

Water Affordability in Philadelphia: Comparing the Tiered Discount and Percentage of Income-Based Bill Affordability Proposals

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The Philadelphia City Council previously determined that the Philadelphia Revenue Department should create a low-income water arrears and affordability program¹ explicitly using the affordability of water bills² based on income as a determinant for low-income households. As with corresponding affordability programs adopted by natural gas and electric utilities, a multitude of alternative ways exist through which the City³ might implement such a directive. Not all alternatives are equal, however, either in their costs, or in their administrative ease, or, most importantly, in the degree to which, if at all, they achieve the desired outcome of “affordability.”

The City has submitted a proposal for a tiered discount model. The Public Advocate has submitted a proposal for a percentage of income payment plan model. The discussion below will review the City’s model against a percentage of income payment plan model (utilizing the same income tiers proposed by the City, in order to have a consistent basis for comparison).

THE TIERED-DISCOUNT MODEL.

The basic structure of the City proposal is to provide a percentage discount on water bills sufficient to reduce the city-wide average bill to four percent (4%) of income at the average income for three specified income tiers. The income tiers have been set at 0% to 50% of Federal

¹ In this discussion, “water” affordability should be construed to include water, wastewater/sewer and stormwater costs.

² My discussion focuses on the affordability of “water bills” as they should be determined under a new program of the Revenue Department consistent with City Council’s prior determinations, distinct from the rates and charges that may generally be calculated for the customers of Water Department who do not participate in such program.

³ I use the term “City” generally to refer to the Philadelphia Revenue Department and/or the Water Department, as the context may require.

Poverty Level; 51% - 100% of Federal Poverty Level; and 101% - 150% of Federal Poverty Level.⁴ The average income was set within each poverty range assuming a household size of 2.5 persons per household. The cost analysis which accompanies the City proposal examines both program costs and administrative costs.

The data and analysis presented below supports the conclusion that not only will the City proposal, as a matter of program design, fail to achieve affordable bills, but the City's cost estimates for both benefit costs and administrative costs are substantially over-stated. Each of these conclusions is examined in more detail below.

The Failure of the City Proposal to Achieve Affordable Water Bills.

As a matter of program design, the City's proposed tiered discount will achieve affordable water bills – as defined by the City proposal--⁵ for few Philadelphia households. The City proposal will generate a bill that is 4% of income only in the rare instance when a household:

- has an income equal precisely equivalent to the fictional average income for the discount tier (i.e., the median of the tier using a household of 2.5 persons); and
- has water usage equal to the average city-wide water usage; and
- has arrears in excess of the sum of the copayments required during participation in the City's program.

For bills to meet the affordability criterion of the City proposal (4% of income), all of these factors must be met. As documented by the discussion below, however, this rarely occurs.⁶ As a result, the City's proposed program would significantly over-pay many Philadelphia residents while significantly under-paying many others, with the result being that the vast majority of the benefits delivered represent an ineffective and inefficient use of ratepayer funds. In addition, the City proposal will redistribute benefits from lower income Philadelphia neighborhoods to higher income neighborhoods.⁷

⁴ The City's proposal includes payment agreement terms, but no discount, for customers between 150% and 250% of FPL.

⁵ Referring to a water bill equal to four percent (4%) of income as "affordable" herein should not be construed as accepting 4% as an appropriate affordability demarcation. In fact, water bills at 4% of income are not generally considered to be affordable to low-income households.

⁶ The analysis presented herein does not specifically calculate the impact of arrears balances; there is inadequate data available for this purpose.

⁷ All recipients under the City proposal will be "low-income." Nonetheless, as the data will show, this redistribution not only will occur, but will inherently occur because of the very design of the program as proposed by the City.

The tiered discount proposed by the City does not, and cannot, result in affordable bills for a substantial portion of Philadelphia’s low-income population. The proposed discount is based on an average income for the City as a whole. It is further based on average water consumption for the City as a whole.

However, my analysis is performed somewhat differently than the City’s. Rather than utilize a fictional average household, calculating its median income for each proposed income tier, I have relied upon actual Census data for this analysis. Similarly, instead of utilizing a monthly average bill of \$67.43 which the City used for its analysis, I have relied upon bills reported by the Census bureau as collected through the annual American Community Survey (ACS) and made available through its on-line Data Ferrett program.⁸

The hypothetical city-wide average used by the City does not reflect the wide diversity of income and water usage throughout Philadelphia. Table 1 below divides Philadelphia into eleven (11) regions called Public Use Microdata Areas (PUMAs), using data from the 2013 American Community Survey from the U.S. Bureau of the Census. Table 1 presents, for the City as a whole (as well as for each PUMA), the average household income and average water bill for that specific geographic area. The Table further disaggregates the data into two of the three ranges of Federal Poverty Level (FPL), as used by the City in its discount proposal (0-50% FPL and 51-100% FPL).⁹

The data is important in that if the PUMA income is lower than the City average, or if the PUMA water bills are higher than the City average, the City proposal will fail to deliver affordable bills. In five of the ten PUMAs studied for the 0-50% FPL range,¹⁰ the average income of households in the specific PUMA was less than the City average, sometimes significantly so. The average income for households with income below 50% FPL in Philadelphia was \$13,066. In contrast, in three of the individual PUMAs, the average income for that individual area was less than \$10,000: (1) Central (\$8,889); (2) Near Northeast-West (\$8,600); and (3) Near Northeast-East (\$5,980). The average income in these areas of the City, in other words, was 32% to 54% less than the average income for the City as a whole, just looking at households with income less than 50% of FPL. In both the North PUMA (\$10,342) and West PUMA (\$11,052), while average income was more than \$10,000 for households with income below 50% of FPL, the income in those areas was still 15% to 20% below the average for the City as a whole.

⁸ Additional analysis has confirmed that utilizing a higher average bill would exacerbate, rather than improve, the mis-targeting of benefits I demonstrate in this analysis. Similarly, adjusting the discount in the City’s model (e.g., targeting 3% instead of 4% of household income) in an effort to bring more households into the range of affordability continues to demonstrate the geographic disparity in outcomes.

⁹ On average, 4% of income for the 100% to 150% range exceeds actual water bills. As a result, that range is excluded from this analysis.

¹⁰ Excluded from the 0 – 50% of Poverty analysis is the PUMA for Northwest Philadelphia. Its reported average income for 0-50% of FPL of \$78,831 indicates a data entry error. For similar reasons, the Far Northeast is excluded from the 50 – 100% of Poverty analysis.

If these below-average incomes were not enough unto themselves, the 2013 ACS tells us further that the average water bill for these specific areas was higher than average. The three areas of Philadelphia with the highest water bills all fall within the four areas with the lowest incomes: (1) Near Northeast-West (\$871); (2) Near Northeast-East (\$778); (3) Central (\$837). The number of households involved with these under-served areas is not small. Of the 63,770 Philadelphia households in these ten (10) PUMAs with income below 50% of FPL, 31,706 (49.7%) live in the areas that the program as proposed by the City would inadequately serve.

As can be seen in Table 1, similar conclusions can be drawn for households with income between 50% and 100% of FPL. Three of the five PUMAs in which the 0-50% of FPL population is underserved by the City proposal are PUMAs in which the 50-100% of FPL population would be underserved also.¹¹

Table 1: Income and Water Bills by Philadelphia PUMAs

0-50% FPL	Number of Households	Average Household Income	Average Household Water Bill
Total City of Philadelphia	63,770	\$13,066	\$665
Philadelphia City (Far Northeast) PUMA	2,268	\$15,089	\$712
Philadelphia City (Near Northeast-West) PUMA	7,047	\$8,600	\$817
Philadelphia City (Near Northeast-East) PUMA	5,882	\$5,980	\$778
Philadelphia City (North) PUMA	10,274	\$10,342	\$478
Philadelphia City (East) PUMA	13,520	\$16,840	\$643
Philadelphia City (Central) PUMA	4,452	\$8,889	\$837
Philadelphia City (West) PUMA	4,051	\$11,052	\$658
Philadelphia City (Center City) PUMA	1,779	\$17,465	\$655
Philadelphia City (Southwest) PUMA	8,269	\$17,015	\$568
Philadelphia City (Southeast) PUMA	6,228	\$18,176	\$737
50-100% FPL	Number of Households	Average Household Income	Average Household Water Bill
Total City of Philadelphia	109,926	\$22,497	\$712
Philadelphia City (Near Northeast-West) PUMA	10,371	\$24,890	\$863
Philadelphia City (Near Northeast-East) PUMA	16,373	\$22,450	\$754
Philadelphia City (North) PUMA	10,117	\$21,475	\$634
Philadelphia City (East) PUMA	32,781	\$24,358	\$596
Philadelphia City (Northwest) PUMA	6,253	\$28,163	\$585
Philadelphia City (Central) PUMA	6,622	\$15,504	\$374

¹¹ The average incomes for the 11 PUMAs examined for the 100% to 150% of FPL are more tightly grouped around the City-wide average.

Table 1: Income and Water Bills by Philadelphia PUMAs

0-50% FPL	Number of Households	Average Household Income	Average Household Water Bill
Philadelphia City (West) PUMA	4,999	\$19,652	\$772
Philadelphia City (Center City) PUMA	807	\$10,662	\$545
Philadelphia City (Southwest) PUMA	11,603	\$16,760	\$868
Philadelphia City (Southeast) PUMA	10,000	\$25,151	\$1,047

Table 2 presents an analysis of the impacts of the City proposal in each PUMA for the City. Table 2 determines a bill based on four percent (4%)¹² of income using the city-wide average income and water bills for households at or below 50% of Federal Poverty Level. It then calculates the percentage discount needed to achieve that 4% burden using these city-wide averages. The discount I calculate is different from the City’s discount for two reasons. First, my discount calculation is based on the use of actual Census data and annual billing amounts from the U.S Census Bureau’s most recent American Community Survey as described above, rather than a fictional household and a monthly bill of \$67.43. Second, my discount calculation reflects the discount on a current bill basis, without regard to arrears, rather than calculating a notionally higher discount, and then increasing the bill by a monthly copay on arrears. Table 2 applies the city-wide percentage discount I calculated to the actual water bills for each PUMA throughout the City. It finally examines the extent to which the City proposal would under-pay and/or over-pay low-income households in each PUMA.

Table 2: Over- and Under-Payment Under City Proposed Model by Philadelphia PUMAs (0 – 50% Poverty)

0-50% FPL	Average Household Income	Average Household Water Bill	Bill at 4% of Income /a/	Dollar Discount Needed to Achieve 4% /b/	Percent Discount Needed to Achieve 4% (City Avg) /c/	Dollar Discount Using City Avg Pct Discount /d/	Over-payment / (Under)-payment Using City Avg Pct Discount /e/
Total City of Philadelphia	\$13,066	\$665	\$523	\$142	21%	---	
Far Northeast PUMA	\$15,089	\$712	\$604	\$108		\$152	\$44
Near Northeast-West PUMA	\$8,600	\$817	\$344	\$473		\$174	(\$299)
Near Northeast-East PUMA	\$5,980	\$778	\$239	\$539		\$166	(\$373)
North PUMA	\$10,342	\$478	\$414	\$64		\$102	\$38
East PUMA	\$16,840	\$643	\$674	(\$31)		\$137	\$168
Central PUMA	\$8,889	\$837	\$356	\$481		\$179	(\$302)
West PUMA	\$11,052	\$658	\$442	\$216		\$141	(\$75)
Center City PUMA	\$17,465	\$655	\$699	(\$44)		\$140	\$184
Southwest PUMA	\$17,015	\$568	\$681	(\$113)		\$121	\$234

¹² The 4% figure is used for analysis here because that is the burden proposed by the City, not because it is acknowledged as an appropriate demarcation of “affordability.”

Southeast PUMA	\$18,176	\$737	\$727	\$10	\$157	\$147
NOTES:						
/a/ Average Household Income x 4% (e.g., \$13,066 x .04 = \$523).						
/b/ Average Household Water Bill – Bill at 4% of Income (e.g., \$665 - \$523 = \$142).						
/c/ Dollar Discount Need to Achieve 4% (city average) / Average Household Water Bill (\$142 / \$665 = 0.213).						
/d/ Average Household Water Bill x Percent Needed to Achieve 4% (city average) (e.g., \$712 x 21.3% = \$152).						
/e/ Dollar Discount Using City Average Percent Discount – Dollar Discount Needed to Achieve 4% (e.g., \$152 - \$108 = \$44. Positive number indicates an OVER-payment. Negative number indicates an UNDER-payment.						

The inability of the City proposal to achieve an affordable bill becomes evident.

- The Near Northeast-East PUMA is underpaid (relative to that needed to achieve a 4% burden) by more than \$370 a year (i.e., a need of \$539 while the City program provides a discount of \$166), while the Near Northeast-West and Central PUMAs are each underpaid by roughly \$300 a year.¹³ In both of these instances, the average income is significantly less than the city-wide average, while the average water bill significantly exceeds the city-wide average.
- At the same time these PUMAs are underpaid, four PUMAs (East, Center City, Southwest, Southeast) are overpaid by between roughly \$150 and \$250 a year. The Center City PUMA is overpaid by \$184 a year, while the Southwest PUMA is overpaid by \$234 a year.
- The City proposal delivers benefits in roughly the amount needed in only two of the PUMAs studied (with overpayments of only \$38 in the North and \$44 in the Far Northeast).

These results arise due to the very design of the City proposal. Irrespective of whether the cost of the City program alternative is “more” or “less” than the model recommended by the Public Advocate, the expenditure of money under the City proposal fails to achieve the desired affordability outcome. In many instances, the City’s proposed program design pays too much; in other instances, the City’s proposed program design pays too little. The extent to which the City’s proposed program design fails to adequately target assistance is not small; the City’s proposed design misses by a lot.

¹³ The Near Northeast-West PUMA has an identified need of \$473 while the City’s program would provide a discount of \$174; the Central PUMA has an identified need of \$481 while the City’s program would provide a discount of \$179.

The conclusion must be that the use of a discount based on city-wide average income and city-wide average water bills is inappropriate. The divergence of income below the city-wide average, and the divergence of water bills above the city-wide average, shows that the City's proposed discounts would continue to provide unaffordable bills to a huge proportion of the low-income residents of the City. Money would be more wisely spent if a true affordability program, explicitly taking into account a household's water bill as a percentage of income, were to be adopted in Philadelphia.

The City Substantially Over-states the Costs of an Affordability Program.

The cost of operating a water affordability program has been significantly overstated by the City in its rate discount proposal. The cost of operating a program consists of two primary elements: (1) the program benefits; and (2) the program administrative costs. The City over-states both cost elements.

Program Benefits have been Over-stated by the City

The City over-states the costs of providing low-income water affordability assistance in Philadelphia. The City calculates benefit costs as though 100% of a low-income customer's bill would be collected in the absence of the program. We know that not to be true.

It is inaccurate for the City to assert that the cost of a low-income water affordability program is comprised of the difference between bills at standard residential rates, as though 100% of those bills would be collected in the absence of a low-income affordability program, and the discounted bills rendered to affordability program participants. One purpose of a low-income program, after all, is to respond to the inability-to-pay of low-income customers.

While the City may well say that it does not know who its low-income customers are, and thus cannot provide data on who pays what, sufficient data has been collected in Pennsylvania to support the conclusion—above and beyond the intuitive nature of the observation that low-income inability-to-pay imposes lost revenue on a utility—that the City loses a substantial amount of revenue to low-income nonpayment each year.

The City fails to convert billings into revenue in two related, yet separate, ways: (1) it loses a certain amount in permanently lost dollars recognized as “uncollectible”; and (2) it loses a stream of revenue that is not written off as uncollectible, but is nonetheless unavailable as a long-term permanent level of arrears. These arrearage levels represent dollars that have not been paid, and are thus unavailable to fund utility operations, but which have not been declared to be bad debt. The discussion below examines each of these two types of lost revenue.

Low-income customers impose substantial bad debt on Pennsylvania utility systems on an annual basis. If a utility bills \$100 with a write-off ratio of 12%, that utility knows that it will collect only \$88 of its billings, even in the absence of a low-income program. As the sister municipally-owned utility serving Philadelphia, the Philadelphia Gas Works (PGW) is perhaps the most nearly analogous situation to Philadelphia Water/Water Revenue. From 2010 to 2013, PGW has operated with an average bad debt rate for its confirmed low-income customers of 19.38%. In 2013 (the most recent year for which data is available), PGW’s bad debt ratio for its confirmed low-income customers reached 24.8%.

PGW Confirmed Low-Income Bad Debt (2010 – 2013)				
2010	2011	2012	2013	
18.78%	15.92%	18.00%	24.80%	

In addition to that revenue written-off as bad debt, however, there is an ongoing stream of revenue maintained as active arrears. Even if not written-off as uncollectible, these dollars are not available to support the operations of the utility. If \$10 in arrears is collected, they are replaced by \$10 in new arrears so that the ongoing average level of unpaid, and thus unavailable, revenue remains permanently unavailable.

Similar to the bad debt analysis presented above, when one examines the loss of revenue attributable to arrearages, PGW presents a good example as a sister municipally-owned utility. In 2010 and 2011, above and beyond its uncollectibles, PGW failed to collect between 19.6% and 22.0% of its billed low-income revenue, instead carrying those dollars as active unpaid account balances. While PGW has seen a recent decline in the level of arrearages within its low-income population (2012: 7.2%; 2013: 6.9%), from 2010 to 2013, above and beyond its uncollectibles, PGW has experienced an annual average of 13.9% of its confirmed low-income billings in arrears.

PGW Confirmed Low-Income Average Annual Bills in Arrears (2010 – 2013)				
2010	2011	2012	2013	
19.6%	22.0%	7.2%	6.9%	

Overall, PGW has reported that since 2010, on average, 44% of its *total* residential arrears came from its confirmed low-income customer base, even though the billings to those confirmed low-income customers represent only 29% of its total billings.

Clearly, if the Philadelphia Revenue Department were to reduce its low-income bill from \$100 to \$75, it would not be losing \$25 in revenue that it would have collected in the absence of the discount. For the City to assert that the “cost” of a bill affordability program is 100% of the difference between usage billed at standard residential rates and usage billed at the affordable rate presents wrong data leading to wrong conclusions.

Program Administrative Costs have been Over-stated by the City

The City over-states the administrative costs of a low-income affordability program. Low-income affordability programs are not new in Pennsylvania. Such programs have been operated for 20+ years by the state's electricity and natural gas utilities. After decades of experience, there is not only good experience, but good data, on what it costs to operate an affordability program.

The City sets forth incremental administrative and communication costs of \$2.046 million. On a tiered discount program cost of \$16.366 million, this represents an administrative cost of 12.5%. Several concerns arise with this estimate. First, a 12.5% administrative rate would be amongst the highest administrative costs of any universal service program in Pennsylvania. In 2013, only National Fuel Gas (NFG), another utility with an income-based tiered discount, would have had a higher administrative cost (at 13%). The administrative costs of operating Pennsylvania's various natural gas and electric affordability programs are set forth in Table 3 below.

Second, the City's 12.5% administrative cost is also likely understated in percentage terms. If, rather than assuming a 100% participation rate for purposes of calculating benefits, one adopts the PGW participation rate cited by the City,¹⁴ the administrative costs soar to more than 20% of the bill credits provided.¹⁵ That administrative rate is more than half again higher than any administrative cost of a Pennsylvania natural gas or electric utility's universal service program.

The Philadelphia utilities have administrative costs even lower for their affordability programs. In contrast to the estimated 20%+ administrative costs, as shown in Table 3 below, in the past three years, the PGW and PECO (electric) costs have ranged from a low of one percent (1%) to a high of three percent (3%). In each of the past three years, PGW would have experienced total administrative costs (in absolute dollars) of fewer dollars than that proposed by the City (2011: \$1,925,100; 2012: \$730,594; 2013: \$1,545,625).

¹⁴ The cost model provided by the City assumes a PGW participation rate of 50% for households with income below 50% of Poverty Level; of 84% for households with income between 50% and 100% of Poverty; and of 36% for households with income between 100% and 150% of Poverty.

¹⁵ Since the City does not modify the administrative costs it presents based upon participation rates, this discussion makes the same assumption: that the actual dollar amount of administrative cost does not decrease with a decreased participation rate.

Table 3. CAP Administrative Costs as Percent of Total Program Costs

Company	Fuel	2011	2012	2013
Duquesne	Electric	6%	7%	8%
GPU (Met Ed 2003)	Electric	4%	5%	10%
PECO-Electric	Electric	3%	3%	3%
Penelec (2003+)	Electric	5%	6%	11%
Penn Power	Electric	3%	5%	11%
PPL	Electric	4%	5%	4%
West Penn Power (2011+)	Electric	6%	8%	5%
Columbia	Natural Gas	6%	15%	7%
Dominion (Peoples 2009+)	Natural Gas	11%	15%	10%
Equitable	Natural Gas	6%	9%	8%
NFG	Natural Gas	6%	9%	13%
PECO-Gas	Natural Gas	7%	9%	8%
PGW (2004+)	Natural Gas	2%	1%	2%
UGI-Gas	Natural Gas	6%	7%	6%
UGI--Penn Natural (2007+)	Natural Gas	6%	6%	6%

Third, the City asserts a need to hire 16 new fulltime “collection representatives” to administer the program. None of the Pennsylvania’s natural gas and electric utilities, however, have found it necessary to hire such new staff.¹⁶

Finally, not all administrative costs of a low-income program are incremental to the utility. The City does not offset any of its proposed administrative costs by the transfer of existing staff who would be able to move from the existing WRAP program (and other customer service duties) to the “new” low-income program. Even if it were accurate that the City might need 16 fulltime staff to administer a low-income program, some of those staff would be working on the program rather than on negotiating payment plans, handling call center calls, or are otherwise currently performing customer service duties directed toward low-income customers who are not receiving an affordability discount.

In sum, no reason exists for the City to have administrative costs for a low-income program that are as high as it currently projects.

¹⁶ Many Pennsylvania utilities have found it cost-effective to contract with community-based service organizations to administer the outreach and intake processes for their respective affordability programs. Such use of CBOs is encouraged by the Pennsylvania Public Utility Commissions regulations governing low-income affordability programs. See, CAP Policy Statement, Section 69.265(6) “CAP design elements”. (6) Administration. “If feasible, the utility should include nonprofit community based organizations in the operation of the CAP.”

THE PERCENTAGE OF INCOME MODEL.

The Public Advocate urges adoption of a percentage of income-based program for Philadelphia’s water affordability program. Setting aside an arrearage forgiveness program component for separate consideration,¹⁷ a percentage of income program can be adopted that, given reasonable program assumptions, costs roughly what the City estimates its proposed program costs to be, improves affordability by offering a lower percentage of income burden, and improves targeting by eliminating the use of city-wide averages.

In order to compare a percentage of income-based program against the City’s proposal, I have designated the following tiered set of water burdens to demarcate “affordability”: (1) two percent (2%) of income for households with income at or below 50% of FPL; (2) three percent (3%) of income for households with income greater than 50% of FPL but at or below 100% of FPL; and (3) four percent (4%) of income for households with income between 100% and 150% of FPL. It is expected that, at the higher income levels, such a program will function as a payment agreement, with the majority of customers in the higher tier, and a substantial number of customers in the middle tier, only participating to the extent such payment agreement is more advantageous than another payment agreement offered by the City.¹⁸ This tiered structure recognizes that households at lower levels of income have a lower threshold of unaffordability, not only in absolute dollar terms but in percentage of income terms as well. A tiered income structure is used by nearly all Pennsylvania energy utilities implementing a percentage of income program, including both PGW and PECO (Philadelphia’s gas and electric companies respectively).¹⁹

Achieving Affordable Water Burdens under a Percentage of Income Proposal

A percentage of income-based program, as recommended by the Public Advocate, offers substantial advantages over the City’s proposal in terms of achieving affordable water bills. The comparative advantage of the Public Advocate’s recommended program design can be seen in data developed by PECO Energy (the electric utility serving Philadelphia) when PECO agreed to abandon the tiered discount program it had historically operated (and as is now proposed for the Revenue Department by the City) and instead move to a percentage of income based program.

¹⁷ The Public Advocate endorses inclusion of an arrearage forgiveness component. It makes no sense to make bills for current service affordable if the total bill will be unaffordable due to substantial additional payments toward pre-existing arrears.

¹⁸ Although not factored into this analysis, customers with income between 150% and 250% of FPL should be eligible to participate in this program by paying 4% of income toward current and accumulated charges if such agreement is more advantageous than another payment agreement offered by the City.

¹⁹ PECO’s percentage of income program was approved by the Pennsylvania PUC in July 2015 with an implementation date of October 2016.

In a mediation designed to consider an appropriate low-income program structure for PECO, PECO developed data that tested the extent to which the tiered discount program and the percentage of income program resulted in affordable bills.

PECO considered changes in both the “breadth” of unaffordability (i.e., how many customers would face unaffordable bills”) and the “depth” of unaffordability (i.e., dollars of bills over an affordable bill). PECO found that a move to a percentage of income plan would improve its ability to achieve an affordable bill from both perspectives.

	Current Program Percent Unaffordable	Current Program \$ Over Affordability (Mean)	Term Sheet FCO Percent Unaffordable	Term Sheet FCO \$ Over Affordability (Mean)	Change in Breadth	Change in Depth
Rate R	34%	\$504	12%	\$414	-22%	-\$90
Rate RH	28%	\$764	10%	\$426	-18%	-\$338

In explaining to the state Public Utility Commission why it was proposing to move from the tiered discount to a percentage of income program, PECO said:

PECO conducted extensive pro forma analyses of affordability for its current program and the [proposed] program as set forth in the Term Sheet, and it expects to see significant improvements in affordability, both for breadth of unaffordability (percentage of customers who receive unaffordable bills) and depth of unaffordability (amount by which an unaffordable customer misses the affordability target). It should be noted that, because of certain Commission-required cost containment mechanisms such as the minimum monthly bill. . . , the program cannot achieve 100% affordability.²⁰

In addition, the Office of Consumer Advocate (OCA), the state equivalent to Philadelphia’s Public Advocate, charged with representing the interests of all residential ratepayers before the PUC, endorsed the move from the tiered discount to the percentage of income program, stating:

The [proposed] model targets these energy burdens to individual customer circumstances rather than to broad tiers of customers as in PECO’s current program. By more closely targeting the individual customer, affordability is achieved for more customers. Under PECO’s current program, 30% of the CAP customers receive unaffordable bills, but under the FCO, this is reduced to 13%

²⁰ PECO Energy Company’s Statement in Support of Joint Settlement, PUC Docket M-2012-2290911, April 30, 2015.

for [non-heating] customers and 9% for [heating] customers, primarily due to the minimum bill requirements and maximum CAP credit.²¹ Moreover, in PECO's current program, many customers receive a discount although their bills are already at an affordable level. The [proposed model] utilizes the available funding more efficiently and redirects dollars to only what is needed to achieve affordability.²²

There is no serious question but that, in contrast to the City's proposal, which underpays a substantial proportion of customers and overpays a substantial proportion of customers, thus ineffectively and inefficiently using ratepayer dollars in the effort to achieve affordability, the affordability model recommended by the Public Advocate will reduce both the "depth" of unaffordability and the "breadth" of unaffordability.

Cost Considerations for a Percentage of Income Model.

Using a participation rate equal to that estimated by Black and Veatch (52,000),²³ escalated by 20% for purposes of keeping estimates conservative ($52,000 * 1.2 = 62,400$ estimated participants), the total gross benefits of a water affordability program using a percentage of income model, as recommended by the Public Advocate, would be \$20,392,083.²⁴ Adding a reasonable administrative allowance (10%) yields a gross program cost of \$22,332,292.

The \$22.3 million program cost, however, is the gross program cost. It assumes that 100% of the bill at standard residential rates would be paid in the absence of the program. For all the reasons discussed in detail above, that is not the cost to ratepayers. When one accounts for the existing nonpayment patterns, including both uncollectibles and long-term arrears, a 30% offset generates a reasonable net program cost of \$16,241,667. Not only would a percentage of income program be better targeted, and generate more positive affordability outcomes, in other words, but it can do so with minimal, if any, additional cost to ratepayers.

This result is precisely what PECO found as well when it agreed to move from a tiered discount program (such as is proposed by the City) to a percentage of income based program (such as is proposed by the Public Advocate). In explaining its decision to the Pennsylvania PUC, PECO Energy explained:

²¹ These two factors, the minimum bill requirements and maximum program benefit, are the two "required cost containment mechanisms" PECO references in the language quoted immediately above.

²² Statement of the Office of Consumer Advocate in Support of Settlement, March 20, 2015.

²³ Black and Veatch, Bill No. 140607, Executive Briefing Report on the Proposed Bill, at 14, Philadelphia Water Department, April 28, 2015.

²⁴ As discussed in detail above, "gross" program costs assume that 100% of the customer's bill at standard residential rates would have been paid in the absence of the program, an assumption known (for all the reasons previously discussed) to be in error.

PECO estimates that, in a normal weather year, the [proposed] program will be approximately \$3.4 million per year less expensive than PECO’s current tiered approach. (\$77 million per year for PECO’s current program; \$73.6 million for the [proposed program].) As discussed previously, PECO nonetheless expects a material increase in affordability through the [proposed] program. This balancing – increased affordability at the same or a reduced cost – is achieved by redeploing some of the existing discounts from customers in the higher ranges of eligibility – approximately 100-150% of the Federal Poverty Level – and re-directing those funds to the poorest of the poor. This approach of redeploing funds from higher income levels to lower income levels is the primary mechanism by which the [proposed program] increases affordability while maintaining program costs.²⁵

As can be seen, PECO’s empirical findings are *exactly* what the Public Advocate found above with respect to the City’s program proposal. The tiered discount results in over-paying some customers while under-paying other customers. In moving to a percentage of income model, those mis-spent resources can, in PECO’s words, be “redeployed.” This redeployment will “increase[...] affordability while maintaining program costs.”

The Payment Impacts of a Percentage of Income Program.

Multiple positive business impacts will arise for the City from the Public Advocate’s percentage of income water affordability proposal. Two impacts, in particular, are noted, both of which are based on similar programs operating in two different states. The benefits of these enhanced payment outcomes are above and beyond the offsets that are discussed above.

A percentage of income program will result in improved payments by program participants. This occurs not simply by reducing bills by “any” amount (as the City proposal urges), but by setting bills at an affordable burden. The 2006 evaluation of the New Jersey Universal Service Fund (USF) left little question but that increasing the percentage of income burdens charged to that state’s USF participants had an adverse impact on the ability of USF participants to maintain payment compliance under the program.²⁶ The data is set forth in Table 4 below. The New Jersey evaluation reported:

- “More than 80% of households with an effective [energy burden] below 3 percent covered 100 percent or more of their annual bill. Less than 60 percent of households with a [net energy burden] at or above 8 percent covered 100 percent of their annual bill.”²⁷

²⁵ PECO Statement in Support, April 30, 2015.

²⁶ The New Jersey USF was directed toward energy bill, not toward water bills.

²⁷ The bill payment coverage is a simple ratio: Dollars of payments / Dollars of bills = Bill payment coverage.

- While 26% of the participants with net energy burdens exceeding 8% of income paid between 50% and 90% of their bill, only 6% of households with energy burdens of between 2% and 3% had coverage rates as low as between 50% and 90%.

Table 4. Distribution of Bill Payment Coverage by Net Energy Burden (natural gas and electricity)
New Jersey Universal Service Fund (USF)

Net Energy Burden	Coverage Rate			
	<50%	50% - <90%	90% - <100%	100% or more
Less than 2%	0.0%	2.7%	5.3%	92.0%
2% - 3%	0.0%	6.0%	11.5%	82.5%
3% - 4%	0.0%	10.0%	13.2%	76.9%
4% - 6%	0.0%	11.6%	16.6%	71.6%
6% - 8%	0.4%	16.6%	17.4%	65.5%
Over 8%	1.0%	25.6%	16.1%	57.4%

Moreover, contrary to the City’s proposal, a percentage of income program, as urged by the Public Advocate, will prevent customers from incurring future arrears. The percentage of income program operated by Public Service Company of Colorado (“PSCO”) demonstrated this result quite clearly. The data is set forth in Table 5. The Colorado data demonstrates that program participants with an affordable bill incur an unpaid balance in significantly fewer months than low-income customers with unaffordable bills. The proportion of program participants with six or fewer months in arrears is much higher than nonparticipants; the proportion of program participants with seven or more months of arrears is much lower than nonparticipants.

Table 5. Percent of Accounts by Number of Months in Arrears in 24 Month Study Period (PSCO)

Number of Months in Arrears (of 24)	Program Participants (23 – 24 months)	Low-Income Non-participants (by level of Month 1 Arrears)			Total
		\$0	\$1-\$250	>\$250	
0	20%	4%	1%	1%	2%
1-6	33%	27%	13%	12%	20%
7-12	20%	36%	9%	10%	21%
13-18	15%	23%	21%	18%	21%
19-21	7%	8%	27%	26%	18%
22-23	4%	1%	29%	33%	17%

Table 5, however, examines only the question of whether an arrearage exists. It does not consider the size of the arrearage. An account with a \$1 arrearage is counted the same as an

account with a \$250 arrearage. Table 6 below examines the *size* of unpaid bills as well. It assesses the proportion of participant and nonparticipant accounts by the ratio of the arrearage maintained in the final month of the study period to the arrearage maintained in the first month of the study period.²⁸ For example, if the Month 1 arrearage was \$100 and the Final Month arrearage was \$75, the ratio would be 0.75 (and fall in the range of 0.50 – 0.99). If the Month 1 arrearage was \$100 and the Final Month arrearage was \$110, the ratio would be 1.10 (and fall in the range of >1.0).

Table 6 shows that the percentage of income program helped program participants reduce their arrearages. Far more program participants had reduced their Month 1 arrearage to \$0; far fewer program participants increased their arrearage over the 24 month period.

Ratio of Final Month Arrears to Month 1 Arrears	Program Participants	Low-Income Non-participants (by level of Month 1 Arrears)		
		\$1-\$250	>\$250	Total
0	40%	9%	6%	8%
.01 - .49	10%	2%	12%	6%
.50 - .99	11%	8%	18%	12%
=1.0	0%	0%	1%	0%
>1.0	38%	80%	63%	74%
Total	100%	100%	100%	100%

The data from prior percentage of income programs demonstrates the benefits of targeting affordability assistance in the fashion recommended by the Public Advocate. Such targeting generates positive payment outcomes.²⁹ The ability to generate these positive impacts depends on the ability of the program to achieve an affordable water bill burden, an impact that the City’s program proposal is, by design, incapable of achieving.

The Impact of a Percentage of Income Program on Customer Consumption

Adoption of a percentage of income program will not result in program participants systematically increasing their consumption of utility service. This conclusion is based both on extensive empirical inquiry and on sound economic theory.

²⁸ Customers with a \$0 balance in Month 1 were excluded.

²⁹ The data further demonstrates the fallacy of the City’s assertion that a low-income program imposes on nonparticipating ratepayers is simply the difference between bills at standard residential rates, as though 100% of those rates are collected, and the discounted bills under a new program.

The Empirical Findings

Concerns are frequently expressed that basing utility bills on a percentage of income, where the bill does not increase as usage increases, will result in customers wastefully increasing their consumption. Over the past 30 years, a number of studies have examined whether this result occurs in fact. A comprehensive national evaluation of low-income affordability programs undertaken in 2007 reported that such usage increases do not occur. That multi-state study reported:

Some of the evaluations that were reviewed analyzed the impact of the affordability programs on energy usage. . .Energy affordability programs reduce the cost of using energy, and therefore program managers are concerned that they may result in increased in energy usage. However, evaluation results. . .show that this is not an issue. Program evaluations find small and insignificant increases in energy usage, or sometimes even declines in energy usage. (emphasis added)³⁰

Particularly for percentage of income programs, while program participants tend generally to have higher consumption than do program nonparticipants –this makes eminent sense since the low-use customers are far more likely to have affordable bills without the program and thus be nonparticipants—program participants do not systematically increase their consumption upon entering the program.

An overview of the various third-party evaluation findings on the impact of a bill affordability program on usage is presented in Appendix A.

The Explanation of those Results

Despite the expressed concerns about the pricing of utility service under a bill affordability program, one clear impact of a low-income bill affordability program is the extent to which such a program will improve the “price signals” delivered to inability-to-pay customers through utility bills. As a general rule, water bills represent an ineffective means to send price signals to low-income customers. As described elsewhere in this document, low-income customers, particularly customers with energy burdens exceeding a prescribed percentage of income, pay less than their entire, undiscounted bill. As a result, low-income customers’ inability-to-pay for utility service substantially distorts the price signal the consumer receives.³¹

³⁰ APPRISE, Inc. and Fisher Sheehan & Colton (2007). Ratepayer-Funded Low-Income Energy Programs: Performance and Possibilities: Final Report.

³¹ From an economic theory perspective, it is easy to understand this result. From a price theory perspective, price signals “work” only if there is adequate information about price and quality. The inability-to-pay, and the resulting arrears, impedes this information process. See generally, Colton (1990). "Customer Consumption Patterns within an Income-Based Energy Assistance Program." 24 Journal of Economic Issues 1079.

In the absence of an affordable bill, a price signal is impeded in two ways.

- First, the price signal provided through the price of current consumption is only effective if a customer has the ability to receive and respond to that price signal. When a customer can afford to pay only a fraction of the bill, the impact of the per-unit price becomes less meaningful.
- Second, the impact that the price of current consumption has on the *total* bill is diluted to the extent that there are substantial arrears wrapped into that total bill. Prices only send a “price signal” if the *current* bill and the *total* bill are reasonably the same.

These two fundamental truths, set forth in any basic price theory, can be further examined using data from electric utilities offering bill affordability programs in Pennsylvania and Colorado.

The ability to receive price signals: The viability of sending a price signal assumes that the customer has the ability to *receive* the signal. If a customer has an ability to pay \$50 per month, the price signal sent to a customer receiving a bill of \$85 rather than a bill of \$75 is negligible, if any signal exists at all. In contrast, the price signal received through a bill for \$49 rather than a bill for \$55 is more significant. The closer that a utility can tailor bills to reflect affordability, the more efficacious any price signal will be. A low-income discount program that reduces bills to an affordable level actually *improves* the price signaling of utility bills.

Seven electric utilities³² offer affordable bills in Pennsylvania. Table 7 below shows the average bill for current consumption under standard residential rates; the affordable bill; and the “CAP credit” (i.e., the difference between the affordable bill and the bill at standard residential rates).

As can be seen, a change in the bill at standard residential rates would have no impact on sending a “price signal” to these inability-to-pay customers. The annual bills at standard residential rates are hundreds of dollars away from being at a level where a change would send any reasonable price information to the program participants. The bills at standard rates range between 30% and 140% greater than the bill level which delivers effective information. In contrast, with 90% (or more) of the bill under CAP actually being paid, any change in price (or consumption) that may affect the bill under the affordability program will have an impact on whether the bill is paid, or whether the bill remains unpaid. As a result, the effectiveness of price signals is enhanced.

³² Duquesne Light, Metropolitan Edison, PECO Energy, Pennsylvania Electric Company (Penelec), Penn Power Company, Pennsylvania Power and Light (PPL), and West Penn Power Company.

Program Year: 2013	Bill at Standard Rate	Bill under Affordability Program	Difference Between Actual Bill and Bill at which Price Signal Received
Duquesne Light	\$1,267	\$924	\$343
Met Ed	\$1,452	\$684	\$768
PECO Energy	\$1,393	\$828	\$565
Pennelec	\$1,205	\$552	\$653
Penn Power	\$1,123	\$468	\$655
PPL Utilities	\$1,982	\$948	\$1,034
West Penn Power	\$1,356	\$1,020	\$336

Dilution of price signals in total bill due to arrears: Carrying substantial arrears impedes the price signal delivered by the price for current service. Public Service Company of Colorado’s (PSCO) low-income population brought an average of nearly \$350 of pre-existing arrears³³ to the low-income bill affordability program. The bulk of those arrears came from participants with large (e.g., greater than \$1,000) pre-existing arrears. A full 60% of the pre-existing arrears were associated with accounts owing more than \$1,000, with more than half of that brought by accounts owing more than \$2,500. Even at the lowest level of arrears, however, (>\$0 to \$300), the average arrears that would have been attached to total bills was \$132.

Changes in prices for current service to these low-income customers, therefore, would have sent little, if any, “price signal” given this expansion of the total bill charged to consumers. A one percent increase in price for current service, in other words, would not result in a one percent increase in the total bill for service. The transmittal of information by each one percent increase in price for current service would instead be impeded to the extent that the account carried arrears.

Level of Pre-existing Arrears	Percentage of Accounts	Percentage of Dollars	Average Arrears
\$0 or less	36%	0%	\$0
> \$0 - \$300	39%	15%	\$132
> \$300 - \$500	9%	10%	\$388
> \$500 - \$1,000	8%	16%	\$695
> \$1,000 - \$2,500	6%	28%	\$1,578
> \$2,500	3%	32%	\$4,250
Total	100%	100%	\$347

³³ This average is the average arrears spread over all low-income customers, not the average spread over only the low-income customers having arrears.

Arguments about the adverse impact of affordable bills on the “price signals” sent by City water bills are not well-founded. Not only are such arguments not grounded in fact, but they are not well-grounded in sound economic price theory either. Rather than impeding price signals, entirely consistent with basic price theory, affordable bill programs have been found to improve the price signals embedded in utility bills.

THE STRUCTURE OF THE EQUIVALENT GAS AND ELECTRIC AFFORDABILITY PROGRAMS SERVING PHILADELPHIA.

Both the Philadelphia Gas Works (PGW) (the municipally-owned natural gas utility serving Philadelphia) and PECO Energy (the investor-owned electric utility serving Philadelphia) operate affordable bill programs for their respective low-income customers. PGW and PECO both extend their bill affordability programs to customers with income at or below 150% of the Federal Poverty Level. Both programs offer a program based on tiered affordability burdens.³⁴

The improved payment results found in the PGW program largely mirror those results discussed above from New Jersey and Colorado. According to PGW’s most recent independent third party evaluation of its low-income bill affordability program,³⁵ PGW experienced “a large increase in bill coverage rates” for program participants. “While only 21 percent of CRP participants paid their full bill in the year prior to enrollment, 41 percent paid the full CRP bill in the year following enrollment. The non-participant comparison group did not see the same increase in coverage rates.”³⁶ The “mean coverage rate” “increased from 74% for the year prior to CRP enrollment to 84% for the year following CRP enrollment.” In addition, the PGW evaluation found that while arrearage balances continued to increase for low-income *non-participants*, unpaid account balances actually decreased for PGW program participants.³⁷

As discussed above, PECO’s redesigned CAP program will be a percentage-of-income model, abandoning its prior tiered discount model, in order to improve both the depth and breadth of bill affordability for low-income participants.

CONCLUSIONS AND RECOMMENDATIONS

The discussion above compares the structure, cost and operation of the City’s proposed water affordability program with a percentage of income program design, using the same FPL

³⁴ PGW has operated its percentage of income approach for years. PECO’s proposal to convert its existing tiered discount program (structured in a way similar to the City’s proposal) to a percentage of income program (structured in a way similar to the program described in the second half of this analysis) was approved by the Pennsylvania PUC in July 2015.

³⁵ APPRISE, Inc. (November 2012). PGW Universal Service Program Impact Evaluation: Final Report.

³⁶ APPRISE, at 73.

³⁷ APPRISE, at 73 – 74.

groupings for both programs. The data and analysis presented above leads to the following conclusions:

- A percentage of income program, as recommended by the Public Advocate, will appropriately target affordability assistance, thereby reducing both the “breadth” of unaffordability and the “depth” of unaffordability. This result can occur by redeploying the over-payments to instead provide benefits to those customers who would be underpaid under a tiered discount program.
- The cost of a water affordability program is not equal to the difference between revenue billed at standard residential rates and discounted revenues billed under an affordability program, calculated as though bills would be 100% collected in the absence of the program. Program costs calculated in such a fashion significantly over-state the costs of an affordability program to ratepayers.
- The tiered discount proposal presented by the City substantially over-states administrative costs.
- The tiered discount proposal presented by the City ineffectively and inefficiently uses ratepayer dollars. The City’s proposal substantially overpays some low-income customers while significantly under-paying other customers.
- The over- and under-payment resulting from the City’s proposal has a distinct geographic element to it, with some areas of the City being over-paid to the detriment of other areas of the City that are being under-paid.
- Setting bills at an affordable water burden will improve payment patterns of participating low-income customers. These improvements will have further positive financial benefits to the City in its business capacity. The City will improve collections while reducing the effort it must devote to the process of collection.

The above data and discussion supports the conclusion that a percentage of income program, as recommended by the Public Advocate, is the superior structure of providing affordable water service in Philadelphia.

**Appendix A: Summary of Evaluation Findings
Regarding Impact of Low-Income Bill Affordability Programs
On Program Participant Usage**

Evaluation of Minnesota Fair Share pilot Programs (1986)

Of the clients served in Anoka County, 57 percent of all participating households fell within the range of a ten percent increase to a ten percent decrease (37 percent increased consumption; 20 percent decreased). An equal number experienced “significant” increases as decreases, with ten percent using at least 25 percent more and eleven percent using at least 25 percent less.

The second Minnesota pilot program involved the BICAP community action agency. With BICAP, the data was almost identical. For participating households, 67 percent of all households fell within the plus or minus ten percent range (21 percent increased; 46 percent decreased). Similarly, while eight percent of participating households increased consumption by at least 25 percent, nine percent decreased consumption by at least 25 percent.

Evaluation of Warwick (Rhode Island)
Percentage of Income Payment Plan (PIPP)
Demonstration Project (January 1988)

The presence of PIPP does not appear to be a factor affecting energy consumption by PIPP participants. Over 60 percent (60%) of PIPP participants with 12 months of consumption data fell within a range of a ten percent increase to a ten percent decrease in consumption during the Program Year. Within that group, slightly more households went up (34%) as went down (27-percent).

An insignificant number of PIPP participants substantially increased their energy consumption during the Program Year. Roughly eleven percent (11%) increased their consumption by more than 20 percent. An equal number of households decreased their energy consumption by a similar amount. Roughly eight percent experienced consumption decreases of more than 20 percent.

The Impact of Missouri Gas Energy’s Experimental Low-Income Rate (ELIR)
On Utility Bill Payments by Low-Income Customers (October 2003)

The grant of fixed credits to the ELIR population does not appear to provide an incentive for those customers to systematically increase their energy consumption. . . While the [Energy Assistance] (EA) population has a total average monthly consumption of 86 therms per month, the ELIR population has a total average consumption of 68 therms. The ELIR population has

consumption that is roughly 20% lower than the EA population. The consumption of the ELIR population is much closer to the total population average monthly usage of 72 therms than to the comparable low-income population not receiving ELIR credits.

The consumption for the ELIR and EA populations was tested for statistical significance at the 0.05 level. With an average consumption of 86 therms, the EA population had a statistically significant *higher* consumption than did the ELIR customers, who had an average consumption of 68 therms. It cannot be concluded that the MGE ELIR program resulted in an increase in consumption relative to those customers not receiving ELIR fixed credits.

Final Report: Washington Low-Income Bill Assistance Program:
Phase II, Impact Analysis (October 2003)

One concern that arose in our interviews was that the discount might simply encourage participants to use more electricity. While there were a few in the focus groups who admitted that they used more electricity than normal due to the bill reduction, all claimed that the increase was only enough to make the home more comfortable. Furthermore, the vast majority (more than 90%) of the participants in the focus groups remarked that their participation in the Program had elevated their level of consciousness and that they tended to be much more conservative in the consumption of electricity. Forty-five percent of the participants claimed to have reduced their electricity consumption. Another 45% reported that their consumption had remained the same.

TW Phillips Energy Help Fund Program Evaluation:
Final Report (November 2004).

[The data] shows that about 20 percent of current and past participants said that their gas usage decreased while they were participating in the program, about 5 percent said their gas usage increased, and more than 60 percent said that their gas usage had not changed.

*Final Report: PG Energy
Universal Service & Energy Conservation Programs Evaluation (August 2005)*

Weather Normalized Usage: The weather normalized usage is annualized usage that has been adjusted to control for the weather, by modeling the relationship between the average daily temperature and the customer's gas usage, and then predicting the customer's usage in an average weather year. Customers had an average weather-normalized usage of 1,489 ccf in the year preceding enrollment and usage of 1,485 ccf in the year following enrollment, an

insignificant decrease of 4 ccf. The net change in weather normalized usage was not statistically significant.

*Final Report: Impact Evaluation and Concurrent Process Evaluation
of the New Jersey Universal Service Fund (April 2006)*

Data on customers' energy usage were analyzed to assess the impact of the USF program on consumption. Customer usage data from the year prior to the institution of the USF program, October 2002 to September 2003, were compared to data from the following year, October 2003 to September 2004. . . The findings with respect to gas usage were:

- On average, clients used about 1,200 therms of gas.
- Gas usage in the preprogram period was about eight percent higher than in the post-program period.
- The change in average usage by group fell into a narrow range from about -5.2 percent to -8.5 percent. . .

The findings with respect to electric usage were:

- On average, clients used about 7,200 kWh of electricity.
- Electric usage in the preprogram period was about the same as that in the post-program period.
- The change in average usage by group fell into a narrow range from about -2.5 percent to +1.6 percent.

In general, these findings suggest that participation in the USF program had little or no impact on usage.

*PPL Electric Utilities Universal Service Programs:
Final Evaluation Report (October 2008)*

There is sometimes a concern that customers who participate in payment assistance programs will increase their usage, as their bill remains constant throughout the year, and they face a lower cost for using electricity. Previous research has not found increases in usage, except in some cases when customers cannot afford bulk fuel delivery and switch to electric space heat. This

section examines the change in usage for OnTrack participants in the year following enrollment to determine if participants do increase their usage.

Table VII-15A displays the change in usage for the OnTrack participants and the comparison groups. The table shows that the OnTrack participants had an increase of 350 kWh in the weather normalized consumption, an increase of two percent over the year prior to OnTrack enrollment. However, the comparison groups also increased their usage during this time period, and this increase in usage therefore most likely reflects a general trend toward increased usage with the increased plug load that is seen in consumers homes. The net change in usage for the treatment group was a decline of 101 kWh.

Table VII-15B examines the change in usage for electric heating customers. This table shows a 501 kWh increase in usage over the pre-enrollment period, a three percent increase. The comparison groups also showed increases in usage over this time period. The net change in usage was an increase of 63 kWh.

Table VII-15C examines the change in usage for non-electric heating customers. This is the group that we may expect to see a larger increase in usage. However, the table shows a 352 kWh increase in usage over the pre-enrollment period, a three percent increase and again the comparison groups showed similar increases in usage over this time period. The net change in usage was a decline of 131 kWh.

*Illinois PIPP Program Impact Evaluation
(December 2009)*

One concern with a PIPP program is that PIPP clients would increase their energy consumption because these clients are required to pay 10 percent of their monthly income toward their utility bill regardless of their actual energy usage and have no incentive to cut back consumption. Table 4.61 shows the annual electric usage in pre- and post-enrollment periods for the clients with 12 months of pre- and post-enrollment data. . . The usage analysis shows that the PIPP clients, who had to pay a fixed amount regardless of the actual usage, increased their consumption by between 0.9% and 3.8% in the post-enrollment period. The small increase in usage may be due to the fact that some of these households were able to afford to keep their home at a healthier and safer temperature, or that they did not have their service disconnected during the post-enrollment period.

*Allegheny Power: Universal Service Programs
Final Evaluation Report (July 2010)*

Respondents were also asked to compare their electric usage prior to LIPURP to while they were participating in the program. Table VII-30 shows that the majority said that there was no change in their usage. However, 25 percent of current participants and 16 percent of past participants said that their usage was lower while on LIPURP and 11 percent of current participants and seven percent of past participants said that their usage was higher when they were on LIPURP.

*Equitable Gas: 2011 Universal Service Impact Evaluation
(May 2011)*

In March 2009, the Company commenced an extensive CAP Usage Monitoring Program wherein they reviewed all active CAP customers for usage greater than 110% of their historical usage. This captured CAP customers from the 2007-2008 program year with twelve months of post-CAP consumption. Customers who were non-active or removed from CAP were deducted from the original pool of 18,650 customers. In addition, the Company weather normalized the consumption to confirm excess usage. . . . The Company expends considerable time, effort and manpower to monitor CAP high usage as currently exists. The use of Company and contractor resources for this effort is excessive compared to the yielded results. For the 2007-2008 CAP program year, a mere 0.2% of CAP customers were identified as requiring follow-up for review.

*Public Service Company of Colorado's (PSCo)
Pilot Energy Assistance Program (PEAP)
and Electric Assistance Program (EAP)
2011 Final Evaluation Report (February 2012).*

The PEAP participation population did tend to have somewhat higher natural gas consumption than both the residential population in general and the federal energy assistance population. Gas-only PEAP participants had a higher gas usage than did the gas-only LEAP participant or the gas-only residential customer. Each type of combination (electric/gas) PEAP participant also evidenced higher consumption than did either the LEAP population or general residential population.

This finding is consistent with prior research regarding low-income “percentage of income” programs. While households seeking the benefits of a low-income affordability program tend to have somewhat higher than average consumption with which to begin, they do not tend to increase their consumption as a result of their participation in the program.

*UGI Utilities, Inc. – Gas Division and UGI Penn Natural Gas, Inc.
Universal Service Program: Final Evaluation Report (November 2012)*

Customers were also asked about the impact of the program on gas usage. [The data] shows that 34 percent said that their usage was lower and eight percent said that it was higher. UGI customers were more likely than the other utility CAP participants to say that their usage was lower while participating in the program.

Usage Change	UGI	Allegheny	PPL	PG Energy
Higher	8%	11%	16%	9%
Lower	34%	25%	27%	22%
No change	47%	55%	48%	61%
Don't Know	11%	9%	10%	7%

*P GW Universal Service Program Impact Evaluation:
Final Report (November 2012)*

Respondents were asked to compare their gas usage while on CRP to their usage before they began participating in the program. [The data] shows that 40 percent of current participants said their usage was lower, eight percent said it was higher, and 44 percent said it had not changed.