrues of eventual uncollectability. On a per account basis, therefore, an older arrears imposes greater costs in three ways:

- It generates a larger number of dollar lag days giving rise to working capital expense;
- It generates more intense (and thus more expensive) collection interventions; and
- It creates high levels of charge-offs.

Reducing both the level and age of arrears, therefore, should result in direct dollar savings to the utility experiencing the reductions.

In reaching this conclusion, resource expenditures that are not avoided altogether but that are redirected to other productive tasks are considered to be “saved” in this analysis. If a half-time full time equivalent (0.50 FTE) can be moved from collecting 90-day old residential arrears to performing other productive work, the labor cost associated with that 0.50 FTE is deemed a “savings” to the collection activities of a company.

Collection Timeline: Assuming a bill is rendered on Day 1 of a collection timeline, and is due on Day 20, significant intervention costs begin to accrue to the utility at around Day 40. The following interventions occur along the collection timeline:

- If a customer-initiated in-bound calls occurs, it will generally occur before the due date of the second bill;
- An out-bound collection call will happen within ten days of the date of the second bill (which first contains the Bill 1 arrears);
- A written disconnect notice is issued within ten days of the out-bound reminder telephone call;
- A written disconnect notice generally generates a response by the customer. If a payment is not made, an in-bound call is handled;
- A field disconnection notice is delivered within ten to fourteen days of the presumed receipt of the written disconnect notice;

¹¹ For an arrears to be 90-days old, the immediately two preceding bills must be in arrears in their entirety. A 30-day or 60-day arrears will not be paid prior to the 90-day arrears being retired.

- A service termination occurs within three days of the delivery of the field disconnection notice;
- If service is reconnected, the reconnection generally occurs within one day of the service termination;
- Write-offs are presumed to occur at day 180 after the initial bill.

The collection time line assumed for this analysis is as follows:

A TYPICAL COLLECTION TIME LINE AND COSTS				
	<u>Days from Bill Date</u>			
	1 - 30	31 - 60	61 - 90	91 - 150
Bill #1 rendered	Day 1			
Bill past due	Day 21			
In-bound call	Day 25 (\$8)			
Out-bound call		Day 40 (\$5)		
Written DNP notice		Day 50 (\$0.50)		
In-bound query		Day 53 (\$8)		
Deliver DNP notice			Day 64 (\$35)	
Disconnect service			Day 67 (\$40)	
Reconnect service			Day 68 (\$45)	
Final bill issued			Day 74 (\$6)	
Write-off				Day 180
Total cost	\$8.00	\$13.50	\$126.00	\$0.00

The costs presented in this time line are rounded to eliminate any sense of false precision. Clearly, also, individual customers may deviate from the norm.

The data presented above have been combined into a model that considers the financial impact of the ELIR initiative. The model considers the change in costs to MGE that arise from the implementation of ELIR. Based on the discussion above, the cost savings are estimated assuming that in the absence of ELIR, the ELIR population would demonstrate the same payment profile as the non-ELIR low-income population.

Assuming that an account traverses the entire range of collection interventions once, that account will cause MGE to incur nearly \$150 in costs exclusive of any final write-off amount. Of the total collection costs, 85% (\$126 of \$147.50) are incurred in the period running from 60 to 90 days after a bill is first issued. Keeping an arrear from entering the 61 – 90 day age bucket will thus provide a substantial cost savings to a utility. However, the bulk of the costs arise from an account entering the active disconnect process. Even if an account enters the 61 – 90 day age bucket, therefore, unless the arrear progresses to the beginning of field services, substantial savings will not arise from collection savings.

The Cost of Replacement Revenue

Whenever a utility bills a dollar of revenue without collecting it, that utility will incur a cost of money associated with the unpaid bill. The cost of money will manifest itself in one of two ways. Either:

- The utility will *procure* money to replace the unpaid revenue (external sources); or
- The utility will use *internal cash* to replace the unpaid revenue (internal sources).

In the first instance, the company will incur a cost at the weighted rate of return. Since working capital is a capital expense for ratemaking purposes, the equity portion of the return will have an income tax component associated with it.¹² In the second instance, in the absence of the need to use the internally-generated cash to meet cash working capital needs, the company would have presumably have invested that cash. Again, the cost consequence of the unpaid revenue is thus quantified at the rate of the weighted cost of capital (grossed up for taxes).

A customer will bring two revenue components into play in any given month:

- The unpaid arrears from prior months' bills;¹³ and
- The bill for current usage.

¹² Since arrears are a relatively permanent aspect of a utility's operations, the working capital reserve is a part of the company's permanent capital requirements. Accordingly, the funds procured from an external source are costed out at a company's weighted cost of capital.

¹³ This unpaid arrears may be \$0, but to maintain some conceptual consistency, the presence of unpaid arrears must be recognized in all instances. To try to distinguish between a customer with "no arrears" and a customer with an arrears of \$0 leads to difficulty in application.

The Cost of Arrears: The unpaid arrears will fall into the various aging buckets that a company maintains. For purposes of analysis, the discussion below will assume that ELIR arrears would be placed into one of three aging buckets: (1) 30-day arrears; (2) 60-day arrears; and (3) 90+-day arrears.

The working capital costs imposed by arrears are based on the number of revenue lag days created by the arrears. The revenue lag days represent the incremental number of days that a bill remains unpaid from the day the bill is first rendered. The days from the day a bill is rendered to an on-time payment is supplied by assumption (15 days, assuming that bills are paid three-quarters of the way through a 20-day payment period). The incremental lag days are then calculated by placing the arrears at the mid-point of each aging bucket.

- A 30-day arrears thus adds 20 days to the initial billing period (the final five days of the payment period plus one-half of the 30-day arrears period).
- A 60-day arrears adds 30 more incremental days (the final 15 days of the 30-day arrears period plus one-half of the 60-day arrears period);
- A 90-day arrears adds 105 more days. Since the 90-day bucket is open-ended, it is unreasonable to assume that the arrears fall within the first 30-days of this age bucket. This analysis supplies the age of 90+-day arrears by taking the arrears out to one-month short of the time at which they are written off as uncollectible (at Day 180). This process adds the final 15 days of the 60-day arrears period plus the 90 more days to 150 days).

The dollar lag days are computed by multiplying the dollars in arrears times the incremental lag days for that month. The dollar lag days are then multiplied by a daily cost of capital to determine the working capital expense.

Table 4 below presents the working capital expense associated with arrears within any given month.

Table 4
Calculation of Working Capital for Any Given Month

	Bill Date to Due Date	30-Day Active	60-Day Active	90-Day Active
Arrears	\$100	\$100	\$100	\$100
Incremental Age	15	20	30	105
Dollar Lag Days	1,500	2,000	3,000	10,500
Annualized Weighted Return	8.5%	8.5%	8.5%	8.5%
Gross Up Factor for Taxes	40.0%	40.0%	40.0%	40.0%
Weighted Return (GUFT)	11.9%	11.9%	11.9%	11.9%
Days per Year	365	365	365	365
Daily Return (GUFT)	0.0308%	0.0308%	0.0308%	0.0308%
Working Capital	\$0.46	\$0.62	\$0.93	\$3.29
Annualizing Factor	12	12	12	12
Annualized Working Capital	\$5.56	\$7.42	\$11.14	\$39.45
WC per \$1,000 Receivables	\$55.58	\$74.16	\$111.41	\$394.48
Per \$1000 0.0326%				

It is important to note that the working capital expense is not additive, but incremental. With a 60-day arrears appearing on a July bill, for example, the working capital associated with those dollars in the month they were billed would have been determined in May. The working capital associated with them when they were 30-day arrears would have been calculated in June. The working capital expense above is presented on a dollars-per-arrears basis.

The working capital expense for a particular month would thus need to be determined as follows (in a hypothetical illustration):

Table 5
Illustration of Working Capital Calculation

	Bill Date to Due Date	30-Day Active	60-Day Active	90-Day Active	Total
WC per \$1,000 Receivables	\$55.58	\$74.16	\$111.41	\$394.48	
Dollars of receivables	\$30,000,000	\$3,600,000	\$2,000,000	\$6,700,000	
Receivables (\$1000 increments)	30,000	3,600	2,000	6,700	
Working capital	\$1,667,277	\$266,970	\$222,818	\$2,643,006	\$4,800,071

The Cost of Current Bills: Current bills in any particular month must be divided into two buckets. The first bucket captures those bills that are paid by the due date. The second bucket captures those bills that are not paid by the due date and thus will be reflected as 30-day arrears in the next month. Both buckets are limited to those dollars that are eventually paid and do not proceed to charge-off.

The significance of the two buckets is simply that dollars in the first bucket are assumed to be paid before the due date. The working capital associated with these current bills thus includes only those days between the billing date and the payment date. In contrast, the dollars that proceed to become arrears go full-term, and thus have a full 20-days of working capital associated with them. For current bills that eventually become arrears, the incremental days of working capital are recognized and calculated in the working capital calculations relating to arrears.

On a per \$1,000 basis, the working capital associated with current bills not subject to eventually being charged-off is as follows:

Table 6
Working Capital Grossed Up for Taxes per \$1,000 in Receivables

	Bill Date to Due Date
Current bill not in arrears	\$100
Incremental Age	15
Dollar Lag Days	1,500
Annualized Weighted Return	8.5%
Gross Up Factor for Taxes (GUFT)	40.0%
Weighted Return (GUFT)	11.9%
Days per Year	365
Daily Return (GUFT)	0.0308%
Working Capital	\$0.46
Annualizing Factor	12
Annualized Working Capital	\$5.56
WC per \$1,000 Receivables	\$55.58

The significance of this calculation lies in the ability to reduce the incremental age of the current bill at the time it is paid in the current month. The same calculation, assuming that bills are paid at Day 10 rather than Day 15, would result in the following cost determination:

Table 7
Working Capital Grossed up for Taxes
Assuming Bill Payment at Day 10

	Bill Date to Due Date
Current bill not in arrears	\$100
Incremental Age	10
Dollar Lag Days	1,000
Annualized Weighted Return	8.5%
Gross Up Factor for Taxes	40.0%
Weighted Return (GUFT)	11.9%
Days per Year	365
Daily Return (GUFT)	0.0308%
Working Capital	\$0.31
Annualizing Factor	12
Annualized Working Capital	\$3.70
WC per \$1,000 Receivables	\$37.02

As can be seen, reducing the bill payment date from Day 15 to Day 10 would save nearly \$20 per \$1,000 of current receivables.

The Cost of Charge-offs

The final cost component to be considered is the cost of charge-offs. The first out-of-pocket cost of charge-offs is the rate at which bills are to be written-off. Charge-offs have both a prospective and a retrospective component to them.

- The prospective component consists of applying the charge-off rate to all future bills rendered for current usage;
- The retrospective component consists of applying the charge-off rate to the arrears that are brought into the ELIR program.

While by its nature, the prospective rate will be repeatedly applied (as each month's current usage is billed), the retrospective component involves a one-time application to the arrears that exist on the books as arrears at the beginning of the program. Data does not exist to disaggregate the rate of charge-off based on the age of arrears.

The rate of charge-off differs depending on the age of arrears. Experience counsels that 95% of 30-day arrears are collectable, 90% of 60-day arrears are collectable, and 85% of 90+-day arrears are collectable. As an arrears ages, only the incremental charge-off should be considered. Under the circumstances identified above, the incremental charge-off rate is five percent for each age bucket.

In addition to the charged-off revenue itself, the working capital associated with carrying bills until they are finally charged-off is an expense to be considered. Some portion of each age bucket of arrears will proceed along the collection time line until it is charged off. By having those bills paid in a particular month, rather than proceeding to charge-off, a utility would avoid the working capital from the point in time in question to the date of charge-off. Thus, for example, the time remaining until charge-off would be as follows by age bucket:

- Current receivables: 165 days
- 30-day arrears: 145 days
- 60-day arrears: 115 days
- 90+-day arrears: 10 days

If a company has \$100 in current receivables, 2.5% of which will eventually be charged-off (at day 180), then having the entire \$100 paid in Month 1 will avoid \$0.13 in future working capital simply for the charge-off amount. A 30-day arrears of \$100 would result in an avoided working capital of \$0.11 simply for the charge-off amount. The calculation translating this into a cost per \$1,000 of receivables is set forth below:

Table 8
Working Capital Associated with Charge-offs

	Bill Date to Due Date	30 Day Active	60 Day Active	90 Day Active
CHARGE-OFF WORKING CAPITAL				
Maximum Age of Charge Off	180			
Potential charge-off rate	2.5%			
Potential Charge Off Dollars	\$2.50	\$2.50	\$2.50	\$2.50
Days Remaining until Charge Off	165	145	115	10
Dollar Lag Days	413	363	288	25
Potential Working Capital	\$0.13	\$0.11	\$0.09	\$0.01
Annualizing Factor	1	1	1	1
Annualized Working Capital	\$0.13	\$0.11	\$0.09	\$0.01
WC per \$1,000 Receivables	\$52.14	\$45.68	\$36.06	\$3.09

Summary of the Costs of Nonpayment

In summary, the costs associated with nonpayment can be categorized into three elements:

- The cost of collection, which involves the expenses associated with interventions which the utility triggers in response to nonpayment;
- The cost of replacing the revenue that is billed but not collected. This cost arises whether the company generates its replacement revenue externally or internally; and
- The costs of charge-offs. This expense involves both the charge-off itself and the working capital associated with the billed revenue carried to the charge-off date.

THE COSTS AND NET COSTS OF THE ELIR INITIATIVE

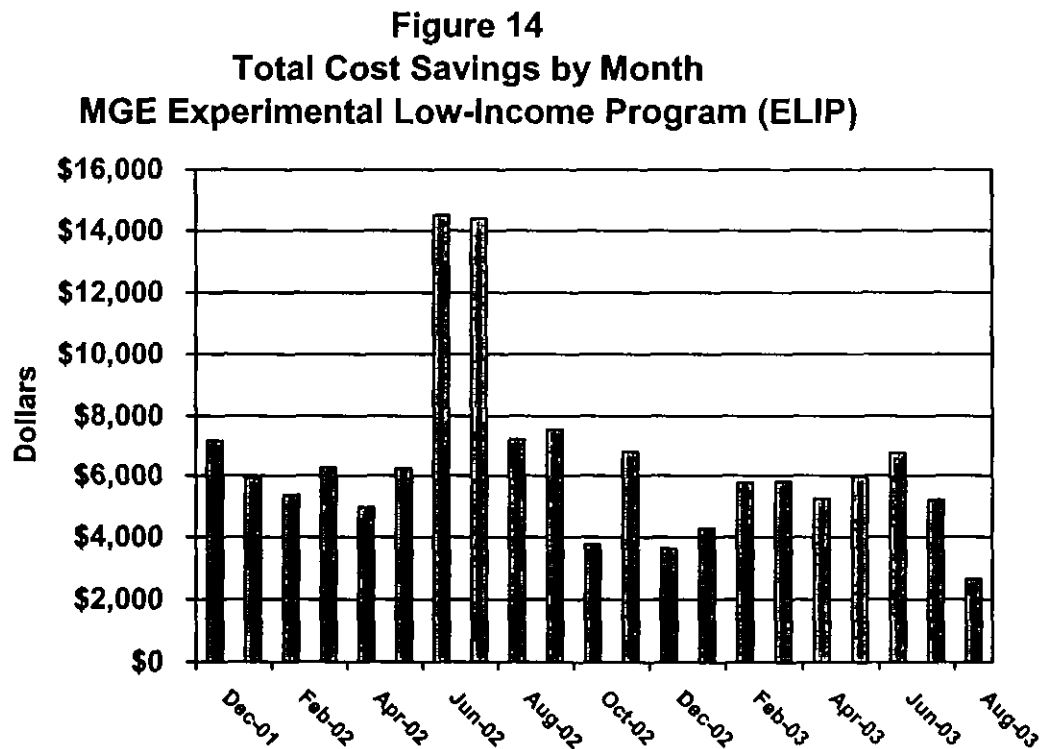
The total direct costs of the fixed credits provided through the ELIR initiative reached \$212,192. These dollar figure were taken directly from the data provided by MGE through its data base. Spread over an average ELIR participation rate of 610 accounts, the per participant cost was \$348 per participant. The ELIR program generated \$135,000

in offsetting program savings. The total net program cost was accordingly \$77,000, or a net program cost of \$126 per participant. A calculation of the program cost offsets is presented in Appendix A.

The bulk of the cost savings accrued in three primary areas:

- Avoided charge-offs (\$38,639);
- Avoided collection costs (\$41,273); and
- Avoided nonpayment shutoffs (NPSOs) (\$35,974).

Savings were relatively constant throughout the program by month. Savings, in other words, did not substantially increase in either the winter or summer months. Total savings by month are presented in Figure 14.



The detailed financial analysis is presented in Appendix A. Three general observations will help explain the sources of the savings. While this data is embedded in the impact discussion above, it is presented again below.

Customers in Arrears

Substantial savings arise from the ELIR program because significantly fewer ELIR accounts experienced arrears. Table 9 shows the percentage of accounts in arrears by month for the ELIR and the EA populations.

Table 9
Percent of Accounts in Arrears: ELIR vs. EA Populations

	EA Accounts	ELIR Accounts
December-01	57%	38%
January-02	51%	23%
February-02	52%	29%
March-02	50%	28%
April-02	49%	32%
May-02	55%	29%
June-02	56%	24%
July-02	55%	25%
August-02	54%	30%
September-02	55%	26%
October-02	53%	25%
November-02	51%	28%
December-02	51%	27%
January-03	48%	23%
February-03	49%	23%
March-03	47%	25%
April-03	50%	23%
May-03	52%	25%
June-03	55%	28%
July-03	54%	32%
August-03	53%	32%
Average over program period	52%	27%

A reduction in the number of accounts in arrears has multiple implications:

- It reduces the working capital required for arrears.
- It reduces the amount of revenue subject to charge-off.
- It reduces the number of accounts subject to disconnection of service for nonpayment.
- It reduces non-service termination collection costs associated with nonpayment.

The reduced number of accounts in arrears is one of the most significant factors affecting the reduction in costs arising as a result of ELIR.

One impact of a reduction in the number of accounts in arrears is the reduction in the cost of collection (not associated with the termination of service). Use August 2002 as an illustrative month. In August 2002, there were 662 ELIR participants. If these accounts experienced an incidence of arrears at the rate of the EA population, 54% would have been in arrears (357 accounts). At an average collection cost of \$12.94, MGE would have spent \$4,625 on collections. In fact, only 30% of ELIR accounts were in arrears (199). At an average collection cost of \$12.94, the company spent only \$2,569 on collections, a savings of more than \$2,000.

Dollars in Arrears

Not only are there fewer accounts in arrears as a result of ELIR, but those accounts that are in arrears carry lower arrears in terms of dollars. ELIR customers ran substantially lower arrears every month of the program. Table 10 presents the data by month. Only in November 2002 did the arrears approach each other (\$89 for EA customers; \$86 for ELIR customers). No ready explanation is available for this clearly anomalous month.

The dollars of arrears and accounts in arrears do not operate independently. It is important to remember that they have their individual effects, but the combined effect is even greater. For example, consider the month of August 2002. There were 662 ELIR participants during August 2002. If those customers reflected the EA population, 54% would have been in arrears with an average arrears of \$145. The total arrears would have been \$51,835. In fact, under ELIR, only 30% of the accounts were in arrears with an average arrears of \$104. The total arrears was only \$20,654 for the ELIR population. Because of the lower arrears, there was both a substantial working capital savings as well as a reduction in the dollars subject to charge-off.

Table 10
Dollars in Arrears by Month: ELIR vs. EA Populations

	EA Accounts	ELIR Accounts
December-01	\$181	\$104
January-02	\$188	\$101
February-02	\$198	\$110
March-02	\$210	\$121
April-02	\$203	\$138
May-02	\$193	\$136
June-02	\$182	\$125
July-02	\$183	\$127
August-02	\$145	\$104
September-02	\$139	\$85
October-02	\$113	\$73
November-02	\$89	\$66
December-02	\$129	\$80
January-03	\$177	\$108
February-03	\$184	\$113
March-03	\$214	\$117
April-03	\$204	\$120
May-03	\$184	\$95
June-03	\$188	\$90
July-03	\$184	\$85
August-03	\$153	\$84

Service Terminations per 100 Accounts in Arrears

A final illustration of how and why cost savings arise lies in the rate at which customers have service terminated for nonpayment. Two factors reduce the number of terminations. First, the rate at which service terminations per 100 accounts in arrears is reduced. Even those customers that fall into arrears, in other words, are not in arrears so far that they experience the loss of service for nonpayment. Second, there are fewer customers in arrears with which to begin. Table 11 presents the monthly data on the rate of service termination per 100 accounts in arrears.

Table 11
Service Terminations per 100 Accounts in Arrears: ELIR vs. EA Populations

	EA Accounts	ELIR Accounts
December-01	0	0.7
January-02	0.6	0
February-02	0.3	0.3
March-02	2.3	0
April-02	2.3	0.5
May-02	1.8	0.6
June-02	18.6	4.2
July-02	18.8	1.9
August-02	9.7	5
September-02	8.4	4
October-02	0	1.2
November-02	12.2	3.2
December-02	0	0
January-03	0	0
February-03	4	0.5
March-03	6.9	4.5
April-03	3.4	4.2
May-03	5.7	3
June-03	7.6	2.3
July-03	5.5	2.6
August-03	0.8	3.9

To illustrate, use again the August 2002 data used above. In August 2002, there were 662 ELIR accounts. If the incidence of arrears was at the rate experienced by the EA population, there would have been 357 accounts in arrears. In August 2002, service terminations occurred at the rate of 9.7 per every 100 accounts in arrears. With 357 accounts in arrears, 34.7 terminations could be expected. In fact, however, service terminations for ELIR customers occurred at the rate of only 5.0 per every 100 accounts in arrears. Moreover, in fact, only 30% of ELIR customer accounts were in arrears. Given these reduced collection rates and reduced numbers of arrears, the ELIR population experienced only 9.9 terminations ($662 \times 0.30 \times 5/100 = 9.9$).

The month-by-month calculation of actual ELIR collection activity, as well as the actual level and incidence of ELIR arrears is presented in Appendix A. This analysis compares

this actual data to what the performance of the ELIR population would have been had ELIR reflected the EA performance instead.

SUMMARY OF FINANCIAL IMPACTS

Based on the above data and discussion. The following conclusions are proffered with respect to the financial impacts generated by the Missouri Gas Energy Experimental Low-Income Rate (ELIR):

- The improved payment profile of ELIR customers generates significant financial savings to the company. These savings arise primarily in the areas of reduced collection costs, reduced charge-offs, and reduced carrying costs. The Company's ELIR generates a cost offset of more than \$135,000.
- In particular, the reduced incidence and rate of nonpayment shutoffs generates a cost savings to the company.
- In particular, the reduced incidence and level of arrears within the ELIR population generate cost savings to the company.
- Cost savings arose almost equally during every month of the program period. The savings were not isolated either to the warm weather months or to the cold weather months.
- While the savings from the ELIR do not completely offset the costs of the program, the net cost of the ELIR program to the Company was reduced to \$77,000 for an average participation rate of 610 customers. The net cost was roughly \$126 per participant over the entire 21-month period ($\$77,000 / 610 = \126). The net annualized cost per participant was thus \$72 ($\$126 / 21 \times 12 = \72).