

## **Program Features: Pennsylvania's Low-Income Usage Reduction Program (LIURP)**

**Katie Southworth**

*This study is part of a series in the EOS inventory of W.A.P.-Leveraged Program Descriptions.*

Pennsylvania's Low Income Usage Reduction Program (LIURP) is a statewide, utility-sponsored, free residential energy usage reduction program designed to help low-income households lower their energy bills and reduce energy consumption through Weatherization and energy education services. Since the creation of the LIURP program in 1988, the Pennsylvania Public Utility Commission (PUC) has required Pennsylvania's 15 largest electric and gas utilities to provide LIURP services to more than 300,000 low-income households using rate-payer funds.<sup>1</sup> The PUC oversees and monitors LIURP through its Bureau of Consumer Services. However, LIURP programs are administered by the individual electric and natural gas distribution utilities.<sup>2</sup> The utilities use a mix of non-profit agencies and private contractors to implement the program.

### **LIURP Program Goals:**<sup>3</sup>

1. Assist low-income customers to conserve energy and reduce residential energy bills;
2. Decrease customer payment delinquencies, collection costs and arrearage costs;
3. Reduce residential demand and peak demand costs;
4. Reduce demand which could lead to construction of new generating capacity; and
5. Improve health, safety and comfort levels of participants.

### **The Basic LIURP Program:**

- I. Identify Eligible Applicants:** Utilities annually determine eligible population estimates in order to apply for the right to designate LIURP funding. Once a customer is selected to receive usage reduction measures, an intake form is completed and forwarded to a Weatherization contractor.
- II. Energy Audit/Survey:** An energy service contractor conducts an onsite inspection of the residence to determine the most appropriate usage reduction measures.
- III. Selection and Installation of Applicable Measures:** LIURP measures are selected on the basis of simple payback over specific recovery periods outlined in state regulations.<sup>4</sup> Measures are installed as outlined by applicable regulations and in compliance with signed contracts.
- IV. Utilities are required to provide customer usage education services:** Education services may occur prior to, during, and subsequent to Weatherization measure installation.
- V. Quality Control/ Program Evaluation:** Utilities are required to submit data pursuant to Universal Service and Energy Conservation Reporting Requirements (USR).<sup>5</sup>

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<sup>1</sup> 52 Pa. Code, Chapter 58.

<sup>2</sup> Utilities covered: Allegheny, Duquesne Light, Metropolitan Edison – a FirstEnergy Company, PECO-Electric, Pennsylvania Electric – a FirstEnergy Company, Penn Power, PPL, Columbia, Dominion, Equitable, NFG, PECO-Gas, PGW, UGI Penn Natural (formerly PG Energy), and UGI-Gas.

<sup>3</sup> 52 Pa. Code § 58.1

<sup>4</sup> 52 Pa. Code, § 58.14

<sup>5</sup> 52 Pa. Code Sections 54.75 and 62.5.

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Customer Surveys are also used by many utilities.

**VI. Advisory Panels:** Each utility has a designated representative on a state Universal Service advisory panel.

**VII. Regulatory Review:** A utility may not implement a LIURP program, nor significantly modify a LIURP program without Commission approval. Each year the PUC/BCS and Penn State CSIS Project conduct evaluations of all company LIURP programs.

### Program Funding and Costs

- *Pennsylvania's electric utilities spent \$21,634,127 in 2008 to provide 20,106 households with LIURP benefits. The companies have budgeted \$23,243,019 for LIURP in 2009.*<sup>6</sup>
- *Pennsylvania's gas utilities spent \$8,918,930 in 2008 to provide 3,966 households with LIURP benefits. The companies have budgeted \$13,051,467 for LIURP in 2009.*<sup>7</sup>

Costs: Pennsylvania's natural gas utilities are required to devote 0.2% of company revenues towards LIURP services.<sup>8</sup> Electric utilities collect LIURP funds through a residential distribution cost included in the rates of all residential electric customers.<sup>9</sup> LIURP funding levels are set over three-year periods as part of a utility's Universal Service Plan, which must be approved by the Pennsylvania PUC. Utilities adjust program funding levels for LIURP based on an assessment of the needs of their customer population.

Benefits: There are four types of LIURP jobs: electric heating, electric water heating, electric baseload, and gas heating. Baseload jobs are defined as services funded by electric utility companies where the electricity is not used for heating.

LIURP Weatherization measures are selected on the basis of simple payback recovery periods. A simple payback recovery period of seven years or less is required for most measures. Some other measures must meet a twelve-year simple payback recovery period: sidewall insulation, attic insulation, furnace replacement, water heater replacement and refrigerator replacement.<sup>10</sup> Utility contractors generally collect LIURP household data for a 13-month period before and after installation of Weatherization measures and monitor the. If consumption increases, contractors return to the home to conduct remedial education and recheck installation quality. Weatherization measures with longer payback periods of 12 years, such as attic and sidewall insulation, were not included in Weatherization programs until 1994, when the PUC adjusted LIURP regulations to include such measures. A study of the program's first 18 years indicated lighting and low- or no-cost measures were the predominant investments.<sup>11</sup>

Program costs and measures are defined and agreed to in contracts between program contractors and the utilities; however, no more than 15% of annual LIURP funds may be allocated towards administrative costs.<sup>12</sup>

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<sup>6</sup> Pennsylvania Public Utility Commission Bureau of Consumer Services. Report on 2008 Universal Services Programs and Collections Performance. (2008). Available at: [http://www.puc.state.pa.us/General/publications\\_reports/pdf/EDC\\_NGDC\\_UniServ\\_Rpt2008.pdf](http://www.puc.state.pa.us/General/publications_reports/pdf/EDC_NGDC_UniServ_Rpt2008.pdf)

<sup>7</sup> *Id.* at 12.

<sup>8</sup> Gas utilities may petition the PUC to recover LIURP funds through residential rates or other methods.

<sup>9</sup> 52 Pa. Code, Chapter 56.

<sup>10</sup> 52 Pa. Code, § 58.14

<sup>11</sup> Shingler, John. Consumer Services Information System Project. "Long Term Study of Pennsylvania's Low Income Usage Reduction Program: Results of Analysis and Discussion." Penn State. 2009. Available at:

[http://www.puc.state.pa.us/General/publications\\_reports/pdf/PSU-LIURP\\_Report2008.pdf](http://www.puc.state.pa.us/General/publications_reports/pdf/PSU-LIURP_Report2008.pdf). (last downloaded Dec. 28, 2009).

<sup>12</sup> 52 Pa. Code, § 58.5

### **Population Served**

Utilities are required to provide annual estimates of the eligible population in order to receive LIURP funding. LIURP-eligible customers have income levels at or below 150% of the Federal Poverty Level (FPL). Approximately 18% of Pennsylvania's residential electric utility customers qualify, including approximately 21% of all natural gas residential customers.<sup>13</sup> A usage threshold, arrearage data, and a number representing households previously served through LIURP (typically within the previous 7 years) are also used to determine eligible population estimates.

In 1998, LIURP regulations were amended to allow up to 20% of LIURP budgets to provide Weatherization services to "special needs" customers between 150-200% FPL. Within the total pool of eligible customers, utilities target customers according to the following priorities:

1. Largest usage and greatest opportunities for bill reductions relative to the cost of providing program services [Electric distribution utilities define high-usage customers as those using 600 kWh per month or 7,200 kWh annually. Gas distribution utilities typically target customers with a usage of greater than 130 Mcf annually *and* a significant bill arrearage (\$100- \$200/ month).];
2. Customers with the greatest arrearages; and
3. Customers with the lowest incomes.

In most utilities' programs LIURP services are available to both homeowners and renters.<sup>14</sup> LIURP serves all housing types: single family homes, mobile homes, and multi-family residences. The majority of the treated housing stock is detached single-family or duplexes (75 percent). Most utilities require customers have a continuous account with the utility for a predetermined period prior to LIURP services and require residence at the home for one year both prior to and after LIURP measures are installed. Landlords are not allowed to raise rent following LIURP measures.

Customers are referred to LIURP from a variety of sources: utility customer service centers, universal service centers, social service agencies, the PUC, and individuals.

### **Energy Conservation Education and Outreach**

Utilities are required to provide customer usage education services; LIURP offers energy education, budget counseling, and usage reduction measures by the contractors and other community-based organizations. These services may include educational materials and newsletters, in-home presentations, workshops, or group presentations.

Customers must also agree to allow access to electric meters for scheduled bimonthly or monthly meter readings.

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<sup>13</sup> Pennsylvania Public Utility Commission Bureau of Consumer Services. Report on 2008 Universal Services Programs and Collections Performance. (2008). Page 7. Available at:

[http://www.puc.state.pa.us/General/publications\\_reports/pdf/EDC\\_NGDC\\_UniServ\\_Rpt2008.pdf](http://www.puc.state.pa.us/General/publications_reports/pdf/EDC_NGDC_UniServ_Rpt2008.pdf)

<sup>14</sup> Some natural gas utilities do not provide LIURP services to renters. See ACEEE. Residential Low Income Single Family. Low Income Usage Reduction Program: National Fuel. 2005. Available at: <http://www.aceee.org/utility/ngbestprac/liurp.pdf>

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Shingler's 2009 assessment provides no savings estimates associated with LIURP education programs but finds that:

- The most effective education services are those that are provided as in-home visits;
- Remedial energy conservation visits for households that do not reduce their energy consumption are effective at reducing a "rebound" or "take-back" effect;
- Education should involve all members of the household, because the number of people living in a household is negatively associated with both reductions in energy consumption and arrearage.

### PECO's Education Program

PECO's LIURP education program received the 2007 American Energy Efficiency Award from American Council for an Energy-Efficient Economy. It includes several unique features. Like many other utilities' programs, an energy service professional who conducts an audit of a qualifying home conducts energy education as part of the audit. This includes reviewing the customer's bill, discussing the determinants of energy usage, and asking the customer to commit to one or more energy saving actions.

The PECO education program includes two unique program elements. First, each program participant receives an energy newsletter every month for 12 months following service delivery. Second, the energy service contractor reviews the bills of program participants and conducts follow-up with those participants who increase usage during the 12 months following service delivery. The initial contact is by telephone. In some cases, a field visit is made to the home.

As with many other combination programs, it is difficult to measure the impact of energy education separate from the delivery of energy saving measures. However, one of the highlighted findings in a 2008 APPRISE evaluation of PECO's program is that customers who only received CFLs had very large electric usage reductions- savings much larger than what would have been expected from only the CFL energy savings.<sup>15</sup> The study concludes that a significant part of those savings are attributable to changes in behavior because of energy education provided through LIURP. The combination of in-home education during an energy audit along with follow-up activities led to both a higher level of reported actions and a higher measured level of energy savings.<sup>16</sup> Further:

- Respondents who said that the contractor reviewed energy bills and estimated dollar savings for each recommended action had higher electric savings than those who did not.
- Respondents who reported that they read PECO's monthly energy education letters had higher electric savings.
- Respondents who reported that they made those changes in electric usage that are expected to have the greatest impact on electric savings did have the highest electric savings. These unprompted reports include avoiding use of space heaters, disconnecting unused refrigerators and freezers, and reducing use of the electric clothes dryer. Respondents who reported that they took no action to reduce their energy usage had the lowest electric savings.

## Evaluation

<sup>15</sup> The expected energy savings from the CFL installations was about 274 kWh. However, these homes saved an average of 953 kWh. (APPRISE, 2008). APPRISE conducted impact evaluations annually for PECO from 2005-2008. They are available at: [http://www.appriseinc.org/reports\\_usage.htm](http://www.appriseinc.org/reports_usage.htm)

<sup>16</sup> *David Carroll and Jacqueline Berger, APPRISE. Transforming Energy Behavior of Households: Evidence from Low-Income Energy Education Programs.*

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Evaluation has been an integral part of LIURP since its initial proposal. Each participating company must annually submit to the Bureau of Consumer Services (BCS) information on each Weatherized household, including full pre- and post-year energy usage and bill payment data.

### **Lessons Learned**

A long-term review of the LIURP program from 1988 to 2005 by Pennsylvania's Consumer Information Services System and Penn State (2009) finds that the following measures contributed toward reductions in energy consumption overall and meet the payback and cost-effectiveness tests of the program. They are listed in order of impact:<sup>17</sup>

- Replacements of inefficient refrigerators and freezers;
- Side wall and attic insulation result in reductions in usage for both gas and electric;
- Installation of energy-efficient lighting;
- Targeting single family households with high energy usage and/or energy bill arrearages;
- In-home educational visits; and
- Remedial energy conservation visits for households that are not reducing their energy consumption

The same study found that the following measures do not contribute to reductions in energy usage or lower bill arrearages:

- Furnace maintenance; and
- Window and door treatments and repairs (for electric baseload jobs).<sup>18</sup>

### **LIURP Results and Achievements**

The 2009 analysis of LIURP's performance from 1988 to 2005 concludes that LIURP is cost-effective in reducing both energy consumption and energy bill arrearages.<sup>19</sup> The following are major conclusions of the report:

#### **Reductions in Consumption**

- Sixty-nine percent of LIURP households reduced their energy consumption following LIURP treatments, with an average reduction of 16.5 percent for all kinds of jobs.<sup>20</sup>
- The average reduction in consumption following gas heating jobs is 21.4%.
- The average reduction in consumption following electric heating jobs is 20.3%.
- The average reduction in consumption following electric baseload jobs is 19.1%.
- The average reduction in consumption following electric water heating jobs is 15.1%.
- Thirty-one percent of LIURP households experience no change in energy consumption or increase their energy consumption following Weatherization, with an average increase of 19.9 percent. This is referred to as the "rebound" or "takeback effect," and has been attributed to a variety of factors, including correcting heating levels in households that did not heat properly prior to Weatherization, and increases in family size.<sup>21</sup>

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<sup>17</sup> 52 Pa. Code, § 58.5

<sup>18</sup> *Id.* at 6.

<sup>19</sup> Shingler, John. Consumer Services Information System Project. "Long Term Study of Pennsylvania's Low Income Usage Reduction Program: Results of Analysis and Discussion." Penn State. 2009. Available at: [http://www.puc.state.pa.us/General/publications\\_reports/pdf/PSU-LIURP\\_Report2008.pdf](http://www.puc.state.pa.us/General/publications_reports/pdf/PSU-LIURP_Report2008.pdf). (last downloaded Dec. 28, 2009).

<sup>20</sup> *Id.*

<sup>21</sup> Greening, Lorna A., David L. Greene, and Carmen Difiglio, 2000, Energy Efficiency and Consumption – The Rebound Effect – A Survey, Energy Policy, 28, p. 389 – 401.

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- Households receiving gas heating jobs are least likely to increase their energy consumption following Weatherization.<sup>22</sup>
- The more residents in the household, the less the reduction in energy consumption.
- Removing or replacing inefficient refrigerators or freezers is the greatest contributor to reductions in energy consumption.
- Installing more energy efficient lighting is associated with reductions in consumption in electric jobs.
- Furnace maintenance, low flow showerheads, and chimney windows and electric repairs had a negative correlation with changes in consumption following LIURP measures.

For gas utility programs, the amount of energy used pre-LIURP installation, amount of arrearage prior to LIURP participation, and chimney, window and electric repairs positively correlated with changes in energy consumption levels following LIURP measures. The number of rooms in a house, low flow showerheads and furnace maintenance negatively correlated with changes in consumption post-LIURP.

### **Reductions in Arrearage**

- Thirty-seven percent of households with electric heat reduce their arrearage, compared to 54.4 percent for the households with residential gas heat systems.
- The number of residents in the household is negatively associated with reductions in arrearage.

### **Other Findings of the Consumer Services Information System and Penn State Assessment**

- Hispanic households may be underrepresented in LIURP. The number of Hispanic households in poverty has increased in recent years while the number of households in LIURP headed by Hispanics has decreased from 2.3 percent to 0.7 percent.
- The head of the typical LIURP household was a 47-year-old white female, with a high school diploma, who owned her home. She earned an average annual income of nearly \$12,000 and had an arrearage on her energy bill.
- The average energy burden for LIURP households was 15.3 percent of annual household income, compared to 4 percent for all households nationwide.

### **Policy Recommendations from Long-Term LIURP Study:**

- Place more emphasis on cooling needs in LIURP.
- Specifically tailor energy conservation education to address the rebound effect and involve all household members. Focus on in-home education rather than mailings or telephone calls.
- Explore methods for adjusting the percentage of the federal poverty level to determine eligibility for LIURP.
- Examine the LIURP outreach and referral process for each company. Compare LIURP participants to census data for each service area to determine if any groups are underrepresented or not being reached. If so, companies should make efforts to include these households in LIURP.

### **History of LIURP Policy Creation and Development**

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<sup>22</sup> Shingler, John. Consumer Services Information System Project. "Long Term Study of Pennsylvania's Low Income Usage Reduction Program: Results of Analysis and Discussion." Penn State. 2009. *Available at:* [http://www.puc.state.pa.us/General/publications\\_reports/pdf/PSU-LIURP\\_Report2008.pdf](http://www.puc.state.pa.us/General/publications_reports/pdf/PSU-LIURP_Report2008.pdf). (last downloaded Dec. 28, 2009).

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Preliminary research for the LIURP program was conducted by the Bureau of Consumer Services and the Pennsylvania State University, which surveyed other states' Weatherization services and Pennsylvania's need not being met by existing programs. The results were then submitted to the PUC and a program was subsequently outlined and regulations drafted.

On May 22, 1987 the PUC issued an order adopting the regulations to establish residential low income usage reduction programs for eligible utility customers. These regulations were later approved by Independent Regulatory Review Commission (IRRC) at a Public Meeting.

It is important to note that LIURP is not a static program. Adjustments are made within the program as technologies and regulations change. Utilities also make adjustments to their programs as they become more experienced. For example, in 1994, various coding changes were made to the data reporting process, and again, in 2000, major coding changes were made to streamline the data gathering process. Further, companies try new treatments, and in recent years, have also had the option of implementing pilot studies within LIURP to test new treatments.

The PUC and Penn State continue to evaluate LIURP on a yearly basis and submit reports to each LIURP company. Updated statistics on LIURP are also included in each Public Utility Commission annual report, and in the yearly Universal Services Reports. Yearly Publications and Reports provided by the PUC are available at:  
[http://www.puc.state.pa.us/general/publications\\_reports/publications\\_reports\\_yearly.aspx](http://www.puc.state.pa.us/general/publications_reports/publications_reports_yearly.aspx)

### **The 2008 Pennsylvania Act 129 (2008) and Utility Low-Income Efficiency Measures**

Act 129 (2008) requires each of the seven major Electric Distribution Companies (EDCs) in Pennsylvania to adopt a plan to reduce energy demand and consumption within its service territory. The Act requires a 1% reduction in electricity consumption by May 31, 2011, a total of 3% reduction in consumption and a 4.5% reduction in peak demand by May 31, 2013.

With regard to Low Income programs, Act 129 provides:

The [EE] plan shall include specific energy efficiency measures for households at or below 150% of the federal poverty income guidelines. The number of measures shall be proportionate to those households' share of the total energy usage in the service territory. The electric distribution company shall coordinate measures under this clause with other program administered by the Commission or another federal or state agency. The expenditures of an electric distribution company under this clause shall be **in addition** to expenditures made under Pa. Code Ch. 58 (relating to residential low income usage reduction programs- **[LIURP]**).

Although measures previously incorporated into the LIURP program are not directly affected by Act 129, the investment in energy-efficient measures will be increased through utility EE funding that is determined by the new standard.

How the PA Commission interprets application of statute:

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According to Section 2806.1(b)(i)(G), the number of energy efficiency measures that must be dedicated to low-income customers is calculated by first determining the percentage of total energy usage that is attributable to the low-income customer group. This percentage is the percentage of the Act 129 plan’s total energy efficiency measures that must be dedicated to low-income customers. In other words, if an EDC’s plan contains forty measures, and the low-income customer group’s share of total energy usage for the service territory is 5%, then the plan must have two measures dedicated to increasing energy efficiency for low income customers.<sup>23</sup>

The Total Resource Cost Test is applied to the Utility EE plans. The Commission references California’s Manual on Cost Tests as a resource for understanding Pennsylvania’s approach.

<b>Annual LIURP Funding by Pennsylvania Utility</b>			
<b>UTILITY</b>	<b>STATE</b>	<b>WEATHERIZATION PROGRAM</b>	<b>ANNUAL FUNDING</b>
Allegheny Power	PA	Low Income Usage Reduction Program (LIURP)	\$5,880,000
Columbia Gas of Pennsylvania	PA	WarmChoice	\$3,000,000
Dominion Peoples	PA	Low Income Usage Reduction Program (LIURP)	\$11,243,789
Equitable	PA	Low Income Usage Reduction Program (LIURP)	\$9,900,900
Met-Ed	PA	Warm Program	\$2,559,050
National Fuel Gas	PA	Low Income Usage Reduction Program (LIURP)	\$900,000
PECO Electric and PECO Gas	PA	Low Income Usage Reduction Program (LIURP)	\$6,475,000
Penelec	PA	Warm Program	\$2,559,050
Penn Power	PA	Warm Program	\$5,700,000
PPL	PA	Winter Relief Assistance Program (WRAP)	\$7,250,000
PG Energy	PA	Low Income Usage Reduction Program (LIURP)	\$360,000
Philadelphia Gas Works	PA	Conservation Works	\$2,200,000

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<sup>23</sup> [http://74.125.93.132/search?q=cache:cu8ej7hp-qIJ:www.puc.state.pa.us/pcdocs/1058256.docx+%E2%80%9CAccording+to+Section+2806.1\(b\)\(i\)\(G\),+the+number+of+energy+efficiency+measures+that+must+be+dedicated+to+low-income+customers+is+calculated&cd=1&hl=en&ct=clnk&gl=us&client=firefox-a](http://74.125.93.132/search?q=cache:cu8ej7hp-qIJ:www.puc.state.pa.us/pcdocs/1058256.docx+%E2%80%9CAccording+to+Section+2806.1(b)(i)(G),+the+number+of+energy+efficiency+measures+that+must+be+dedicated+to+low-income+customers+is+calculated&cd=1&hl=en&ct=clnk&gl=us&client=firefox-a)