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VIA OVERNIGHT DELIVERY

September 29, 2005

Ms. Elizabeth O'Donnell
Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, Kentucky 40602-0615

Re: Filing of the Annual Status Report, Application for Continuation of the Energy Education Residential Comprehensive Energy Education (Need), and Program administration Programs, and Adjustment of the 2005 DSM Cost Recovery Mechanism with Filing of the Amended Tariff Sheets for Gas Rider DSM (Revised Sheet No. 62.9) and Electric Rider DSM (Revised Sheet No. 78.9)
Case No. 2005-00402

Dear Ms. O'Donnell:

I have enclosed an original and twelve copies of The Union Light, Heat and Power Company's Application in the above-referenced case.

Please date stamp and return the two extra copies in the enclosed, self-addressed envelope.

If you have any questions, please do not hesitate to contact me at (513) 287-3601.

Sincerely,

John J. Finnigan, Jr.
Senior Counsel

JJF/sew

cc: All parties of record

BEFORE THE
KENTUCKY PUBLIC SERVICE COMMISSION

In The Matter Of:)

THE ANNUAL COST RECOVERY FILING)
FOR DEMAND SIDE MANAGEMENT BY)
THE UNION LIGHT, HEAT AND POWER COMPANY)

CASE NO. 2005-00402

FILING OF THE ANNUAL STATUS REPORT, APPLICATION FOR CONTINUATION OF THE ENERGY EDUCATION RESIDENTIAL COMPREHENSIVE ENERGY EDUCATION (NEED), AND PROGRAM ADMINISTRATION PROGRAMS, AND ADJUSTMENT OF THE 2005 DSM COST RECOVERY MECHANISM WITH FILING OF THE AMENDED TARIFF SHEETS FOR GAS RIDER DSM (REVISED SHEET NO. 62.9) AND ELECTRIC RIDER DSM (REVISED SHEET NO. 78.9)

Now comes Applicant The Union Light, Heat & Power Company (ULH&P) with the consensus of the Residential Collaborative and the new Commercial and Industrial Collaborative, pursuant to this Commission's November 4, 2004 Order in Case No. 2003-00367 and February 14, 2005 Order in Case No. 2004-389, to file the annual status report and to propose an adjustment to the 2005 DSM Cost Recovery Riders (Application). The Applicant is The Union Light, Heat and Power Company (ULH&P) of 1697A Monmouth Street, Newport Shopping Center, Newport, Kentucky 41071, and its mailing address is P.O. Box 960, Cincinnati, Ohio 45201-0960. The Residential Collaborative members are: Ann Louise Cheuvront (AG), Nina Creech (People Working Cooperatively), Joy Rutan (League of Women Voters), Florence Tandy, the Northern Kentucky Community Action Commission (CAC), Beth Hodge (Brighton Center), Carl Melcher (Northern Kentucky Legal Aid), Karen Reagor (Kentucky NEED Project), Pat Dressman (Campbell County Fiscal Court), Monica Braunwart (Boone County Fiscal Court) and John Davies (Kentucky Office of Energy Policy). Please note that the United Way is an ongoing member of the

Collaborative whose representative left the agency. United Way has not filled that position on the Collaborative at the time of this filing. The Commercial & Industrial Collaborative members are Ann Louise Cheuvront (AG), Jim Smith (People Working Cooperatively), Karen Reagor (Kentucky NEED Project), John Cain (Wiseway Supply), Nicole Christian (Northern Kentucky Chamber of Commerce), Pat Dressman (Campbell County Fiscal Court), Ralph Dusing (Ashley Development), Bob Flick (Flick's Foods), Russell Guy (Campbell County Fiscal Court), Kris Knochelmann (Knochelmann Heating & Air), Robert Lape (Kenton County Schools), Ed Monohan, Sr. (Monohan Development Company), Gary Sinclair (Kenton County Fiscal Court), and John Davies (Kentucky Office of Energy Polisy).

In addition to filing the annual status report, ULH&P and the Collaborative respectfully request a modification of ULH&P'S DSM Riders to reflect the reconciliation of planned and actual expenditures, lost revenues, and shared savings.

I. INTRODUCTION

A. Background

On December 17, 2002, the Commission issued its Order in Case No. 2002-00358 approving ULH&P's plan to continue three demand-side management (DSM) programs, Residential Conservation and Energy Education, Residential Home Energy House Call, and Residential Comprehensive Energy Education for a three-year period ending December 31, 2005; to continue to fund the expansion and improvement of existing programs and the development of new programs; and to implement a revised low-income home energy assistance program as a pilot through May 31, 2004. The Commission, in its November

30, 2003 Order in Case No. 2003-00367, also approved the implementation of Power Manager, a residential direct load control program, through the year 2007.

This filing specifically addresses the requirements in the Commission's November 20, 2003 Order in Case No. 2003-00367 and its February 14, 2005 Order in Case 2004-00389 that ULH&P's next scheduled DSM filing is due by September 30, 2005. In the status and reconciliation portion of this report, expenses are reported for the period July 1, 2004 through June 30, 2005. In addition, this filing makes application for continuation of the Residential Conservation and Energy Education (low-income) program, the Home Energy House Call program, the Residential Comprehensive Energy Education (NEED) program and Program Administration, Development and Evaluation Funds through 2009 to align the timing of these programs with those approved in the February 14, 2005 Order in Case 2004-00389.

If the Commission is delayed in making its determination until after December 23, 2005, the Company requests the Commission's approval to continue implementing the current set of programs and to continue recovering costs for its existing DSM programs under its existing tariffs, until the effective date of new tariffs to be implemented pursuant to the Commission's order in this proceeding.

Also, ULH&P informs the Commission that some of the programs approved for implementation in Case No. 2004-00389 were also proposed for implementation or expansion in the service area of PSI Energy, Inc., the regulated utility operating in the Indiana portion of Cinergy's service area. ULH&P noted in its filing in Case No. 2004-00389 that, due to the cost sharing nature across the utility service areas for two of these programs (specifically, Energy Star Products and Home Energy House Call), denial of the

application to implement these programs by the IURC could raise the fixed costs for the programs for ULH&P and could affect their cost-effectiveness in Kentucky. As it turns out, the IURC denied the implementation of some programs and the expansion of the Home Energy House Call program in its May 25, 2005 Order in Cause No. 42612. In light of the IURC's denial, ULH&P has worked on alternate means to cost-effectively bring as many of the programs approved by the Kentucky Public Service Commission in Case No. 2004-00389 as possible.

B. Definitions

For the purposes of this Application, the following terms will have the meanings established in the Principles of Agreement, Demand Side Management (Exhibit 1 to the Application in Case No. 95-312, dated July 15, 1995):

1) **"DSM Revenue Requirements"** shall mean the revenue requirements associated with all Program Costs, Administrative Costs, Lost Revenues (less fuel savings), and the Shareholder Incentive.

2) **"Collaborative"** shall mean the ULH&P DSM Collaborative, which was established by the Signatories and other parties separately from this process. As noted above, there is a Residential Collaborative and a Commercial and Industrial Collaborative. Unless either collaborative is specifically identified, the term "Collaborative" will be used to collectively refer to both collaboratives.

3) **"Program Costs"** shall mean the costs incurred for planning, developing, implementing, monitoring and evaluating the DSM programs described in

Section XI of the Principles of Agreement Demand Side Management (pp. 11-19) and the DSM programs that have been approved by the Collaborative.

4) **"Administrative Costs"** shall mean the costs incurred by or on behalf of the collaborative process and that are approved by the Collaborative, including, but not limited to, costs for consultants, employees and administrative expenses.

5) **"Lost Revenues"** shall have the meaning in Section IV of the Principles of Agreement Demand Side Management.

6) **"Shareholder Incentive"** shall have the meaning in Section IV of the Principles of Agreement Demand Side Management.

7) **"DSM Cost Recovery Mechanism"** shall have the meaning in Section IV of the Principles of Agreement Demand Side Management.

8) **"Voucher"** shall mean the credit receipt the customer receives from a social service agency. The voucher can be used by the customer as a partial payment toward the utility bill.

II. STATUS OF CURRENT DSM PROGRAMS

ULH&P currently offers the following programs, the costs of which were recoverable through the DSM Cost Recovery Rider mechanism approved by the Commission in Case No. 2004-00389.

Program 1: Residential Conservation and Energy Education

Program 2: Residential Home Energy House Call

Program 3: Residential Comprehensive Energy Education Program (NEED)

Program 4: Program Administration, Development & Evaluation Funds

Program 5: Energy Education and Bill Assistance

Program 6: Power Manager

Program 7: Energy Star Products

Program 8: Energy Efficiency Website

Program 9: C&I High Efficiency Incentive

Under the current DSM Agreement and prior Commission Orders, the first four programs terminate at the end of 2005, unless the Commission specifically orders continuation of these programs, which ULH&P, with the consensus of the Collaborative members, requests in this application. The fifth program is a pilot program which extends through 2006. The sixth program is a direct load control program approved for implementation through the year 2007. The last three programs were approved in Order 2004-00389 to be implemented through 2009.

This section of the application provides a brief description of each current program, a review of the current status of each program, and information on any changes that may have been made to the programs. In addition, this section requests continuation of the Residential Conservation and Energy Education (low-income) program, the Home Energy House Call program, the Residential Comprehensive Energy Education (NEED) program and Program Administration, Development and Evaluation Funds.

Program 1: Residential Conservation and Energy Education

The Residential Collaborative is requesting approval to continue the Residential Conservation and Energy Education program designed to help the Company's income-qualified customers reduce their energy consumption and lower their energy cost. This program specifically focuses on LIHEAP customers who meet the income qualification level, *i.e.,* income below 150% of the federal poverty level. This program uses the

LIHEAP intake process as well as other community outreach to improve participation. The program provides direct installation of weatherization and energy-efficiency measures and educates ULH&P's income-qualified customers about their energy usage and other opportunities to reduce energy consumption and lower their utility bill.

The Company estimates that at least 6,000 customers (number of single family owner occupied households with income below $25,000) within ULH&P's service area may qualify for services under this program. The program has provided weatherization services for 251 homes in 2000, 283 homes in 2001, 203 homes in 2002, 252 homes in 2003, 252 homes in 2004 and 100 homes in the first six months of 2005.

This program is structured so that the homes needing the most work, and having the highest energy use per square foot, get the most funding. The program does this by placing each home into one of two "Tiers." This improves the cost-effectiveness of the program by allowing the implementing agencies to utilize their limited budgets where there is the most potential for savings. For each home in Tier 2, the field auditor uses the National Energy Audit Tool (NEAT) to determine which specific measures are cost effective for that home. The specific services provided within each Tier are described below.

The tier structure is defined as follows:

	Therm / square foot	kWh use/ square foot	Investment Allowed
Tier 1	0 < 1 therm / ft2	0 < 7 kWh / ft2	Up to $600
Tier 2	1 + therms / ft2	7 + kWh / ft2	All SIR ≥ 1.5 up to $4K

SIR = Savings - Investment Ratio

Tier One Services

Tier 1 services are provided to customers by ULH&P, through its subcontractors. Customers are considered Tier 1, if they use less than 1 therm per square foot per year and less than 7 kWh per square foot per year based on the last year of usage (weather adjusted) of Company supplied services. Square footage of the dwelling is based on conditioned space only, whether occupied or unoccupied. It does not include unconditioned or semi-conditioned space (non-heated basements). The total program dollars allowed per home for Tier One services is $600.00 per home.

Tier One services are as follows:

- Furnace Tune-up & Cleaning
- Furnace replacement if investment in repair over $500 (through Gas WX program)
- Venting check & repair
- Water Heater Wrap
- Pipe Wrap
- Waterbed mattress covers
- Cleaning of refrigerator coils
- Cleaning of dryer vents
- Compact Fluorescent Light (CFL) Bulbs
- Low-flow shower heads and aerators
- Weather-stripping doors & windows
- Limited structural corrections that affect health, safety, and energy up to $100

- Energy Education

Tier Two Services

ULH&P will provide Tier Two services to a customer, if they use at least 1 therm and/or 7 kWh per square foot per year based on the last year of usage of ULH&P supplied fuels.

Tier Two services are as follows:

- Tier One services plus:
- Additional cost-effective measures (with SIR $\geq$ 1.5) based upon the results of the NEAT audit. Through the NEAT audit, ULH&P can determine if the cost of energy saving measures will pay for themselves over the life of the measure as determined by a standard heat loss/economic calculation (NEAT audit) utilizing the cost of gas and electric service as provided by ULH&P. Such items can include but are not limited to attic insulation, wall insulation, crawl space insulation, floor insulation and sill box insulation. Safety measures applying to the installed technologies can be included within the scope of work considered in the NEAT audit as long as the SIR is greater than 1.5 including the safety changes.

ULH&P provides energy education to all customers in the program, regardless of placement in a specific tier.

To increase the cost-effectiveness of this program and to provide more savings and bill control for the customer, the Collaborative and ULH&P proposed in the

September 27, 2002 filing in Case No. 2002-00358 and subsequently received approval to expand this program to include refrigerators as a qualified measure in owner occupied homes. Refrigerators can consume a very large amount of electricity within the home. Through replacement of low efficiency units, it is estimated that customers can save an average of $96 per year. To determine replacement, the program weatherization provider performs a two-hour meter test of the existing refrigerator unit. If it is a low efficiency unit, as determined by this test, the unit is replaced. The program replaces approximately 40% of the units tested. Replacing with a new Energy Star qualified refrigerator, which uses approximately 400 kWh, results in an overall savings to the average customer of 1,280 kWh per year. In 2003, 116 refrigerators were tested and 47 were replaced. In 2004, 163 were tested with 73 replaced. For the first six months of 2005, ULH&P has tested 77 units and replaced 28 units. Due to the higher proportion of rental properties in ULH&P's service area, this replacement rate is less than expected based on Cinergy's experience with this program in Ohio. The refrigerator being replaced is removed from the home and destroyed in an environmentally appropriate manner to assure that the units are not used as a second refrigerator in the home or do not end up in the secondary appliance market.

An impact evaluation was completed on the weatherization program as well. As this is a small population, participants in the Ohio program were also used since the weatherization aspects of both programs are the same. This expansion to include additional homes increases the reliability of the results. A control group was also used to determine non-program changes and influences on the savings. The full report is available in Appendix A. The results show that across the total program an average of

623 kWh and 181 therms are saved by participants annually. Tier 1 customers save 229 kWh and 142 therms while Tier 2 customers save 698 kWh and 194 therms. The cost effectiveness model shows an overall combined UCT score of 0.93, with a Tier 1 score of 1.5 and a Tier 2 score of 1.15. Nationally, such low-income programs do not pass cost effectiveness tests so the Collaborative is excited about the level of these results. The other test results are as follows: the overall Total Resource Cost (TRC) Test is 0.93; the Ratepayer Impact (RIM) Test is 0.45; and the Participant Test is infinite. The test results for the refrigerator portion of the program are as follows: UCT is 1.42; TRC is 1.42; RIM is 0.75; and Participant Test is infinite.

Program 2: Residential Home Energy House Call

The Residential Collaborative is also requesting approval to continue the Home Energy House Call program at its existing levels. The Home Energy House Call (HEHC) program, implemented by ULH&P subcontractor Enertouch Inc. (dba GoodCents Solutions), provides a comprehensive walk through in-home analysis by a qualified home energy specialist to identify energy savings opportunities in homes. The energy specialist analyzes the total home energy usage, check the home for air infiltration, examines insulation levels in different areas of the home and checks appliances and heating/cooling systems. A comprehensive report specific to the customer's home and energy usage is then completed and mailed back to the customer within ten working days. The report focuses on building envelope improvements as well as low-cost and no-cost improvements to save energy. At the time of the home audit, the customer receives a kit containing several energy saving measures at no cost. The measures include a low-flow

showerhead, two aerators, outlet gaskets, two compact fluorescent bulbs, and a motion sensor night-light. The auditors will install the measures so customers can begin realizing an immediate savings on their electric bill or the customer may choose to install the measures themselves.

For the period of July 1, 2004 to June 30 of 2005, a total of 505 audits were completed in Kentucky. This surpasses the annual goal of 500. In 2003, HEHC began piggybacking on the work of some 500 students participating in the Kentucky National Energy Education Development (NEED) program. As part of the curriculum on energy conservation in the Kentucky NEED program, Home Energy House Call audits are offered on a first-come, first-serve basis. This combined program approach has led to increased participation in the HEHC program, increasing the program's cost effectiveness.

Customer satisfaction ratings for the new program to-date are very positive with a rating of 4.8 on a five- point scale for program.

Since the beginning of the program in 1996, more than 2,800 customers have participated comprising of 485 in 2000, 500 in 2001, 513 in 2002, 507 in 2003, 569 in 2004 and 297 in the first six months of 2005.

An evaluation of the program was completed and is included in Appendix B. The impact evaluation participant savings were proportionally weighted for the modeling with the average gas heat participant saving 6 therms per year and the average electric heat participants saving 666 kWh per year. As this is an informational program, it is anticipated that customer savings will increase as participants implement more of the audit recommendations over time. The results of the cost effectiveness for this program

are UCT of 3.38, a TRC of 3.38, a RIM of 1.02, and the Participant Test is infinite.

Program 3: Residential Comprehensive Energy Education

The Residential Collaborative requests approval to continue the Residential Comprehensive Energy Education program operated under subcontract by Kentucky National Energy Education Development (NEED). NEED was launched in 1980 to promote student understanding of the scientific, economic, and environmental impacts of energy. The program is currently available in 46 states, the U.S. Virgin Islands, and Guam.

The program has provided unbiased educational information on all energy sources, with an emphasis on the efficient use of energy. Energy education materials, emphasizing cooperative learning, are provided to teachers. Leadership Training Workshops are structured to educate teachers and students to return to their schools, communities, and families to conduct similar training and to implement behavioral changes that reduce energy consumption. Educational materials and Leadership Training workshops are designed to address students of all aptitudes and have been provided for students and teachers in grades K through 12.

The Kentucky NEED program follows national guidelines for materials used in teaching, but also offers additional services such as: hosting teacher/student workshops, sponsoring teacher attendance at summer training conferences, sponsoring attendance at a National Youth Awards Conference for award-winning teachers and students, and providing curricula, free of charge, to teachers.

Since October 1999, more than 500 teachers enrolled in the program with

approximately 135 teacher/student presentations, 250 teachers attending teacher workshops and over 3,000 students attending workshops. Overall, the program has reached teachers and students in 71 schools in the six counties served by ULH&P. There are currently 158 teachers enrolled in the program. At a minimum, it is estimated that these teachers have impacted over 4,000 students. In addition, many of the teachers have multiple classes, so the number is potentially higher. Students who attend workshops are encouraged to mentor other students in their schools – further spreading the message of energy conservation. Teams of high school students serve as facilitators at workshops. Through this approach, all grade levels are either directly or indirectly presented the energy efficiency and conservation message. Several of the student teams have made presentations to community groups, sharing their knowledge of energy, promoting energy conservation and demonstrating that the actions of each person impact energy efficiency. It is intended that these students will also share this information with their families and reduce consumption in their homes.

Due to efforts of the Kentucky NEED program, the Kentucky Division of Energy has been awarded a Special Projects grant from the U.S. Department of Energy. This Rebuild Kentucky project, which began in January 2002, established a new partnership to implement an Energy Smart Schools program in six Northern Kentucky counties. Kentucky NEED is a cost share partner in this project.

The program addresses 1) building energy efficiency improvements through retrofits, financed by use of energy saving performance contracts (ESPC) and improved new construction; 2) school transportation practices; 3) educational programs; 4) procurement practices; and 5) linkages between school facilities and activities within the

surrounding community. Successful elements of the Energy Smart Schools program will be marketed to other schools statewide.

To improve and better document the energy savings associated with the program, a change was made in 2004 adding a new survey instrument for use in the classroom and an energy savings "kit" as a teaching tool. New curriculum was developed around this kit and survey to allow teachers to have actual in-home measures assessed and implemented. The result of this change has demonstrated that measures are being installed in the home. These kits include CFL's, low-flow shower heads, faucet aerators, water temperature gauge, outlet insulation pads and flow meter bag.

The kits were tested in the spring of 2003 and began full application in the new school year beginning September 2003 when the science curriculum deals with these issues. The number of kits distributed from 2003-2005 totaled 985. For the first six months of 2005, 93 kits were distributed. Other activities in 2005 included: 100 teachers receiving NEED materials; 3 teacher/student training workshops: and the NEED project hosting an in-service with Northern Kentucky University to provide training and materials for education majors. The Glenn O. Swing School in Northern Kentucky produced the 2004-2005 State School of the Year award for student energy efficiency program. These students attended the national NEED conference in Washington, D.C. summer of 2005.

An impact evaluation of this was completed and attached as Appendix C. This evaluation shows through the classroom surveys that behavior changes have been made and that students are implementing measures through provision of the energy kits. The study found, based on the equipment saturations, baseline consumption patterns, and

installation rates, the average participant saved between 240 and 360 kWh and between 10 and 16 therms per year. This translates to first year average cost savings of between $25 and $38, assuming rates of $0.07/kWh and $0.80/therm. The cost effectiveness model shows a UCT of 1.57 for the program. The TRC is 1.57; the RIM is 0.64; and the Participant Test is infinite.

Program 4: Program Administration, Development, & Evaluation Funds

The Collaborative requests approval to continue this program that captures costs for the administration and support of the Collaborative and ULH&P's overall DSM effort. In addition these funds are used for program development and evaluation. Program development funds are utilized for the redesign of programs and for the development of new programs or program enhancements such as the refrigerator replacement portion of the Residential Conservation and Energy Education program. Funds have also been utilized for impact evaluation and cost-effectiveness tests that are included as appendices to this filing. Funds going forward will be used to again monitor, evaluate and analyze these programs to improve cost effectiveness. While total funds have not been spent for the twelve-month period ending June 30, the evaluation studies were not completed until after July 1 so these funds will continue to be needed to cover costs for the current year's activities as well as future evaluations.

Program 5: Pilot Program: Home Energy Assistance Plus (renamed *Payment Plus*)

Since January of 2002 the Residential Collaborative and ULH&P have been testing an innovative home energy assistance program called Payment Plus. The pilot program

was designed to impact participants' behavior (*e.g.*, encourage meeting utility bill payments as well as eliminate arrearages) and to generate energy conservation impacts. That program was extended with Order 2004-00389 as a pilot through 2006 looking at both the early participants and new participants each year.

The pilot program has three parts:

1. Energy & Budget Counseling – to help customers understand how to control their energy usage and how to manage their household bills, a combined education/counseling approach is used.
2. Weatherization – participants in this program are required to have their homes weatherized as part of the normal Residential Conservation and Energy Education (low-income weatherization) program unless weatherized in past program years.
3. Bill Assistance – to provide an incentive for these customers to participate in the education and weatherization, and to help them take control of their energy bills, payment assistance credits are provided to each customer when they complete the other aspects of the program. The credits are: $200 for participating in the energy efficiency counseling, $150 for participating in the budgeting counseling, and $150 to participate in the Residential Conservation and Energy Education program. If all of the requirements are completed, a household could receive up to a total of $500. Current funding allows for approximately 100 homes to participate per year.

This program is offered over six winter months per year starting in November. Customers are tracked and the program evaluated after two years to see if customer energy consumption has dropped and changes in bill paying habits have occurred.

In the current update, the "Estimates of the Energy Effects of the Payment Plus

Pilot Program's Energy Education Workshop" study (Appendix A) examined customer energy usage records for a period of one to three years before the program and for one to two years following the program (depending on record availability). However, the analysis of the Payment Plus Program is based on a small population of participants (please see the report discussion of sample size). The study estimated the energy consumption changes due to the educational component of the Payment Plus Program. The results of the estimated energy impact of the educational component include:

1. The energy education component of the Payment Plus Programs may result in a decrease in kWh consumption of about 2,127-2,661 kilowatt-hours per year.

2. Estimates of therm savings from the educational components are not as close as the results of the kilowatt-hour analysis; however, 40-217 therms per year can be attributable to the educational workshops of the Payment Plus Program.

The findings indicate that the training and weatherization the participants received has resulted in decreased energy consumption. Based on these results, ULH&P is very optimistic about this program and will continue with the pilot as approved in Order 2004-00389. A further evaluation will be completed for the status update report for the September 2006 DSM filing.

Program 6: Power Manager

The purpose of the Power Manager program is to reduce demand by controlling

residential air conditioning usage during peak demand conditions in the summer months. The program is offered to residential customers with central air conditioning. ULH&P attaches a load control device to the customer's compressor to enable ULH&P to cycle the customer's air conditioner off and on when the load on ULH&P's system reaches peak levels. Customers receive financial incentives for participating in this program based upon the cycling option selected. If a customer selects Option A, their air conditioner is cycled to achieve a 1 kW reduction in load. If a customer selects Option B, the air conditioner is cycled to achieve a 1.5 kW load reduction. Incentives are provided at the time of installation: $25 for Option A and $35 for Option B. In addition, when a cycling event occurs, a Variable Daily Event Incentive based upon marginal costs is also provided.

The cycling of the customer's air-conditioning system will have minimal impact on the operation of the air-conditioning system or on the customer's comfort level. The load control device has built-in safe guards to prevent the "short cycling" of the air-conditioning system. The air-conditioning system will always run the minimum amount of time required by the manufacturer. The cycling simply causes the air-conditioning system to run less which is no different than what it does on milder days. Research from other programs including previous CG&E and ULH&P programs has shown that the indoor temperature should rise approximately one to two degrees for control Option A and l approximately two to three degrees for control Option B. Additionally, the indoor fan will continue to run and circulate air during the cycling event.

The initial design of Power Manager has been structured on the same basic principles as ULH&P's innovative PowerShare® program. Power Manager will couple

direct load control with a flavor of "real time pricing" through the Variable Daily Event Incentive structure as described above. By implementing the Variable Daily Event Incentive structure, ULH&P can educate customers on the real time cost of electricity. ULH&P will continue to explore opportunities to cross-market the Power Manager program with ULH&P's other DSM programs thus tying both conservation and peak load management together as one package.

As of the end of June, ULH&P already had a total of 3537 customers enrolled. ULH&P expects to meet the program goals of 5000 switch installations by the end of 2005. The modeling results for Power Manager has a UCT of 1.9 with a TRC of 1.9, a RIM of 1.9, and the Participant Test is infinite. The Power Manager program has already been approved for implementation through 2007. ULH&P is providing the test results with this filing since this is the first year of the program in which we can evaluate actual implementation results. ULH&P activated the program eight times in the period of June through August 2005 due to the hot weather and high market prices for power. The program operated well and resulted in an estimated peak load reduction of 3 MW on the peak day.

Program 7: Energy Star Products

As approved in Order 2004-00389, the Energy Star Products program provides market incentives and market support through retailers to build market share and usage of Energy Star products. Special incentives to buyers and in-store support stimulate demand for the products and make it easier for store participation. The programs targets Residential customers' purchase of specified technologies through retail stores and special sales events. The first year of the program focuses on compact fluorescent lamps (bulbs) and torchiere

lamps. An additional measure, clothes washers, was also evaluated. While the clothes washer passed the UCT, it was considered non-economic due to the cost to participants. The Residential Collaborative chose to not implement this measure as part of the program. Technologies may change in the future years of program operation based on new technologies and market responses.

There are several market barriers addressed through the program. The first is price. Purchase rewards are provided for customers to lower the initial cost of the item and stimulate interest. The second barrier is retailer participation. Through retail education, in-field sales support (signs, ads, *etc.*), and stimulated market demand retailers stock more product, provide special promotions and plan sales strategies around these Energy Star products. Additional support is provided through manufacturer relationships that often can reduce prices through special large-scale purchases. Coordination will occur with the national Energy Star initiatives such as the "Change a Light, Change the World" promotion.

The intent is to provide incentives or "customer rewards" through special in-store "Instant Reward" events that occur in stores at the time of purchase. Technology incentives start at the following levels:

- Lighting = $2 per bulb — Savings per unit = 66 kWh
- Torchiere Lamps = $20 — Savings per unit = 388 kWh

Training is provided to the sales staff of the retailers and sales aids are provided.

ULH&P has contracted with the Wisconsin Energy Conservation Corporation (WECC) to provide this service. Recognized as the national leader in this program and located in the region, ULH&P is taking advantage of WECC's current activity to control

costs and leverage other activity.

To keep the program cost effective, the administrative and support of this program was proposed to be shared with Cinergy's PSI territory. This would allow ULH&P to take advantage of a bigger program to spread administrative costs. The PSI program was not approved by the State of Indiana which resulted in two outcomes. First, program startup was delayed until after August 1, 2005. Consequently there have been no expenditures, activities or results to report in this filing. However the contract has been awarded and the first campaigns and activities are planned for this fall. The second outcome was a revised approach to the market to reduce administrative costs and maintain cost-effectiveness of the program. Instead of year-around ongoing activities for the program, special campaigns will be held at different times of the year and at different locations to promote these Energy Star Products. This shorter term more intense effort will result in the original participation estimate of 40,000 CFL's and 500 CFL Torchieres per year provided to customers with the same budget even without the Indiana activity, thus keeping the program cost effective. An Energy Star Products program will be filed yet this year for potential implementation in Cinergy's CG&E territory. If the program is implemented in Ohio, the ULH&P program will be reviewed for potential expansion back to the previous approach.

Program 8: Energy Efficiency Website

As approved in Order 2004-00389, Energy Zone™ is ULH&P's enhanced energy efficiency web site. It provides ULH&P customers the most advanced programs, tools, and measures available to manage their energy and achieve load impacts. The website features a multi-tiered design providing the consumer the opportunity to receive quick customized

energy tips and, if they choose, the ability to complete an online audit and receive ten self-install energy efficiency measures. The marketing of the Energy Efficiency Website is an initiative meant to diversify and increase the reach of ULH&P's DSM programs.

To get customers to the website for its efficiency recommendations, an incentive of an Energy Efficiency Starter Kit will be sent to customers who complete an audit. The kit provides the customer with the following measures:

(1) 15w CFL Bulb
(1) 20w CFL Bulb
(1) 2.0 GPM Earth Showerhead
(1) Dual Setting Touch Flow Kitchen Aerator with Swivel
(1) 1.5 GPM Standard Faucet Aerator
(1) LimeLite Nite Light
(1) Pkg. Toilet Dye Tablets
(2) Switch/Outlet Draft Stoppers
(1) Energy Star Efficiency Guide

The average cost per kit is $17 with the expectation of distributing 1,050 kits in 2006.

The largest barrier to success of the program is making the customer aware of the website. For those customers interested in how they use energy and lowering their energy bill, the website contains an audit tool, an appliance efficiency calculator, efficient products e-catalog and a library of energy information. The challenge is to get them to visit the website, which ULH&P expects to occur primarily through direct marketing to the end user and promotion through the Call Center Customer Service Representative. Since Indiana's expansion of this program did not occur, ULH&P plans to promote this program through its current E-bill customers.

The revised program has been developed during the first six months of 2005 with implementation to occur during the last two quarters of this calendar year.

Program 9: C&I High Efficiency Incentive

Order 2004-00389_approved a new program for ULH&P to provide incentives to small commercial and industrial customers to install high efficiency equipment in applications involving new construction, retrofit, and replacement of failed equipment. This program was to be jointly implemented with the Cinergy PSI territory to reduce administrative costs and leverage promotion. The current PSI program has been around for many years and promotes limited prescriptive incentives for motor, lighting and cooling equipment types. The approved ULH&P program not only included these technologies but expanded the program to include additional technologies to cover more applications and end uses. These same expanded technologies were included in the PSI Indiana filing, but funding for the expanded technologies was rejected. In the interest of cost-effectiveness, the ULH&P program technology offering is being scaled back from the original proposal to include lighting, motors and HVAC technologies only. However, a new C&I expanded program is being proposed in Cinergy's CG&E territory. If it is approved there, the ULH&P technologies will again be expanded. The PSI program denial has two outcomes. First the ULH&P program initiation was delayed until after July 1. The program has now been started on a limited basis with Trade Ally mailing and meetings held in September, 2005. The second outcome is a limitation in the technologies with incentives. The technologies to be initially offered in both ULH&P and PSI territory include the following:

High-Efficiency Incentive Lighting

- 8 ft 1 & 2 Lamp T-8/ E Ballast
- 8 ft HO 1 & 2 T-8/ EB
- 4 ft 1-4 T-8 /EB
- 3 ft 1-4 T-8 /EB
- 2 ft 1-4 T-8 /EB

- LED Exit Signs New/Electronic
- CFL Fixture
- CFL Screw in
- T-5 with Elec Ballast replacing T-12
- T-5 HO with Elec Ballast replacing T-12
- Tubular Skylight
- Hi Bay Fluorescent 4LT5HO
- Hi Bay Fluorescent 6LF32T8
- Hi Bay Fluorescent 8L 42W CFL

High Efficiency Incentive HVAC

- Packaged Terminal AC
- Packaged Terminal HP
- Unitary AC & Rooftop
    - <65,000 BTUH 1 Phase
    - <65,000 BTUH 3 Phase
    - 65-135,000 BTUH
    - 135-760,000 BTUH
    - 760,000 + BTUH
- Unitary & Rooftop HP
    - <65,000 BTUH 1 Phase
    - <65,000 BTUH 3 Phase
    - 65-135,000 BTUH
    - 135-760,000 BTUH
    - 760,000 + BTUH
- Ground Source HP – Closed Loop
- Water Source HP – Building Loop

High Efficiency Incentive Motors 20 to 250 hp

Greater than 1500 hours per year

High Efficiency Pumps 1.5 to 20 hp

Incentives are provided through the market providers (contractors and retail stores) based on ULH&P's cost-effectiveness modeling but with a high-end limit of 50% of measure cost. Using the ULH&P cost-effectiveness model assures cost-effectiveness over the life of the measure. Primary delivery of the program is through existing market channels, equipment providers and contractors. ULH&P is using its current DSM team to manage and support the program. Additional outside technical assistance is being

retained to analyze technical applications and provide customer/market provider assistance as necessary. ULH&P also will provide education and training to its market providers to understand the program and the appropriate applications for the technologies. Full program operations are expected to be initiated in the last quarter of 2005.

III. CALCULATION OF THE 2006 DSM COST RECOVERY MECHANISM

The reconciliation of the DSM rider involves a comparison of projected vs. actual program expenses, lost revenues, and shared savings as well as inclusion of the prior year's reconciliation. The actual cost of program expenditures, lost revenues, and shared savings for this reporting period was $1.65 million. The projected level of expenditures, including the ramp up of the programs that were delayed, is $2.27 million.

Lost revenues are computed using the applicable marginal block rate net of fuel costs and other variable costs times the estimated kWh savings. The estimate of kWh savings is based upon the results from the recently completed impact evaluation studies (see Appendices A, B and C) and actual customer participation.

With respect to shared savings, ULH&P utilized the shared incentive of 10% of the total savings net of the costs of measures, incentives to customers, marketing, impact evaluation, and administration. The savings are estimated by multiplying the number of participants for each measure times the UCT value and then subtracting the program costs.

Outline of DSM Activity

ULH&P is planning to offer the following DSM programs in ULH&P's service territory in 2006:

Program 1: Residential Conservation and Energy Education (Low-Income Weatherization)

Program 2: Residential Home Energy House Call

Program 3: Residential Comprehensive Energy Education Program (NEED)

Program 4: Program Management, Development and Evaluation Funds

Program 5: Pilot Program Energy Education & Bill Assistance Program (Payment Plus)

Program 6: Power Manager

Program 7 Energy Star Products

Program 8 Energy Efficiency Website

Program 9 C&I High Efficiency Incentive

2006 DSM Riders

In accordance with the Commission's Order in Case No. 95-312, ULH&P, with the consent of the Collaborative, submits the proposed DSM Riders (Appendices E and F). The riders are intended to recover projected 2006 program costs, lost revenues and shared savings, and to reconcile the actual DSM revenue requirement as previously defined to the revenue recovered under the DSM Riders for the period July 1, 2004 through June 30, 2005. Appendix D, page 1 of 5, tabulates the reconciliation of the DSM Revenue Requirement associated with the prior reconciliation, ULH&P's program costs, lost revenues, and shared savings between July 1, 2004 and June 30, 2005, and the revenues collected through the DSM Riders over the same period. The calculation of lost revenues and shared savings only covers the period from the time of the Order in Case 2004-00389 to June 30, 2005. The true-up adjustment is based upon the difference between the actual DSM revenue requirement and the revenues collected during the period July 1, 2004

through June 30, 2005.

The actual DSM revenue requirement for the period July 1, 2004 through June 30, 2005, consists of: 1) program expenditures, lost revenues, and shared savings and 2) amounts approved for recovery in the previous reconciliation filing. The actual program costs incurred are reflected in column (2) labeled "Projected Program Costs 7/2004 to 6/2005."

Appendix D, page 5 of 5 contains the calculation of the 2006 Residential DSM Riders. The calculation includes the reconciliation adjustments calculated in Appendix D, page 1 of 5 and the DSM revenue requirement for 2006. The residential DSM revenue requirement for 2006 includes the costs associated with the Residential DSM programs, the program development funds, the pilot Energy Education and Bill Assistance Program (Payment Plus), the Power Manager program, the Energy Star Products program, the Energy Efficiency Website program, and the associated net lost revenues and shared savings (Appendix D, pages 2 and 3 of 5). Total revenue requirements are incorporated along with the projected electric and gas volumes (Appendix D, page 4 of 5) in the calculation of the Residential DSM Rider.

Appendix D, page 5 of 5 also contains the calculation of the 2006 Commercial and Industrial DSM Rider. The calculation includes the reconciliation adjustments calculated in Appendix D, page 1 of 5 and the DSM revenue requirement for 2006. The Commercial & Industrial DSM revenue requirement for 2006 includes the costs associated with the commercial and industrial DSM program (C&I High Efficiency Incentive) and the associated net lost revenues and shared savings (Appendix D, pages 2 and 3 of 5). Total revenue requirements are incorporated along with the projected electric volumes (Appendix

D, page 4 of 5) in the calculation of the Residential DSM Rider.

The Company's proposed 2006 DSM Riders, shown as Appendices E and F, replace the current DSM Riders, which were implemented in the first billing cycle of March, 2005. The electric DSM rider, proposed to be effective with the first billing cycle in January 2006, is applicable to service provided under ULH&P's electric service tariffs as follows:

Residential Electric Service provided under:

Rate RS, Residential Service, Sheet No. 30

Non-Residential Electric Service provided under:

Rate DS, Service at Secondary Distribution Voltage, Sheet No. 40

Rate DT, Time-of-Day Rate for Service at Distribution Voltage, Sheet No. 41

Rate EH, Optional Rate for Electric Space Heating, Sheet No. 42

Rate SP, Seasonal Sports, Sheet No. 43

Rate GS-FL, Optional Unmetered General Service Rate for Small Fixed Loads, Sheet No. 44

Rate DP, Service at Primary Distribution Voltage, Sheet No. 45

Rate RTP-M, Real Time Pricing – Market-Based Pricing, Sheet No. 59

Rate RTP, Experimental Real Time Pricing Program, Sheet No. 99

The gas DSM rider is applicable to service provided under the following residential gas service tariff:

Rate RS, Residential Service, Sheet No. 30

ULH&P respectfully requests that, if the Commission cannot issue an Order within

the time-frame sought in this filing, the Company be permitted to continue the current set of DSM programs and to collect revenues under the existing DSM Riders until the effective date of new tariffs issued under the Commission's Order in this filing.

Calculation of the Residential Charge

The proposed residential charge per kWh for 2006 was calculated by dividing the sum of: 1) the reconciliation amount calculated in Appendix D, page 1 of 5, and 2) the DSM Revenue Requirement associated with the DSM programs projected for calendar year 2006, by the projected sales for calendar year 2006. DSM Program Costs for 2006 include the total implementation costs plus program rebates, lost revenues, and shared savings. The calculations in support of the residential recovery mechanism are provided in Appendix D, page 5 of 5.

Calculation of the Non-Residential Charge

The proposed non-residential charge per kWh for 2006 was calculated by dividing the sum of: 1) the reconciliation amount calculated in Appendix D, page 1 of 5, and 2) the DSM Revenue Requirement associated with the DSM program projected for calendar year 2006, by the projected sales for calendar year 2006. DSM Program Cost for 2006 includes the total implementation costs plus program rebates, lost revenues and shared savings.

Allocation of the DSM Revenue Requirement

As required by KRS 278.285 (3), the DSM Cost Recovery Mechanism attributes the costs to be recovered to the respective class that benefits from the programs. The amounts associated with the reconciliation of the Rider are similarly allocated as demonstrated in Appendix D, page 2 of 5. The costs for the Power Manager program are

fully allocated to the residential electric class, since this is the class directly benefiting from the implementation of the program. As required, qualifying industrial customers are permitted to "opt-out" of participation in, and payment for, the DSM programs. In fact, all of ULH&P's Rate TT customers met the "opt-out" requirements prior to the implementation of the DSM Riders in May 1996, and are not subject to the DSM Cost Recovery Mechanism.

WHEREFORE, ULH&P respectfully requests that the Commission approve the DSM programs and revised rider charges as requested herein.

Respectfully submitted,

THE UNION LIGHT, HEAT AND POWER COMPANY

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing filing was served on the following via ordinary United States mail, postage prepaid, this 29th day of September, 2005:

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Final Report

Estimates of the Energy Effects of the Payment Plus Pilot Program's Energy Education Workshop

A Look at the Energy Consumption Of Pilot Participants and Kentucky & Ohio Weatherization Participants

APPENDIX A

September 13, 2005

Prepared for

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Table of Contents

Executive Summary

About This Report

This report presents the results of an impact evaluation of Cinergy's Payment Plus Pilot Program and compares these results with the results from an impact evaluation of the Weatherization Program offered by Cinergy in Kentucky and Ohio. The Payment Plus Pilot program provides energy efficiency, conservation and financial management training to participants along with home weatherization services. The Ohio and Kentucky Weatherization program provides weatherization services. For comparison purposes the Kentucky and Ohio Weatherization Program participants are grouped together for this analysis in order to obtain a more reliable sample that more accurately estimates the impacts from the Weatherization programs. These two weatherization programs' participants are grouped into one assessment group because the program offerings and the participant weather is nearly identical allowing for a more rigorous assessment.
The analysis for the Pilot Program includes all participants that had enough reliable energy consumption data to conduct the analysis.

The Pilot program was first implemented in January 2002 and ran through May of the same year (Pilot Program I). The program was evaluated, modified and implemented again in June 2003 and ran through November 2003 (Pilot Program II). The Pilot Program serves high-arrears low-income customers who are also typically LIHEAP participants. The Kentucky and Ohio Weatherization programs serve LIHEAP customers, but does not provide a formal energy education. The homes examined in this study were weatherized between July 2002 and October of 2003.

The effect of the added education and training components of Cinergy's Payment Plus Pilot Program was evaluated by comparing the Pilot Participants (both Pilot I and Pilot II) to participants that only received only weatherization services. The difference in energy consumption between these two groups provides an estimate of the effects that can be attributable to the education that the participants received as a part of their participation in the Payment Plus Pilot Programs.

The first section of this report details the energy impacts of the Payment Plus Program as they compare to the energy savings realized by the participants of the Kentucky and Ohio Weatherization Programs. The second section dissects these results to estimate the level of energy savings that can be attributable to the educational component of the Payment Plus Program.

Summary of Findings

TecMarket Works examined customer energy consumption records for a period of one to three years before the program and for one to two years following the program (depending on record availability). However, the analysis of the Payment Plus Program is based on a small population of participants (please see the discussion on sample size in "Energy Use Analysis and Findings"). The results of this analysis are presented in the

Energy Use and Analysis section of this report. The combined energy impact analysis results include:

1. Both kilowatt-hour and therm savings increase consistent with the level of Weatherization services provided. Weatherization program participants save on average 181 therms and 623 kilowatt-hours per year. When looking at the program components, Tier 1 participants save 142 therms and 229 kilowatt-hours, Tier 2 participants save 194 therms and 698 kilowatt-hours, and Tier 3 participants save 217 therms and 1104 kilowatt-hours per year. The more weatherization services received, the more savings are realized. However, this analysis does not look at the cost effectiveness of these investments, just savings.

2. The kilowatt-hour savings of the participants of the Kentucky and Ohio weatherization program are, on average, 623 kilowatt-hours per year. The savings of the Payment Plus program participants are significantly higher, with weatherized participants saving an average of 2,588 kWhs per year, and those that were not weatherized savings 2,813 kWhs per year.

3. The therm savings of the participants of the Kentucky and Ohio weatherization program are, on average, 181 therms per year for those that decreased their consumption. The savings of the Payment Plus program participants who decreased consumption, reduced their consumption significantly more, with weatherized Pilot II participants saving an average of 299 therms per year Pilot II participants that were not weatherized realized savings of only 106 therms per year, on average.

TecMarket Works estimated the energy consumption changes due to the increased educational component of the Payment Plus Program. The results of this analysis are presented in the *Estimates of Energy Savings Attributable to the Educational Components of the Pilot Program* section of this report. The results of the estimated energy impact of the educational component include:

1. The energy education component of the Payment Plus Programs results in a decrease in kWh consumption of about 19.8% - 22.0% kilowatt-hours per year. The results from the two methods used for estimating these savings (explained in section 2) are statistically similar and should be regarded as a strong indication of the effects of the educational workshops.

2. Estimates of therm savings from the educational components are not as similar across the two analysis approaches, indicating that from 49 - 217 therms per year can be attributed to the educational workshops of the Payment Plus Program.

The findings presented below indicate that the training and weatherization services received by the participants of both programs have resulted in decreased energy consumption.

Introduction

This report presents the results of an impact evaluation of Cinergy's Payment Plus Pilot Program. This program provides energy efficiency, conservation and financial management training to participants along with home weatherization services. The program was first implemented from January through May of 2002 (Pilot Program I). The program was evaluated, modified and implemented again in June through November 2003 (Pilot Program II).

The Kentucky and Ohio Weatherization program participants are LIHEAP customers that have received weatherization services from Cinergy, but they have not received a formal energy education, similar to that provided in the Pilot Program. Comparing the Pilot Participants savings (both Pilot I and Pilot II) with those that are only weatherized provides a way to estimate the impacts that can be attributed to the Pilot Program education efforts. It should be noted that the Weatherization component of the program was modified from a three Tier system to a two Tier system during the period of this analysis. Findings for the Tier 2 and Tier 3 Weatherization participants include this change.

For a detailed description of the Payment Plus Pilot Programs, please refer to the August 2004 report by TecMarket Works titled "An Evaluation of the Payment Plus Pilot Program; Results of a Process, Energy Consumption and Arrearage Effects Evaluation".

Evaluation Methodology

The study methodology consisted of a comparison group adjusted, weather-normalized energy use analysis to determine if participation in the Pilot Programs or the Weatherization Program resulted in energy savings.

Energy savings for the Pilot Program II participants and the Kentucky and Ohio weatherization recipients were identified by assessing the change in energy usage of the participants compared to the change in consumption of a comparison group of eligible customers who did not participate in the program or receive any weatherization services. The Princeton Scorekeeping Method (PRISM™) software was utilized in this analysis. PRISM™ is capable of providing weather-normalized data analysis of energy use.

An analysis was conducted on six groups of participants to identify changes in both kWh and therm consumption. The groups are:

1. Pilot II weatherized participants,
2. Pilot II participants who were not weatherized, and
3. All Kentucky and Ohio weatherization recipients that were not participants in the Payment Plus Program.
4. Tier 1 Kentucky and Ohio weatherization recipients.
5. Tier 2 Kentucky and Ohio weatherization recipients.
6. Tier 3 Kentucky and Ohio weatherization recipients.

Sample sizes for the Payment Plus groups are small, and should be considered as preliminary findings until there are enough pilot program participants to conduct a more rigorous assessment.

All analyses used a comparison group of 725 matched customers. These customers were LIHEAP recipients for three or four years out of the four years of data provided, and who had two or three years of billing data (depending on data availability).

After the comparison group was selected, further cleaning was conducted to eliminate those customers that did not have sufficient data for the study or included accounts in which there was a tenant change. These customers were analyzed with PRISM to obtain a comparison group that had clean and statistically reliable and similar consumption profiles. This "cleaning effort" left approximately 725 customers out of the original 1,317 customers that could be used for the matched comparison group for both the Payment Plus participants and the Weatherization participants. These customers were then randomly assigned false participation dates to establish the pre- and post-program analysis periods for the control group.

Participants' data was also separated into pre and post periods. Participants who were weatherized after the educational workshops had their pre-participation data begin before the workshops, and their post-participation period beginning after the weatherization measures were installed at their home. Data between these two dates is not included in

the analysis. Participants who were not weatherized, or who were weatherized before the pre-participation period started, had their post-participation data begin one month after participating in the workshops.

The data that was used for this analysis was provided from Cinergy's monthly-metered account database. The data was provided in therms and kWh per month per customer for up to three years before the program and for up to twenty-four months after the program.

This report presents the savings in annual kilowatt-hours of electricity and therms of natural gas, and percent savings. Mean and median summaries are provided for each of the six groups of customers. A description of the PRSIM™ software is provided in the following section.

PRISM™ Analysis

Program impacts were examined using PRISM™ Advanced Version 1.0 software for Windows developed at Princeton University's Center for Energy and Environmental Studies.

PRISM™ is a commercially available analysis software package designed to estimate energy savings for heating and/or cooling loads in residential and small commercial buildings. The current Advanced Version permits users to enter and edit data from a variety of sources, to carry out sophisticated reliability checks, to eliminate cases that do not meet standards, and to display results in graphical and textual forms.

PRISM™ allows the user to estimate the change in energy consumption per heating or cooling degree-day for the periods before and after measures are installed in homes by combining energy consumption and weather data. By subtracting the estimate of energy use per degree-day after the measures are installed from the value before the measures are installed and multiplying by an appropriate annual degree-day value, total annual normalized energy savings can be estimated.

Degree-days vary from year to year, which potentially presents a problem for deciding on a value for annual degree-days. This is especially problematic if one is trying to determine paybacks. For example, one could normalize the savings to the period preceding the installation of measures or the period after. If one selects a warm period, then savings may be too low and paybacks too long. If one selects a cool period for normalization, then the estimate of paybacks may be too high.

PRISM™ mitigates this problem by effectively averaging temperatures over a twelve-year period and providing an estimate of degree-days that is typical for the region of the study, although not one that necessarily matches the specific weather conditions in any given year. The advantage of normalizing to the PRISM™ recommended period is that the results will be consistent from study to study over a period of time. The same end can be achieved by consistently using the same user selected time frame. For this study, we chose the period from January 1, 1992 through December 31, 2002, recommended by PRISM™ support.

A major feature of PRISM™ is the ability to evaluate cases against reliability criteria. The first criterion is the R^2 value (explained variance), a measure of the fit of the degree-day and energy consumption data, statistically described as the amount of variance in energy consumption explained by changes in degree-days. Energy consumption is assumed to be a linear function of degree-day. R^2 varies from 0 to 1. If R^2 is close to zero, it means that factors other than outdoor temperature are driving energy consumption. If the R^2 is close to 1 it means that outdoor temperature is almost entirely responsible for energy consumption. Outdoor temperature is usually the overriding factor in both heating and air conditioning fuel use and the goal of the weatherization program is to improve the thermal characteristics of the building shell and the fuel use rate of the heating and air conditioning systems to reduce fuel use related to outdoor temperature. The PRISM™ default for R^2 is at .7. This means that at least seventy percent of energy use is temperature dependant. If less than 70 percent of the energy used in a building is

temperature related, then it becomes difficult to understand the effects of the weatherization measures and the case is dropped from the analysis. For therm analysis, we used .7 in this study although most of the R^2 values in this study were .85 or higher. In other words, 85 percent or more of heating fuel use in this study is temperature driven. PRISM™ has a second measure of reliability which is the coefficient of variation for the normalized annual consumption (CV(NAC)). Normalized annual consumption is the amount of fuel consumed by a unit for a typical weather year. When estimating normalized annual consumption some estimates may have a very tight error band while others may have a band that is quite wide. In estimating the average consumption we want estimates of unit consumption that are very close to the actual and we want to eliminate values that may not be very close because they may cause the estimates of the average consumption for all units to vary significantly from the actual. Because the variation in the estimates of normalized annual consumption generally will be higher in homes with higher consumption, the estimate of the variation in normalized annual consumption is divided by the estimate of normalized consumption to obtain CV(NAC). This provides a standardized measure of the variability of the normalized consumption that is comparable across homes. The PRISM™ default for CV(NAC) is 7 percent and that is the value used in this study.

Energy Use Analysis and Findings

One of the goals of the Payment Plus Program is for participants to learn ways to be more energy efficient. In this analysis, we examined and compared energy usage of Pilot Program II participants, and a comparison group of non-participants, over the years before and after the program. We also compared the usage of the Pilot participants who were weatherized, to the Cinergy's Kentucky and Ohio weatherization participants to identify an estimate of the effects of the energy efficiency education the Payment Plus participants received through the Pilot Program.

Sample Size

Many of the customers in both the participant and the control group did not have a history of account information prior to program enrollment, or they had moved shortly after the program, making their consumption data unavailable or not relevant for the analysis. As a result, many participant accounts had to be eliminated from this study. The Pilot II results are based on thirty-one weatherized participants and eighteen non-weatherized participants (49 total). The group of Kentucky and Ohio weatherization program participants consists of 541 customers that had sufficient and valid account history to be included in the analysis. The comparison group consists of approximately 725 low-income customers with pre-participation payment and consumption histories that are similar to the participants.

Despite the small size of the Pilot groups, the precision levels are sufficient enough to draw conclusions of the overall effects of the program. However, as the program continues over the next few years, these findings will need to be confirmed. This report allows policy makers to have evidence of program effects early in the life of the program's efforts.

Statistical Precision

All of the analytical runs conducted in PRISM™ provide a R^2 and CV(NAC) value that indicates the strength of the results provided. The higher the R^2 value (maximum value is 1.0), and the lower the CV value, the more reliable the results are. All therm results presented in this report have a minimum R^2 value of .70 and a maximum CV value of 7.0%, making the results presented highly reliable. The kilowatt-hour results have no minimum R^2 value, but a maximum CV value of 7.0%. For more information on PRISM™ and these statistics, please see the section on methodology.

Section 1: Changes in Energy Consumption

Changes in Electrical Consumption

Kentucky/Ohio weatherization and Pilot II were successful at assisting customers with reducing their electrical consumption. Figure 1 shows the six groups analyzed in PRISM™ and their electrical savings per year. (There was not enough data to assess the group of Pilot I participants.)

Pilot II participants who were not weatherized reduced their consumption by 2,813 kWhs per year, after being adjusted for the comparison group, which increased their consumption. Pilot II participants that were weatherized decreased their consumption by an average of 2,588 kWhs per year. That is, both weatherized and non-weatherized Pilot II participants saved energy on their electric accounts. However, data variability in electric consumption is typically significant and we expect these values to be somewhat different each time this analysis is conducted.

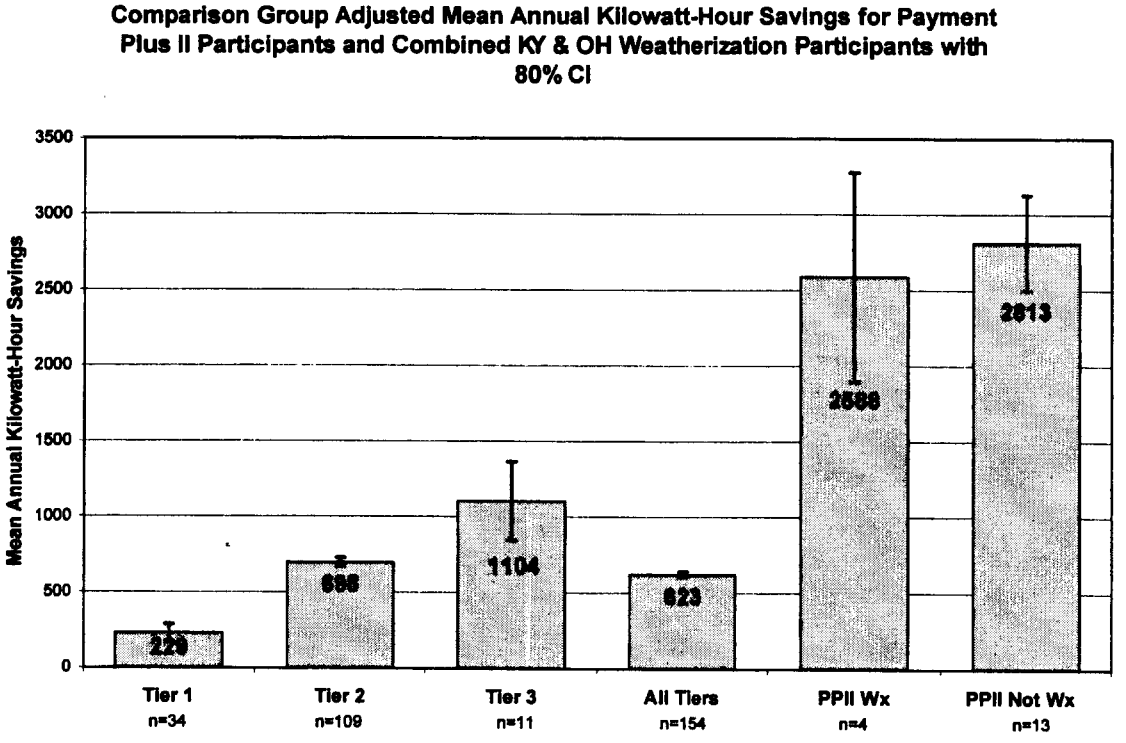

Figure 1. Comparison Group Adjusted Mean Annual Kilowatt-Hour Savings of Kentucky and Ohio Weatherization Recipients and Pilot II Participants

Kentucky and Ohio residents that received weatherization services from Cinergy reduced their consumption by an average of 623 kWhs per year. Those in Tier 1 saved only 229 kwhs/year, however, the customers placed in higher Tiers achieved higher savings. The

significance of these savings is that this group did not receive educational services. Their savings are due to weatherization services only.

The greatest electric savings were achieved by Pilot II participants who were not weatherized. These customers had the greatest mean annual kWh savings, with an adjusted net savings of 2,813 kWhs per year. However, again, these savings should be considered suggestive rather than confirmative (because of the small sample size) and we expect that while these savings relationships will continue in future studies, we also expect the amounts of savings to fluctuate.

PRISM™ also calculates the net percent change in electrical consumption, which is presented in Figure 2. The comparison group increased their electrical consumption by 3.3%, while Pilot participants, on average, decreased their consumption. Weatherized Pilot II participants had the greatest decrease in consumption with an average 27.7% comparison group-adjusted net reduction. Pilot II participants that were not weatherized also achieved impressive net electric savings by decreasing their consumption 19.8% without weatherization services. Kentucky and Ohio weatherization recipients only slightly decreased their electric consumption by, on average, 5.7%. This lack of savings could be attributed to the fact that this group received only limited educational services, indicating that the energy education workshop component of Payment Plus is successful in decreasing the electrical consumption of the participants. Other estimates of the savings attributed to the educational component will be discussed in Section 2 of this report.

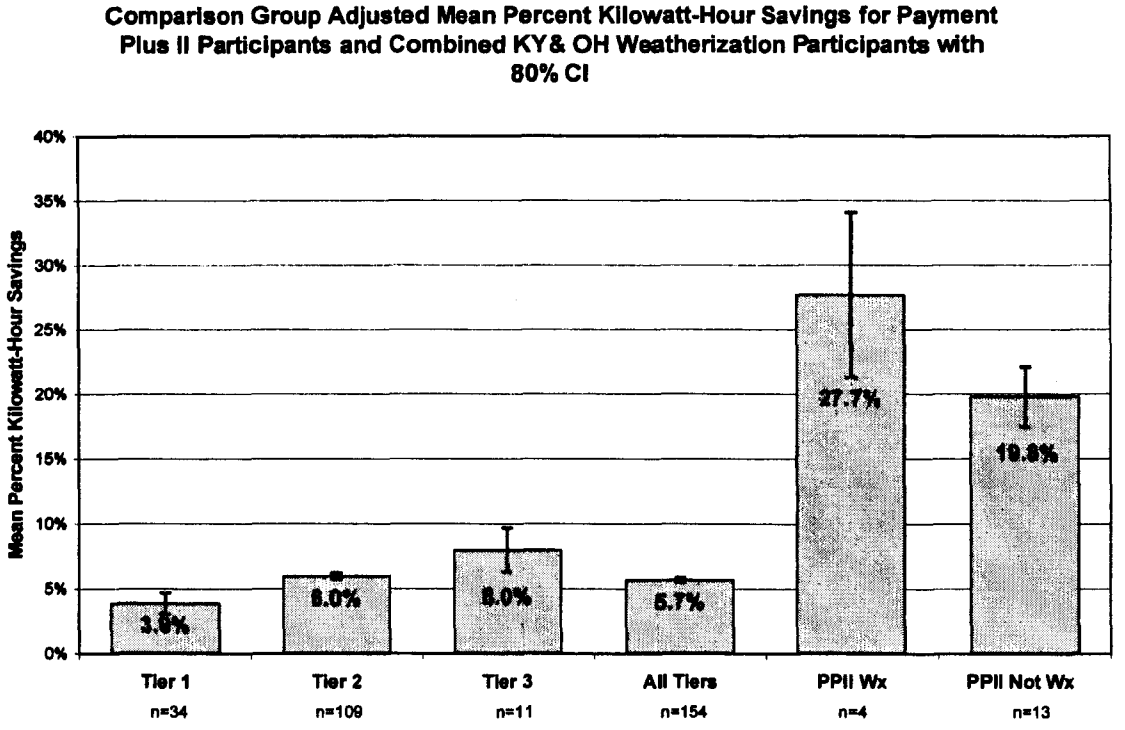

Figure 2. Comparison Group Adjusted Mean Percent Kilowatt-Hour Savings of Kentucky and Ohio Weatherization Recipients and Pilot II Participants

Figure 1 and Figure 2 examined the mean net program electric savings. However, an examination of the median savings is also informative. The median kWh savings provides an alternate perspective on the energy savings associated with participation in the Pilot programs and Kentucky and Ohio weatherization programs. Pilot II participants who were not weatherized had a net median savings of 2,585 kWhs/year, compared to a mean savings of 2,588 kWhs/year (see Figure 1). Pilot II participants who were weatherized have a similar result, with a median savings of 2,379 kWhs/year compared to a mean increase of 2,813 kWhs/year, indicating that some of the participants greatly increased their consumption, bringing the mean to a high average increase across the entire group. This indicates that the program was very effective at reducing gross savings for the weatherized participants. More than half of the Kentucky and Ohio weatherization recipients decreased their consumption, as the median savings of 260 kWh/yr is positive. Those in Tier 1 have a median that is negative, indicating that over half of those in that group increased their consumption; however, the mean savings is still positive, allowing the group, as a whole to decrease their consumption.

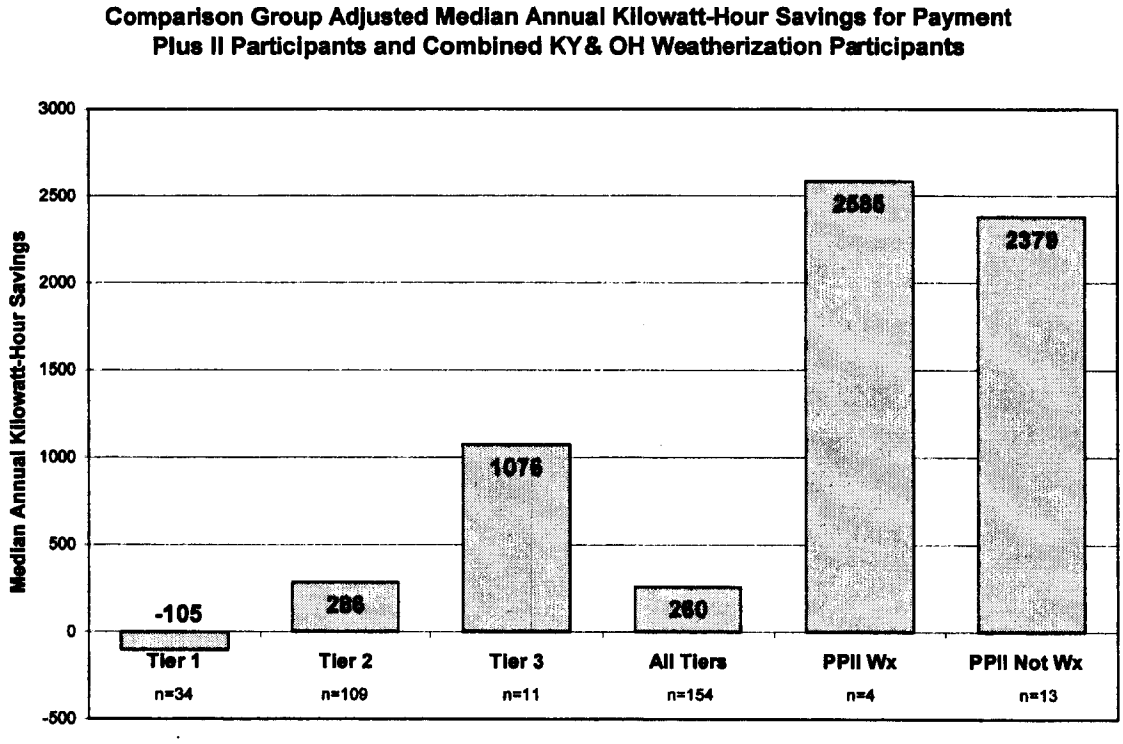

Figure 3. Comparison Group Adjusted Median kWh Savings of Kentucky and Ohio Weatherization Recipients and Pilot II Participants

Figure 4 shows the median percent change in electric consumption. All Pilot participant groups analyzed decreased their electrical use by a median comparison group-adjusted value of 18.6% to 31.2%, while the Kentucky and Ohio weatherization program participants only managed a comparison group-adjusted median savings of 4.0%.

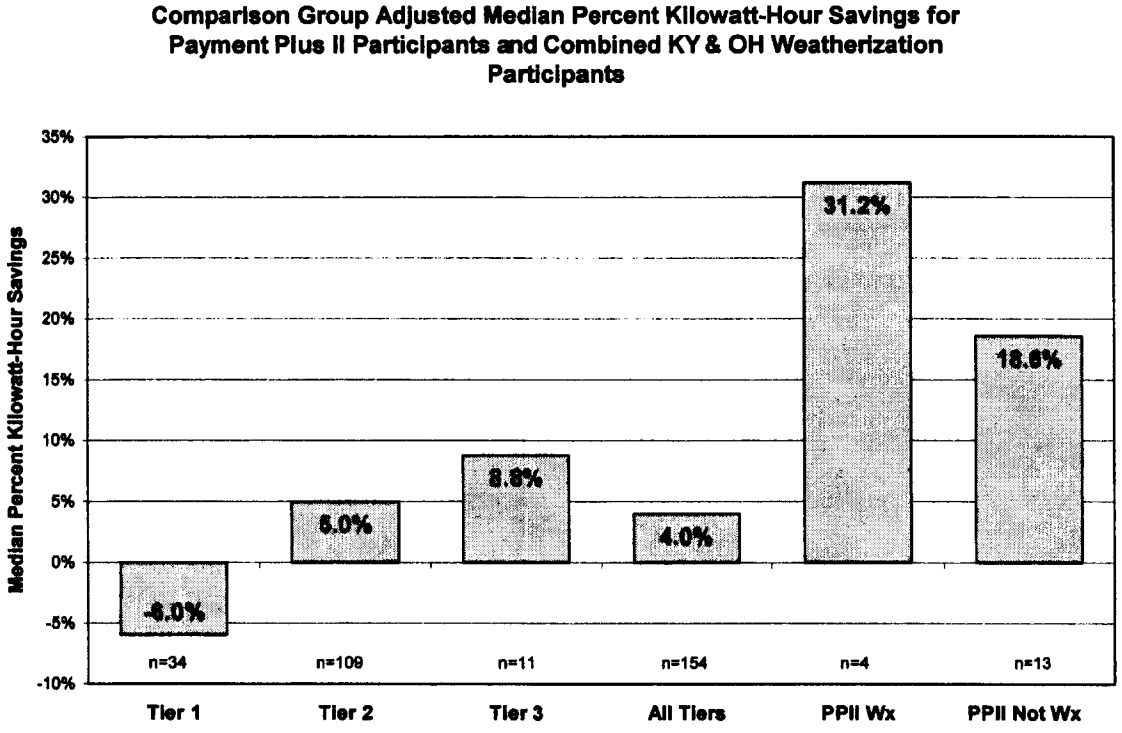

Figure 4. Comparison Group Adjusted Median Percent kWh Savings of Kentucky and Ohio Weatherization Recipients and Pilot II Participants

Changes in Natural Gas Consumption

Participants also decreased the amount of natural gas they consumed after participating in the program. The comparison group used in this analysis is the same group that is used in the electrical analysis, however; in this case, the control group slightly decreased their consumption, by about 15 therms per year.

Figure 5 shows that weatherized participants have an advantage when it comes to reducing natural gas consumption. Weatherized Pilot II participants reduced their consumption by 299 therms per year. Kentucky and Ohio weatherization recipients reduced their consumption by 92 therms per year. Pilot II participants that were not weatherized were only able to save an average of 49 control-adjusted therms per year, slightly less than the Tier 1 weatherization participants.

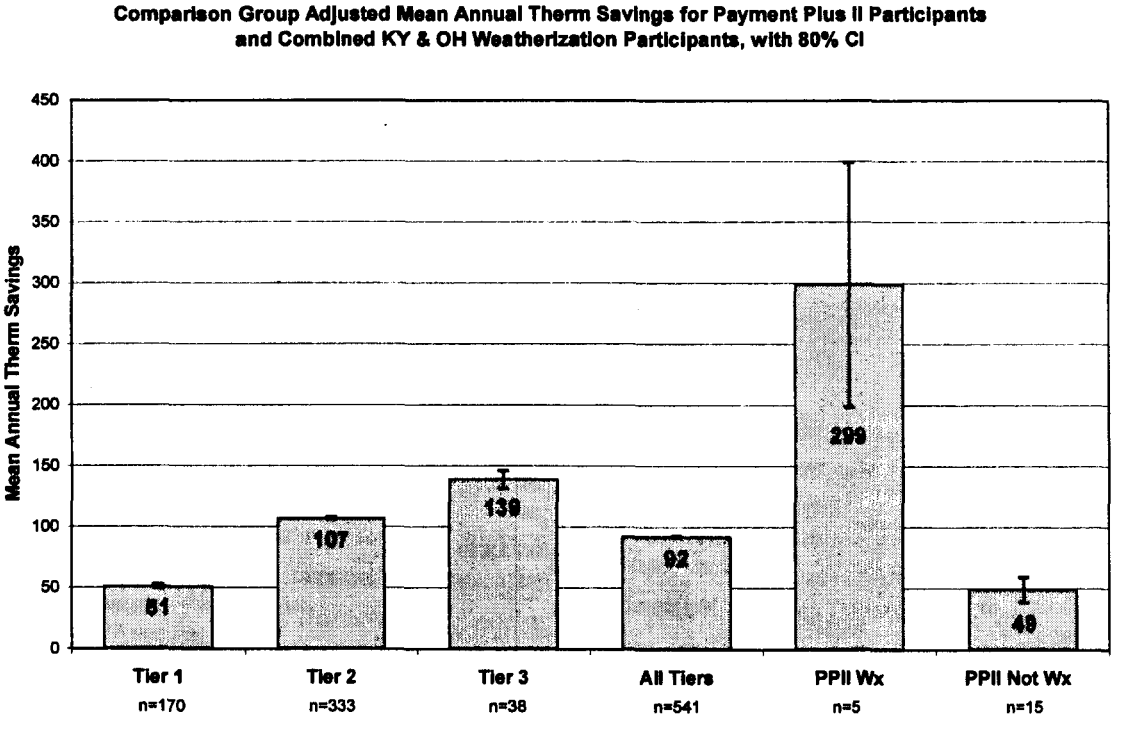

Figure 5. Comparison Group Adjusted Mean Therm Savings of Kentucky and Ohio Weatherization Recipients and Pilot II Participants

The average percent change in therm consumption shows a similar result, as seen in Figure 6. The participants who were not weatherized were able to decrease their consumption, by 6.8%, while weatherization allowed the Payment Plus participants to decrease their consumption by an average 20.0%. The Kentucky and Ohio weatherization recipients' consumption was reduced by an average 8.6%.

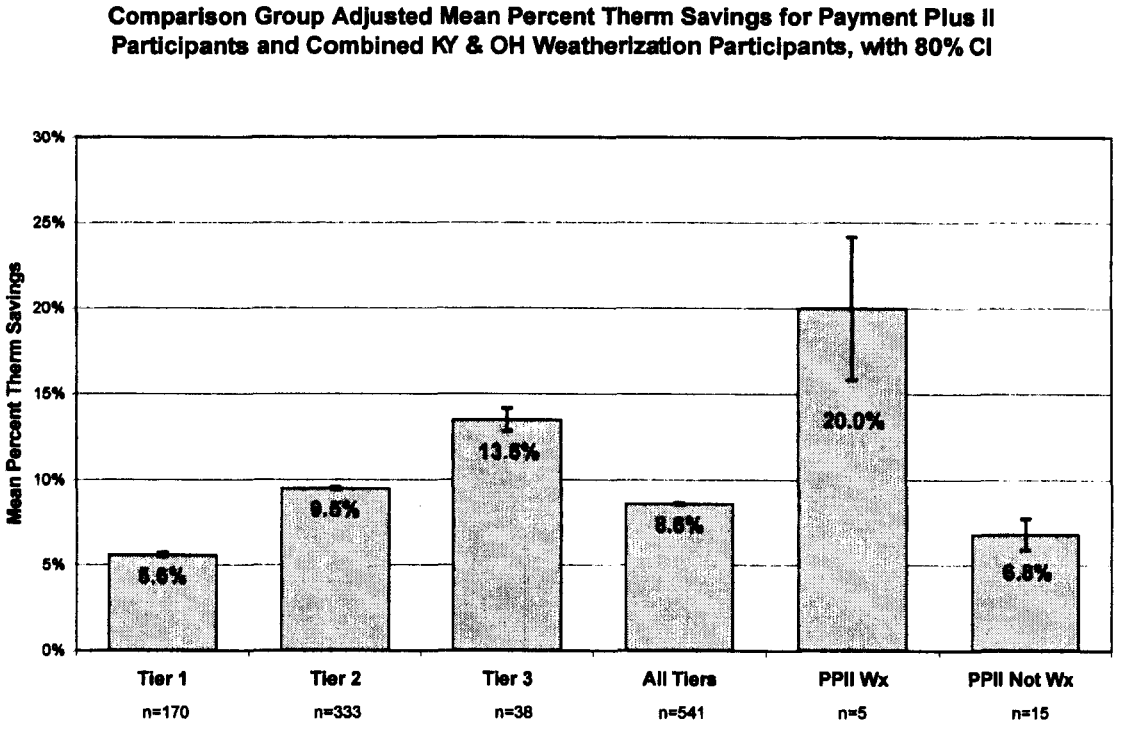

Figure 6. Comparison Group Adjusted Mean Percent Therm Savings for Kentucky Weatherization Recipients and Pilot II Participants

An assessment of the median savings aid the understanding of these results. The mean savings is high for the weatherized Payment Plus participants group, with a 20% reduction equal to 299 therms/year, however, the median savings, as shown in Figure 7 is 184 therms/year, indicating that there is a substantial sub-group that has experienced a high level of reduction in therm consumption. The other three groups have median scores that are similar to the mean therm consumption reductions, indicating that the average change is also the most expected change.

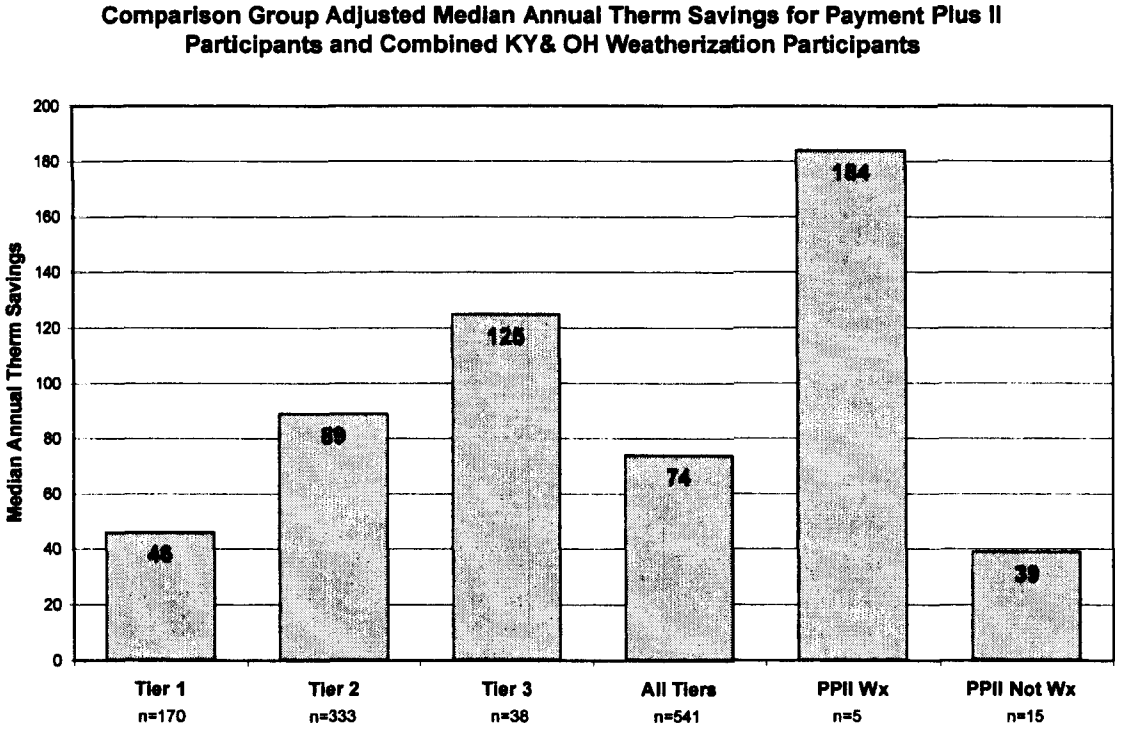

Figure 7. Comparison Group Adjusted Median Therm Savings for Kentucky Weatherization Recipients and Pilot II Participants

Figure 8 shows the median percent savings, and indicates that the Pilot II participants who were weatherized have the greatest amount of savings, with a median 18.1% reduction in natural gas consumption.

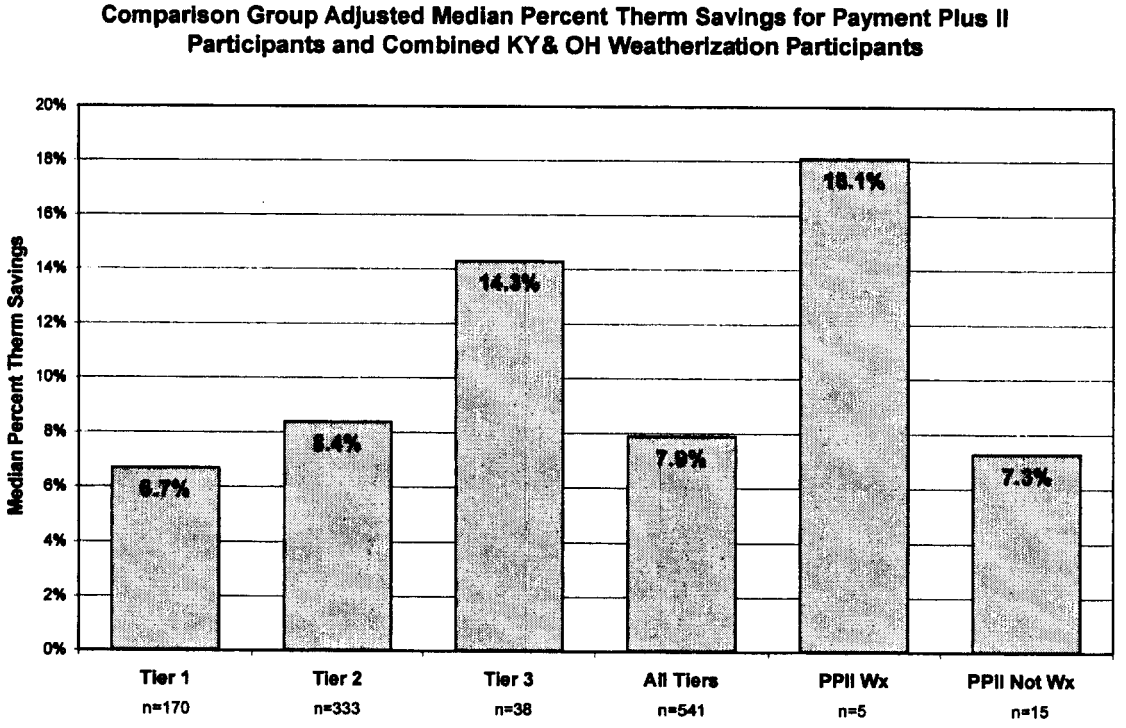

Figure 8. Comparison Group Adjusted Median Percent Therm Savings of Pilot II Participants

Changes in Natural Gas Consumption for those that Decreased their Consumption

We also looked at the changes in natural gas consumption for only those Kentucky and Ohio Weatherization customers who decreased their usage. Due to the fact that a house cannot consume more energy after weatherization takes place unless there are behavioral changes, we felt it was more representative of non-lifestyle changes (lifestyle changes include people added to the family, illness, etc.) by using the changes in consumption for those who decreased consumption.

Removing the weatherized customers who increased their natural gas consumption from the analysis results in higher therm savings, as reported in Figure 9. With the customers who increased their consumption included in the analysis, Kentucky and Ohio Weatherization participants had an average savings of 92 therms/year, without these increasers, savings are 181 therms/year. Figure 10 below provides the mean percent changes in therm consumption.

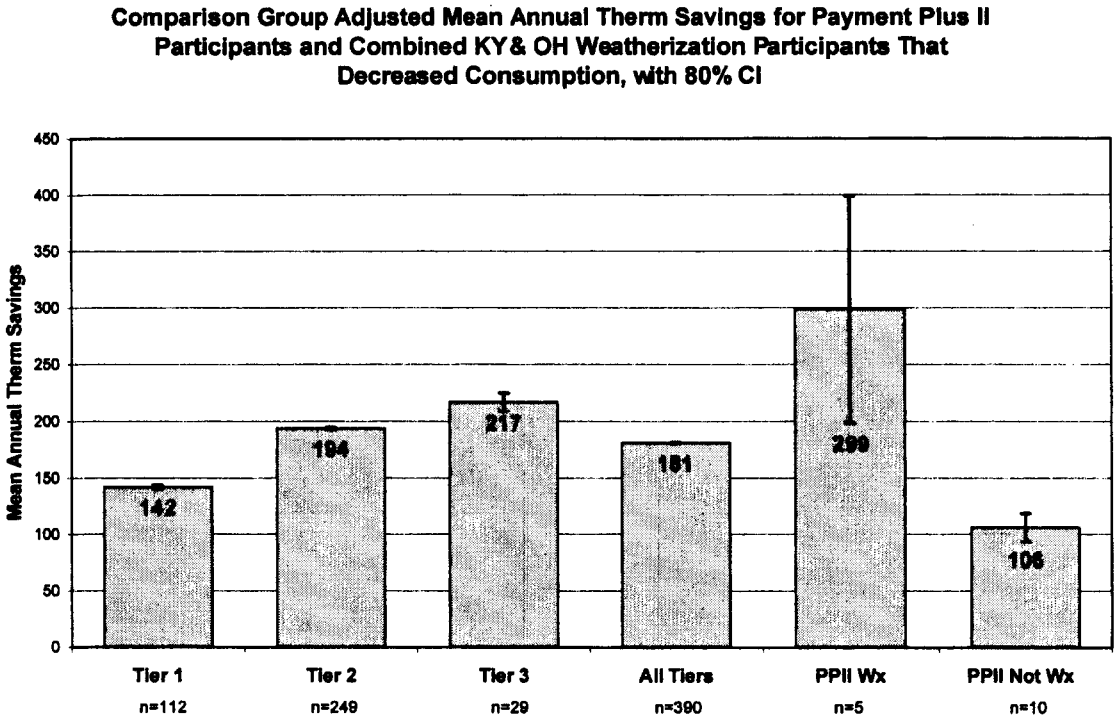

Figure 9. Comparison Group Adjusted Mean Therm Savings of Kentucky and Ohio Weatherization Recipients and Pilot II Participants (Decreasing Consumption Only)

Those in Tier 3 had the highest percent therm savings, with an average 21.3% decrease in therm consumption.

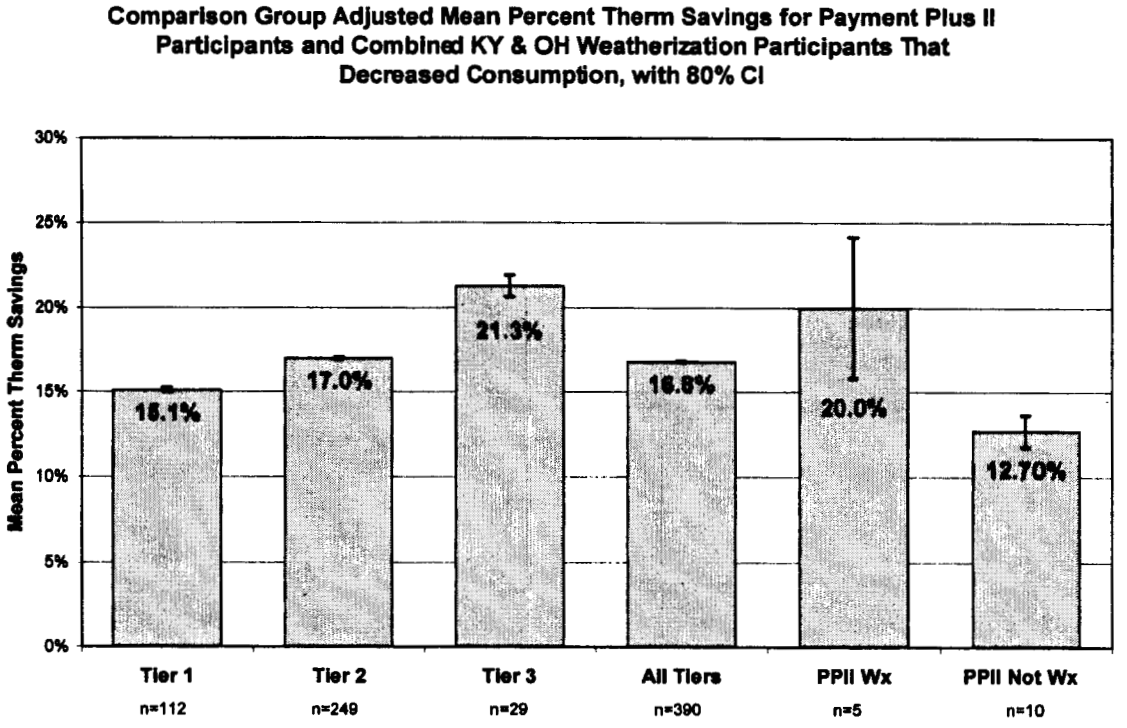

Figure 10. Comparison Group Adjusted Mean Percent Therm Savings for Kentucky and Ohio Weatherization Recipients and Pilot II Participants (Decreasing Consumption Only)

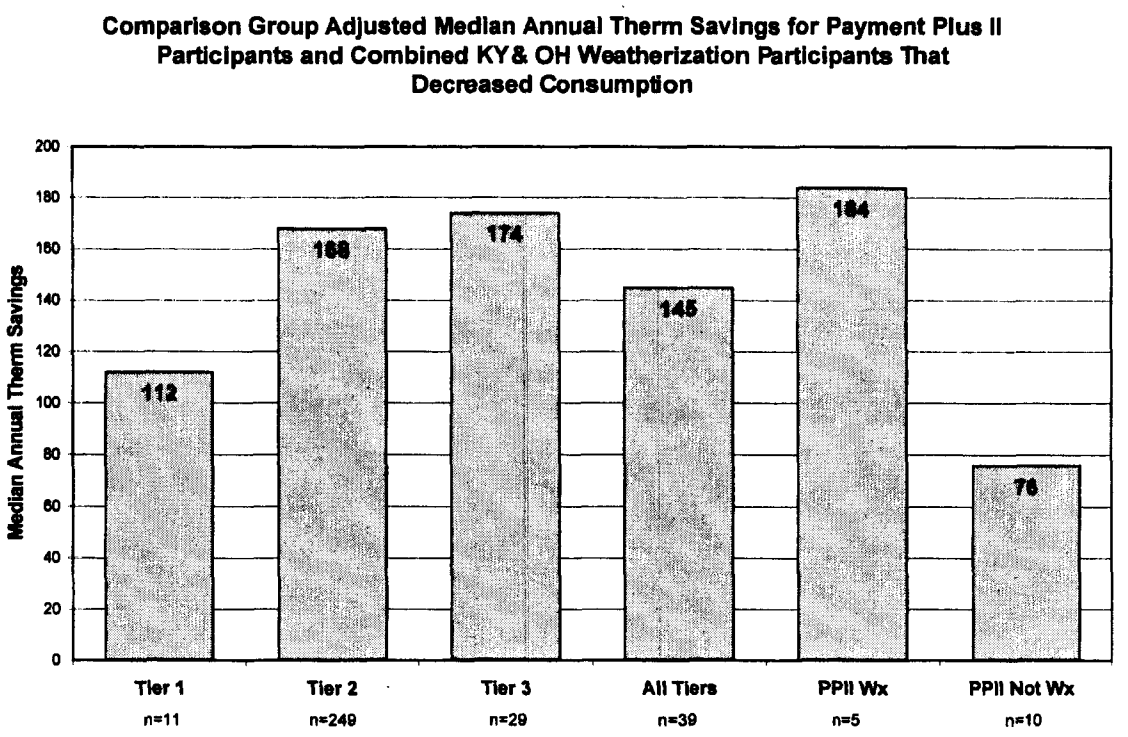

Figure 11. Comparison Group Adjusted Median Percent Therm Savings for Kentucky and Ohio Weatherization Recipients and Pilot II Participants (Decreasing Consumption Only)

In each of these groups, the mean (Figure 9) is larger than the median (Figure 11), meaning that for each of these groups, there are a number of customers with very high savings that are driving the higher means.

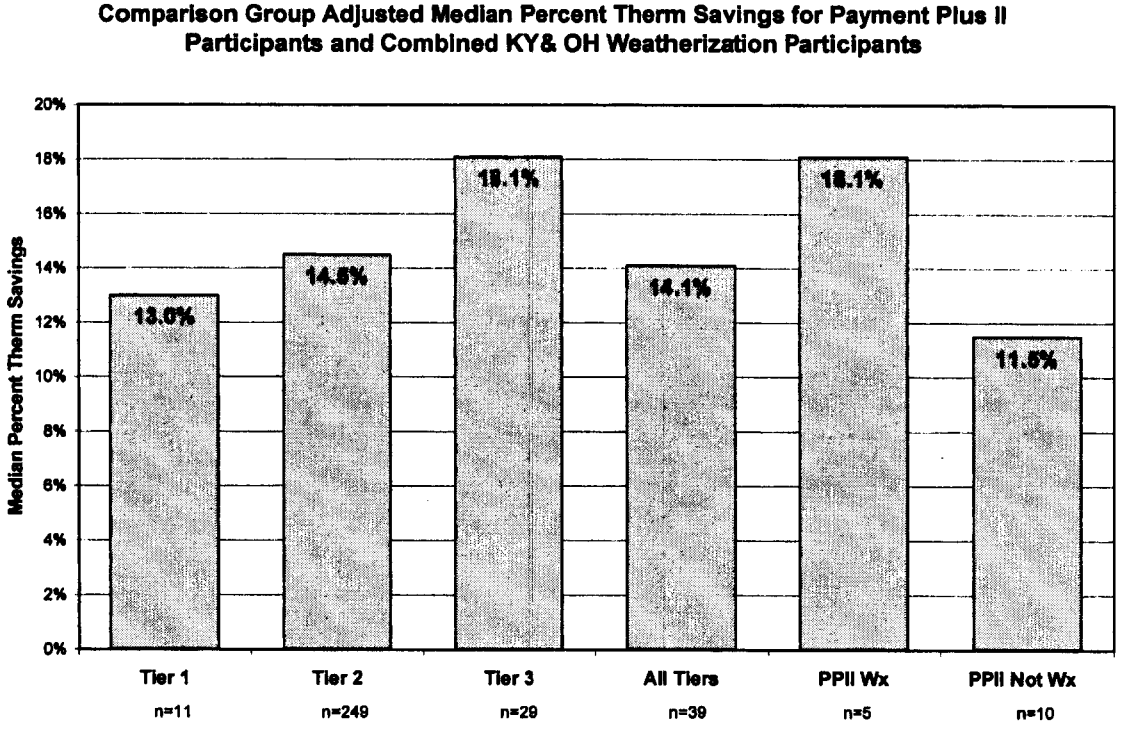

Figure 12. Comparison Group Adjusted Median Percent Therm Savings of Kentucky and Ohio Weatherization Participants (Decreasing Consumption Only)

Section 2: Estimates of Energy Savings Attributable to the Educational Components of the Pilot Program

This section will look at two different estimates for identifying energy savings that can be attributed to the energy education workshop component of the Payment Plus Pilot Program. Sample sizes for the Payment Plus groups are small, and should be considered as preliminary findings until there are enough pilot program participants to conduct a more rigorous assessment.

Estimate 1: This estimate takes the savings of Pilot II participants who were weatherized and who went through the energy education workshop. The values presented are the savings from the Pilot II participants (who received the education), less the savings of the Kentucky and Ohio weatherization participants (who did not receive the expanded education).

Pilot II Participant Savings	–	Kentucky and Ohio Participant Savings	=	Effect of Education
(weatherization + education)	–	(weatherization)	=	education

The values were previously adjusted by the same comparison group, so no further adjustment calculations are needed.

Estimate 2: Eighteen of the Pilot II workshop participants did not receive weatherization services from Cinergy (note there is an unknown potential for these participants to receive other assistance from other agencies); therefore, their savings are based solely on what they learned during the energy education workshops offered through the Pilot Program. In this group, all of the savings are therefore attributable to the effect of education, as that is the only service that they received from the program.

Electrical Consumption Savings Estimates

Annual electric savings that can be attributed to the educational component of the Pilot programs range from 1,965 kilowatt-hours per year to 2,813 kilowatt-hours per year (as seen in Figure 13), depending on the estimation approach used.

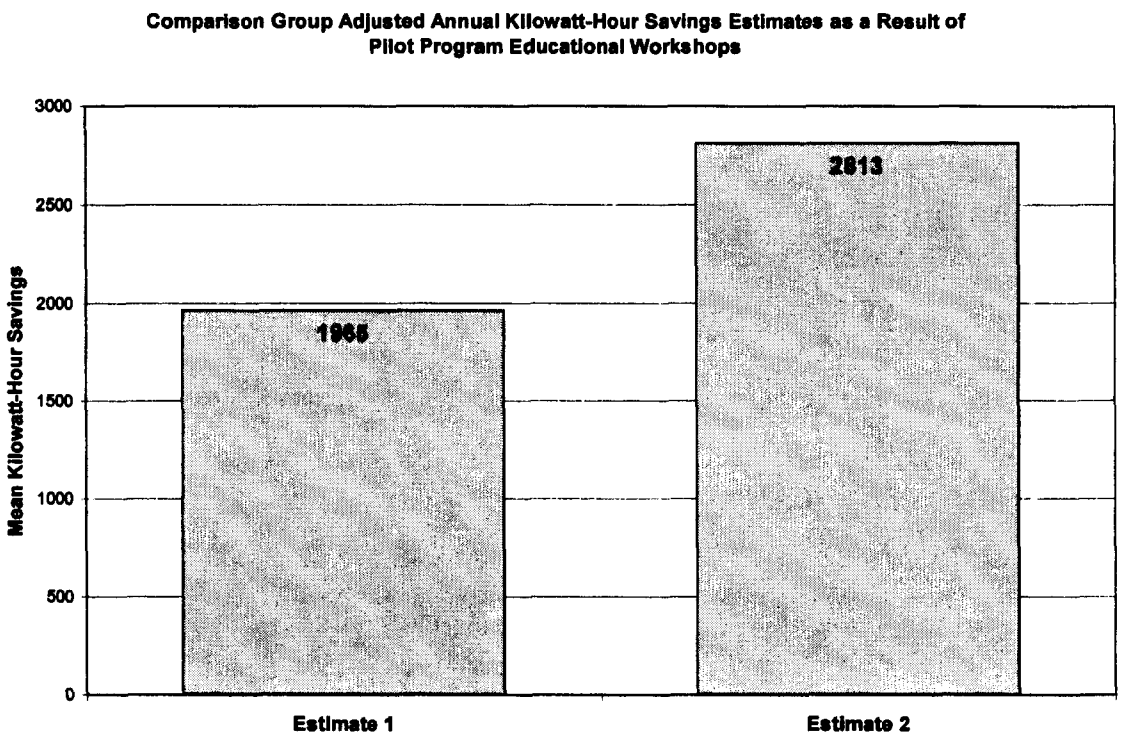

Figure 13. Comparison Group Adjusted Annual Kilowatt-Hour Savings Estimates

Estimate 1 used the savings from the Kentucky and Ohio weatherization participants less the savings from the Payment Plus participants who received weatherization services. Using this approach, the savings are estimated at 1,965 kilowatt-hours per year.

Estimate 2 uses the mean savings of the Payment Plus II participants that went through the educational workshop on energy efficiency, but did not receive weatherization measures. This approach results in an average 2,813 kilowatt-hours savings per year.

Giving both of these estimation approaches equivalent rating provides an average kilowatt-hour savings attributable to the educational component of the Payment Plus program of 2,389 kilowatt-hours per year.

Because of overall consumption levels of the different types of participants, the percent savings that can be attributed to the educational workshop tells a slightly different story. The savings estimates range from 19.8% to 22.0% attributed to the educational component of the Pilot programs. In these estimates, the lowest savings is from Pilot II participants that did not receive weatherization services and whose savings can be directly attributed to the workshop they attended as a Pilot program participant.

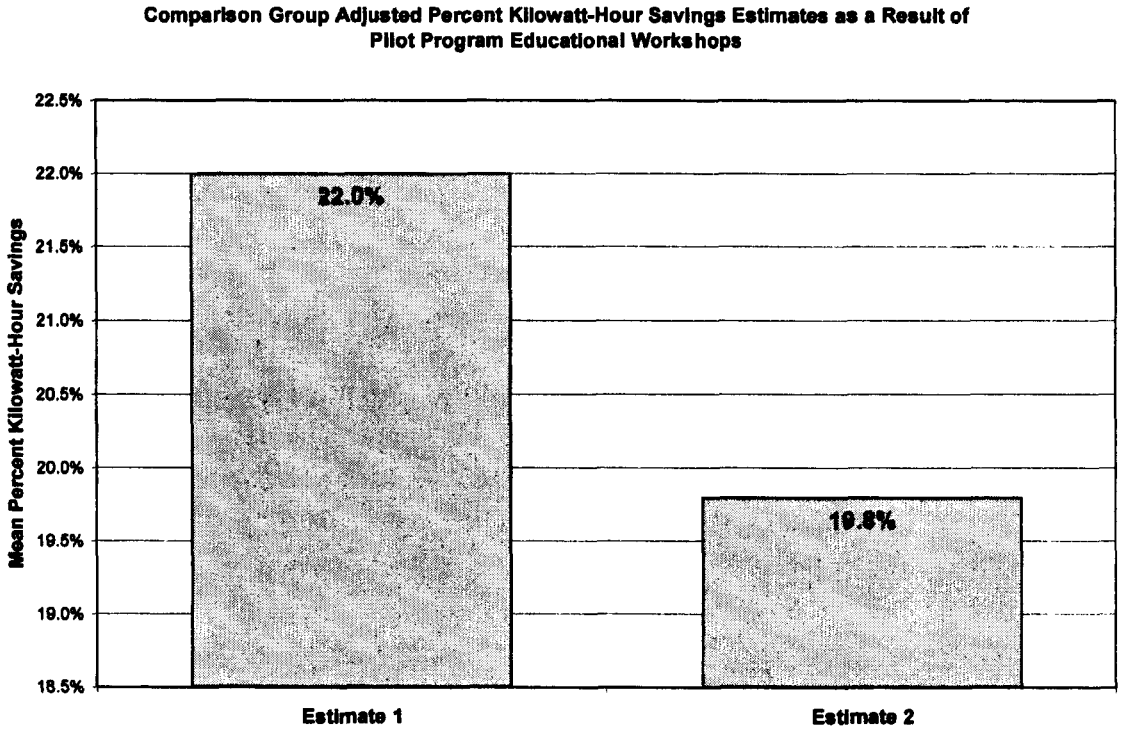

Figure 14. Comparison Group Adjusted Kilowatt-Hour Percent Savings Estimates

Estimate 1 used the savings from the Kentucky and Ohio weatherization participants less the savings from the Payment Plus participants who received weatherization services. Using this approach, the reduction in electrical consumption is estimated at 22.0%.

Estimate 2 uses the mean savings of the Payment Plus II participants who went through the energy efficiency educational workshop, but did not receive weatherization services. This approach results in a 19.8% reduction in electrical consumption.

The average percent kilowatt-hour savings attributable to the educational component of the Payment Plus program is 20.9%.

Therm Consumption Savings Estimates

Natural gas savings that can be attributable to the educational component of the Pilot programs range from a decrease of 49 therms per year to a decrease of 27 therms per year depending on the estimation approach (see Figure 15). The estimated savings using the Ohio and Kentucky weatherization service-only groups were able to reduce their therm consumption by more than four times what the Pilot II participants realized in reductions due to their participation in the educational workshops.

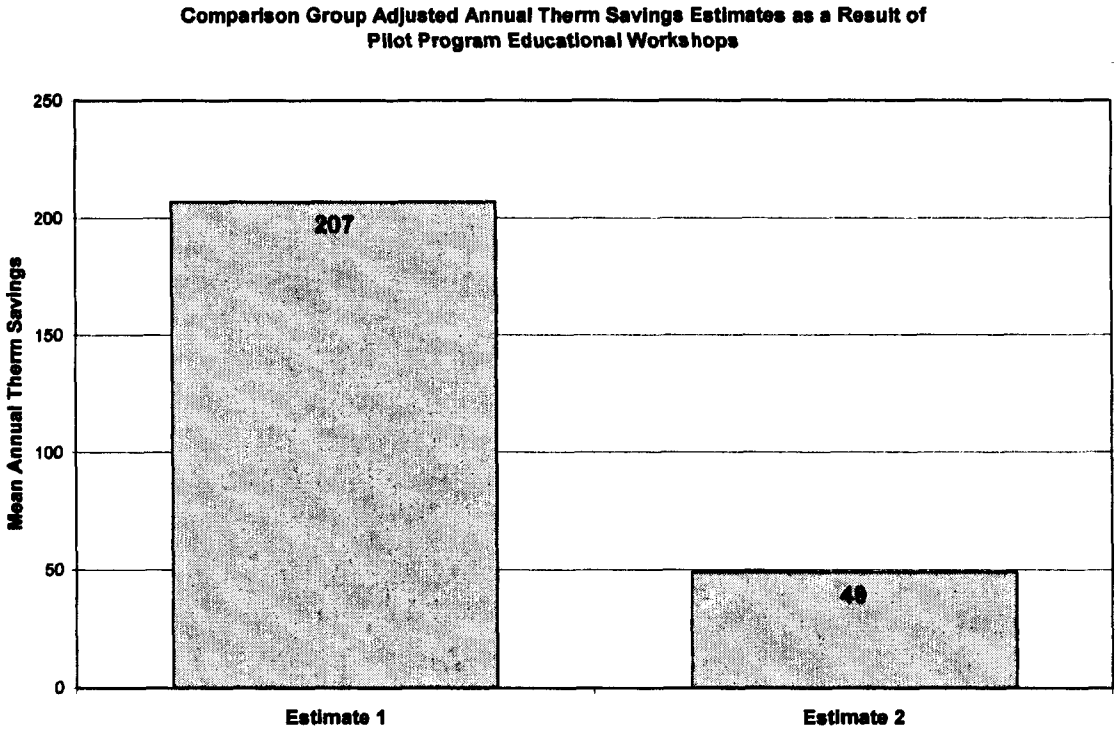

Figure 15. Annual Therm Savings Estimates

Estimate 1 used the savings from the Kentucky and Ohio weatherization participants less the savings from the Payment Plus participants who received weatherization services. Using this approach, the savings are estimated at 207 therms per year. (If only those customers who decreased their consumption after Kentucky and Ohio weatherization are examined, then this value decreases substantially to 118 therms per year.)

Estimate 2 uses the mean savings of the Payment Plus II participants who went through the energy efficiency educational workshop, but did not receive weatherization measures. This approach results in 49 therm savings per year.

The average therm savings attributable to the educational component of the Payment Plus program is 128 therms per year.