

## Baltimore's Conundrum:

Charging for Water / Wastewater Services  
that Community Residents Cannot Afford to Pay

November 2018 (Revised)

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## Executive Summary

Like most major cities in the United States today, the City of Baltimore is facing a major dilemma. On the one hand, Baltimore has major capital investments that it must make in the infrastructure used to deliver water and wastewater service to city residents. These investments are expected to cost billions of dollars. On the other hand, many of the residents of Baltimore simply cannot afford to pay the water and wastewater rates that will be required in order to fund these billion dollar investments.

Hence the conundrum facing city officials: Baltimore must borrow money to invest in water and wastewater infrastructure improvements that can no longer be delayed in order to deliver an essential public service. Not making the improvements is not an option. In contrast, many Baltimore customers of the water / wastewater utility do not have the ability to pay the increase in bills that will be charged for those essential public services. Not using water and/or wastewater service is also not an option.

Failing to acknowledge, let alone to address, this conundrum results in a multitude of problems for Baltimore. It results in environmental problems as City officials may seek to delay or avoid their responsibilities to deliver safe, clean and healthy service. It results in social problems as increasing numbers of Baltimore residents lose their water/wastewater service (and, frequently, correspondingly lose their homes). It results in financial problems to the City, as Baltimore, in its capacity as a municipal government, experiences increased expenses (such as addressing homelessness and municipal decay) while facing a decreasing property tax base (as water service

is terminated and homes are abandoned).<sup>1</sup> Just as importantly as these impacts, however, the failure to acknowledge and address the conundrum results in a business problem to the water / wastewater utility, as it unsuccessfully seeks to collect money that City residents don't have (and inefficiently spends money in those unsuccessful collection efforts).

The objective of the analysis presented below is to contribute some understanding to how Baltimore might address its water / wastewater conundrum.

## **Baltimore Water and Wastewater Investments.**

The City of Baltimore has invested heavily in its water and wastewater infrastructure in recent years. A review of the City of Baltimore's Comprehensive Annual Financial Reports ("CAFR") since 2010 provides insights into the need for the investments. For example, the City's 2010 CAFR stated:

The City has voluntarily entered into a Consent Decree to rehabilitate its aging sewer infrastructure and correct historical overflow mechanisms. The Consent Decree is one of many the U.S. Department of Justice is and has currently negotiated with major east coast cities with aged sewer and storm water infrastructures. The City is proactively negotiating to ramp up its remedial efforts to address discharge and overflow concerns of the State and Federal regulatory agencies. These efforts are ambitious and the cost of the construction and maintenance are estimated to be greater than \$1 billion dollars over the next decade and beyond. The City has committed to financing these remedial efforts through a combination of water and waste water revenue bonds in conjunction with all available State and Federal assistance.

By 2016, the prior Consent Decree had expired. In its 2016 CAFR, after explaining the history of the Consent Decree, the City of Baltimore further reported:

During the life of the Consent Decree to date, the City has spent over \$800.0 million to study, design and begin improving the sanitary sewer system with the goal of eliminating sanitary sewer overflows. The Consent Decree expired on January 1, 2016, and the City has been negotiating a new decree with the Department of Justice, the Environmental Protection Agency and the Maryland Department of the Environment. On June 1, 2016, the City, the Environmental Protection Agency, the Department of Justice, and the Maryland Department of the Environment filed a proposed modification to the 2002 Consent Decree with

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<sup>1</sup> Throughout the discussion that follows, the term "water service" should be construed as referring to water, wastewater and stormwater services unless the context clearly indicates a contrary intent.

the U.S. District Court. The revised decree is composed of two phases with priority given to those projects that provide the greatest environmental benefits in the early years and is expected to cost \$630.1 million in fiscal year 2017, to complete the remaining phase one projects. The second phase deadline is fiscal year 2030, and focuses on increasing the capacity of the system, which is expected to cost \$548.4 million.

According to the City's CAFRs, from 2010 through 2016, the principal and interest remaining to be paid by Baltimore's water customers increased by 38% (from \$865,972,000 in 2010 to \$1,191,771,000 in 2016). In addition, during that same seven year period (2010 – 2016), the principal and interest remaining to be paid by Baltimore's wastewater customers increased by 47% (from \$1,050,842,000 in 2010 to \$1,540,101,000 in 2016).

This increase in debt generates not merely a *noticeable* impact on annual expenses to be included in customer rates, but a *substantial* impact. From 2010 to 2016, the principal and interest paid by water customers *each year* increased by 86.3% (from \$26,466,000 in 2010 to \$49,313,000 in 2016). During the same time period, the principal and interest paid by wastewater customers each year increased by 58.4% (from \$44,740,000 in 2010 to \$70,874,000 in 2016).

The real question, today, is whether Baltimore is both willing and able to take those steps necessary to face the following conundrum. The City of Baltimore does not have the discretion *not* to make these investments. However, and it is a huge “however,” the need to make the investments does not make the ability-to-pay of Baltimore customers any greater.

### **The Collision of Increasing Rates and Inability-to-Pay.**

One impact of the increasing investments is that the rates charged to the City's water and wastewater customers correspondingly increase. The City's financial reports report that for each year 2010 through 2016, with the exception of 2011, the water and wastewater utilities received higher revenues attributable to rate increases.

Years of Water / Wastewater Rate Increases in Baltimore			
Fiscal Year Ending June 30	Water Rate Increase	Wastewater Rate Increase	Page Cite to Annual CAFR
2010	✓	✓	Page 9
2011	---	---	---
2012	✓	✓	Page 9
2013	✓	✓	Page 12
2014	✓	✓	Page 14
2015	✓	✓	Page 14
2016	✓	✓	Page 13

Baltimore's water and wastewater rates are projected not only to continue to increase, but to sharply increase into the foreseeable future. Typical residential bills in Baltimore have increased by 127% from FY2010 to FY2018. Residential bills have increased by 37% simply from FY2014 to FY2018. The bill increases will become more and more dramatic. By Fiscal year 2022, assuming the same three year annual increase as was adopted in the last three-year rate decision, the typical residential bill of \$1,115 will be more than triple what the 2010 bill had been ( $\$1,115 / \$347 = 3.21$ ).

Past, Current and Projected Bills (combined water and wastewater) (Baltimore, MD) (2010 – 2022)		
Fiscal Year	Year of Increase	Annual Bill
FY2010	2009	\$347.28
FY2011	2010	\$378.54
FY2012	2011	\$412.62
FY2013	2012	\$449.76
FY2014	2013	\$517.26
FY2015	2014	\$574.20
FY2016	2015	\$637.44
FY2017	2016	\$720.48
<b>FY2018 (current bill)</b>	<b>2017</b>	<b>\$787.58</b>
FY2019	2018	\$860.96
<b>FY2020 /a/</b>	<b>2019</b>	<b>\$938.45</b>
<b>FY2021 /a/</b>	<b>2020</b>	<b>\$1,022.91</b>
<b>FY2022 /a/</b>	<b>2021</b>	<b>\$1,114.97</b>

Notes:  
/a/ Projection of 9% annual increase, as was adopted in the most recent three-year increase.

One of the problems facing the City of Baltimore is that sending bills that exceed the capacity of the community to pay does not result in the revenue that is required to meet one's financial obligations. As a result, a downward spiral is created. Future rate increases have to be higher, in order to take into account the fact that much of the increase in billed revenue, in fact, will not be collected. In the meantime, arrearages grow, as do the expenditures that the utility devotes to its increasingly unsuccessful efforts to collect its revenue. What occurs, in other words, is that the City works harder and harder to collect less and less.

While the City of Baltimore does not keep sufficient records to completely document this phenomenon, there is sufficient data upon which to reach the conclusion that this race to the bottom has begun for Baltimore's water and wastewater utility. The City's CAFRs distinguishes between "current assets" (those receivables believed to be subject to collection within one year) and "non-current assets" (those receivables that the City does not expect to collect within one year).

Since 2010, Baltimore's total water receivables have increased by nearly \$15 million, while the City's total wastewater receivables have increased by nearly \$125 million. Even more importantly, the City's wastewater non-current asset receivables have increased by \$90 million (from \$6.5 million in 2010 to \$98.1 million in 2016).

In many ways, in other words, Baltimore is impeding its own progress in seeking to generate funding for current and future investments in its water and wastewater infrastructure in the manner in which it is now proceeding. As bills become more and more *unaffordable*, the City realizes less and less cash from each rate increase. As the City collects less and less money, it is forced to raise rates even higher to replace the funds not collected. The City does not track information on the number or size of bills that remain unpaid, or on the efforts the City takes to collect those bills, let alone on the success (or lack of success) in converting billed revenue into collected revenue. The downward spiral is thus exacerbated.

### **Assessing the Current and Future Affordability of Baltimore's Water / Wastewater Bills.**

The affordability of water and wastewater service in Baltimore is examined on a geographically disaggregated basis below. The analysis is limited exclusively to the City. The City of Baltimore was broken down into its component Census Tracts. Baltimore City has 200 Census Tracts. Census data was obtained from the American Community Survey for each Tract by year for the years 2010 through 2016. The current and future affordability of Baltimore's water and wastewater bills is then assessed from four different perspectives:

- Households at median income within their individual Census Tracts;

- Households in the First Quintile (“bottom quintile”) of income;<sup>2</sup>
- Households with income at 150% of the Federal Poverty Level; and
- Households with income at 100% of the Federal Poverty Level.

The results are mixed at moderate income levels. In 2010, 187 of the 198 Census Tracts for which median income is available (94.4%) experienced affordable water and wastewater bills at the Census Tract median incomes. By 2016, the number had fallen to 134 (67.7%). 2019 is the year in which water and wastewater bills become unaffordable for more than half of the City at median income (108 of 198 Census Tracts). It is important to remember that the data above does not focus on “low-income” households, but rather on households at the mid-point of income in each Census Tract (i.e., the median is the point at which half of all incomes are higher and half are lower).

In contrast, in 2010, nearly 90% of Census Tracts had unaffordable water / wastewater bill burdens for households in the First Quintile of income. The proportion of Census Tracts having unaffordable burdens for these lower income households was at 98% during the years 2014 through 2017. The proportion never falls below 94% in the ten year period in 2013 and beyond.

Beginning in 2015, the number of Census Tracts in which households in the First Quintile of income faced high bill burdens began to sharply increase. In 2015, 83 Census tracts experienced bill burdens exceeding eight percent (8%) of income for households with income in the First Quintile of their Census Tract (8% being four times higher than the 2% water / wastewater burden generally deemed to be affordable). By 2018, that number increased to 103 (more than half) of all Census Tracts. By 2022, that number had increased to 126 Census Tracts (or more than 70% of the City) that had water / wastewater burdens four times higher than the burden deemed to be affordable.

The importance of looking at customers with incomes at lower levels of Poverty cannot be overstated for Baltimore. In 2016, nearly 35% of Baltimore’s population lived with income at or below 150% of the Federal Poverty Level. Nearly one-in-four (24%) of Baltimore’s population lived with income at or below 100% of the Federal Poverty Level. Just as importantly, there are some areas of the City where poverty is concentrated. The percentage of population living at or below 100% of Poverty is greater than 25% more than the overall City average in 53 Census Tracts, while the

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<sup>2</sup> In its reporting of income data, the Census Bureau rank orders the population of each Census Tract by income from the lowest income to the highest income. The Census Bureau then divides the population into five equal parts. Each of these parts is called a “quintile” (20% of the population). The Census Bureau then reports the average income for each quintile in each Census Tract. The “First Quintile” (sometimes called the “lowest quintile”) is the one-fifth of households with the lowest income in the Census Tracts.

percentage of population living at or below 150% of Poverty is 25% more than the overall City average in 61 Census Tracts. By 2016, bills were affordable at 150% of Poverty Level in only five (5) of the 198 Census Tracts. By 2019, bills will not be affordable at 150% anywhere in the City of Baltimore.

At income levels equal to 100% of Poverty, water / wastewater bill burdens exceeded the demarcation of affordability (2%) in more than 90% of all Census Tracts ( $186 / 198 = 93.9\%$ ) as early as 2011. By 2014, not a single Census Tract experienced an affordable bill burden at 100% of Poverty. By 2020, 189 of the 198 Census Tracts (95.5%) would have bill burdens of 4% or more. By 2022, 74 of the 198 Census Tracts (37%) experience bill burdens of up to 10% of income at 100% of the Federal Poverty Level, five times higher than the affordable level.

### **A Proposed Bill Affordability Program for Baltimore.**

A bill affordability program directed to water and wastewater customers with annual income at or below 150% of Poverty is proposed for Baltimore. The necessary components of an effective and efficient rate affordability program include:

- **A rate affordability component.** The rate affordability program will be directed toward reducing bills to an affordable percentage of income. The rate affordability program is designed to reduce water/sewer bills to a base affordable burden set at 2% of household income.
- **An arrearage management component.** The arrearage management component will reduce pre-program arrears to a manageable level over an extended period of time. An arrearage management program component is necessary to help get low-income customers "even" so they have a chance at future success in making payments. It does not help to have current bills be affordable if the household is subject to service termination for preprogram arrears.
- **A crisis intervention component.** The need for a crisis intervention program arises from three different attributes of low-income households. First, one attribute of low-income households is their lack of cash assets to allow them to weather the storm of unexpected expenses or unexpected loss of income. Second, one attribute of a low-income household is that low wage workers tend to be hourly wage workers, the overwhelming majority of whom lack paid leave. The need for either medical leave, or family care leave, in other words, leads directly to lost income when paid leave is not provided. Third, low wage workers tend to have lower quality jobs, often marked by considerable income fluctuations due to the number of hours they are called upon

to work. The number of lost hours, and thus the amount of lost wages, is referred to as involuntary part-time employment.

- **A water conservation component.** A multi-state study of affordability programs in the United States found that, in the energy industry, “every state that has adopted a home energy affordability program has incorporated an energy efficiency component into that affordability initiative.” The study found that “these [low-income efficiency] programs can effectively complement the impacts of affordability programs.”

## **The EPA’s Support of Low-Income Affordability Programs.**

The U.S. Environmental Protection Agency (“EPA”) has explicitly recognized the role that low-income rates play in improving the capacity of a community to make precisely the types of investments that Baltimore is facing. In 2013, the EPA told its Regional Administrators that “EPA strongly encourages municipalities to consider establishing lower rates or subsidies for low income customers. This is consistent with one of the goals of integrated planning, which is to take advantage of synergies and savings that can be found through an integrated approach and thereby promote affordability.” EPA said, “local officials have a great deal of latitude under these regulations and the EPA continues to encourage communities to consider and adopt rate structures that ensure that lower income households continue to be able to afford vital wastewater services.”<sup>3</sup>

## **The Philadelphia Model: Income-Based Water Rate Affordability Program (IWRAP).**

In the Fall of 2015, the City of Philadelphia became the first major urban center to adopt a water affordability program structured on percentage of income principles. Adopted unanimously by the Philadelphia City Council on November 19, 2015, the Philadelphia initiative is titled the Income-based Water Rate Affordability Program (“IWRAP”).<sup>4</sup> IWRAP opened for business on July 1, 2017.

Philadelphia’s IWRAP legislation provides that: “monthly IWRAP bills shall be affordable for low-income households, based on a percentage of the household’s income. . .” Each low-income customer’s bill, the legislation directed, shall be “based upon each Customer’s actual income.” The discounted rates charged to low-income customers “shall be charged in lieu of the Department’s service, usage, and stormwater charges.”

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<sup>3</sup> Memo (January 13, 2013). Nancy Stoner, Acting Assistant Administrator, Office of Water, EPA, Cynthia Giles, Assistant Administrator, Office of Enforcement and Compliance Assurance, EPA, to Regional Administrators.

<sup>4</sup> Bill No. 140607-AA, amending Philadelphia Code, §19-1605, adopted by the City Council on November 19, 2015. Signed by the Mayor on December 1, 2015.



The Philadelphia IWRAP legislation adopts virtually every component identified in this review of Baltimore water and wastewater rates as being important for a water affordability initiative. It provides for a percentage of income-based bill affordability approach relating to bills for current service. It provides for an opportunity for low-income customers to earn forgiveness of pre-program arrears incurred under the rates that have been found to have been unaffordable. It provides for a usage reduction (i.e., “water conservation”) program component. The Philadelphia IWRAP program should serve as the model for an affordability initiative in Baltimore.

### **The Expected Outcomes from Adopting Affordable Bills.**

The City has an available option that it could implement to help it resolve its water and wastewater conundrum. Addressing the problem is a choice the City could make. Modelled after the Income-based Water Rate Affordability Program (“IWRAP”) that the Philadelphia City Council unanimously approved in December 2015, an IWRAP program in Baltimore could be expected to both (1) increase the billed revenue that is actually collected; and (2) decrease the effort (and thus the expense) devoted to the process of collection.

#### *Collection Effectiveness*

The first impact of a water bill affordability program<sup>5</sup> in the City of Baltimore would be an increase in the bill payment coverage ratio of participating low-income consumers. The bill payment coverage ratio is the percentage of billed revenue actually paid by the customer. A customer who pays \$90 of a \$100 bill, for example, has a bill payment coverage ratio of 90%. States adopting bill affordability programs see a dramatic improvement in the bill payment coverage ratios of their low-income customers. For example, in Pennsylvania, more than 22% of all confirmed low-income accounts were in debt, with those confirmed low-income customers having an average monthly arrears of \$656. Fewer than half of those low-income customers in arrears were on payment agreements.

In contrast to these payment difficulties for confirmed low-income customers, the participants in the low-income CAP programs in Pennsylvania had an average payment coverage ratio of 86%. Through their affordability programs, in other words, Pennsylvania’s utilities took extremely payment-troubled confirmed low-income customers and structured a response where the utilities were receiving nearly \$9 of every \$10 billed.

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<sup>5</sup> Throughout this report, references to “water” are intended to incorporate storm water and wastewater (i.e., sewer) as well unless the context clearly indicates otherwise.

Similarly, Public Service Company of Colorado (“PSCO”) experienced a dramatic increase in the payment coverage of its low-income program participants. By the end of the Company’s low-income program pilot, the payment coverage ratio of participants in PSCO’s low-income bill affordability program (83%) was nearly 30% higher than the payment coverage ratio of low-income customers *not* participating in the program (55%).

### *Collection Productivity*

Bill affordability programs have been demonstrated to increase the productivity of utility collection activities. For example, the evaluation of PSCO’s affordability program found that the collection activities that PSCO directed toward program participants were more productive at generating payments than the collection activities directed toward program non-participants. PSCO needed to engage in from three to five times more collection activities for each 1,000 customer payments it received from program non-participants. The results were the same when collections productivity was viewed in terms of dollars of payments rather than in terms of numbers of payments. In Colorado, participation in the affordable bill program reduced the reliance on disconnect notices as a collection activity. While program participants required between one (1) and two (2) disconnect notices for each \$1,000 in customer payments, non-participants required between five (5) and seven (7).

### *Positive Non-Collection-Related Outcomes*

Adoption of an IWRAP program in Baltimore would generate positive outcomes on issues involving public health and safety; housing abandonment; and homelessness. An IWRAP program in Baltimore would help improve the City’s educational outcomes and make the City more competitive in business location decisionmaking.

## **Summary and Conclusions.**

The City of Baltimore has an available option that it could implement to help it resolve the financial conundrum facing the City today. The City faces a choice today. It could choose to do nothing in response to the increasing unaffordability of water and wastewater bills (and the collection problems that accompany that unaffordability). Or it could choose to address the quandary in which the City finds itself.

The recommendation of this report is that the City of Baltimore should choose to act. Baltimore should adopt an IWRAP program based on the Philadelphia model. A Baltimore IWRAP should include the following components: (1) a percentage-of-income-based bill affordability program; (2) an arrearage management component; (3) a crisis intervention component; and (4) a water conservation component.

Given the problems facing Baltimore, and given the demonstrated success of percentage-of-income based bill affordability programs in addressing precisely these types of problems, the time for the City of Baltimore to adopt a Baltimore IWRAP is today.

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# Introduction

Like most major cities in the United States today, the City of Baltimore is on the horns of a major dilemma. On the one hand, Baltimore has major capital investments that it must make in the infrastructure used to deliver water and wastewater service to city residents. These investments are expected to cost billions of dollars. On the other hand, many of the residents of Baltimore simply cannot afford to pay the water and wastewater rates that will be required in order to fund these billion dollar investments.

Hence the conundrum facing city officials: Baltimore must borrow money to invest in water and wastewater infrastructure improvements that can no longer be delayed in order to deliver an essential public service. Not making the improvements is not an option. In contrast, many Baltimore customers of the water / wastewater utility do not have the ability to pay the increase in bills that will be charged for those essential public services. Not using water and/or wastewater service is also not an option.

Failing to acknowledge, let alone to address, this conundrum results in a multitude of problems for Baltimore. It results in environmental problems as City officials may seek to delay or avoid their responsibilities to deliver safe, clean and healthy service. It results in social problems as increasing numbers of Baltimore residents lose their water/wastewater service (and, frequently, correspondingly lose their homes). It results in financial problems to the City, as Baltimore, in its capacity as a municipal government, experiences increased expenses (such as addressing

homelessness and municipal decay) while facing a decreasing property tax base (as water service is terminated and homes are abandoned).<sup>6</sup> Just as importantly as these impacts, however, the failure to acknowledge and address the conundrum results in a business problem to the water / wastewater utility, as it unsuccessfully seeks to collect money that City residents don't have (and inefficiently spends money in those unsuccessful collection efforts).

The objective of the analysis presented below is to contribute some understanding to how Baltimore might address its water / wastewater conundrum. The discussion below is presented into the following parts:

- Part 1 provides an overview of the financial investments that Baltimore is, and has been, making in its water / wastewater infrastructure. This section examines both the long-term dollar investments that Baltimore is making (and will continue to make). It documents how these long-term investments are being translated into an annual cost to the City's water and wastewater utilities.
- Part 2 examines the collection consequences that Baltimore faces when required rate increases collide with an incapacity of the community to pay. This section of the discussion examines the impacts on rates resulting from recent City investments in infrastructure improvements. This section then compares the bills that have been rendered to customers to the revenue that is being generated. It finally examines the available data on what credit and collection responses the City is taking in response to nonpayment.
- Part 3 examines the capacity of Baltimore residents to pay Baltimore's increasing water / wastewater bills. This section focuses primarily, but not exclusively, on lower-income residents of the City of Baltimore. Indeed, the discussion finds that an exclusive focus on the impacts to the City's poor will understate the inability-to-pay problems that give rise to the problems identified above.
- Part 4 examines a proposed solution to the problems posed by the incapacity of a substantial proportion of Baltimore's residents to pay the skyrocketing water / wastewater bills that exist today, and can reasonably be expected to continue in the future. This section includes a review of the Income-Based Water Rate Affordability Program ("IWRAP") adopted by the City of Philadelphia in response to problems similar to those facing Baltimore.
- Part 5 examines the payment outcomes impacts that can reasonably be expected to arise from adoption of the Philadelphia model of an Income-Based Water Rate Affordability

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<sup>6</sup> Throughout the discussion that follows, the term "water service" should be construed as referring to water, wastewater and stormwater services unless the context clearly indicates a contrary intent.

Program. This section examines both the effectiveness and the efficiency of collections should Baltimore adopt the Philadelphia model for billing water and wastewater revenues. The analysis considers not only the percentage of billed revenue that is actually collected, it considers, also, the efforts that Baltimore would be expected to devote to the process of collection.

Finally, an examination of some of the non-utility outcomes that Baltimore can expect to experience, in its capacity as a municipal government, should it choose to adopt a program that mirrors the Philadelphia IWRAP program is presented in Appendix B.

In short, the discussion that follows documents the financial problems that Baltimore is, and will be, facing as a result of necessary water and wastewater investments. It assesses the cause of the current and long-term problems associated with inability-to-pay, and examines the extent of those problems. The discussion below proposes a way out of this conundrum. It compares this proposal to an affordability program recently adopted by the City of Philadelphia. Finally, it documents the outcomes that adoption of such a program can be expected to generate for the City of Baltimore.

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## Part 1: Baltimore’s unavoidable current and future water and wastewater investments.

The City of Baltimore has invested heavily in its water and wastewater infrastructure in recent years. In its Ten Year Financial Plan (2013-2022), released in February 2013, the City of Baltimore expressed concern about future funding of wastewater projects serving the City. While not addressed direct in the Ten-Year Financial Plan process,<sup>7</sup> the City acknowledged that “these parallel Enterprise Fund issues are also critical, and merit independent attention.” Of particular concern within the municipal activities supported by Enterprise Funds<sup>8</sup> was wastewater services. The Ten Year Financial Plan reported:

Reductions in federal and state grant revenue outside of the City’s operating budget—including federal cutbacks to address national deficit reduction goals—

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<sup>7</sup> Public Financial Management (February 2013). City of Baltimore: Ten-Year Financial Plan, FY2013-FY2022, Background Report,” at 63. (“Where such capital needs are financed under an Enterprise Fund (most notably, for the City’s water and wastewater system, and, going forward, stormwater management and relating ‘greening’ programs), they are not addressed in this Ten-Year Financial Plan process, which has focused on the larger, tax-supported General Fund.”)

<sup>8</sup> Baltimore’s most recent (2016) Comprehensive Annual Financial Report (“CAFR”) explained the City’s “enterprise funds” as follows: “*Enterprise funds* are used to report the same functions presented as business-type activities in the government-wide financial statements. Enterprise funds are used to accounts (sic) for the operation of the City’s business-type activities and include water, sewer and stormwater, utilities, and parking facilities, all of which are considered to be major funds of the City, and several other non-major fee supported activities.” City of Baltimore (MD). *Comprehensive Annual Financial Report, Year Ended June 30, 2016*, at 6, prepared by Baltimore Department of Finance and Bureau of Accounting and Payroll Services (hereafter, “Baltimore FY2016 CAFR”).

could create increased pressure for the City to provide additional local funding. . The Capital Budget includes a combined \$57.7 million in federal and state grants for transportation, housing and community development, waste water, and recreation projects. Cuts to these federal and state grants may require additional support from the General Fund or other local funding sources in order to preserve core services.<sup>9</sup>

Indeed, while the General Operating Budget has not been directly called upon to support the required investments in the water and wastewater system, the lack of federal funding has resulted in the cost of system upgrades being borne almost exclusively by ratepayers. As a result, as investments are made, rates (and thus bills) correspondingly increase. A recent report by the Abell Foundation explains the timeline:

In 2002, the city signed a consent decree with the Environmental Protection Agency, agreeing to rebuild the sewer system, after EPA found Baltimore in violation of the federal Clean Water Act for sending untreated sewage into “Back River, Patapsco River, and the Chesapeake Bay and several smaller water bodies.” The city has since spent \$867 million over 14 years to determine the extent of problems in the antiquated, leaky sewer system and to design and implement improvements. As of late 2015, the city had repaired 164 miles of sewage pipes, with another 256 miles to go. That same year, the city reported 400 overflows of at least 44 million gallons of raw sewage. . .

In June 2016, state and federal regulators gave Baltimore an additional five years to comply with the consent decree, and to develop a plan for other repairs estimated to take until 2030 to complete. This modification has been submitted for public review and must be approved by the court. In addition to more than 2,000 citation violations for overflows, which resulted in more than a half million dollars in penalties from the EPA, the city’s sewer system was also contributing to backups into home basements — many in poor communities. According to *The Baltimore Sun*, residents have reported more than 7,500 sewage backups into their basements since February 2015.<sup>10</sup>

A review of the City of Baltimore’s Comprehensive Annual Financial Reports (“CAFR”) since 2010 confirms the accuracy of this Abell Foundation report. For example, the City’s 2010 CAFR stated:

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<sup>9</sup> Ten Year Financial Plan, supra note 7, at 20.

<sup>10</sup> Joan Jacobson (November 2016). *Keeping the Water On: Strategies for addressing high increases in water and sewer rates for Baltimore’s most vulnerable customers*, at 2, Abell Foundation: Baltimore (MD) (internal notes omitted).



The City has voluntarily entered into a Consent Decree to rehabilitate its aging sewer infrastructure and correct historical overflow mechanisms. The Consent Decree is one of many the U.S. Department of Justice is and has currently negotiated with major east coast cities with aged sewer and storm water infrastructures. The City is proactively negotiating to ramp up its remedial efforts to address discharge and overflow concerns of the State and Federal regulatory agencies. These efforts are ambitious and the cost of the construction and maintenance are estimated to be greater than \$1 billion dollars over the next decade and beyond. The City has committed to financing these remedial efforts through a combination of water and waste water revenue bonds in conjunction with all available State and Federal assistance.<sup>11</sup>

By 2016, the prior Consent Decree had expired. In its 2016 CAFR, after explaining the history of the Consent Decree, the City of Baltimore further reported:

During the life of the Consent Decree to date, the City has spent over \$800.0 million to study, design and begin improving the sanitary sewer system with the goal of eliminating sanitary sewer overflows. The Consent Decree expired on January 1, 2016, and the City has been negotiating a new decree with the Department of Justice, the Environmental Protection Agency and the Maryland Department of the Environment. On June 1, 2016, the City, the Environmental Protection Agency, the Department of Justice, and the Maryland Department of the Environment filed a proposed modification to the 2002 Consent Decree with the U.S. District Court. The revised decree is composed of two phases with priority given to those projects that provide the greatest environmental benefits in the early years and is expected to cost \$630.1 million in fiscal year 2017, to complete the remaining phase one projects. The second phase deadline is fiscal year 2030, and focuses on increasing the capacity of the system, which is expected to cost \$548.4 million.<sup>12</sup>

As indicated in the text of these financial reports, the costs of the environmental compliance facing Baltimore's water and waste water systems is (and will continue to be) mind-boggling. Each year, Baltimore's annual CAFR reports the "pledged revenue" that is associated with the

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<sup>11</sup> City of Baltimore, *Comprehensive Annual Financial Report: Year Ended June 30, 2010*, at 68, prepared by Baltimore Department of Finance and Baltimore Bureau of Accounting and Payroll Services.

<sup>12</sup> Baltimore's FY2016 CAFR, *supra* note 8, at 80.

bonds to upgrade Baltimore’s water and wastewater systems.<sup>13</sup> According to the most recent (2016)<sup>14</sup> CAFR:

The Water, Wastewater and Stormwater Utility Funds have pledged future customer revenue to repay \$697,174,000, \$1,004,067,000, and \$29,109,000 of revenue bond debt, respectively. Proceeds from these revenue bonds were used to build and improve various aspects of the City’s Water, Wastewater and Stormwater Utility systems. The bonds are payable solely from the revenues of the Water and Wastewater Utility Funds and are payable through 2047.<sup>15</sup>

Note that when the CAFR states that “the bonds are payable solely from the revenues of the Water and Wastewater Utility Funds,” that means that the bonds will be paid by rates billed to Baltimore ratepayers. If, as will be discussed below, Baltimore is not collecting the bills it is charging because ratepayers cannot afford to pay them, problems arise.

According to the City’s CAFRs, from 2010 through 2016, the principal and interest remaining to be paid by Baltimore’s water customers increased by 38% (from \$865,972,000 in 2010 to \$1,191,771,000 in 2016). In addition, during that same seven year period (2010 – 2016), the principal and interest remaining to be paid by Baltimore’s wastewater customers increased by 47% (from \$1,050,842,000 in 2010 to \$1,540,101,000 in 2016). As can be seen in Table 1, while the debt the City owed was declining through 2013, there has been a sharp increase in the ensuing years.

Table 1. Principal and Interest Remaining to be Paid, Water and Wastewater Revenue Bond Debt (thousand \$s) City of Baltimore (2010 – 2016)							
	2010	2011	2012	2013	2014	2015	2016
Water	\$865,972	\$933,290	\$830,861	\$796,981	\$1,089,932	\$1,237,308	\$1,191,771
Wastewater	\$1,050,842	\$1,207,871	\$1,159,280	\$1,141,505	\$1,377,223	\$1,586,949	\$1,540,101

This increase in debt generates not merely a *noticeable* impact on annual expenses to be included in customer rates, but a *substantial* impact. Table 2 shows that, from 2010 to 2016, the principal and interest paid by water customers *each year* increased by 86.3% (from \$26,466,000 in 2010 to \$49,313,000 in 2016). During the same time period, the principal and interest paid by wastewater customers each year increased by 58.4% (from \$44,740,000 in 2010 to \$70,874,000

<sup>13</sup> The CAFR also addresses Baltimore’s efforts to upgrade its stormwater system. The stormwater system is set aside for purposes of this analysis.

<sup>14</sup> As of the date of this analysis, the City of Baltimore’s CAFR for the year ending June 30, 2017 was not publicly available.

<sup>15</sup> Baltimore 2016 CAFR, *supra* note 12, at 60.

in 2016). In contrast, simply for comparison purposes, the total expenditure by Baltimore’s water utility on wages and salaries in 2016 was \$36.893 million, while the total expenditures for wastewater wages and salaries reached \$34.933 million in 2016.

Table 2. Principal and Interest Paid in Current Year, Water and Wastewater Revenue Bond Debt City of Baltimore (2010 – 2016)							
	2010	2011	2012	2013	2014	2015	2016
Water	\$26,466,000	\$30,543,000	\$31,176,000	\$33,887,000	\$31,956,000	\$40,144,000	\$49,313,000
Wastewater	\$44,740,000	\$45,131,000	\$46,171,000	\$51,586,000	\$51,224,000	\$58,103,000	\$70,874,000

Table 3 below sets forth the total operating expenses for both water and wastewater in Baltimore for the years 2010 through 2016 compared to the total expenditures on the principal and interest for revenue bonds for each utility service. In contrast to the 86.6% increase in annual principal and interest paid on water revenue bonds from 2010 to 2016, total water operating expenses increased by “only” 34.5%. In contrast to the 58.4% increase in annual principal and interest paid on wastewater revenue bonds from 2010 to 2016, total wastewater operating expenses increased by only 10.6%.

Table 3. Principal and Interest Paid in Current Year, Water and Wastewater Revenue Bond Debt Compared to Total Water and Wastewater Operating Expenses City of Baltimore (2010 – 2016) (thousand \$s)							
	2010	2011	2012	2013	2014	2015	2016
<b>Water</b>							
Principal and Interest	\$26,466	\$30,543	\$31,176	\$33,887	\$31,956	\$40,144	\$49,313
Total Operating Expenses	\$102,962	\$107,314	\$114,937	\$121,967	\$136,065	\$138,536	\$139,981
<b>Wastewater</b>							
Principal and Interest	\$44,740	\$45,131	\$46,171	\$51,586	\$51,224	\$58,103	\$70,874
Total Operating Expenses	\$147,202	\$144,726	\$154,259	\$162,069	\$162,076	\$162,841	\$169,666

The point of the discussion above is not to criticize the Baltimore water and wastewater utilities for their efforts at environmental compliance. As indicated in the Baltimore CAFRs, the City was far from unique in the problems it was forced to confront. Indeed, the financial problems involved with combining mandated environmental compliance with the repair and/or

replacement of aging infrastructure are posing perplexing questions to urban water and wastewater systems throughout the nation.<sup>16</sup>

The real question, today, is whether Baltimore is both willing and able to take those steps necessary to face the resulting conundrum identified in the Introduction to this analysis. The City of Baltimore does not have the discretion not to make these investments. However, and it is a huge “however,” the need to make the investments does not make the ability-to-pay of Baltimore customers any greater. The next section of this analysis examines what happens when those two conflicting realities (the need to make expenditures vs. the inability to pay for them) collide.

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<sup>16</sup> See, e.g., Thomas Jewell (May 22, 2017). “Federal consent decree expected to nearly quadruple Cleveland Heights' 2018 sewer bills.” Cleveland Heights Community Blog. [http://www.cleveland.com/cleveland-heights/index.ssf/2017/05/federal\\_consent\\_decree\\_to\\_expe.html](http://www.cleveland.com/cleveland-heights/index.ssf/2017/05/federal_consent_decree_to_expe.html). (last accessed November 14, 2017).

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## **Part 2: The collision of increasing rates / bills with inability-to-pay.**

Given the increased investments<sup>17</sup> in environmental compliance and system repair and replacement, it comes as no surprise that Baltimore's water and wastewater customers have been called upon to pay higher rates. In fact, not only have customers been called upon to pay "higher" rates, the City's customers have been called upon to pay substantially higher rates.

### **A. Increasing Rates for Water and Wastewater Service**

While the City's CAFRs do not report the percentage rate increases for either the water or wastewater utilities each year, these financial reports did report that for each year 2010 through 2016, with the exception of 2011, the water and wastewater utilities received higher revenues attributable to rate increases.

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<sup>17</sup> Not all of the water and wastewater rate increases can be attributed to infrastructure investments. However, the rate increases are unquestionably driven primarily by Baltimore's capital investments.

Figure 1. Years of Water / Wastewater Rate Increases in Baltimore			
Fiscal Year Ending June 30	Water Rate Increase	Wastewater Rate Increase	Page Cite to Annual CAFR
2010	✓	✓	Page 9
2011	---	---	---
2012	✓	✓	Page 9
2013	✓	✓	Page 12
2014	✓	✓	Page 14
2015	✓	✓	Page 14
2016	✓	✓	Page 13

Table 4 below sets forth the annual Operating Revenue for both the water and wastewater utilities of the City of Baltimore for the years 2010 through 2016.<sup>18</sup> Compared to these revenues is the combined number of customers<sup>19</sup> by year. Not every year in which the water and wastewater systems received increases did they also experience increases in operating revenues. In some years, despite rate hikes, revenues declined as a result of a decline in the number of customers and/or the failure to collect the revenue that was billed.

Table 4. Operating Revenues (thousand \$s) and Number of Customers by Year Water and Wastewater: City of Baltimore			
Fiscal Year Ending June 30	Water	Wastewater	Number of Customers
2010	\$130,512	\$166,016	441,209
2011	\$129,262	\$160,076	445,335
2012	\$132,940	\$179,873	446,142
2013	\$154,680	\$183,521	450,427
2014	\$158,678	\$221,181	454,008
2015 <sup>20</sup>	\$176,439	\$216,428	426,642
2016	\$160,865	\$229,300	407,000

<sup>18</sup> It is important to remember that beginning in July 2013 (FY2014), pursuant to state legislative mandate, Baltimore began to separately charge for stormwater services.

<sup>19</sup> The Baltimore CAFRs do not report separate figures for water and wastewater customers. Presumably this is because wastewater rates are tied to water consumption.

<sup>20</sup> 2015 is the year in which the number of water and wastewater customers in Baltimore began to decline.

## B. The Resulting Increases in Bills for Water and Wastewater Service

As rates increased in Baltimore, and the number of customers decreased, the bills to be paid by residential customers invariably increased as well. Moreover, given the financial trends identified above with respect to the need for continuing investments in environmental compliance projects, along with the repair and replacement of an aging infrastructure, rates are projected not only to continue to increase, but to sharply increase into the foreseeable future. Table 5 below shows the typical annual residential bill<sup>21</sup> for combined water and wastewater service in Baltimore for the years 2010 through 2022 (projected). As shown in the Table, typical residential bills in Baltimore have increased by 127% from FY2010 to FY2018.<sup>22</sup> Residential bills have increased by 37% simply from FY2014 to FY2018.

Table 5. Past, Current and Projected Bills (combined water and wastewater) (Baltimore, MD) (2010 – 2022)		
Fiscal Year	Year of Increase	Annual Bill
FY2010	2009	\$347.28
FY2011	2010	\$378.54
FY2012	2011	\$412.62
FY2013	2012	\$449.76
FY2014	2013	\$517.26
FY2015	2014	\$574.20
FY2016	2015	\$637.44
FY2017	2016	\$720.48
<b>FY2018 (current bill)</b>	<b>2017</b>	<b>\$787.58</b>
FY2019	2018	\$860.96
<b>FY2020 /a/</b>	<b>2019</b>	<b>\$938.45</b>
<b>FY2021 /a/</b>	<b>2020</b>	<b>\$1,022.91</b>
<b>FY2022 /a/</b>	<b>2021</b>	<b>\$1,114.97</b>

*Notes:*  
/a/ Projection of 9% annual increase, as was adopted in the most recent three-year increase.

The bill increases will become more and more dramatic. By Fiscal year 2022, assuming the same three year annual increase as was adopted in the last three-year rate decision, the typical

<sup>21</sup> These bills assume a consumption of five (5) CCF per month, 15 CCF per quarter.

<sup>22</sup> Each Fiscal Year begins on July 1 of the preceding year. For example, Fiscal Year 2018 began on July 1, 2017 and will continue through June 30, 2018.

residential bill of \$1,115 will be more than triple what the 2010 bill had been ( $\$1,115 / \$347 = 3.21$ ).

### C. What Happens When Increasing Bills Collide with Inability-to-Pay.

One of the problems facing the City of Baltimore is that sending bills that exceed the capacity of a community to pay does not result in the revenue that is required to meet one's financial obligations. As a result, a downward spiral is created. Future rate increases have to be higher, in order to take into account the fact that much of the increase in billed revenue, in fact, will not be collected. In the meantime, arrearages grow, as do the expenditures that the utility devotes to its increasingly unsuccessful efforts to collect its revenue. What occurs, in other words, is that the City works harder and harder to collect less and less.

While the City of Baltimore does not keep sufficient records to completely document this phenomenon (as discussed in the next section), there is sufficient data upon which to reach this conclusion that this race to the bottom has begun for Baltimore's water and wastewater utility. Table 6 shows the receivables for the "service billings" by the City's water and wastewater utilities by year for the years 2010 through 2016. Setting forth data reported by the City's CAFRs, the Table distinguishes between "current assets" (those receivables believed to be subject to collection within one year) and "non-current assets" (those receivables that the City does *not* expect to collect within one year).

Fiscal Year	Water Receivables (service billings)			Wastewater Receivables (service billings)		
	Current Asset	Non-Current Asset	Total	Current Asset	Non-Current Asset	Total
FY2010	\$40,091	\$6,402	\$46,493	\$21,550	\$6,463	\$28,013
FY2011	\$42,772	\$8,452	\$51,224	\$27,254	\$14,573	\$41,827
FY2012	\$47,424	\$14,198	\$61,622	\$33,579	\$23,563	\$57,142
FY2013	\$53,400	\$8,999	\$62,399	\$39,392	\$48,115	\$87,507
FY2014	\$45,556	\$7,488	\$53,044	\$46,354	\$47,890	\$94,244
FY2015	\$45,184	\$0	\$45,184	\$46,496	\$126,920	\$173,416
FY2016	\$60,273	\$0	\$60,273	\$54,725	\$98,146	\$152,871

Figure 2 below shows that same growth in receivables (both current assets and non-current assets) for Baltimore's water and wastewater utilities. As can be seen, since 2010, Baltimore's *total* water receivables have increased by nearly \$15 million, from \$46.5 million to \$60.3



million), while the City's total wastewater receivables increased by nearly \$125 million (from \$28.0 million to \$152.9 million). Even more importantly, the City's non-current asset wastewater receivables have increased by more than \$90 million (from \$6.5 million in 2010 to \$98.1 million in 2016).

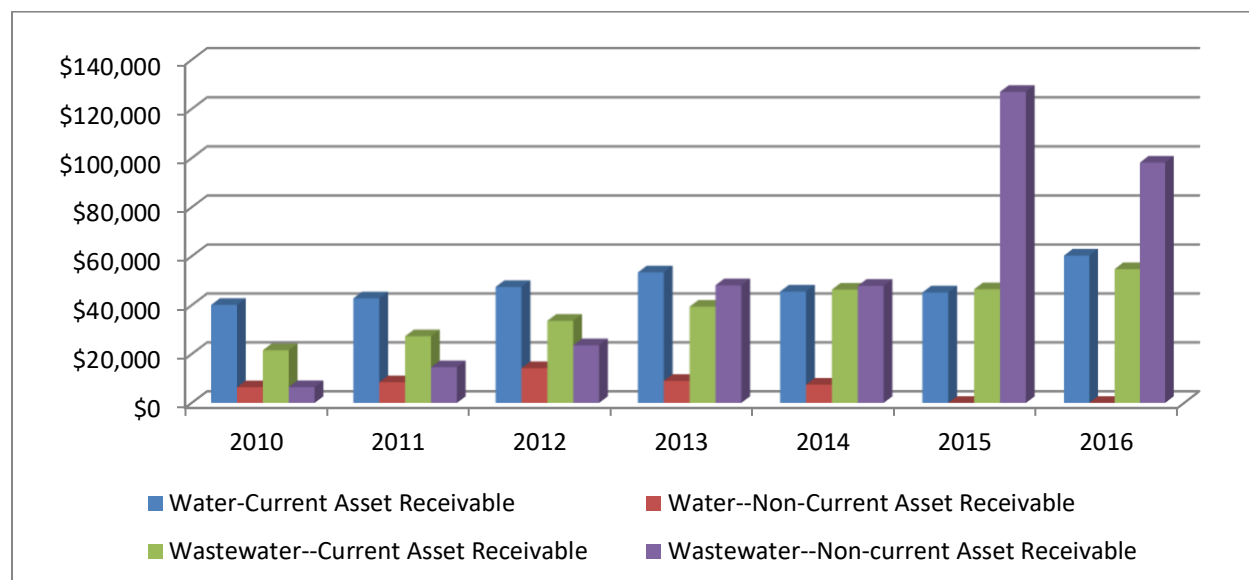


Figure 2. Receivables: Water and Wastewater Service Billings: 2010 - 2016 (Baltimore MD) (thousand \$s)

Figure 2 shows the danger to the City when it raises rates without taking into consideration the capacity of Baltimore's customers to absorb those rate increases. The struggle that Baltimore faces when sharply increasing bills intersect with inability-to-pay can be seen in the above collection statistics. The observation that the City has made no substantive effort to take the customer's inability-to-pay, and thus the City's inability-to-collect, into account is considered further immediately below.

#### D. Collection Data from Baltimore's Water and Wastewater Utilities.

Despite an increase in total receivables for service billings of nearly \$140 million from 2010 to 2016, 92 percent (\$128.6 million) of which is deemed to be "inactive" assets (i.e., not subject to near-term collection), Baltimore maintains a shocking absence of data on collections and payments. In August 2017, for example, the Honorable Mary Washington (Ph.D.), who represents Baltimore in the Maryland House of Delegates, asked Baltimore Department of Public Works ("DPW") Director Rudolph Chow for certain basic information about the residential billings and payments on Baltimore water / wastewater bills. Delegate Washington further asked for information about the types of activities the City pursues to collect water / wastewater bills from the City's residential customers, along with the frequency and intensity of such collection activities. Delegate Washington asked for information over a multi-year period. Director

Chow's September 25, 2017 response to Delegate Washington's request (hereafter "Director Chow's Response") is attached to this report as Appendix A.

Director Chow's Response stated among other things that the City of Baltimore:

1. Knows how many dollars it tenders in bills to residential customers for water and wastewater service each year (Director Chow's Response, para. 2), but does not know how many dollars the City collects in residential payments. (Director Chow's Response, para. 3).
2. Does not know the aging of its residential arrears,<sup>23</sup> either in terms of dollars of arrears (Director Chow's Response, para. 11) or in terms of the number of accounts in arrears. (Director Chow's Response, para. 12).
3. Does not know the average size of its residential arrears for residential accounts in arrears (Director Chow's Response, para. 5(b)) or any distribution of the size of arrears by varying bands of dollars (e.g., how many customers owe \$0 - \$100, how many owe \$100 - \$200, and so forth). (Director Chow's Response, para.15).
4. Does not know the average residential arrears at the time a residential customer is disconnected for nonpayment. (Director Chow's Response, para. 5(d)).
5. Does not know the number of residential customers to whom the City sent a final notice of disconnection for nonpayment (Director Chow's Response, para. 7).
6. While the City urges that it makes available "payment plans" to residential customers who need some extra time to pay their bills, the City of Baltimore does not keep track of the number of payment plans it enters into (Director Chow's Response, para. 16(a)); the average term of payment plans (Director Chow's Response, para. 16(c)); or the average dollar amount of arrears made subject to a payment plan (Director Chow's Response, para. 16(d)).
7. While the City urges that it makes available payment plans to residential customers who need some extra time to pay their bills, the City of Baltimore does not keep track of the number of such payment plans that are current (but not yet complete) (Director Chow's Response, para. 16(g)); the number of payment plans that are successfully completed (Director Chow's Response, para. 16(h)); or the number of plans that default. (Director Chow's Response, para. 16(f)).

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<sup>23</sup> The "aging" of arrears generally reflects what percentage of receivables, for example, is current versus what percentage of receivables is 30 – 60 days overdue, 60 – 90 days overdue, 90 – 120 days overdue, and so forth.

8. The City of Baltimore does not track any data on billings, payments, arrears, disconnections/reconnections, payment plans, or other credit and collection activities disaggregated by geographic area. (Director Chow’s Response, para. 17).

For a City whose total water receivables have increased by nearly 90%, while the City’s wastewater receivables have increased by nearly 700% between 2010 and 2016, the lack of effort to understand its nonpayment population, or the extent of its residential nonpayment problems, is somewhat disturbing. Without such an understanding of its problem, it would be nearly impossible for the City of Baltimore to craft billing and collection responses that could reasonably be expected to succeed.

### **E. Six Important Findings.**

1. Residential combined water and wastewater bills in Baltimore are projected to more than triple between 2010 and 2022, from \$350 to more than \$1,100. Residential bills have more than doubled from 2010 (\$347) to 2018 (\$788).
2. Baltimore total water receivables for “service billings” increased by nearly \$15 million from 2010 to 2016, while total wastewater receivables for “service billings” increased by nearly \$125 million.
3. Even more importantly, the City’s “non-current asset” receivables (those receivables the City does expect to collect within one year) for wastewater service increased by more than \$90 million.
4. While the City of Baltimore knows the amount of dollars it bills to residential customers each year, the City of Baltimore does not collect data on the payments it receives from those residential customers.
5. While the City of Baltimore offers “payment plans” to customers who say they need some extra time to pay their bills, the City does not keep track of how many payment plans are offered; how many dollars are made subject to such payment plans; or the number of payment plans that either succeed or default.
6. The City of Baltimore does not track information about the unpaid bills of residential customers, including the age of those arrearages, the size of residential arrearages, or the activities directed toward collecting those arrearages.

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## **Part 3: Baltimore’s capacity to pay increasing water / wastewater bills**

As was seen in the discussion above, in many ways, Baltimore is impeding its own progress in seeking to generate funding for current and future investments in its water and wastewater infrastructure in the manner in which it is now proceeding. As bills become more and more *unaffordable*, the City realizes less and less cash from each rate increase. As the City collects less and less money, it is forced to raise rates even higher to replace the funds not collected. The City does not track information on the number or size of bills that remain unpaid, or on the efforts the City takes to collect those bills, let alone on the success (or lack of success) in converting billed revenue into collected revenue. The downward spiral is thus exacerbated.

### **A. Lessons from Maryland’s Energy Utilities**

Baltimore can learn many lessons from its sister utilities serving low-income Maryland residents in the energy (gas and electric) industries. Data from Maryland demonstrates that low-income customers are not only more likely to be in arrears, but, also, that those who are in arrears are more likely to be deeper in arrears. For example, for many years, Maryland utilities have filed with the Maryland Public Service Commission (“PSC”) annual reports on the state’s Utility Service Protection Program (“USPP”). The most recent report with statewide compiled data was published for the 2013/2014 program year. There is, however, no reason to believe that the patterns presented in the USPP reports have dramatically changed since that time, even though it

is likely that individual data points have varied. The USPP reports present data for MEAP-eligible customers and non-MEAP<sup>24</sup> customers (amongst other data). For Baltimore Gas and Electric (“BGE”), as reported in the annual USPP reports, customers who are MEAP-eligible are both more frequently in arrears and are deeper in arrears. The USPP data for the three most recent years reported is presented immediately below:

Table 7. Selected USPP Data: Baltimore Gas and Electric						
	2011/2012		2012/2013		2013/2014	
	MEAP-eligible	Non-MEAP	MEAP-eligible	Non-MEAP	MEAP-eligible	Non-MEAP
Percentage in arrears	53%	26%	58%	20%	59%	20%
Average arrears	\$990	\$420	\$820	\$396	\$1,041	\$440
SOURCE: Annual Maryland PSC Staff Report Universal Service Protection Program (“USPP”).						

This BGE data is even more compelling given its consistency with other Maryland data on the relative payment problems of low-income and non-low-income customers. For example, low-income Maryland *electric* customers have been found to have substantially greater payment problems than do residential customers as a whole. In its 2007 evaluation<sup>25</sup> of the Electric Universal Service Program (“EUSP”),<sup>26</sup> the PA Consulting Group compared a variety of attributes of payment difficulties, including but not limited to the number of elapsed days after receiving a bill before making a payment, the completeness of payment,<sup>27</sup> the regularity of payments,<sup>28</sup> and the continuity of payments.<sup>29</sup> PA Consulting found that “all households”

<sup>24</sup> “MEAP” is the Maryland Energy Assistance Program. MEAP is the state-administration of the federal Low-Income Home Energy Assistance Program (“LIHEAP”).

<sup>25</sup> PA Consulting (May 2007). *Electric Universal Service Program Evaluation: Final Evaluation Report*, prepared for Maryland Public Service Commission. (hereafter, “PA Consulting”).

<sup>26</sup> Maryland Public Service Commission (2014). *Electric Universal Service Report: 2014 Annual Report*, at 1, prepared for the General Assembly of Maryland. (“The Electric Universal Service Program (“EUSP”), enacted as part of the Electric Customer Choice Act of 1999, was designed by the Maryland General Assembly to assist low-income electric customers with retiring utility bill arrearages, making current bill payments, and accessing home weatherization following the restructuring of Maryland’s electric utilities and electricity supply market. The Act, codified as Section 7-512.1 of the Public Utilities Article, Annotated Code of Maryland (“PUA §7-512.1” or “EUSP Legislation”) required the Public Service Commission of Maryland (“Commission”) to establish the program, make it available to low-income electric customers Statewide, and provide oversight to the Office of Home Energy Programs (“OHEP”), the arm of the Department of Human Resources (“DHR”) responsible for administering the EUSP.”)

<sup>27</sup> “The completeness index is an indicator of the percent of the total bill for which the household was responsible that was paid during the before and after periods.” PA Consulting, *supra* note 25, at 4-3.

<sup>28</sup> The regularity index “is the percentage of payments the customer made compared to the number of billings.” PA Consulting, *supra* note 25, at 4-4.

outperformed low-income customers on each of these payment metrics. “All households” paid a higher percentage of their bills, made more payments in response to bills, and exhibited more regularity in payments than did low-income customers prior to their participation in EUSP.

PA Consulting compared the performance of low-income customers *before* they entered Maryland’s electric affordability program to “all households.” In each instance, the low-income households exhibited worse payment patterns than did the residential population as a whole. Table 8 below presents data comparing low-income performance to residential performance as a whole. Even when Maryland’s low-income energy customers did make payments, PA Consulting found, they were less regular and less continuous. Moreover, low-income households making payments took more days before making their payments.

Table 8. Low-Income <sup>30</sup> vs. All Residential Customers Selected Payment Performance Indicators				
	Completeness of Payment	Regularity of Payment	Continuity of Payment <sup>31</sup>	Elapsed Days before Payment
Low-income customers	83.6%	70.0%	0.3	32.6
All customers	97.6%	86.8%	0.52	21.8

These results are precisely what would be expected from customers whose bills as a percentage of their income exceed their ability to pay. In 2006, the New Jersey Board of Public Utilities (“BPU”) –the New Jersey equivalent of the Maryland Public Service Commission-- commissioned an evaluation of that state’s Universal Service Fund (“USF”). The New Jersey USF Evaluation left little question but that energy unaffordability problems were a function of

<sup>29</sup> The continuity index “is an indicator of how consistently payments were made. For example, making nine payments in a row would yield a higher consistency score than making three payments in a row.” PA Consulting, *supra* note 25, at 4-4.

<sup>30</sup> “Low-income” is defined as a participant in the Maryland EUSP program prior to their entry into EUSP. All EUSP participants, however, receive federal fuel assistance through the Maryland Energy Assistance Program (“MEAP”). The reported performances would, as a result, be better than low-income customers not receiving MEAP. MEAP serves a fraction of all Maryland low-income customers.

<sup>31</sup> The “continuity of payment” is measured as follows according to PA Consulting: “The continuity index is the sum of the square of payments made in sequence divided by the square of the number of billings in the study period. Thus, if a participant makes 12 payments in a row and there are 12 billing periods then the continuity index is  $12^2 / 12^2$  or one. This means that the participant consistently paid the electric bill. The continuity index is structured so that the more payments that are made in sequence, the higher the continuity index. A household that made 9 of 12 payments in contiguous months would have a continuity index of  $9^2 / 12^2$  or 0.56. A household that made 9 of 12 payments where four and five of the payments were in sequence, would have a continuity index of  $(5^2 + 4^2) / 12^2 * 100$  or 0.28. The three missed payments could have been dispersed at the beginning, middle, or end of the study period; have all been at the beginning, middle, or end; or in some other combination. A final illustration is that nine payments made in clusters of 3 would result in a continuity index of  $(3^2 + 3^2 + 3^2) / 12^2$  or 0.19. The continuity index captures how payments are made in sequence.” PA Consulting, *supra* note 25, at 4-4.

energy burdens rather than being a function of income and/or poverty.<sup>32</sup> The USF Evaluation expressly found that increasing the percentage of income burdens charged to USF participants had an adverse impact on the ability of USF participants to maintain payment compliance under the program. 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.”<sup>33</sup>
- 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 that low.

The New Jersey USF evaluation documents quite clearly that as percentage of income payment responsibilities increase, payment compliance decreases. While the Maryland and New Jersey data discussed above relate to home energy bills, no reason exists to believe that different results appertain to unaffordable water and wastewater bills. Recognizing that high bill burdens are directly related to nonpayment, the bill burdens facing Baltimore residents are examined below.

## **B. Assessing the Current and Future Affordability of Baltimore’s Water / Wastewater Bills.**

The affordability of water and wastewater service in Baltimore is examined on a geographically disaggregated basis below. The analysis is limited exclusively to the City. The City of Baltimore was broken down into its component Census Tracts. Baltimore City has 200 Census Tracts. Census data was obtained from the American Community Survey for each Tract<sup>34</sup> by year<sup>35</sup> for the years 2010 through 2016. The current and future affordability of Baltimore’s water and wastewater bills is assessed below from four different perspectives:

- Households at median income within their individual Census Tracts;
- Households in the First Quintile (“bottom quintile”) of income;

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<sup>32</sup> Apprise, Inc. (2006). *Impact Evaluation and Concurrent Process Evaluation of the New Jersey Universal Service Fund*, prepared for the New Jersey Board of Public Utilities, Apprise, Inc.: Princeton (NJ).

<sup>33</sup> An “affordable” bill was defined as a bill not exceeding 3% of income for either natural gas or non-heating electricity, or 6% for electric heating.

<sup>34</sup> For some data points, data was not available for all 200 Census Tracts. When this occurs, it will be specifically noted.

<sup>35</sup> Five-year ACS data was used for this study. Thus, for example, 2016 data was the average of the years 2012 – 2016. The data for 2015 was the average of the years 2011 – 2015.

- Households with income at 150% of the Federal Poverty Level; and
- Households with income at 100% of the Federal Poverty Level.<sup>36</sup>

For each perspective, the analysis begins by matching, for each Census Tract in Baltimore, incomes (as reported for 2010) with water/wastewater bills for each year to determine the bill as a percentage of income. The resulting burdens are compared to an “affordable” burden. Bills are defined to be “affordable” when they result in a burden of not exceeding two percent (2%) of income. The presentation of data includes both a distribution of bill burdens (by numbers of Census Tracts) and the distribution of how many Census Tracts experience an unaffordable burden. The process is repeated each year through the year 2022.<sup>37</sup>

### 1. Households at Median Income within Their Census Tract.

Baltimore’s water / wastewater bills have been reasonably affordable at the median income of each Census Tract until recent years. The median income indicates the middle, that point at which half of all households have incomes higher and the other half have incomes lower. The number of Census Tracts in which bills exceeded a two percent (2%) affordability threshold began to sharply increase in 2015 and 2016. The unaffordability of bills becomes deeper on an increasingly fast basis in 2017 and beyond.

Table 9 shows that in 2010, 187 of the 198 Census Tracts for which median income is available (94.4%) experienced affordable water and wastewater bills at the Census Tract median incomes. By 2015, the number of Census Tracts where water and wastewater bills were affordable at the median income had fallen to 153 (77.2%) and by 2016, the number had fallen to 134 (67.7%)

Projecting future burdens sees only 79 Census Tracts (39.9%) with affordable bills at each Tract’s median income in 2020 and only 62 Census Tracts (31.1%) with affordable bills by 2022. The data shows that 2018 is when water and wastewater bills become unaffordable, at median income, in nearly half of the City Baltimore (94 out of 198 Census Tracts facing unaffordable bills at median income); 2019 is the year in which water and wastewater bills become unaffordable for more than half of the City at median income (108 of 198 Census Tracts).

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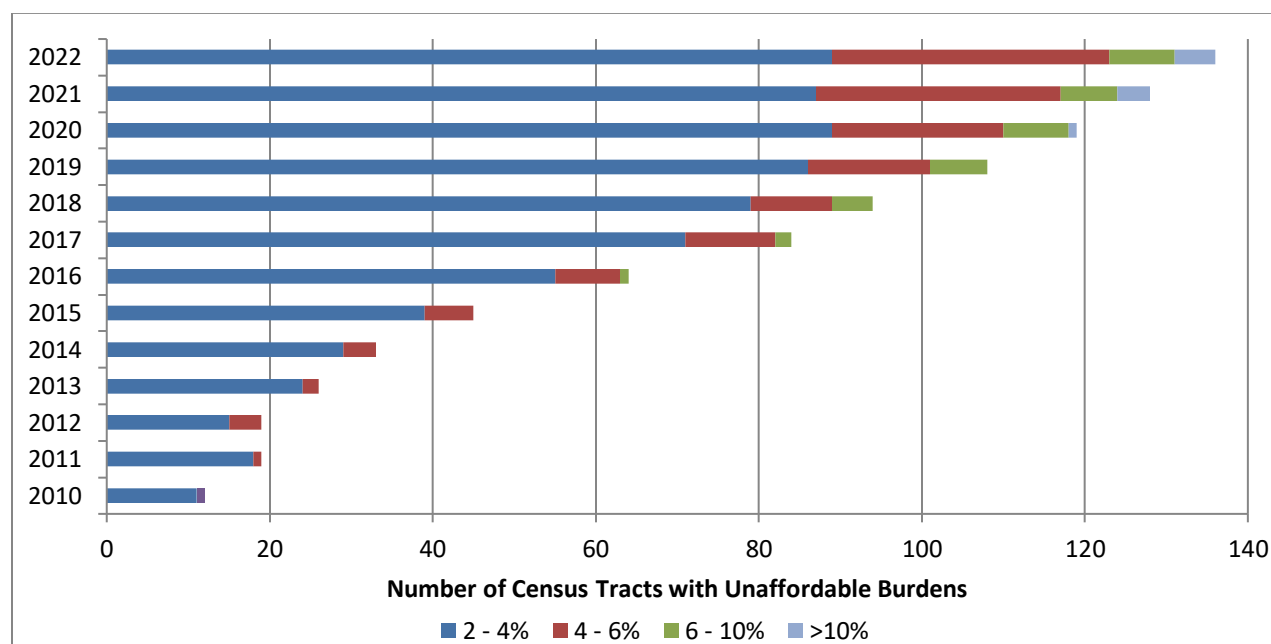
<sup>36</sup> It is important to note that the analysis in this and in the next section considers households at 100% (or at 150%) of Poverty Level. The analysis is not directed to households at or below the designated percentages of Poverty Level.

<sup>37</sup> Post-2016 incomes are escalated at the same rate they have escalated, within each Census Tract, during the most recently reported five year period. Different Census Tracts, in other words, may have experienced different income escalation rates over time.



Water Burden	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<1%	102	94	80	68	47	34	28	18	17	15	14	11	11
1 - 2%	85	85	99	104	118	119	106	96	87	75	65	59	51
2 - 3%	8	15	13	20	23	30	46	56	60	63	61	60	61
3 - 4%	3	3	2	4	6	9	9	15	19	23	28	27	28
4 - 5%	0	1	4	2	3	5	7	7	6	11	14	19	19
5 - 6%	0	0	0	0	1	1	1	4	4	4	7	11	15
6 - 8%	0	0	0	0	0	0	1	2	3	4	6	5	6
8 - 10%	0	0	0	0	0	0	0	0	2	3	2	2	2
10%-20%	0	0	0	0	0	0	0	0	0	0	1	4	5
20%+	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	198	198	198	198	198	198	198	198	198	198	198	198	198

Figure 3 narrows in on those Census Tracts in which bill burdens are unaffordable. The Figure demonstrates that the largest growth in affordable bills occurs in the Census Tracts where burdens remain at between two percent (2%) and four percent (4%) of income. In the years 2018 to 2022, however, the real growth in the number of Census Tracts with unaffordable burdens occurs in the Tracts in which bill burdens are six percent (6%) or higher. By the years 2021 and 2022, bill burdens are expected to exceed 10% for a number of Census tracts.



**Figure 3. Distribution of Unaffordable Bill Burdens by Census Tract at Median Income by Year (2010 – 2022).**

<sup>38</sup> Baltimore has 198 of its 200 Census Tracts for which median income is reported by the Census Bureau.

It is important to remember that the data above does not focus on “low-income” households, but rather on households the mid-point of income in each Census Tract (i.e., the median is the point at which half of all incomes are higher and half are lower). The Census Tracts with the highest burdens, while experiencing lower incomes, are not locations where households, on average, have very deep poverty. The average median income in the Census Tracts with bill burdens exceeding 10% of income in 2022 is more than \$9,000. The average median income in the Census Tracts with bill burdens between six percent (6%) and 10 percent (10%) of income (i.e., from three to five times higher than the 2% burden defined to be affordable by international standards) is nearly \$15,000.

## **2. Households with Average Income in the First Quintile of Income in their Census Tract.**

The unaffordability of the City of Baltimore’s water and wastewater bills becomes even more evident when the focus of Baltimore’s affordability analysis shifts to low-income households rather than households with median incomes. Table 10 again examines the affordability of Baltimore bills within each individual Baltimore Census Tract.<sup>39</sup> Rather than looking at median incomes—median incomes would be income at the 50<sup>th</sup> percentile—in this analysis, the discussion presents water / wastewater burdens as a percentage of income given the average income in the First Quintile of income for each Census Tract.

In its reporting of income data, the Census Bureau rank orders the population of each Census Tract by income from the lowest income to the highest income. The Census Bureau then divides the population into five equal parts. Each of these parts is called a “quintile” (20% of the population). The Census Bureau then reports the average income for each quintile in each Census Tract. The “First Quintile” (sometimes called the “lowest quintile”) is the one-fifth of households with the lowest income in the Census Tract.<sup>40</sup>

It is important to remember that for this analysis, income quintiles were determined for each Census Tract, not only for the City as a whole. In a Census Tract with higher incomes, in other words, the First Quintile of income would be correspondingly higher. In 2016, for example, the average income of the First Quintile of income in the Census Tract ranged from a low of \$1,744 to a high of more than \$58,000. In three Census Tracts, the average income within the First Quintile for that Tract exceeded \$40,000, while in 11 Census Tracts, the average First Quintile income exceeded \$25,000.

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<sup>39</sup> Not all Census Tracts reported data by income quintile. This is likely because the sample size within some Tracts was sufficiently small that privacy standards adopted by the Census Bureau could not be met.

<sup>40</sup> The same analysis is done for other geographic areas (e.g., places, counties, states).

Water Burden	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
<1%	0	0	0	0	0	0	0	0	0	3	4	4	4
1 - 2%	22	16	13	8	4	4	4	4	7	5	6	6	5
2 - 3%	35	28	21	24	15	10	11	10	8	6	4	7	8
3 - 4%	39	36	30	23	24	26	14	8	9	10	10	7	8
4 - 5%	26	35	33	22	18	13	15	17	10	8	5	6	4
5 - 6%	23	20	25	28	19	21	15	16	16	13	14	10	7
6 - 8%	17	22	28	43	43	37	38	29	25	26	22	17	16
8 - 10%	8	9	10	13	28	31	25	31	28	22	21	23	20
10%-20%	7	17	15	22	29	48	48	49	51	52	50	50	55
20%+	3	2	3	5	8	4	8	14	24	33	42	48	51
Total	180	185	178	188	188	194	178	178	178	178	178	178	178

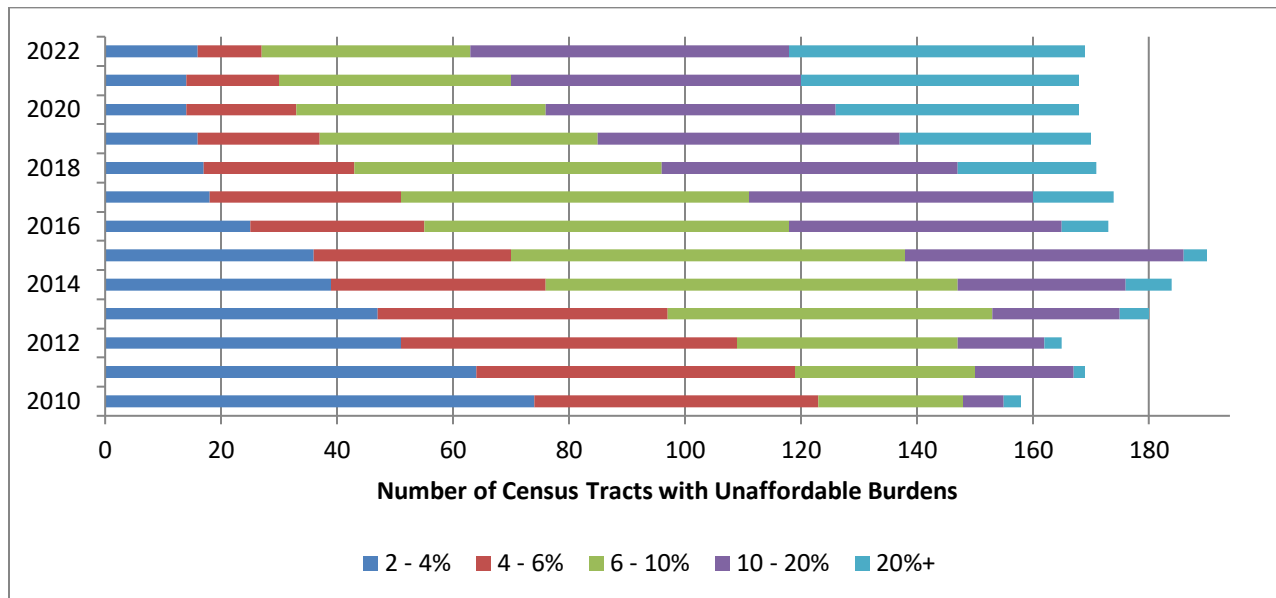
Table 10 shows that even as far back as 2010, water and wastewater bills were unaffordable in 158 of Baltimore's 180 Census Tracts for which data was reported (i.e., stated conversely, bills were affordable in only 22 of the 180 Baltimore Census Tracts). By 2014, Baltimore's water and wastewater bills were affordable to households in the First Quintile of income in only four (4) of the City's Census Tracts. By 2022, water and wastewater bills are expected to be unaffordable in virtually every part of the City.

Figure 4 presents quite a different story for households living in the First Quintile of income than does Figure 3 (which focused on households at median income). Several important observations can be seen in the Figure below. First, the number of Census Tracts with unaffordable water / wastewater bill burdens at the First Quintile of income does not sharply increase over the years.<sup>41</sup> Instead, even in 2010, nearly 90% of Census Tracts had unaffordable water / wastewater bill burdens for households in the First Quintile of income. The proportion of Census Tracts having unaffordable burdens for these lower income households was at 98% during the years 2014 through 2017. The proportion never falls below 94% in the ten year period in 2013 and beyond.

It is the upper ranges of unaffordability shown in the Figure below, however, that are even more disturbing for a City that is already having difficulty collecting the revenue it bills to its water and wastewater customers. While in the period 2010 through 2015, the number of Census Tracts with water and wastewater burdens exceeding 20% of income varied between two (2011) and five (2013), beginning in 2015, the number of Census Tracts in which households in the First Quintile of income faced high bill burdens began to sharply increase.

<sup>41</sup> Note in the Table above that the number of Census Tracts for which First Quintile income was reported varies somewhat by year.

- In 2015, 83 Census tracts experienced bill burdens exceeding eight percent (8%) of income for households with income in the First Quintile of their Census Tract (8% being four times higher than the 2% water / wastewater burden generally deemed to be affordable);
- By 2018, that number increased to 103 (more than half) of all Census Tracts;
- By 2022, that number had increased to 126 Census Tracts (or more than 70% of the City).



**Figure 4. Distribution of Unaffordable Bill Burdens by Census Tract at First Quintile Income by Year (2010 – 2022).**

Indeed, by 2020, Baltimore will face water and wastewater burdens of ten percent (10%) or more (five times higher than the burden deemed to be affordable) in more than half of its Census Tracts (92 out of 178), while by 2022, nearly 60% of the City (106 of 178 Census Tracts) will face water / wastewater burdens of 10% or more among households falling into the First Quintile of income.

### 3. Households at 150% of Federal Poverty Level.

An examination of the affordability of Baltimore’s water / wastewater bills at 150% of the Federal Poverty Level offers several insights into the need for, and design of, a water affordability program for the City.<sup>42</sup> The importance of looking at customers with incomes at these low levels of Poverty cannot be over-stated for Baltimore. In 2016, nearly 35% of Baltimore’s population lived with income at or below 150% of the Federal Poverty Level. Nearly one-in-four (24%) of Baltimore’s

<sup>42</sup> The dollar income at 150% of Poverty Level varies by Census Tract. Since Poverty Level is based on income taking into account household size, to the extent that household size differs by Census Tract, so, too, will Poverty Level vary.

population live with income at or below 100% of the Federal Poverty Level. Just as importantly, there are some areas of the City where poverty is concentrated. The percentage of population living at or below 100% of Poverty is greater than 25% more than the overall City average in 53 Census Tracts, while the percentage of population living at or below 150% of Poverty is greater than the overall City average in 61 Census Tracts.

Table 11 below distributes Baltimore's Census Tracts by the bill burdens that households face at 150% of Poverty. As can be seen, during the period 2010 through 2013, affordable bills were reasonably common throughout the City at 150% of Poverty Level. As recently as 2013, bills were affordable at 150% of Poverty Level in 177 of Baltimore's 198 Census Tracts reporting data. By 2014, however, bills had increased to an unaffordable burden (at 150% of Poverty) in 77 of Baltimore's 198 Census Tracts (39%). By 2016, bills were affordable at 150% of Poverty Level in only five (5) of the 198 Census Tracts. By 2019, bills will not be affordable at 150% anywhere in the City of Baltimore.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Less than 1%	0	0	0	0	0	0	0	0	0	0	0	0	0
1 - 2%	198	193	190	177	121	35	5	1	1	0	0	0	0
2 - 4%	0	5	8	21	77	163	193	196	196	192	186	157	118
4-6%	0	0	0	0	0	0	0	1	1	6	12	40	79
6 - 10%	0	0	0	0	0	0	0	0	0	0	0	1	1
10 - 20%	0	0	0	0	0	0	0	0	0	0	0	0	0
20%+	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	198	198	198	198	198	198	198	198	198	198	198	198	198

At 150% of the Federal Poverty Level, customers do not experience the very high bill burdens experienced by households with incomes in the First Quintile of income by Census Tract. In no Census Tract, does the water / wastewater burden exceed 10% of income, while in only one tract does the burden exceed 6% of income. Table 11 provides support for the conclusion that establishing a bill affordability program with maximum income eligibility at 150% of Poverty should reasonably address bill affordability problems in the City for the foreseeable future.

A danger lurks in examining households at the 150% of Poverty income level. The danger is posed by a tendency of many readers to think of households at 150% of Poverty to be representative of households at or below 150% of Poverty. In fact, the number of households

<sup>43</sup> This data presents burdens at 150% of Poverty Level, not at or below 150% of Poverty Level. A further distribution of households at 100% of Poverty Level is presented below.

who live precisely at the 150% of Poverty Level will be very few, if any. Some households will live at 100% of Poverty, while others will live with income at 80% or 50% or some other percentage of the Federal Poverty Level. The impact of reducing incomes, even if by a relatively small amount (i.e., to 100% of Poverty) is examined immediately below.

#### 4. Households at 100% of Federal Poverty Level.

In contrast to the discussion above, the data in Table 12 demonstrates that even if household income is reduced only to 100% of Poverty, an assessment of affordability reveals a distinctly greater problem for the City of Baltimore. The Table shows that at income levels equal to 100% of Poverty, water / wastewater bill burdens exceeded the demarcation of affordability (2%) in more than 90% of all Census Tracts (186 / 198 = 93.9%) as early as 2011. By 2014, not a single Census Tract experienced an affordable bill burden at 100% of Poverty.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Less than 1%	0	0	0	0	0	0	0	0	0	0	0	0	0
1 - 2%	43	12	6	1	0	0	0	0	0	0	0	0	0
2 - 4%	155	186	192	197	197	191	176	111	61	25	9	2	2
4-6%	0	0	0	0	1	7	22	87	136	168	177	160	121
6 - 10%	0	0	0	0	0	0	0	0	1	5	12	36	74
10 - 20%	0	0	0	0	0	0	0	0	0	0	0	0	1
20%+	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	198	198	198	198	198	198	198	198	198	198	198	198	198

Moreover, as can be seen in the data in Table 12, households living at 100% of Poverty begin to experience some of the very high bill burdens found earlier with respect to First Quintile households. By 2018, 137 Census Tracts would have water / wastewater burdens at 4% of income or above. By 2020, 189 of the 198 Census Tracts (95.5%) would have bill burdens of 4% or more. by 2022, 74 of the 198 Census Tracts (37%) experience bill burdens of up to 10% of income at 100% of the Federal Poverty Level.

A bill burden of 4%, of course, is two times higher than the bill burdens common accepted as being “affordable.” A bill burden of 10% is five times higher than what is deemed to be affordable.

<sup>44</sup> This data presents burdens at 150% of Poverty Level, not at or below 150% of Poverty Level. A further distribution of households at 100% of Poverty Level is presented below.

### C. Six Important Findings.

1. In 2010, 187 of the 198 Census Tracts for which median income is available (94.4%) experienced affordable water and wastewater bills at the Census Tract median incomes. By 2016, the number had fallen to 134 (67.7%). 2019 is the year in which water and wastewater bills become unaffordable for more than half of the City at median income (108 of 198 Census Tracts). It is important to remember that the data above does not focus on “low-income” households, but rather on households the mid-point of income in each Census Tract (i.e., the median is the point at which half of all incomes are higher and half are lower).
2. In 2010, nearly 90% of Census Tracts had unaffordable water / wastewater bill burdens for households in the First Quintile of income. The proportion of Census Tracts having unaffordable burdens for these lower income households was at 98% during the years 2014 through 2017. The proportion never falls below 94% in the ten year period in 2013 and beyond.
3. Beginning in 2015, the number of Census Tracts in which households in the First Quintile of income faced high bill burdens began to sharply increase. In 2015, 83 Census tracts experienced bill burdens exceeding eight percent (8%) of income for households with income in the First Quintile of their Census Tract (8% being four times higher than the 2% water / wastewater burden generally deemed to be affordable). By 2018, that number increased to 103 (more than half) of all Census Tracts. By 2022, that number had increased to 126 Census Tracts (or more than 70% of the City).
4. The importance of looking at customers with incomes at lower levels of Poverty cannot be over-stated for Baltimore. In 2016, nearly 35% of Baltimore’s population lived with income at or below 150% of the Federal Poverty Level. Nearly one-in-four (24%) of Baltimore’s population live with income at or below 100% of the Federal Poverty Level. Just as importantly, there are some areas of the City where poverty is concentrated. The percentage of population living at or below 100% of Poverty is greater than 25% more than the overall City average in 53 Census Tracts, while the percentage of population living at or below 150% of Poverty is 25% more than the overall City average in 61 Census Tracts.
5. By 2016, bills were affordable at 150% of Poverty Level in only five (5) of the 198 Census Tracts. By 2019, bills will not be affordable at 150% anywhere in the City of Baltimore. At 150% of the Federal Poverty Level, customers do not experience the very high bill burdens experienced by households with incomes in the First Quintile of income by Census Tract. In no Census Tract, does the water / wastewater burden exceed 10% of income, while in only one tract does the burden exceed 6% of income.

6. At income levels equal to 100% of Poverty, water / wastewater bill burdens exceeded the demarcation of affordability (2%) in more than 90% of all Census Tracts (186 / 198 = 93.9%) as early as 2011. By 2014, not a single Census Tract experienced an affordable bill burden at 100% of Poverty. By 2020, 189 of the 198 Census Tracts (95.5%) would have bill burdens of 4% or more. by 2022, 74 of the 198 Census Tracts (37%) experience bill burdens of up to 10% of income at 100% of the Federal Poverty Level.



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## **Part 4: A way forward: A program design to increase Baltimore's capacity to pay increasing water / wastewater bills**

In response to the affordability problems documented above, and the broad range of utility, social, and municipal impacts arising because of these problems, this report outlines the essential components comprising an effective and efficient low-income affordability program for the City of Baltimore. These components include:

- A rate affordability component;
- An arrearage management component;
- A crisis intervention component; and
- A water conservation component.

Each of these program components is briefly described below. Before taking this look at program design, however, it is beneficial to examine how a low-income affordability program fits into the City's financial capacity to pay.

## **A. The EPA and a Community's Financial Capacity to Pay.**

The U.S. Environmental Protection Agency (“EPA”) has expressed its concerns with the ability of local governments to meet their clean water obligations under federal law. In its November 2014 “Financial Capability Assessment Framework,” the EPA stated that it “is committed to working with state and local government partners to assist local municipalities and local authorities to meet Clean Water Act (“CWA”) obligations in a manner that recognizes the unique financial challenges that local jurisdictions face.” The EPA Framework document stated:

Many local governments face complex water quality issues that are heightened by the need to address population growth or decline, increases in impervious surfaces, source water supply needs, and aging infrastructure. In recent years, many local governments and authorities have increased investments in their wastewater and stormwater infrastructure through capital projects to rehabilitate existing systems, improve operation and maintenance, and address additional regulatory requirements. As programs are implemented to improve water quality and attain CWA objectives, many state and local government partners find themselves facing difficult economic challenges with limited resources and financial capability. We recognize these challenging conditions and are working with states and local governments to develop and implement new approaches that will achieve water quality goals at lower costs and in a manner that addresses the most pressing problems first. Long-term approaches to meeting CWA objectives should be sustainable and within a local government or authority's financial capability. The financial capability of these entities and other relevant factors are important to consider when developing appropriate schedules for infrastructure projects in permits or enforcement actions to help protect human health and the environment.<sup>45</sup>

The EPA tells municipalities that information on the rate impacts at various income levels is an important element of assessing municipal financial capacity. EPA identified “examples of information related to residential impacts” that municipalities should assess as including:

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<sup>45</sup> EPA (November 24, 2014). “Financial Capability Assessment Framework,” at 1, U.S. Environmental Protection: Washington D.C.

- Income distribution by quintile, geography or other breakdown, illustrating how income distribution in the service area differs from comparable data on the national level or for similar cities.
- Where cities have adopted differential rates for low income customers, the income distribution that led to that rate structure.
- Information about service area poverty rates and trends.
- Projected, current and historical sewer, and stormwater fees as a percentage of household income, quintile, geography or other breakdown.<sup>46</sup>

The EPA has historically not been neutral when it comes to offering low-income rates. According to a January 2013 EPA memo to the agency’s Regional Administrators:

Uniform rate structures may place a disproportionately high financial burden on households with low incomes. EPA strongly encourages municipalities to consider establishing lower rates or subsidies for low income customers. This is consistent with one of the goals of integrated planning, which is to take advantage of synergies and savings that can be found through an integrated approach and thereby promote affordability.

Some communities have asked whether the CWA restricts a community’s ability to set different rate structures to address such burdens or would limit their ability to receive grant funding from the Agency. EPA plans to discuss both the limits and opportunities that different rate structures present for achieving clean water goals. Local officials have a great deal of latitude under these regulations and the EPA continues to encourage communities to consider and adopt rate structures that ensure that lower income households continue to be able to afford vital wastewater services.<sup>47</sup>

(emphasis added). EPA cited Section 204(b)(1) of the Clean Water Act as recognizing “the use of lower charges for low-income residential users as satisfying the stipulation that recipients of services must pay their proportion share.”

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<sup>46</sup> EPA Framework, supra note 45, at 5 – 6.

<sup>47</sup> Memo (January 13, 2013). Nancy Stoner, Acting Assistant Administrator, Office of Water, EPA, Cynthia Giles, Assistant Administrator, Office of Enforcement and Compliance Assurance, EPA, to Regional Administrators.

Indeed, EPA cited its regulations implementing the Clean Water Act which state in relevant part: “Low income residential user rates. (1) Grantees may establish lower user charge rates for low income residential users after providing for public notice and hearing. A low income residential user is any residence with a household income below the Federal poverty level as defined in 45 CFR 1060.2 or any residence designated as low income under State law or regulation.”<sup>48</sup>

It is within this context, that the following affordability program is recommended for Baltimore.

## **B. The Basic Program Design**

The discussion below outlines the necessary components of an effective and efficient rate affordability program. These components include:

- A rate affordability component;
- An arrearage management component;
- A crisis intervention component; and
- A water conservation component

### **1. The Rate Affordability Component**

A water / wastewater rate affordability program is proposed for the City of Baltimore. The rate affordability program will be directed toward reducing bills to an affordable percentage of income. The rate affordability program is designed to reduce water/sewer bills to a base affordable burden set at 2% of household income.

The “base” affordable burden is set to reflect affordability to the lowest income tier (0 – 50% of Poverty). In fact, bill affordability burdens are proposed to be tiered by Poverty Level. Three tiers are recommended, with Tier 1 being 0 – 50% of Poverty (2.0% affordable burden); Tier 2 being 51 – 100% of Poverty (2.5% affordable burden); and Tier 3 being 101 – 150% of Poverty (3% affordable burden).

This level of discount has an empirical basis. The level of a low-income discount should be set so that it helps to advance some pre-established program objective. Providing a discount

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<sup>48</sup> 40 C.F.R. §35.2140(I) (2017).

is not an end unto itself. It is instead a means to an end. The objective for a low-income rate discount is to increase the affordability of rates to participating customers. Providing a discount at insufficient levels does not advance the objective of increasing the affordability of home water service. Providing a discount at excessive levels also fails to advance the objective (to the extent the discount is above that needed).

**The eligible population:** The proposed rate affordability program is directed to households with income at or below 150% of the Federal Poverty Level. Table 13 sets forth income at various levels of Poverty (2017) for households with from one to four members.

Table 13. Dollars of Income by Household Size and 2017 Poverty Level.			
Household Size	100% FPL	125% FPL	150% FPL
1	\$12,060	\$15,075	\$18,090
2	\$16,240	\$20,300	\$24,360
3	\$20,420	\$25,525	\$30,630
4	\$24,600	\$30,750	\$36,900

The discussion above documents that unaffordability begins to dissipate when incomes reach or exceed 150% of the Federal Poverty Level. The point of establishing an eligible population is not merely to define who might be “poor.” The point is to demarcate those who, because of their incomes, are likely to face unaffordable water and wastewater bills.

**The use of “fixed credits”:** Rate affordability assistance should be distributed on a percentage of income basis. Using a percentage of income approach to targeting provides an efficient use of scarce rate affordability resources. A percentage of income approach delivers those benefits, but only those benefits, needed to bring low-income bills into an affordable range; an across-the-board discount does not.<sup>49</sup>

Although a variety of percentage-of-income based approaches exists, the delivery of rate affordability assistance should use a fixed credit approach. The fixed credit approach begins as an income-based approach. In order to be eligible for the rate, a household must meet *both* eligibility criteria: (1) that the household income is at or below 150% of the Federal Poverty Level; and (2) that the household water burden<sup>50</sup> exceeds the burden deemed to be affordable.

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<sup>49</sup> Using an across-the-board discount, the rate affordability program would pay some customers *more* than is necessary to bring bills into an affordable range while paying other customers *less* than is necessary to bring bills into an affordable range.

<sup>50</sup> Remember, again, that the term “water” is a collective reference to water, wastewater and stormwater bills.

Providing a fixed credit involves calculating what bill credit would need to be provided to the household in order to reduce the household's bill to the designated percent of income. To calculate the fixed credit involves three steps: (1) calculating a burden-based payment; (2) calculating an annual bill; and (3) calculating the fixed credit necessary to reduce the annual bill to the burden-based payment.

There are substantive advantages to the fixed credit approach. Perhaps most importantly, the fixed credit provides a strong conservation incentive to the low-income customer. Under the fixed credit model, Baltimore would provide a fixed credit to the low-income household irrespective of the household's actual bill. If the household increases its consumption, and thus has a higher bill, the household pays the amount of the increase. If, in contrast, the household conserves water and thus lowers its bill, the household pockets the savings.

**The use of “express lane eligibility”:** Enrollment of customers should occur through a process called “adjunctive eligibility.” It is sometimes referred to as “express lane eligibility.” Baltimore would not be unique in allowing such adjunctive eligibility for a utility rate affordability program. Adjunctive eligibility is a well-accepted doctrine for enrolling income eligible households in particular programs. Adjunctive eligibility was pioneered as a mechanism to increase enrollment in children’s health insurance programs. One evaluation of the use of such an intake approach in the children’s health arena stated:

Express Lane Eligibility. . .accelerates enrollment for the hundreds of thousands of uninsured children already enrolled in other income-comparable publicly funded programs such as Head Start or school lunch. The simple notion is that children who have met the income test for these income-comparable programs should have their eligibility expedited and do not need to provide duplicative income information to qualify for health care coverage. Express Lane Eligibility can cut administrative red tape while streamlining the application process. . .<sup>51</sup>

This, of course, is *precisely* one of the goals of the adjunctive eligibility approach: to cut red-tape while streamlining the application process.

Adjunctive eligibility would be operationalized in Baltimore in two ways. After taking direct applications from customers for the Baltimore rate affordability program, Baltimore would accept verification of participation in the designated programs directly from the

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<sup>51</sup> The Children's Partnership, *Express Lane Eligibility: How to Enroll Large Groups of Uninsured Children in Medicaid and CHIP*, Children's Partnership: Washington D.C.

agency administering those programs. Through this process, families are required to fill out and submit information only once. A number of states, including Illinois, Maryland, Michigan, California and Ohio, use joint applications for their TANF, Medicaid and Food Stamp programs. Other states use the same application for their supplemental nutrition program for Women, Infants and Children (WIC) and Medicaid programs.

Utility regulators have approved such an enrollment process for utility rate affordability programs. For example, the Pennsylvania PUC has specifically said within the context of Customer Assistance Programs (CAPs) for natural gas and electric utilities that "we have found that automatic referrals to CAP when a customer calls to make a payment arrangement and intake certification by government agencies are simple to administer and cost-effective."<sup>52</sup> Baltimore should incorporate into its low-income rate discount program a process that obtains customer income certification from third parties. Upon receipt of verification that a customer is a low-income customer, the customer will be placed in the rate affordability program.

## **2. The Arrearage Management Component**

The arrearage management component in the recommended rate affordability program will reduce pre-program arrears to a manageable level over an extended period of time. An arrearage management program component is necessary to help get low-income customers "even" so they have a chance at future success in making payments. It does not help to have current bills be affordable if the household is subject to service termination for preprogram arrears. In addition, it does not help to have current bills be affordable if the *total* bill is unaffordable due to payment obligations required to retire past arrears.

Through an arrearage management program, a customer earns credits toward his or her preprogram arrears over a period of time, so long as the customer remains on the rate affordability program. By the end of the time period, the household's preprogram arrears will be reduced to \$0. The time period over which to provide credits needs to be selected so as to stay within the reasonable planning horizon of the customer. To suggest, for example, that arrears will be reduced to \$0 over a period of four or more years is outside the horizon within which low-income households do their planning. The recommendation here is for an arrearage management period of two years. Arrearage credits are earned on a monthly basis.

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<sup>52</sup> 1999 CAP Policy Statement, at 6, codified at 52 Pa. Code section 69.261, et seq.; Order, Re. Revisions to the Customer Assistance Program Made Pursuant to 52 Pa. Code, Chapter 69, Docket No. M-00991232.

### 3. The Crisis Intervention Component

The third critical component of a low-income affordability program involves crisis intervention. The need for a crisis intervention program arises from three different attributes of low-income households.

- First, one attribute of low-income households is their lack of cash assets to allow them to weather the storm of unexpected expenses or unexpected loss of income. Low-income households do not have the ability to withstand a significant expense associated with a family emergency, or the loss of income associated with such an emergency. Given such exigencies, there is considerable likelihood that some proportion of customers taking service under the low-income program will have occasional exigencies that can be met through a crisis intervention program.
- Second, one attribute of a low-income household is that low wage workers tend to be hourly wage workers. The overwhelming majority of these workers lack paid leave. The need for either medical leave, or family care leave, in other words, leads directly to lost income when paid leave is not provided. The lack of paid leave time may directly affect the ability of a working poor customer to maintain payments on their monthly utility bill. A person working 35 hours a week on hourly wages may lose three days of work due to a sick child missing school and requiring care. If no paid leave time exists for that employee, the sick child translates into permanently lost wages.
- Third, low wage workers tend to have lower quality jobs, often marked by considerable income fluctuations due to the number of hours they are called upon to work. The number of lost hours, and thus the amount of lost wages, is referred to as involuntary part-time employment. This fact of unstable income presents no commentary on the working poor individuals themselves. Rather it reflects the nature of work in which the working poor find themselves.

Given these attributes of the target population, the crisis component of the low-income program represents a budget from which to provide crisis intervention assistance on an as-needed basis.

### 4. The Water Conservation Component

Baltimore should use water conservation investments as a supplement to its rate affordability discount on low-income water bills. The use of water conservation investments



in this manner is a reasonable approach, conditioned on the provision of a sufficient budget to make water conservation measures available to those low-income rate discount participants who would most benefit from the investments.

Water conservation can be an effective supplement to this type of discount for low-income customers. Water conservation measures are of particular value because, in addition to generating water use reductions (and thus water bill savings), water conservation efforts can generate corresponding bill reductions on low-income customer natural gas and electric bills as well.

The combination of efficiency/conservation investments with the negotiation of deferred payment agreements has been recognized throughout the Pennsylvania utility industry in particular. Consider what the Pennsylvania Public Utility Commission (“PUC”) said in adopting its Low-Income Usage Reduction Program (“LIURP”). The PUC stated the purpose of LIURP as follows:

[LIURP] requires covered utilities to establish fair, effective and efficient energy usage reduction programs for their low-income customers. The programs are intended to assist low-income customers conserve energy and reduce residential energy bills. The reduction in energy bills should decrease the incidence and risk of customer payment delinquencies and the attendant utility costs associated with uncollectible accounts expense, collection costs and arrearage carrying costs.

The Pennsylvania PUC subsequently found that its low-income usage reduction program has had precisely the impacts called for in this statement of purpose. In January 2009, Penn State University released a comprehensive long-term evaluation of the LIURP program. Prepared for the Pennsylvania PUC, the evaluation examined data over the first 18 years of program operation. The evaluation provides important lessons that inform whether Baltimore would promote least-cost service by adding a usage reduction component to the City’s bill assistance programs. The LIURP evaluation reported:

- “LIURP is a cost-effective method of reducing both energy consumption and energy bill arrearages. . .Sixty nine percent of LIURP households reduce their energy consumption following weatherization treatments, with an average reduction of 16.5 percent.” Electric baseload jobs generated a usage reduction of 698.2 kWh, or 19.1%.
- “Of those households with energy bill arrearages, 40 percent reduce their arrearage following weatherization services. Thirty-seven percent of electric

industry households reduce their arrearages. . .”<sup>53</sup> LIURP was targeted to households with arrears (within the population of large consumers). The LIURP evaluation found that “by the end of the year following weatherization, 68 percent of the households have an energy bill arrearage, a decrease of 29 percent. . .Although the average number of full payments made does not vary from the pre- to post-period, the percent of households with missed payments decreased and the average number of partial payments increased.”<sup>54</sup>

A multi-state study of affordability programs in the United States found that “every state that has adopted a home energy affordability program has incorporated an energy efficiency component into that affordability initiative.” The study found that “these [low-income efficiency] programs can effectively complement the impacts of affordability programs.”<sup>55</sup> The same would be true for a water affordability program for Baltimore. Accordingly, a water conservation component should be part of the program design.

### **C. IWRAP: The Philadelphia Affordable Water Model.**

In the Fall of 2015, the City of Philadelphia became the first major urban center to adopt a water affordability program structured on percentage of income principles. Adopted unanimously by the Philadelphia City Council on November 19, 2015, the Philadelphia initiative was titled the Income-based Water Rate Affordability Program (“IWRAP”).<sup>56</sup> IWRAP opened for business on July 1, 2017.

Philadelphia’s IWRAP legislation provides that: “monthly IWRAP bills shall be affordable for low-income households, based on a percentage of the household’s income. . .”<sup>57</sup> Each low-income customer’s bill, the legislation directed, shall be “based upon each Customer’s actual income” and “shall be charged in lieu of the Department’s service, usage, and

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<sup>53</sup> The LIURP evaluation found that this result was consistent with prior U.S. Department of Energy (DOE) research, which found that “low-income families who receive weatherization have a lower rate of default on their utility bills and require less emergency heating assistance.” Bruce Tonn, et al. (2001). *Weatherizing the Home of Low-Income Home Energy Assistance Program Clients: A Programmatic Assessment*, U.S. Department of Energy: Washington D.C.

<sup>54</sup> The evaluation noted that participation in LIURP was associated with increased participation in energy assistance programs. It was difficult to distinguish the impact of the two.

<sup>55</sup> Carroll, Colton and Berger (2007). *Ratepayer Funded Low-Income Energy Programs: Performance and Possibilities*, at 132, Apprise, Inc.: Princeton (NJ)..

<sup>56</sup> Bill No. 140607-AA, amending Philadelphia Code, §19-1605, adopted by the City Council on November 19, 2015. Signed by the Mayor on December 1, 2015.

<sup>57</sup> Amended Philadelphia City Code, Section 19-1605(3)(a) (2017).

stormwater charges.”<sup>58</sup> The following major policy decisions are incorporated into this language:

- Bills “shall be affordable.” The purpose of the Philadelphia legislation, in other words, was not merely to provide “some” level of discount to low-income customers. There is, instead, a legislatively-mandated outcome. The level of discount must result in an affordable bill for low-income customers. This policy works two ways. First, if a customer has a lower income (or a higher bill), the amount of assistance should be increased to reflect the increased dollars needed to make a bill affordable. Second, if a customer has an affordable bill without assistance, the customer does not receive a discount merely because he or she is “poor.” The bill assistance, in other words, should be an amount that is sufficient, but only that amount which is sufficient, to make a bill affordable.
- Affordability is to be “based on a percentage of the household’s income.” Affordability, however, was not some generic concept included in the legislation. Instead, Philadelphia specifically mandated that affordability was to be determined as a function of a “percentage of income.”
- Affordability is to be “based upon each Customer’s actual income.” According to the Philadelphia City Council, in other words, affordability was not to be determined “on average” or on a City-wide basis. Affordability could not be set, for example, based on median income or even on some percentage of Federal Poverty Level. Affordability was not to be based on some estimated or imputed income. Rather, pursuant to the legislation, affordable IWRAP bills in Philadelphia are to be determined based upon “each customer’s actual income.”
- The Philadelphia IWRAP legislation made clear that the difference between bills that would have been charged at standard residential rates and bills actually charged pursuant to the IWRAP legislation was not to be accumulated for subsequent collection from the IWRAP participants. Instead, IWRAP bills were “in lieu of” the water, wastewater and stormwater charges otherwise charged to residential customers. “Timely payment of his or her monthly IWRAP bill,” the legislation provides, “shall satisfy all of a customer’s current water liabilities, so that there is no addition to his or her arrears.”<sup>59</sup>
- Finally, the IWRAP legislation was intended to be comprehensive. It was designed to cover all aspects of “water” bills charged to residential customers, including

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<sup>58</sup> Amended Philadelphia City Code, Section 19-1605(3)(a) (2017).

<sup>59</sup> Amended Philadelphia City Code, Section 19-1605(3)(d) (2017).

water, wastewater and stormwater charges.

The Philadelphia legislation directly addresses the treatment of arrearages that had been incurred by low-income customers before those customers entered IWRAP. The legislation recognizes that collection efforts by the Philadelphia Water Department are based on total bills, not on whether a customer's arrears were incurred before or after the effective date of the water affordability program. Moreover, the City Council recognized, it was not only possible, but indeed it was likely that low-income customers would have incurred arrears during that time period prior to the point where the City Council moved to incorporate affordability into the City's rate structure. Accordingly, the Philadelphia legislation mandates that "low-income customers who are enrolled in IWRAP shall be required to make no additional payment in respect to any pre-IWRAP arrears to maintain service."<sup>60</sup> In fact, the legislation explicitly provides that "earned forgiveness of arrearages shall be available under such terms and conditions as are adopted by regulation."<sup>61</sup>

Finally, while the legislation does not specify the exact nature of water conservation investments to be directed toward low-income customers, the IWRAP legislation does specifically contemplate water conservation as an important component of the affordability effort. "Each participating IWRAP customer," the legislation provides, "shall agree to accept and reasonably maintain any free conservation measures offered to the customer by the Water Department."<sup>62</sup>

In short, the Philadelphia IWRAP legislation adopts virtually every component identified in this review of Baltimore water and wastewater rates as being important for a water affordability initiative. It provides for a percentage of income-based bill affordability approach relating to bills for current service. It provides for an opportunity for low-income customers to earn forgiveness of pre-program arrears incurred under the rates that have been found to have been unaffordable. It provides for a usage reduction (i.e., "water conservation") program component.

The complete Philadelphia IWRAP legislation is attached as Appendix A. The Philadelphia IWRAP legislation is commended to the City of Baltimore as an ideal example of addressing the affordability problems identified in this report. The Philadelphia legislation presents Baltimore with a way out of its conundrum.

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<sup>60</sup> Amended Philadelphia City Code, Section 19-1605(3)(h) (2017).

<sup>61</sup> Amended Philadelphia City Code, Section 19-1605(3)(h)(i) (2017).

<sup>62</sup> Amended Philadelphia City Code, Section 19-1605(3)(q) (2017).

## D. Six Important Findings.

1. The U.S. Environmental Protection Agency (“EPA”) “strongly encourages municipalities to consider establishing lower rates or subsidies for low income customers.” According to the EPA, “the EPA continues to encourage communities to consider and adopt rate structures that ensure that lower income households continue to be able to afford vital wastewater services.”
2. The level of a low-income discount should be set so that it helps to advance some pre-established program objective. Providing a discount is not an end unto itself. It is instead a means to an end. The objective for a low-income rate discount is to increase the affordability of rates to participating customers. Providing a discount at insufficient levels does not advance the objective of increasing the affordability of home water service. Providing a discount at excessive levels also fails to advance the objective (to the extent the discount is above that needed).
3. An arrearage management program component is necessary to help get low-income customers "even" so they have a chance at future success in making payments. It does not help to have current bills be affordable if the household is subject to service termination for preprogram arrears. In addition, it does not help to have current bills be affordable if the *total* bill is unaffordable due to payment obligations required to retire past arrears.
4. Water conservation can be an effective supplement to this type of discount for low-income customers. Water conservation measures are of particular value because, in addition to generating water use reductions (and thus water bill savings), water conservation efforts can generate corresponding bill reductions on low-income customer natural gas and electric bills as well.
5. A multi-state study of affordability programs in the United States found that “every state that has adopted a home energy affordability program has incorporated an energy efficiency component into that affordability initiative.” The study found that “these [low-income efficiency] programs can effectively complement the impacts of affordability programs.”
6. In the Fall of 2015, the City of Philadelphia became the first major urban center to adopt a water affordability program structured on percentage of income principles. Adopted unanimously by the Philadelphia City Council on November 19, 2015, the Philadelphia initiative was titled the Income-based Water Rate Affordability Program (“IWRAP”). IWRAP opened for business on July 1, 2017. The

Philadelphia IWRAP legislation is an ideal example of addressing the affordability problems identified in this report. The Philadelphia legislation presents Baltimore with a way out of its conundrum.

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## **Part 5: Affordable bills: increased revenues and decreased collection efforts**

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Setting aside the positive municipal finance outcomes associated with a low-income affordability program, which are described in Appendix B, adoption of a low-income bill affordability program for Baltimore can reasonably be expected to generate a number of utility-related, business-related outcomes as well. The discussion below identifies those outcomes and provides information on why it is reasonable to expect such outcomes for Baltimore.

### **A. Increased Bill Payment Coverage.**

The first impact of a water bill affordability program<sup>63</sup> in the City of Baltimore would be an increase in the bill payment coverage ratio of participating low-income consumers. The bill payment coverage ratio is the percentage of billed revenue actually paid by the customer. A customer who pays \$90 of a \$100 bill, for example, has a bill payment coverage ratio of 90%. Having a bill payment coverage ratio of more than 100% means the customer is not only paying his/her current bill, but is also retiring pre-existing arrears. Having a bill payment coverage ratio of less than 100% means that the customer is incurring additional arrears.

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<sup>63</sup> References to “water” are intended to incorporate storm water and wastewater (i.e., sewer) as well.

States adopting bill affordability programs see a dramatic improvement in the bill payment coverage ratios of their low-income customers. For example, consider the Apprise, Inc. evaluation of the New Jersey Universal Service Fund. That Apprise report shows the following for gas or electric customers (target affordable bill burden of 3%):

Table 14. Distribution of Effective Coverage Rate by Net Energy Burden (gas or electric: 3%) New Jersey Universal Service Fund ("USF")				
	Coverage Rate			
Burden	< 50%	50% - <90%	90% - <100%	100% or more
<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%	65.6%
More than 8%	1.0%	25.6%	16.1%	57.4%

As can be seen in the Table above, so long as the bill burden remained in the target range in New Jersey (3% or lower), from 94% (11.5% + 82.5% = 94%) to 97% (5.3% + 92.0% = 97.3%) of the low-income customers generated a bill payment coverage ratio over 90% (i.e., paid more than 90% of their bills). Indeed, between 83% and 92% of low-income program participants had a bill payment coverage ratio of 100% or more.

Similar results have arisen from the Pennsylvania low-income affordability programs. Each year, the Pennsylvania PUC's Bureau of Consumer Services ("BCS") collects and reports data on the performance of the state's "universal service" programs. The data collection allows policy-makers and utility service providers to compare the performance of low-income residential customers participating in the low-income bill affordability programs of Pennsylvania utilities (called Customer Assistance Programs, or "CAPs") to the performance of "confirmed low-income" customers in general. In 2013 (the most recent year for which data is available), Pennsylvania utilities had 1.046 million confirmed low-income customer accounts statewide.<sup>64</sup> The confirmed low-income accounts were heavily payment-troubled. Fifteen percent of these confirmed low-income customers had been disconnected for nonpayment in 2013, of which only 72% were reconnected. More than 22% of all confirmed low-income accounts were in debt, with those confirmed low-income customers having an average monthly arrears of \$656. Of those confirmed low-income accounts in arrears, fewer than half were on payment agreements.

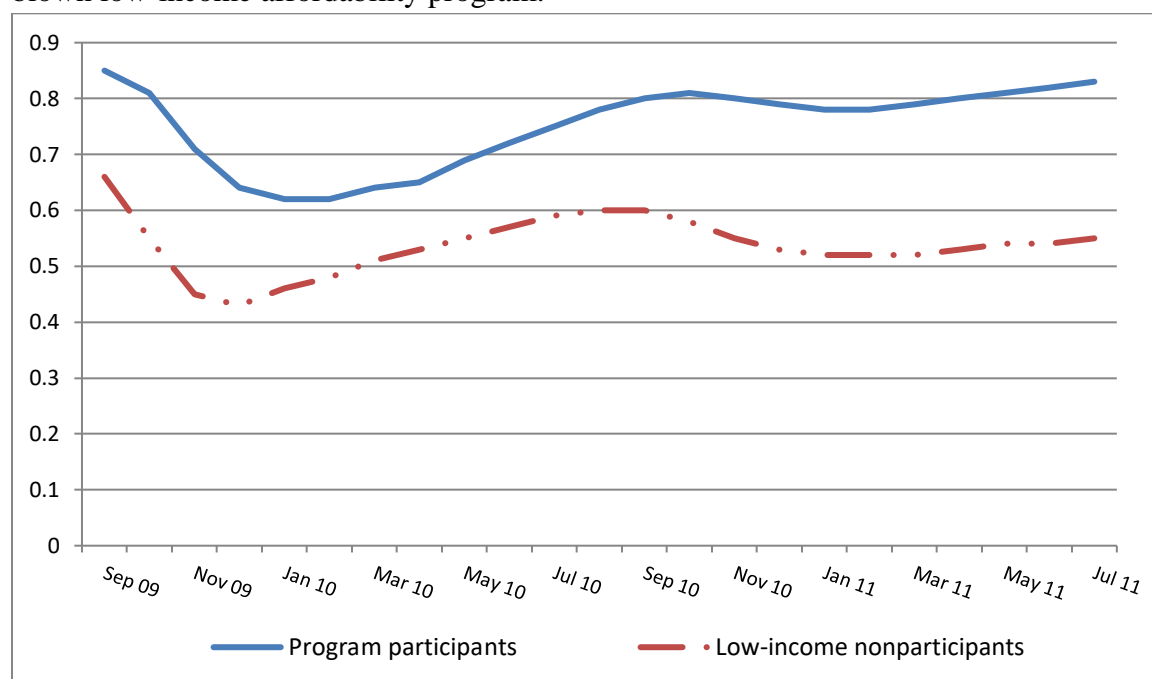
<sup>64</sup> Pennsylvania utilities had an *estimated* 1,987,364 number of low-income customer accounts. Accordingly, the utilities had "confirmed" roughly 53% of their estimated number of low-income accounts. Given that these numbers include both gas and electric utilities, however, it cannot be concluded that these numbers reflect "households." Some accounts may be counted twice, once by the electric utility and again by the natural gas utility.



In contrast to these payment difficulties for confirmed low-income customers, the participants in the low-income CAP programs had an average payment coverage ratio of 86%. Through their affordability programs, in other words, Pennsylvania’s utilities took extremely payment-troubled confirmed low-income customers and structured a response where the utilities were receiving nearly \$9 of every \$10 billed.

Public Service Company of Colorado (“PSCO”) also experienced a dramatic increase in the payment coverage of its low-income program participants. The impact of the Colorado low-income program can be seen in the graph of payment coverage ratios (i.e., customer payments / billed revenue = payment coverage ratio) presented immediately below. PSCO’s bill affordability program participants substantially out-performed those PSCO low-income customers who received LIHEAP –called “LEAP” in Colorado--<sup>65</sup> but who did not participate in the bill affordability program.

As can be seen in the Figure below, by the end of the program pilot, the payment coverage ratio of participants in PSCO’s low-income bill affordability program (83%) was nearly 30% higher than the payment coverage ratio of low-income customers *not* participating in the program (55%). Moreover, the cumulative payment coverage ratio of program participants was increasing throughout the term of the pilot. PSCO has since expanded its program to a full-blown low-income affordability program.



**Figure 5. Cumulative Customer Payment Coverage Ratio for PSCO Low-Income Affordability Program Participants compared to Low-Income Non-Participants**

<sup>65</sup> Both “LIHEAP” (Low-Income Home Energy Assistance Program) and “LEAP” (Low-income Energy Assistance Program) refer to the federal energy assistance program in the United States.

A universal finding of programs offering affordable bills has been that low-income customers increase their payment coverage ratios. In contrast to the ongoing and substantial nonpayment problems faced by Baltimore's water and wastewater utilities, rate affordability participants tend to pay their bills. While, as discussed above, Baltimore does not track the payments received from its residential customers, let alone the payment difficulties of individual customers, the payment outcomes discussed above stand in sharp contrast to the increasing receivables (whether grouped as active or inactive assets) for service billings from the Baltimore water and wastewater utilities in recent years.

## B. Increased "Net Back."

A not-surprising corollary to the increased bill payment coverage ratio of bill affordability program participants is an increase in the "net back" experienced by the utilities offering affordable low-income rates. Stated conceptually, it is better for a utility to collect 90% of a \$70 bill ( $\$70 \times 0.90 = \$63$ ) than it is for that utility to collect 60% of a \$100 bill ( $\$100 \times 0.60 = \$60$ ). Under an affordable bill plan, in other words, even though a portion of the bill is discounted, the extent to which payments increase is such that total revenue goes up. This increase in revenue is accompanied by a decrease in the cost of collecting that revenue.

"Net back" is a common metric in measuring the cost-effectiveness of collecting revenue. One collection professional described "net back" as follows:

The second and most important way to determine the true value of a collection agency is to calculate its Net Back figure and compare it with those of other collection agencies. Collection agencies charge for their services in different ways, but the end result is usually a single fixed rate or a variable contingency rate that is charged as a percentage of recoveries: a commission.

Because some collection agencies are more effective than others, the rate of recovery must also be considered in determining the true value. When you consider both an agency's commission rate and its recovery rate, you can arrive at a figure for comparison, the Net Back figure.<sup>66</sup>

The "net back" criterion focuses on whether a utility offering affordable bills experiences an increase in net revenues if customer bills are paid in a more complete fashion as a result of the affordable bill. While generally viewed as a measure of cost-effectiveness, in fact, "net back"

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<sup>66</sup> Statewide Credit Association, Inc. (January 12, 2012).  
<http://www.statewidecredit.net/ProductsServices/TheNetBackConcept/tabid/87/Default.aspx>

combines "effectiveness" and "cost-effectiveness" into one comprehensive evaluation criterion. It provides not only a measurement of the effectiveness of the low-income programs (through the "payment coverage ratio" measure), it also provides a measurement of the cost of the program. By combining the two measurements into one criterion, "net back" provides for a balancing of both factors (effectiveness of the programs on the one hand and costs of the programs on the other hand).

An increased net back impact has been found for both the Colorado and Indiana low-income bill affordability programs. In assessing the impact of improved customer payment performance on total revenue, the Colorado evaluation reported that the PSCO program "generated a revenue neutrality when PEAP participants were compared to other low-income customers, but not when compared to the residential population as a whole." It went on to say:

The lesson learned from [the PSCO data] is that PEAP generates a sufficiently substantial improvement in payment coverage ratios relative to the low-income (nonparticipant) population to more than offset the discount provided. To the extent that the low-income customers have a prior history of non-payment, the revenue neutrality will be somewhat (but not substantially) greater. However, because the payment coverage ratios of the residential population as a whole are higher with which to begin, the revenue that is being "lost" to nonpayment in the absence of the discount is smaller, and the increase in payment coverage ratios is insufficiently large to offset the effects of the discount.<sup>67</sup>

The same results were found for Indiana's low-income programs. A 2007 evaluation of the Citizen Gas and Coke Utility ("CGCU") low-income program (called the Universal Service Program or "USP") found:<sup>68</sup>

Customers that participated in the Citizens Gas USP made substantively greater payments than did that company's nonparticipant population. Over the months of January through March 2007, USP participants paid 79% of their current utility bill. While billed \$273,627 during those winter months, the USP participants paid \$215,897. In contrast, the Citizen Gas *non*participants paid only 64% of their January through March billings. While billed \$304,072, these customers paid \$194,577. As can be seen, the USP was better than revenue neutral to Citizens

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<sup>67</sup> Colton (2012). *Public Service Company of Colorado's (PSCo) Pilot Energy Assistance Program (PEAP) and Electric Assistance Program (EAP): 2011 Final Evaluation Report*, prepared for Public Service Company of Colorado: Denver (CO).

<sup>68</sup> All dollar figures presented in this analysis, unless other explicitly noted to the contrary, are associated with the sample population and not the total population.

Gas. While USP participants were billed 90% of what nonparticipants were billed, they paid 111% what nonparticipants paid.

The revenue neutrality can be seen from a different perspective as well. Had USP nonparticipants paid at the same rate as USP participants did, they would have paid \$240,216, nearly \$46,000 more than they actually paid.<sup>69</sup>

As in the Colorado program, in other words, in Indiana, the increased payment performance was more than sufficient to offset the billing discount. As a result of the low-income discount, total revenues to the utility actually increased.

At the same time revenues were found to be increasing, the costs of collecting those revenues were found to be decreasing. Looking at the cost of PSCO's most common collection activity (issuing notices of disconnection for nonpayment), the company's cost of collection from program participants was more than 65% less than the company's cost of collection from program non-participants.<sup>70</sup> The benefits of the increase in revenue are even further enhanced when these decreased expenses are also taken into account.

The cost of collection decreases because of improvements in the relative efficiency and effectiveness of collection activities for the participant customer populations relative to the non-participant population. Stated quite simply, because of the affordability program, PSCO had to work less hard to collect revenue from program participants than it did to collect revenue from non-participants.

This assessment of expense savings could well be important in the event that the "revenue analysis" presented above determines that the low-income affordability program does not generate revenue neutrality for the utility. In circumstances where there is not revenue neutrality, in other words, the expense savings nonetheless might still make the "net back" positive even if the revenue neutrality is not.<sup>71</sup> For PSCO, however, since the program was revenue neutral with which to begin, the expense savings from DNP notices further expanded the overall financial benefit to the utility when program participants were compared to program non-participants.

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<sup>69</sup> Colton (2007). *An Outcome Evaluation of Indiana's Low-Income Bill affordability programs*, prepared for Citizens Gas and Coke Utility, Vectren Energy, and Northern Indiana Public Service Company.

<sup>70</sup> The PSCO evaluation found that under this analysis, the actual cost of each individual collection activity is less important. If, for example, only a \$0.50 "incremental" cost were used, while the absolute dollar savings would be less, the "percent savings" would remain identical.

<sup>71</sup> If for example, there is a \$20 loss of revenue, but a \$22 decrease in costs, the "net back" would still be a positive \$2.

Overall, as a result of an affordable bill program directed toward low-income customers, Baltimore's water and wastewater utilities could be expected not only to collect more money, but could be expected to spend less in the process of collection in so doing.

### **C. Increased Efficiency / Productivity of Collection Efforts.**

A bill affordability program offered by the City of Baltimore could be expected to increase the productivity of utility collection efforts directed toward low-income customers. Improvements in the productivity of collection activities can occur in either of two ways:

- The need for collection interventions can be reduced thus allowing an increased payment per each collection intervention performed. In this first instance, improvement can be seen even if total dollars collected remains the same (but the number of interventions needed to generate those dollars decreases); or
- The customer response to the collection activity can improve thus allowing an increased payment per each collection intervention performed. In this second instance, improvement can be seen if the total number of collections activities remains the same (but the amount of dollars generated by those activities increases).

The metrics used to measure collection efficiency and productivity are two-fold:

- The number of each collection activity per 1,000 customer payments (measured in number of payments without regard to the size of each individual payment); and
- The number of each collection activity per \$1,000 in customer payments (measured in dollars of payments made).

In both instances, a lower number is “better” than a higher number.<sup>72</sup> Efficiency is measured as the ratio of the effort expended to the outcomes generated. A “lower number is better” because the denominator (either the number of payments or the dollars of payments) increases while the numerator (the number of collection interventions) stays the same.

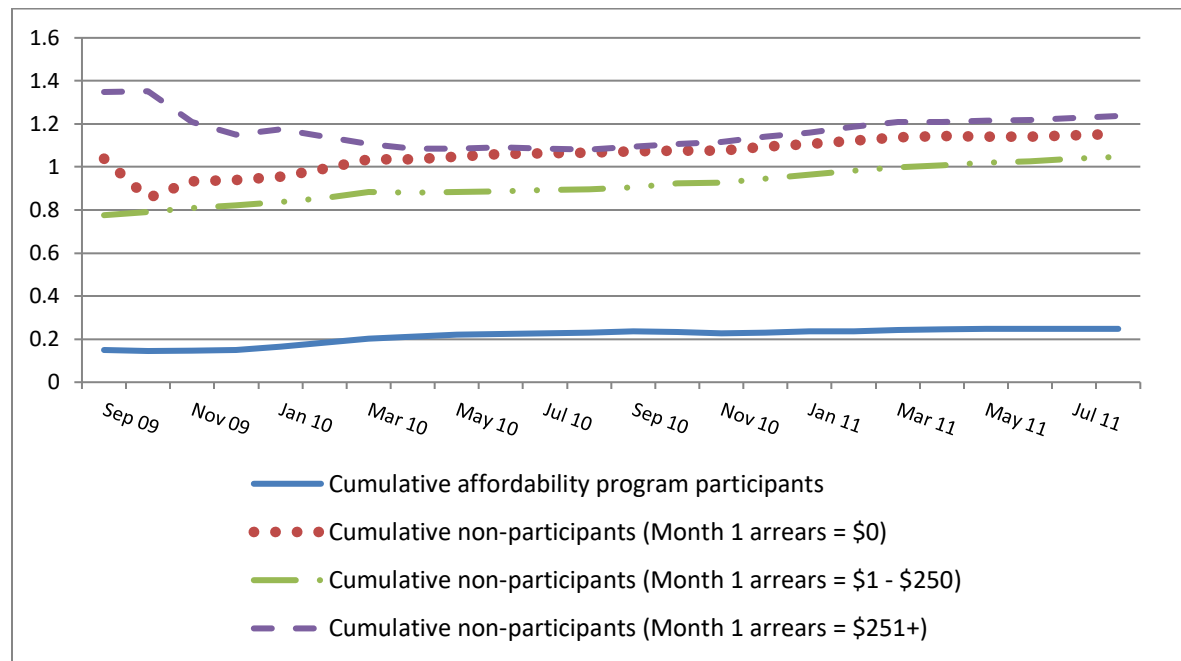
The evaluation of PSCO's affordable bill found that the collection activities that PSCO directed toward program participants were more productive at generating payments than the collection activities directed toward program non-participants. As shown in the Figure below, PSCO

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<sup>72</sup> Engaging in four collection actions per each \$1,000 in payments is “better” than engaging in seven collection activities per each \$1,000 in payments.

needed to engage in from three to five times more collection activities for each 1,000 customer payments it received from non-participants.<sup>73</sup>

The non-participant population was disaggregated by the level of Month 1 arrears to determine whether prior nonpayment made a difference in the result. As can be seen, it did not. The participant population out-performed the nonparticipant population irrespective of the prior payment arrearages of the non-participants.

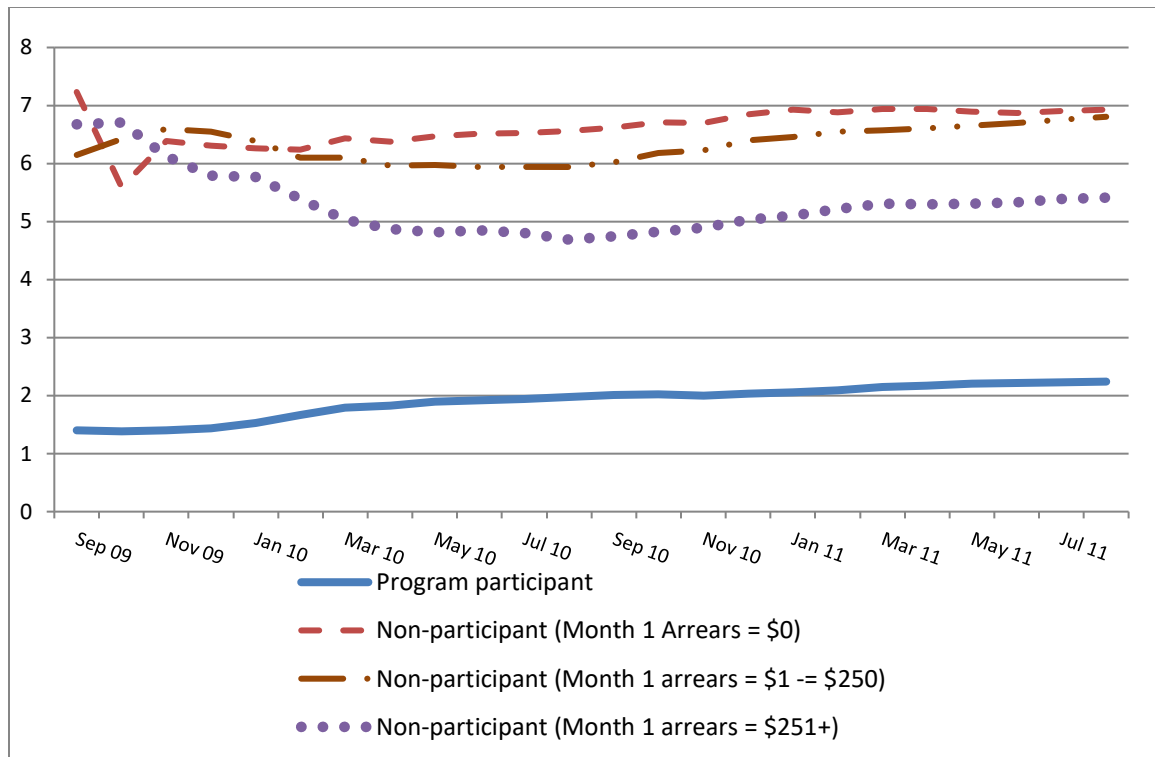


**Figure 6. Cumulative Disconnect Notices per 1,000 Customer Payments for Affordability Participants Compared with Non-Participants by Level of Month 1 Non-Participant Arrears.**

The results were the same when collections productivity was viewed in terms of dollars of payments rather than in terms of numbers of payments. In Colorado, participation in the affordable bill program reduced the reliance on disconnect notices as a collection activity. While program participants required between one (1) and two (2) disconnect notices for each \$1,000 in customer payments, non-participants required between five (5) and seven (7).

Again, the existence of pre-existing nonpayment by the non-participant population did not affect the conclusions drawn about the difference between the participant and non-participant populations.

<sup>73</sup> As discussed in more detail above, this result might occur for one of two reasons. On the one hand, more PEAP participants might make payments without need of any disconnect notices being issued. On the other hand, more PEAP participants might respond to the receipt of a disconnect notice by making payments.



**Figure 7. Cumulative Disconnect Notices for Nonpayment per \$1,000 in Customer Payments for Affordability Participants Compared to Non-participants by Level of Non-participant Month 1 Arrears.**

In sum, based on both measures of productivity, overall, not only did PSCO collect more revenue from its affordability program participants (as discussed above), but the utility was required to engage in fewer collection activities to generate those payments.

#### **D. Long-Term Success of Collection Efforts.**

By addressing the underlying inability-to-pay, a low-income bill affordability program can be expected to increase not only the productivity of collection efforts (as I describe immediately above), but it can also be expected to increase the long-term success of collection efforts as well. It would be unreasonable to expect a low-income affordable bill program to totally eliminate the need for all collections efforts directed toward program participants. Even non-low-income residential customers have some collection effort directed toward them. However, an affordable bill can be expected to help increase the success of those collection efforts that are required.

In this regard, a “successful” (or “effective”) collection activity is measured not merely by the extent to which customers make payments in the month in which the collection activity occurs, but also over a period of time immediately subsequent to that collection activity. A collection activity that generates a payment in the month of the activity, only to see the customer fall back into a pattern of nonpayment in the immediately subsequent months, is less “effective” (or

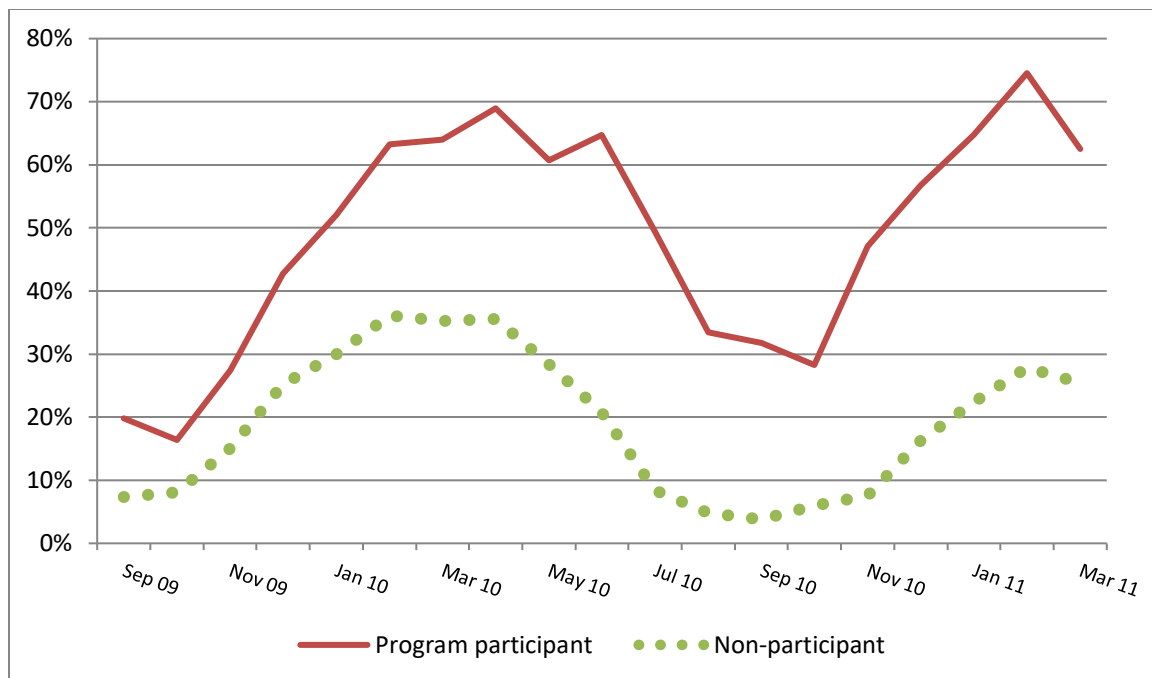
“successful”) than a collection activity that generates a series of more timely (or more complete) payments over a period of months.

The PSCO program evaluation measured the success of collection efforts for low-income customers participating in the company’s affordable bill program as compared to the success of collection efforts directed toward low-income customers not participating in the bill affordability program. The data examined the percentage of accounts receiving disconnect notices that have a customer payment coverage ratio of more than 1.0 in the ensuing four months. As with the payment coverage ratio discussed above, in this inquiry, a higher number is “more effective” while a lower number is “less effective.” A higher number indicates that more accounts having received a disconnect notice made payments equal to a higher proportion of their bill for current usage in the four months immediately following receipt of a disconnect notice.

The data presented in the Figure below examines the proportion of customers having received a disconnect nonpayment (“DNP”) notice who made payments equal to or more than 100% of their current bill. The percentage of program participants with a payment coverage ratio of more than 1.0 is consistently higher than the proportion of non-participants doing so. A payment coverage ratio of greater than 1.0 means that the customer is paying more than his/her bill for current usage. That customer, in other words, is completely paying his/her bill for current usage and making some payment toward the arrears that was the reason for issuing the disconnect notice in the first instance.

As can be seen in this Figure, the payment performance for participants in the low-income program improved over time, while the payment performance of low-income customers not participating in the low-income program did not. In this Figure, the population is limited to customers who received a disconnect notice for nonpayment. The payment coverage ratio examined the ratio of dollars of payments made in the four months after receiving a disconnect notice to the dollars of bills received in the four months after receiving a disconnect notice. The Figure shows that three times more program participants were paying their entire bill plus something toward their arrears than were program non-participants.



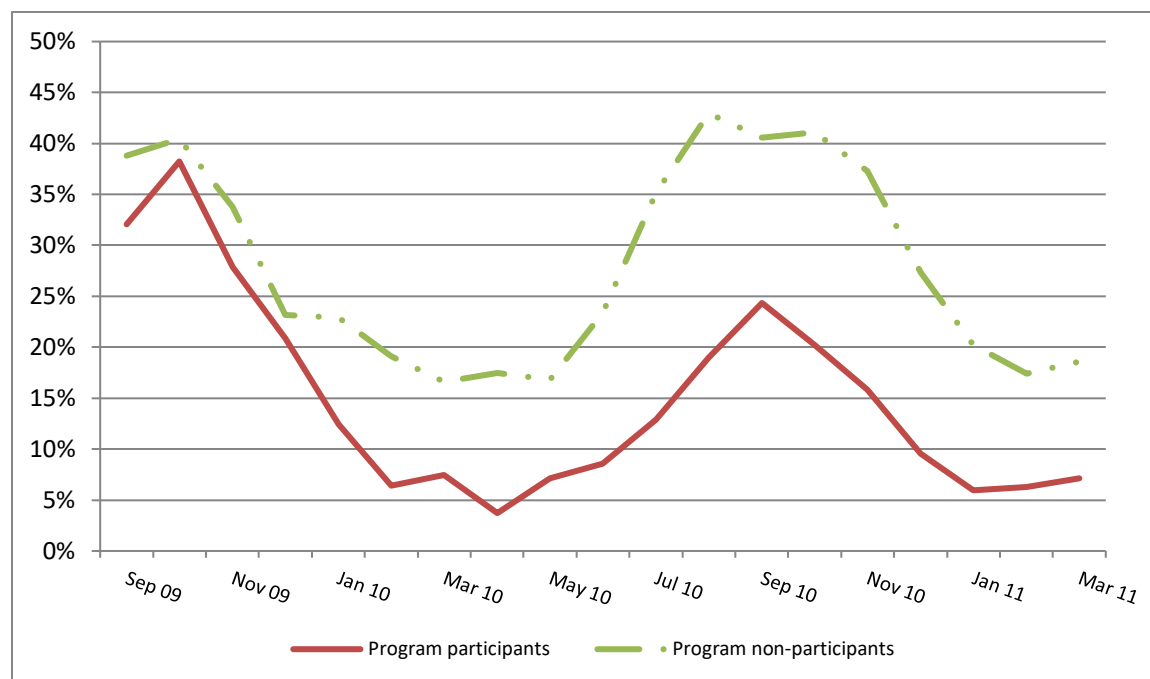


**Figure 8. Percent of Customers Receiving DNP Notices with Customer Payment Coverage Ratio > 1.0 in 4-Months After DNP Notice**

The same impact (i.e., the relative effectiveness or success of collection efforts with and without an affordability program) can be examined by considering the lack of effectiveness (or success) of collection efforts. The Figure below, again taken from the PSCO evaluation, examines the proportion of affordability program participants and non-participants who made some payment in the four months after receiving a notice of disconnection for nonpayment, but whose dollars of payments were less than 50% of the dollars of bills they received during that same four month period. A customer payment coverage ratio of less than 0.50 means, in other words, that the customer payments in the four month period after receipt of a DNP notice were less than one-half of the bills for current usage in those four months. A customer with a payment coverage ratio of less than 0.5 is paying nothing toward retiring their arrears, since they are paying less than half of their current bill.

As described above, a collection activity that generates a payment in the month of the activity, only to see the customer fall back into a pattern of nonpayment in the immediate subsequent months, is deemed to be “less effective” than a collection activity that generates a series of more complete payments over a period of months. In the Figure below, a lower number is “more successful” and a higher number is “less successful.” A higher figure means that a greater proportion of customers receiving a disconnect notice for nonpayment made customer payments equal to less than half of their bill for current usage in the ensuing four months. As can be seen, the affordability program participants substantially out-performed the non-participants. While roughly 20% of low-income program non-participants were paying less than half of their bill for

current service after receiving a disconnect notice for nonpayments, only roughly five percent (5%) of program participants were.



**Figure 9. Customer Payment Coverage Ratio > 0 < 0.50 for Customers Receiving DNP Notice in 4-Months after Receiving DNP Notice.**

Either of the two Figures immediately above alone, but certainly both of the two Figures in combination one with the other, document that a bill affordability program can be expected to improve the success of a Baltimore’s water and wastewater collections performance.

Substantially more program participants were paying their entire bill and retiring their arrears after receiving a disconnect notice for nonpayment. Substantially fewer program participants were paying less than half of their bill after being subjected to a collection activity.

### E. Payments Yielding \$0 Balances.

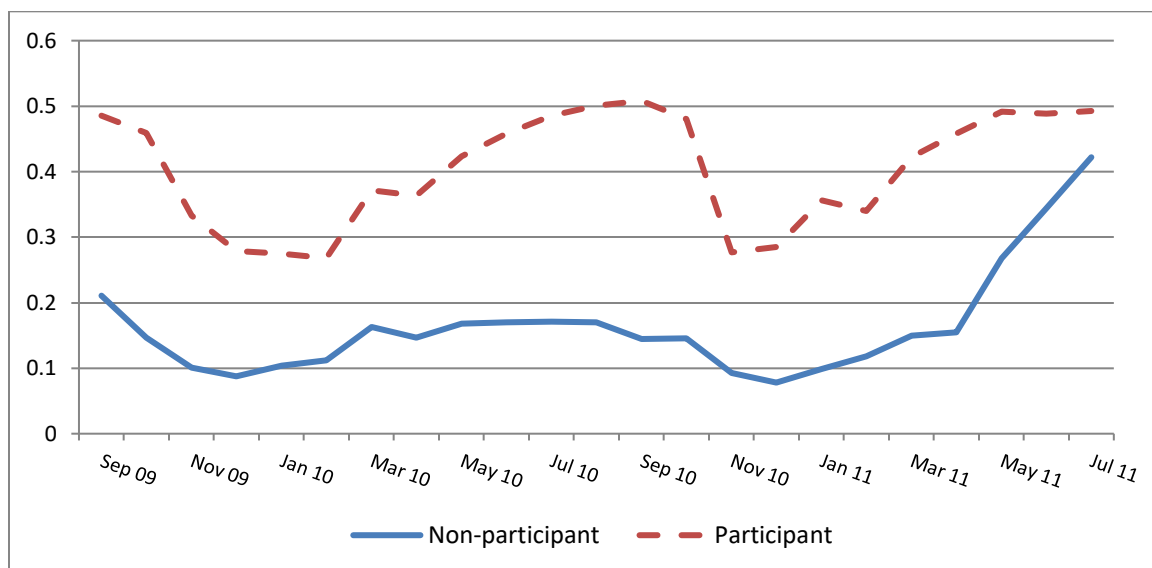
Ultimately, the outcome that the City of Baltimore seeks from its customers is a payment that results in a \$0 balance. That outcome has been examined from a variety of perspectives elsewhere throughout this report (e.g., the payment coverage ratio). The discussion below, however, examines the impact of an affordable bill program on the regularity with which “complete” bill payment occurs. The regularity of complete bill payment is examined below from two perspectives:

- On the one hand, the discussion considers the extent to which complete bill payments are made as a proportion of the number of bills rendered.

- On the other hand, the discussion considers the extent to which complete bill payments are made as a proportion of the number of payments that are made.

While a utility would prefer to have customers make bill payments that result in a \$0 balance in response to each bill (i.e., a ratio of 1.0), a customer that exhibits a higher proportion of payments resulting in \$0 balances of the payments that are made nonetheless is still a better performer than a customer that makes a lower proportion of payments that result in a \$0 balance.

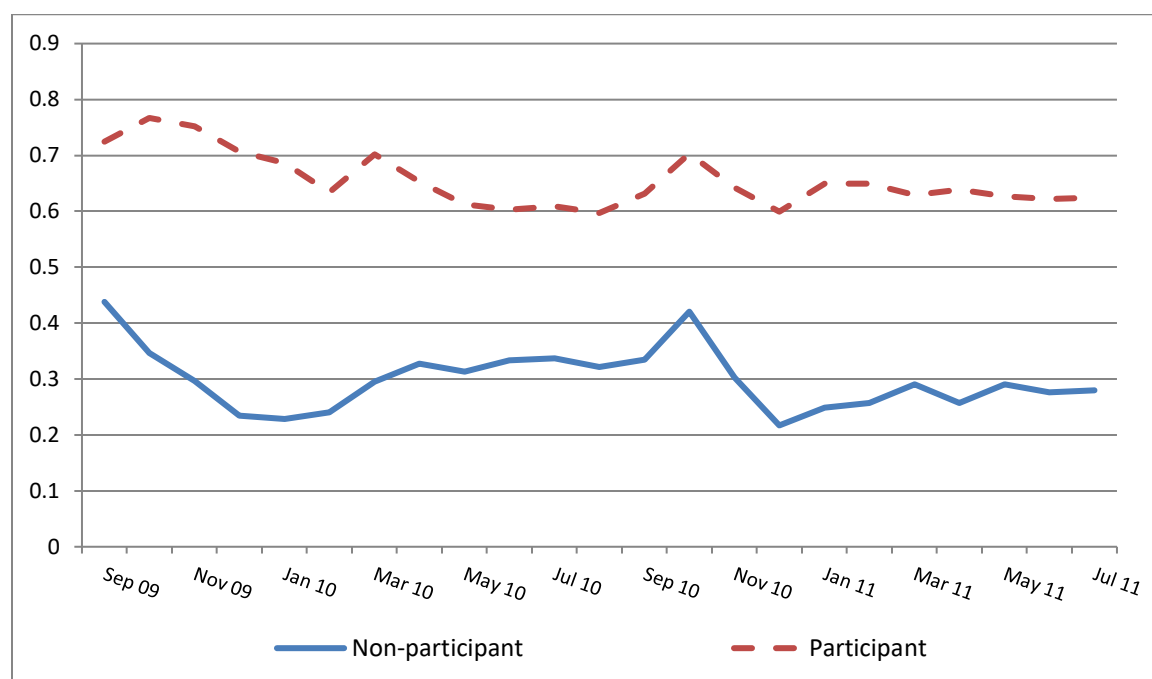
An affordable bill for Baltimore’s water and wastewater utilities can be expected to improve the incidence at which participating low-income customers make complete bill payments (i.e., a payment yielding a \$0 balance). In Colorado, PSCO’s program participants out-performed non-participants in the proportion of bills that are met with payments that result in a \$0 balance. The Figure below presents the data. The data in this Figure involves monthly (not cumulative) data. The extent to which program participants out-perform program non-participants is notable. While 50% or more of warm-weather bills resulted in a \$0 balance for the participant population, fewer than 20% of the warm-weather bills resulted in a complete retirement of outstanding balances for the non-participant population. Even with an influx of “crisis” assistance in the Spring of 2011, the proportion of non-participants making complete bill payments falls well short of program participants.



**Figure 10. Ratio of Number of Payments Resulting in \$0 Balance to Number of Bills by Affordability Program Participation.**

The Figure below shows that when program participants *did* make payments, they tended to make payments sufficient to retire their entire balances. While these customers tend to make payments retiring their entire balance in response to 50% or less of the bills that are rendered, they also tend to make payments retiring their entire outstanding balance in between 60% and 70% of all the payments that they do make. In contrast, while the program non-participants

tended to make payments retiring all outstanding balances in response to between 10% and 20% of bills they receive, they also tended to make payments retiring their entire outstanding balance in only 20% to 30% of the payments that they made.



**Figure 11. Ratio of Number of Payments Resulting in \$0 Balance to Number of Payments by Length of Affordability Program Participation.**

## F. Improved Price Signals.

One clear impact of a low-income bill affordability program is the extent to which such a program improves the “price signals” delivered to inability-to-pay customers through utility rates.

As a general rule, utility bills represent an ineffective means to send price signals to low-income customers. Low-income customers, particularly customers with bill burdens exceeding a prescribed level, pay less than their entire bill. As a result, a low-income customer’s inability-to-pay for utility service substantially distorts the price signal that consumer receives. When customers cannot afford to pay their water bill bills, in other words, price signals are not effective.

The viability of sending a price signal assumes that the customer has the ability to *receive and to act upon* the signal.<sup>74</sup> If a customer has an ability to pay \$50 per month, in other words, the price

<sup>74</sup> 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. By improving this information process, while maintaining the task of

signal sent to a customer by receiving a bill of \$75 rather than \$65 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 Baltimore can tailor rates 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 rates.

Again, without an affordable bill, any 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 with which to begin, 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 the total bill. Prices only send a “price signal” if the current bill and the total bill are reasonably the same.

Given these two fundamental truths set forth in any elementary price theory, the extent to which an affordable bill program improves price signals can be examined. The discussion below will focus on data from seven electric utilities offering affordable bills in Pennsylvania immediately below.<sup>75</sup> The Table 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).

Program Year: 2013	Bill at Standard Rate (actual bill)	Affordable Bill (price signal received)	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
Penelec	\$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

reflecting increases and decreases in a bill, the bill affordability program improves rather than distorts the price signal. See generally, R.Colton (1990). "Customer Consumption Patterns within an Income-Based Energy Assistance Program." 24 *Journal of Economic Issues* 1079.

<sup>75</sup> Duquesne Light, Metropolitan Edison, PECO Energy, Pennsylvania Electric Company (Penelec), Penn Power Company, Pennsylvania Power and Light (PPL), and West Penn Power Company.

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 an effective price signal. 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, effective price signals are enhanced.

Carrying a substantial arrears also impedes the price signal delivered by the price for current service. The Colorado program illustrates this impact. PSCo’s low-income population brought an average of nearly \$350 of pre-existing arrears<sup>76</sup> 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, therefore, would have sent no “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. Each one percent increase in price would instead be diluted to the extent that the account carried arrears.

Table 16. Pre-existing Arrears at the Time of Enrollment by Size of Arrears (PSCO Program Participants)

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

Arguments about the adverse impact of affordable bills on the “price signals” sent by utility bills are not well-founded. Not one single evaluation of an affordable bill program prepared within the past 30 years has found a systematic increase in consumption resulting from the program. Rather

<sup>76</sup> This average is the average arrears spread over all customers, not the average spread over only the customers having arrears.

than impeding price signals, entirely consistent with elementary price theory, affordable bill programs have been found to improve the price signals embedded in utility rates.

### G. Workforce Impacts/Internal Productivity

Initiatives such as the affordable water program proposed herein can deliver business benefits through enhanced staff productivity. The inability (or unwillingness) to effectively manage the growing presence of factors creating conflict creates business costs that impede “desired organization and business outcomes.”<sup>77</sup> According to a February 2010 analysis of the costs and benefits of promoting workplace diversity by the U.S. Military Leadership Diversity Commission, “such costs can be direct (i.e., produced by turnover and absenteeism among employees who are the minority in their work group) or indirect (i.e., the result of conflict or reduced communication between employees who are different).”<sup>78</sup>

The provision of affordable low-income rates allows utility customer service representatives to avoid imposing similar direct and indirect productivity costs on the Baltimore water / wastewater utilities. The provision of affordable low-income rates provides utility staffpersons greater satisfaction in their jobs. By enhancing home energy affordability on the front-end, utility staff face fewer customer confrontations, have a greater number of options available leading to successful conclusions from the customer/utility interaction, generate a higher success rate in obtaining payment, and reduce the daily stress imposed on staff addressing nonpayment situations.

Improving employee satisfaction delivers business benefits to the utility.<sup>79</sup> “[E]mployees with supportive workplaces are the most satisfied with their jobs and the most loyal, which leads to reduced turnover among workers as well as a reduction in the costs related to such turnover.”<sup>80</sup> As the Military Leadership Diversity Commission found, “retention and turnover of personnel are fundamental concerns for . . . businesses. There are significant costs associated with recruiting for replacements, and organizations make considerable investments in training each individual.”<sup>81</sup> Helping to reduce “avoidable turnover costs” may have “real bottom-line financial implications for firms.”<sup>82</sup> Costs are associated with retention, recruitment, training and related employee activities.

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<sup>77</sup> Military Leadership Diversity Commission (2010). *Business-Case Arguments for Diversity and Diversity Programs and Their Impact in the Workplace*, 2, Issue Paper #14, Military Leadership Diversity Commission: Arlington (VA).

<sup>78</sup> *Id.*

<sup>79</sup> Duboff and Heaton (Jan/Feb. 1999). Employee Loyalty: A Key Link to Value Growth, *Planning Review*, 27(1).

<sup>80</sup> Fairfax (2003). The bottom line on board diversity: A cost-benefit analysis of the business rationales for diversity on corporate boards, 2005 *Wisconsin Law Review* 795, 829 (2005); see also, Harter et al. (2002). Business-Unit-Level relationship between employee satisfaction, employee engagement, and business outcomes, *Journal of Applied Psychology*, 87, 268 – 274,

<sup>81</sup> Business-Case Arguments for Diversity, at 3.

<sup>82</sup> McKay et al. (2007). Racial differences in employee retention: Are diversity climate perceptions the key?, *Personnel Psychology*, 60, 35-62; see also, Jackson et al. (1991). Some differences make a difference: Individual

## H. Seven Important Findings.

An appropriately designed and well implemented water affordability program, as an integrated part of Baltimore's water rate structure, is in the public interest. A rate affordability program can be designed to be a more cost-effective approach for dealing with issues of customer inability-to-pay than are traditional collection methods.

The positive social outcomes associated with low-income affordability programs represent benefits that are above and beyond the utility-related benefits produced by such programs. From a purely "business" perspective for Baltimore's water and wastewater utilities, a low-income rate affordability program can reasonably be expected to generate the following utility-related business benefits to the City of Baltimore:

1. A bill affordability program will result in an increase in the bill payment coverage ratio of participating low-income consumers.
2. A bill affordability program will result in an increase in the "net back" experienced by the utility offering the affordability program. Net back is the total net cash realized by the utility taking into account both the rate of payment and the cost of collection.
3. A bill affordability program can be expected to increase the productivity of utility collection efforts directed toward low-income customers. Improvements in the productivity of collection activities can occur in either of two ways: (1) the need for collection interventions can be reduced thus allowing an increased payment per each collection intervention performed; or (2) the customer response to the collection activity can improve thus allowing an increased payment per each collection intervention performed.<sup>83</sup>
4. By addressing the underlying inability-to-pay utility bills, a bill affordability program can be expected to increase not only the productivity of collection efforts, but it can be expected to increase the long-term success of collection efforts as well.

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dissimilarity and group heterogeneity as correlates of recruitment, promotions and turnover, *Journal of Applied Psychology*, 76, 675-689.

<sup>83</sup> An additional increase in the productivity of collections, not discussed in these comments, will occur because utility collection efforts will be re-directed away from low-income customers who do not have the ability to pay and toward non-low-income customers who do have the ability to pay.



5. An affordable bill program can be expected to improve the incidence at which participating low-income customers make complete bill payments (i.e., a payment yielding a \$0 balance).
6. One clear impact of a low-income bill affordability program is the extent to which such programs improve the “price signals” delivered to inability-to-pay customers through utility rates.
7. An affordable bill program can be expected to increase internal workforce productivity and decrease productivity-related expenses.

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## Summary and Recommendations

The City of Baltimore today faces a major conundrum. On the one hand, the City is faced with the need to make literally billions of dollars of investments in its water and wastewater infrastructure. On the other hand, a large, and growing, portion of the City's customer base cannot afford to pay the bills that result from these investments. The necessity of the investments does not make the resulting bills any more affordable. However, the unaffordability of the bills doesn't make the investments any less necessary.

One impact arising from the failure to address this dilemma is a dramatic increase in the portion of Baltimore's water and wastewater bills that go unpaid. From 2010 to 2016, the receivables for water increased by nearly \$15 million, while the receivables for wastewater increased by nearly \$125 million. Even more importantly, the receivables that the City classifies as "non-current assets" (i.e., not subject to collection any time in the near-term) has increased by more than \$90 million in that same time frame.

This result is hardly surprising. Residential water / wastewater bills in Baltimore have more than doubled from 2010 to 2018. From 2010 to 2022, water / wastewater bills in Baltimore will have more than tripled. Baltimore has entered into a dizzying spiral. When the City cannot collect the bills it sends to its customers, it faces a revenue shortfall. When it experiences this shortfall, the City must raise its rates in an effort to generate more money. But, as it raises its rates even higher, the unaffordability of the bills becomes ever greater, thus exacerbating the underlying shortfall even more.

There can be little question but that water and wastewater bills in Baltimore are unaffordable. A review of the City's 200 individual Census Tracts shows that bills will be unaffordable at median income in more than half of the City's Census Tracts by 2019. A review of low-income households finds that at income levels equal to 100% of Poverty, water / wastewater bill burdens exceeded the demarcation of affordability (2%) in more than 90% of all Census Tracts (186 / 198 = 93.9%) as early as 2011. By 2014, not a single Census Tract experienced an affordable bill burden at 100% of Poverty. And yet the City responds by raising rates ever higher.

The City has an available option that it could implement to help it resolve its conundrum, and stop the downward spiral. Addressing the problem is a choice the City could make. Adoption of a percentage-of-income bill affordability program for income-eligible customers would help Baltimore resolve its quandary. Modelled after the Income-based Water Rate Affordability Program ("IWRAP") that the Philadelphia City Council unanimously approved in December 2015, an IWRAP program in Baltimore could be expected to both:

- Increase the billed revenue that is actually collected; and
- Decrease the effort (and thus the expense) devoted to the process of collection.

In addition, adoption of an IWRAP program in Baltimore would generate positive outcomes on issues involving public health and safety; housing abandonment; and homelessness. An IWRAP program in Baltimore would help improve the City's educational outcomes and make the City more competitive in business location decisionmaking.

The U.S. Environmental Protection Agency ("EPA") has explicitly recognized the role that low-income rates play in improving the capacity of a community to make precisely the types of investments that Baltimore is facing. In 2013, the EPA told its Regional Administrators that "EPA strongly encourages municipalities to consider establishing lower rates or subsidies for low income customers. This is consistent with one of the goals of integrated planning, which is to take advantage of synergies and savings that can be found through an integrated approach and thereby promote affordability. . . Local officials have a great deal of latitude under these regulations and the EPA continues to encourage communities to consider and adopt rate structures that ensure that lower income households continue to be able to afford vital wastewater services."<sup>84</sup>

The recommendation of this report is that the City of Baltimore should adopt an IWRAP program based on the Philadelphia model. A Baltimore IWRAP should include the following components:

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<sup>84</sup> Memo (January 13, 2013). Nancy Stoner, Acting Assistant Administrator, Office of Water, EPA, Cynthia Giles, Assistant Administrator, Office of Enforcement and Compliance Assurance, EPA, to Regional Administrators.

(1) a percentage-of-income-based bill affordability program; (2) an arrearage management component; (3) a crisis intervention component; and (4) a water conservation component.

Given the problems facing Baltimore, and given the demonstrated success of percentage-of-income based bill affordability programs to address precisely these types of problems, the time for the City of Baltimore to adopt a Baltimore IWRAP is today.

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## **Appendix A: Baltimore DPW Direct Rudolph Chow Response to Maryland Delegate Mary Washington Request for Water / Wastewater Data.**

The September 25, 2017 response of Baltimore Department of Public Works (“DPW”) Director Rudolph Chow to the Honorable Mary Washington, Ph.D., Delegate, Maryland House of Delegates, begins on the next page.



September 25, 2017

The Honorable Mary L. Washington, PhD  
The Maryland House of Delegates  
6 Bladen Street, Room 429  
Annapolis, Maryland 21401

Dear Delegate Washington:

In your letter, dated August 11, 2017, you requested data pertaining to residential water billing issues held by Baltimore City Department of Public Works ("DPW"). Director Chow subsequently responded through a letter, dated August 21, 2017, noting DPW may be unable to provide some of the requested information. Nonetheless, Director Chow agreed that we would provide any responsive information DPW staff could compile by September 25, 2017.

**1. The number of customers**

Responsive data is provided on Attachment A.

**2. The dollars billed**

Responsive data is provided on Attachment A.

**3. The dollars received in payment**

DPW does not retain responsive data.

**4. The dollars of late payment charges billed**

Responsive data is provided on Attachment A.

**5. Provide the following averages:**

**a. Average bill for all residential accounts;**

Responsive data is provided on Attachment A, regarding various meter sizes related to residential homes.

**b. Average arrears for all residential accounts in arrears;**

DPW does not retain responsive data.

**c. Average bill for all residential accounts in arrears;**

DPW does not retain responsive data.

**d. Average arrears at time of service disconnection for accounts disconnected for nonpayment.**

DPW does not retain responsive data.

**6. The number of customers from whom a new or larger deposit was requested from:**

- a. New customers / applicants
- b. Existing customers

DPW does not request deposits from its customers.

**7. The number of accounts receiving a final notice of disconnection for non-payment**

DPW does not retain responsive data.

**8. The number of accounts disconnected for nonpayment.**

Cityworks has a Work Order ("WO") type called "WATER TURN OFF (DELINQUENT)." A search of all distinct addresses for this WO type provides that 965 addresses were disconnected for non-payment between 5/18/2016 to 5/5/2017.

**9. The number of accounts reconnected subsequent to a disconnection for non-payment**

- a. The average time between disconnection and reconnection

DPW does not retain responsive data.

**b. A distribution in reasonable bands of how long customer was "off"**

Cityworks has a WO type called "WATER TURN ON (DELINQUENT)." A search of all distinct addresses for this WO type provides that 280 addresses were reconnected between 6/3/2016 to 8/3/2017.

Unfortunately, Cityworks does not have a means of linking disconnected properties with subsequent reconnections. DPW staff manually reviewed data for individual residential addresses and determined that of the 280 reconnected properties, only 186 addresses had been identified as a prior disconnection for non-payment between 5/18/2016 to 5/5/2017. Of the those 186 addresses,

- 28 were reconnected in the same day (two were negative numbers);
- 100 were reconnected within 1-3 days;
- 39 were reconnected within 4-7 days;
- 24 were reconnected within 8-30 days; and
- 17 were reconnected after more than 30 days.

**10. The number of accounts taking service on levelized “budget billing” plan**

DPW does not provide a budget billing plan to its customers.

**11. The number of accounts in arrears by bands of age of arrears**

DPW does not retain responsive data.

**12. The dollars of arrears by bands of age of arrears**

DPW does not retain responsive data.

**13. A distribution of water consumption in bands of 100 ccf**

DPW does not retain responsive data.

**14. A calculation of an average bill in sufficient detail to allow replication:**

- a. For water
- b. For wastewater

DPW bills individual residences based upon the size of their water meters and the water consumed, while multi-family structures may be billed using a master meter. Due to the variances in meter sizes and configurations there is not an average bill for residential customers that can be readily replicated.

**15. A distribution of accounts in arrears in bands of \$100**

DPW does not retain responsive data.

**16. With respect to deferred payment arrangements (“DPAs”):**

- a. The number of new deferred payment arrangements entered into;
- b. The average down payment of DPAs newly entered into;
- c. The average term of DPAs newly entered into;
- d. The average dollar amount of arrears of DPAs newly entered into;
- e. The average monthly installment of DPAs newly entered into;
- f. The number of defaulted DPAs;
- g. The number of DPAs that are “current”;
- h. The number of DPAs that are successfully completed;
- i. The number of renegotiated DPAs newly entered into.

DPW does not retain responsive data.

**17. For the most recent 12-month period available, please provide any information that is available that is broken down geographically regarding:**

- a. Billing;
- b. Payments;



- c. Arrears;
- d. Disconnections, reconnections;
- e. Payment plans;
- f. Other credit and collection activities.

DPW does not retain responsive data. Nonetheless, information regarding payment plans is set forth in Attachment B.

**18. Please provide the total number of customers receiving water bill assistance grants from a state or local program for service provided in the:**

- a. 2014-2015 program year;
- b. 2015-2016 program year;
- c. 2016-2017 program year.

To the extent that DPW retains responsive data, it is provided on Attachment A.

**19. Please provide the total number of customers receiving public or private crisis assistance grants for service provides in the:**

- a. 2014-2015 program year;
- b. 2015-2016 program year;
- c. 2016-2017 program year.

DPW does not retain responsive data.

**20. Please provide the total dollars of water bill assistance grants from a state or local program for service provided in the:**

- a. 2014-2015 program year;
- b. 2015-2016 program year;
- c. 2016-2017 program year.

DPW does not retain responsive data.

**21. Please provide the total dollars of public or private crisis assistance grants received from a public or private program in the:**

- a. 2014-2015 program year;
- b. 2015-2016 program year;
- c. 2016-2017 program year.

DPW does not retain responsive data.

Sincerely,



Paul N. De Santis  
Chief, Office of Legal and Regulatory Affairs

## **ATTACHMENT A**



## DEPARTMENT OF PUBLIC WORKS WATER AND WASTEWATER BILLING INFORMATION

### 1. Numbers of Customers (As of 6/30/2017)

City: 213,597  
 County: 207,084  
 TOTAL: 420,681

### 2. Dollars Billed

	2014	2015	2016
Water	\$ 165,543,489	\$ 175,794,913	\$ 195,162,117
Waste Water	\$ 206,206,859	\$ 207,355,299	\$ 244,685,868
Stormwater	\$ 23,434,071	\$ 29,023,049	\$ 28,101,591
<b>TOTAL</b>	<b>\$ 395,184,419</b>	<b>\$ 412,173,261</b>	<b>\$ 467,949,576</b>

### 4. The Dollars of Late Payment Charges Billed

2014	2015	2016
\$ 11,879,306	\$ 13,917,565	\$ 12,941,151

### 5. Average Bill for Residential Accounts

Meter Size	Average CCF per Month	Monthly Water Charge	Monthly Sewer Charge	Monthly Water Infrastructure Charge	Monthly Sewer Infrastructure Charge	Total Monthly Water & Sewer Charges
58	5.054	11.42	31.13	\$8.15	\$7.07	<b>57.77</b>
75	6.11	13.81	37.64	\$14.67	\$12.73	<b>78.85</b>
1	7.15	16.16	44.04	\$32.60	\$28.28	<b>121.08</b>

### 18. Customers on Assistance Programs (As of 9/25/2017)

Hardship Exemption of Stormwater and Bay Fee: 4,526  
 Senior Citizen Billing Discount: 3,519  
 Payment Plan Assistance: 1,788  
**Total: 9,833**

09/25/2017

## ATTACHMENT B



## WATER BILLING PAYMENT PLANS

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### What is a Payment Plan?

Homeowners and tenants can apply for a payment plan that, while in good standing, allows between 6 – 12 months to pay a past due amount on their water bill without penalties or being subject to turn-off.

### Terms & Conditions

1. The applicant must be a City of Baltimore resident who receives a water bill directly from the City.
2. The applicant must certify that he/she is the property owner-of-record with the Maryland Department of Assessments and Taxation or one whose name is on the water bill.
3. The applicant must not have breached a payment plan with the Department of Public Works or City Law Department in the last 12 months.
4. In order to stay on the payment plan, the applicant must keep the payment plan amount current PLUS pay each new water bill that is received.
5. Failure to pay the installment payment amount or new bill balances will cancel the payment arrangement.
6. An applicant may not be on more than one payment plan at the same time.

### How to Apply

Eligible customers may apply in person or by phone. If a down payment is required, proof of payment must be provided (e.g., email, in person, fax, USPS).

Phone: (410) 396-5398  
Address: 200 Holliday St., First Floor, Room 8, Baltimore, MD 21202  
Walk In Center Office Hours: Monday - Friday (8:30 A.M. to 4:30 P.M.)

Once the payment plan is agreed upon, it will appear on the monthly water bill and a payment plan confirmation letter is sent after enrollment with a summary of the agreement.



## WATER BILLING PAYMENT PLANS

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### Payment Plan Options

#### **Payment Plan Option #1: Standard**

**Down Payment:** \$0

**Length:** Balance is divided into 6 monthly installments

**Eligibility:** Terms & Conditions for Payment Plans

#### **Payment Plan Option #2: Low Income**

**Down Payment:** 50% Down using a Low Income Grant is required

- The Low Income Grant is used to reduce the down payment requirement needed to be set-up on a payment arrangement. The applicant then pays the difference of the remainder of the 50% required down payment.
- Customer receives grant from community action center (CAC)

**Length:** Balance is divided into 12 monthly installments

**Eligibility:** Terms & Conditions for Payment Plans  
Terms & Conditions for the Low Income Grant Program

#### **Payment Plan Option #3: Senior Citizen or Hardship Eligible**

**Down Payment:** 0% Down

**Length:** Balance is divided into 12 monthly installments

**Eligibility:** Terms & Conditions for Payment Plans  
Terms & Conditions for the Senior Citizen Discount Program or  
Hardship Exemption Program

#### **Payment Plan Option #4: Law Department**

Customers unable to pay the balance due in 6 or 12 months installments may work with the City's Law Department to determine if the applicant is eligible for an alternative payment plan arrangement.

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# Appendix B: Philadelphia's IWRAP Legislation.

## City of Philadelphia

City of Philadelphia -1-  
(Bill No. 140607-AA)  
AN ORDINANCE

Amending Title 19 of The Philadelphia Code (Finance, Taxes, and Collections), Chapter 1600 (Water and Sewer Rents), by providing for installment payment agreements, all under certain terms and conditions.

*THE COUNCIL OF THE CITY OF PHILADELPHIA HEREBY ORDAINS:*

SECTION 1. Chapter 19-1600 of The Philadelphia Code is hereby amended to read as follows:

CHAPTER 1600. WATER AND SEWER RENTS.

\* \* \*

§19-1605. Limitation on Action to Enforce Collection; *Income-Based Water Rate Assistance Program.*

\* \* \*

(1) The Department may waive any claim for unpaid water, sewer and stormwater charges (also referred to in this Chapter as “water or sewer rent”) after the expiration of 15 years following the year in which such charges become due.

(2) *Definitions. For purposes of this Section 19-1605, each of the following terms has the meaning specified or referred to in this section:*

(a) *Customer means a natural person who (i) is receiving or (ii) is in the process of requesting or simultaneously requests to receive or restore service from the Water Department at such person’s primary residence in Philadelphia. A person shall cease to qualify as a customer under the second category if his or her application for service is ultimately denied.*

(b) *Income shall have the same definition as for Section 19-1305.*

(b.1) *FPL means the Federal Poverty Level, as determined annually by the United States Census Bureau, or, at the discretion of the Revenue Department, roughly equivalent levels of income measured by Area Median Income, as determined annually by the United States Department of*

*Housing and Urban Development. Any limitations based on FPL may be translated into their rough equivalent in Area Median Income.*

*(c) IWRAP means the Income-Based Water Rate Assistance Program described in this section.*

*(d) Low-income shall be defined as income equal to or less than one hundred fifty percent (150%) of FPL.*

*(e) Monthly household income means the monthly income received by the customer and all adults residing in the customer's household.*

*(f) Special Hardship may include, but is not limited to, the following conditions: (i) the addition of a dependent; (ii) a seriously ill household member; or (iii) circumstances that threaten the household's access to the necessities of life if payment of a delinquent bill is required.*

*(3) The IWRAP program is authorized under the following terms and conditions:*

*(a) Monthly IWRAP bills shall be affordable for low-income households, based on a percentage of the household's income and a schedule of different percentage rates for (i) households with income up to fifty percent (50%) of FPL, (ii) households with income from fifty percent (50%) to (100%) of FPL, and (iii) households with income from one hundred percent (100%) to one hundred fifty percent (150%) of FPL, and shall be charged in lieu of the Department's service, usage, and stormwater charges. That goal shall be achieved through a discount on generally-applicable residential rates or other bill calculation mechanism based upon each Customer's actual income and, if practicable, historical usage, in a manner consistent with applicable federal law. The percentage of income limitations to be imposed at each level by the first sentence shall be determined by the Water, Sewer and Storm Water Rate Board, which also shall have discretion to establish more, but not fewer, Low-Income tiers. Bills issued pursuant to this IWRAP program shall be deemed to comply with Philadelphia Code Section 13-101(4)(d). The Department shall have discretion to offer more favorable terms than the standard rates upon an individualized finding of Special Hardship. Historical usage shall not include significant usage attributable to leaks or activities not customary to a residential setting.*

*(b) Individual Financial Assessment. Customers may request an individual financial assessment comparing household income and expenses in order to demonstrate Special Hardship.*

*(c) More Affordable Alternative. Prior to enrolling a customer in IWRAP and upon each recertification of eligibility, the Department shall determine whether, on the basis of such customer's monthly bills, the customer would receive more affordable bills under another available payment agreement or rate discount. In such event, the Department shall provide the customer with such more affordable payment agreement and rate discount, if applicable, in lieu of IWRAP.*

*(d) Timely payment of his or her monthly IWRAP bill shall satisfy all of a customer's current water liabilities, so that there is no addition to his or her arrears. Timely payment shall be payment postmarked or received within one month of that payment's due date.*



*(e) Any amount paid for a monthly IWRAP bill in excess of the customer's current water liabilities shall reduce the balance of his or her arrears.*

*(f) In the event an IWRAP customer's service is terminated for nonpayment of IWRAP bills, such customer shall be entitled to restoration of service (i) upon payment of such unpaid IWRAP bills and other charges assessed during the period such customer's service was off, (ii) upon such customer's entry into a payment agreement with the Department regarding such unpaid IWRAP bills or other charges, as applicable, or (iii) upon a finding of Special Hardship by the Department. Upon restoration of service pursuant to this subsection (f), a customer shall automatically be entitled to continue in IWRAP, or to apply for IWRAP, as appropriate.*

*(g) Eligibility for the IWRAP program shall be understood in all cases to require showing of financial or Special Hardship. Customers demonstrating monthly household income that is Low-Income shall have satisfied this eligibility requirement.*

*(h) Total bill. Low-income customers who are enrolled in IWRAP shall be required to make no additional payment in respect to any pre-IWRAP arrears to maintain service.*

*(h.1) Minimum bill amounts consistent with the goal of providing affordability may be established for cases where a bill calculated under rates set pursuant to subsection (3)(a) would result in a nominal amount.*

*(h.2) Earned forgiveness. Earned forgiveness of arrearages shall be available under such terms and conditions as are adopted by regulation. Customers with household income from one hundred fifty percent (150%) to two hundred fifty percent (250%) of FPL, shall be offered payment plans that result in a total bill – including arrearages – that is affordable.*

*(i) Eligibility and Enrollment in IWRAP.*

*(.1) A Customer shall be enrolled in IWRAP upon approval of a completed application on or with which the applicant shall be required to provide proof that he or she (i) is a resident at the property in question; and (ii) qualifies for IWRAP because of financial hardship or Special Hardship. The Department shall design an appropriate application and shall set appropriate standards for what constitutes proof of those criteria. Requirements for proof of criteria other than ownership should be consistent with those under Philadelphia Code Section 19-1305.*

*(.2) The Department shall accept determinations of income and/or residency made within the prior twelve months pursuant to §19-1305.*

*(.3) The Department may deny a customer's eligibility for IWRAP or a payment agreement for good cause, provided that such denial shall constitute an adverse decision subject to the provisions of subsection (3)(g) of this Section. A customer who is otherwise eligible for an IWRAP agreement under this Section shall not be denied an IWRAP agreement based on the customer's nonpayment of prior bills due to the Department or default or failure to comply with a non-IWRAP payment agreement.*

*(j) IWRAP Enrollment Confirmation. Upon a customer's entry into an IWRAP agreement, the Department shall provide a written statement setting forth the terms and conditions of the customer's participation in IWRAP.*

*(k) Decisions in writing. Any decision or determination of the Department relating to (i) initial or continued eligibility for IWRAP, (ii) a Department payment agreement, (iii) the amount of IWRAP or other arrears for which the customer is responsible, (iv) the completeness of a customer's application, and the adequacy or completeness of any documentation submitted in connection with an application, for an IWRAP or a Department payment agreement, or (v) the customer's performance of his or her obligations under an IWRAP or a Department payment agreement, shall be provided to the customer in writing, and shall include a specific reason for the decision or determination, and a statement of the customer's right to an administrative hearing to dispute such decision.*

*(l) The Tax Review Board is authorized to review any adverse final decision or determination of the Department relating to initial or continued eligibility for an IWRAP agreement or to the Customer's performance of his or her obligations under an IWRAP agreement with the same effect as a petition for review pursuant to Chapter 19-1700 of this Title.*

*(m) The Department and the Water Department shall promulgate standards governing stay, postponement, and holds of pending enforcement actions or service terminations to allow customers time to apply for and enter into IWRAP or other payment agreements, and/or to seek legal representation or assistance from community based organizations. The Department and the Water Department shall also promulgate standards regarding circumstances under which pending enforcement actions shall be discontinued after a customer enters into IWRAP. (n) Warning of Risk of Water Foreclosure Action. No less than ninety days before filing any water foreclosure action, the Department shall send the customer, and shall deliver to each dwelling unit at the service address, a Warning of Risk of Water Foreclosure Action containing the following information:*

*(.1) a brief description of any possible legal action and its consequences, including a clear and conspicuous statement, where appropriate, that the customer will become in danger of losing his or her home or property if he or she does not act; a brief description of IWRAP and the other available assistance programs available for residential customers; the steps the customer must take to enter into such programs, and the deadline for doing so; and a brief description of any charges, fees, penalties, or interest that may be imposed;*

*(.2) the total amount required to pay off the arrears in full, the date by which it must be paid, the addresses where payments can be made, and accepted forms of payment;*

*(.3) a statement explaining the types of other City-related debt that may be capable of being lienied against a property including, without limitation, property tax, nuisance and demolition fees and fines, and a brief explanation of how the customer may request confirmation as to the existence and amounts of any such debt;*

*(.4) lists of the free housing counseling agencies and the legal services agencies that offer relevant services and may be available to assist the customer, including addresses and phone numbers.*

*(o) IWRAP Recertification, Recalculation, and Repayment Agreements. Upon written request of the Department and no more frequently than once every year, a customer must re-certify to the Department his or her income and eligibility. No person shall intentionally make any false statement when applying to enter into an IWRAP agreement. If it is determined that a customer entered into an IWRAP agreement on the basis of an intentionally false statement, the agreement shall be null and void.*

*(p) In the event of a change in household income or household size, prospective IWRAP bills will be calculated according to subsection (3)(a) above and such recalculation shall be done promptly at the request of the customer. A customer also may request a determination or redetermination of Special Hardship at any time he or she experiences a change in circumstances. In the event of a change in household income that results in a determination that the customer is no longer eligible to participate in IWRAP, such customer shall receive the benefit of any forgiveness earned during the period of the IWRAP agreement.*

*(q) Conservation Measures. Each participating IWRAP customer shall agree to accept and reasonably maintain any free conservation measures offered to the customer by the Water Department.*

#### *(4) Arrears Determination.*

*(a) Upon the customer's enrollment in an IWRAP agreement, the Department shall determine and notify the Customer in writing of the amount of such customer's arrears.*

*(b) The Department's determination of arrears shall not impair a customer's ability to request review of, or to challenge in any informal hearing, appeal, or other administrative or legal process, the validity or amount of any such arrears.*

*(c) A customer qualifying for an IWRAP agreement shall receive IWRAP bills pursuant to subsection (3)(a) notwithstanding the customer's request for review of, or challenge to, the Department's arrears calculation. In the event of any adjustment to the arrears, the amount of forgiveness earned by such customer shall be recalculated as if such adjusted arrears were determined as of such customer's IWRAP enrollment.*

#### *(5) Information for Residential Customers.*

*(a) Both the Department and the Water Department shall provide information about the IWRAP program and about organizations that can assist in applying for IWRAP to any individual who contacts those departments under circumstances that suggest the individual may qualify for and may benefit from the program.*

*(b) Information Available Online. The Department shall clearly and conspicuously post information regarding IWRAP on its website.*

*(c) Language Access/Non-English Speakers. The Department shall take reasonable steps to ensure meaningful access to IWRAP and other payment agreements for Limited English Proficient (LEP) persons. Such steps shall include providing copies of all vital documents in English and Spanish, both on-site and on-line translations of all vital documents, including notices and agreements, as well as providing translated “taglines” on all English language notices in Spanish and other languages advising LEP persons that telephone interpreter services are available at the Department.*

*(6) Rules and Regulations. The Department shall promulgate such rules, regulations, written policy, forms, and other documentation as are deemed necessary to effectuate the purpose of this Section, including but not limited to a schedule of documentation that shall be accepted as proof of ownership consistent with subsection 2(f).*

*(7) Reporting.*

*(a) By March 31 of each year, the Department shall submit a written report to the Mayor, with a copy to the President and Chief Clerk of Council, regarding activities undertaken pursuant to this Section during the previous calendar year.*

*(b) Each such report shall include the following information for the twelve-month period covered:*

*(.1) how many applicants were enrolled in IWRAP and a breakdown of such enrollments by income level, and the gross amount of arrears calculated;*

*(.2) how many applicants were not enrolled in IWRAP and a breakdown of the reasons for the same (e.g., lack of residency, failure of customer to follow up, and so on);*

*(.3) the total number of non-IWRAP payment agreements and a breakdown of such payment agreements by type, term, and amount covered, which amount shall be further broken down into principal, interest, penalties, and other fees or costs; and*

*(.4) the total number of IWRAP customers who defaulted during the applicable period and the reason(s) (e.g., non-payment, failure to recertify eligibility) for the default.*

*(8) Access to Records. Any customer or his or her designated representative (who need not be an attorney) seeking an agreement under this chapter, may request in writing or may visit the Department in person during regular working hours, to review and receive copies of any available records relevant to the water, sewer and storm water service at such individual’s primary residence. As used in this section, the term “records” refers to all physical and electronic records in the Department’s possession.*

*(9) Implementation. The IWRAP program shall go into effect as soon as practicable after the first decision by the Water, Sewer and Storm Water Board on new rates and charges, but in any event the later of July 1, 2017 or 15 months following such decision by the Board.*

\* \* \*

SECTION 2. This Ordinance shall be effective immediately.

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## **Appendix B: The impacts of affordable water on cities in their municipal capacity.**

### **An Excerpt from Philadelphia City Council Testimony<sup>85</sup>**

Promoting the affordability of home water service in Philadelphia today serves multiple economic objectives. These objectives extend far beyond the benefits provided to individual Philadelphia households. The objectives also include both:

- Generating business benefits to Philadelphia Water by improving payment patterns for low-income customers; and
- Improving outcomes that beneficially affect the municipal finances of the City of Philadelphia in its capacity as a provider of municipal services.

\* \* \*

Setting aside the positive business outcomes to the Philadelphia Water Department associated with a low-income affordable bill program, the City of Philadelphia will recognize specific beneficial outcomes to its own municipal finances as a result of an affordable water program.

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<sup>85</sup> This Appendix is an excerpt of testimony provided to the Philadelphia City Council regarding the proposed Income-based Water Rate Affordability Program. Roger Colton (April 9, 2015). *Water Bill Affordability for the City of Philadelphia, Prepared Statement of Roger Colton (excerpt)*, presented to Philadelphia City Council.

## Decreased Educational Costs and Decreased Loss of School Revenue

One impact of unaffordable home utility service is the forced mobility of households. ‘Forced mobility’ occurs when households are required to change residences, either inside or outside a utility's service territory, in response to unaffordable service. This mobility may occur because the current residence is rendered uninhabitable due to the lack of utility service; because the household has insufficient funds to reasonably expect that its arrears to a particular utility will ever be retired and thus moves; or because the household simply seeks shelter with more affordable utility costs.

Adverse education outcomes result from this frequent mobility.<sup>86</sup> Third-graders who have changed schools frequently are two-and-a-half times as likely to repeat a grade as third-graders who have never changed schools. Of the nation's third-graders who have changed schools frequently, 41 percent are below grade level in reading, compared with 26 percent of third-graders who have never changed schools. 33 percent of children who have changed schools frequently are below grade level in math, compared with 17 percent of those who have never changed schools.

When children change schools four or more times, they are more likely to drop out of school. Children who change schools four or more time by the Eighth Grade were at least four times more likely to drop out than those who remained in the same school.

The adverse impacts associated with the frequent mobility associated with unaffordable home utility bills, however, arise not only for the children affected, but also for the school districts who are charged with educating these children. Highly mobile students pose problems to the school systems. High numbers of mobile children interfere with teachers' ability to organize and deliver instruction. Teachers find it difficult to assess the needs of these new children, determine their past education experiences, and provide instruction that builds on these experiences. These tasks may be especially difficult when many new children enter the classroom throughout the year, often with no advance notice.

Teachers in schools with high proportions of children who change schools after the beginning of the year report that these school changes disrupt classroom instruction, and teachers must spend additional time on non-instructional tasks. Teachers may therefore not have the time to identify gaps in such a child's knowledge. Moreover, these gaps may grow as the child is left on his or her own to make sense of the new curriculum and its relationship to the one at the previous school.

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<sup>86</sup> Colton, Roger (1996). “A Road Off Taken: Unaffordable Home Energy Bills, Forced Mobility and Childhood Education in Missouri,” 2 *Journal on Children and Poverty* 23.

While not related to school costs, the frequent mobility of school-age students, particularly if between school systems, may also adversely affect school revenues. To the extent that individual schools receive state aid to education based on the number of "student days" of attendance, actual dollars of state support will decrease as schools lose "student days" either to non-attendance at all, or to attendance in a different school district.

## Homelessness and Housing Abandonment

Unaffordable utility bills contribute to the prevalence of homelessness and, as a result, to the municipal costs associated with responding to that homelessness. According to the U.S. Conference of Mayor's most recent annual survey of hunger and homelessness, 48% of the demand for homeless services in Philadelphia were being unmet.<sup>87</sup> The prevalence of homelessness is not without cost to the City in its capacity as a provider of municipal services.<sup>88</sup>

According to a study by Temple University's Institute for Public Policy Studies, over five years, an average of 32 percent of the homes of residential electric customers in Philadelphia became abandoned within one year following service termination for nonpayment. The average percentage was found to be slightly lower for gas terminations: 22.4 percent. The IPPS study concluded: "The evidence linking utility terminations to abandonment is strong, consistent over a five year period and across two utilities, gas and electric. The evidence also suggests that the percentage of units which have experienced termination and become vacant increases over time."<sup>89</sup>

These results have been confirmed elsewhere. The most commonly cited reasons for homelessness in Colorado, for example, were loss of job and housing costs, followed by family/relationship breakup and utility costs. Slightly more than half (53%) of the reported reasons were related to the cost of housing (housing costs, utility costs and eviction /

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<sup>87</sup> U.S. Conference of Mayors (December 2014). *2014 Hunger and Homelessness Survey: A Status Report on Hunger and Homelessness in America's Cities*, Conference of Mayors: Washington D.C.

<sup>88</sup> The Conference of Mayors reported as follows for Philadelphia: "The City of Philadelphia's Permanent Supportive Housing Clearinghouse (CH) is a consolidation of the housing resources of the social service departments in the City. The role and purpose of the CH is to provide a streamlined, single point of access to permanent supportive housing, eliminate redundancies and multiple access points, promote coordination between housing and services, and manage new housing partnerships and resources. Resources are dedicated to households served by City social service agencies that have a services and a housing need, including individuals and families with mental illness, chronic substance abuse and related health disabilities, and those who are homeless or at the highest risk of homelessness. The CH began in 2012 and now includes access to eight programs, including the housing that is provided through a partnership with the Philadelphia Housing Authority."

<sup>89</sup> Institute for Public Policy Studies, Temple University (June 1991). *An Examination of the Relationship between Utility Terminations, Housing Abandonment, and Homelessness*.



foreclosure).<sup>90</sup> In a survey of residents of homeless shelters in Kentucky, among the dominant housing related reasons for homelessness, utility terminations were cited as the cause 7.9% of the time.<sup>91</sup>

Nationwide, over the past five years, 14% of Energy Assistance recipients moved in with friends or family due to the inability to pay energy bills; 6% were evicted from their home or apartment due to unpaid energy bills; 4% faced home mortgage foreclose due to home energy bills.<sup>92</sup>

Similar results would be expected for customers of Philadelphia's water utility.

## Public Health Implications

The disconnection of electricity and/or natural gas service represents a distinct public health threat, particularly to aging households and to low-income households with children. The impact of service disconnections on the public's health and safety can hardly be debated in light of recent research. According to the 2005 NEADA survey, the loss (and threatened loss) of home heating service has significant health consequences to low-income households with children. NEADA found that survey respondents reported becoming ill because their home was too cold in the winter heating months. Nearly 1-in-6 of all energy assistance recipients reported that someone in the home became sick because the home was too cold in the past five years.

These illnesses were frequently severe enough to require medical treatment. In both 2003 and 2005, 11% of the surveyed energy assistance recipients reported that someone in the home had become ill enough to require going to a doctor or hospital because the home was too cold in the past five years.

A variety of reasons contribute to the overall rate of illness, as well as to the rate at which illnesses required medical treatment within the low-income energy assistance recipient population.<sup>93</sup> The primary contributing factor to the adverse health outcomes involves the tendency of low-income households to keep their homes at unsafe or unhealthy temperatures, given the unaffordability of home energy to the household. Of the households with children

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<sup>90</sup> Colorado Statewide Homeless Count, Summer 2006.

<sup>91</sup> Northern Kentucky Coalition for the Homeless (with technical assistance by Applied Information Resources) (July 1990). *Homelessness and Low-Cost Housing in Northern Kentucky: An Analysis and a Strategic Action Plan*.

<sup>92</sup> National Energy Assistance Directors Association (November 2011). *2011 National Energy Assistance Survey: Final Report*, APPRISE, Inc.: Princeton (NJ).

<sup>93</sup> See generally, Wilkins et al (2001). *Cold Comfort: The Social and Environmental Determinants of Excess Winter Death in England 1986 – 1996*. The Policy Press: Bristol; Maheswaran et al. (2004). Socio-economic deprivation and excess winter mortality and emergency hospital admissions in South Yorkshire Coalfields Health Action Zone, UK. *Public Health* 118. 167 – 176.

under age 18, between 20% and 25% kept their homes at “unsafe or unhealthy temperatures” because they did not have enough money to pay their home heating bills. Aside from households with children, the adverse health impacts of cold temperatures within a home are particularly acute for elderly households.<sup>94</sup>

## Business Locational Decisions

Offering affordable rates to low-income customers can be expected to have long-term positive impacts for Philadelphia from the perspective of maintaining and expanding its revenue base. The provision of a strong social safety-net so that individuals and households do not face the deprivation of basic household necessities is a strong and growing factor in businesses making locational decisions. These locational factors are particularly important for high technology firms, which represent a particularly strong future growth potential for the economy.

Assistance programs such as the proposed water affordability program improve the productivity of local workers. Unreliable transportation, inadequate child care, and poor health are leading contributors to absenteeism, tardiness, and turnover among low-income workers.<sup>95</sup> One joint study, performed in collaboration with the Center for Workforce Preparation of the U.S. Chamber of Commerce and the Center for Workforce Success of the National Association of Manufacturers, reports that many low wage workers fail to access public benefits. This failure, according to the joint Chamber of Commerce / Association of Manufacturers study, “not only hurts the workers who miss out on income and benefits; it also hurts their employers through higher turnover and increased absenteeism.”

An evaluation of [households leaving the TANF program]<sup>96</sup> in New Jersey by Mathematica Policy Research reported that 52 percent had been fired as a result of frequent tardiness or absenteeism related to child care or health problems. In the words of a call center manager who has hired many entry-level workers through the Annie E. Casey Foundation’s Jobs Initiative, “these peoples’ lives are in chaos. They have so many problems they cannot pay attention to work.”

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<sup>94</sup> Brennan et al. (1982). Seasonal variation in arterial blood pressure, *British Medical Journal*. 285. 919 – 923; Wilkinson et al. (2004). Vulnerability to winter mortality in elderly people in Britain: population based study. *British Medical Journal* 329. 647 – 652; Collins (1986). Low indoor temperatures and morbidity in the elderly. *Age and Aging* 15(4):212-20.

<sup>95</sup> Geri Scott (2004). *Private Employers and Public Benefits*, Workforce Innovation Networks (WINS): Boston (MA) and Washington D.C. WINS is a collaboration of Jobs for the Future, the Center for Workforce Preparation of the U.S. Chamber of Commerce, and the Center for Workforce Success, The Manufacturing Institute of the National Association of Manufacturers

<sup>96</sup> TANF is the Temporary Aid for Needy Families program, that program generally considered to be “welfare” in the United States.

An unpublished survey conducted by ASE in Detroit, Michigan, highlights workplace problems that employers can experience when employees' non-work needs are not addressed. ASE asked entry-level workers and their supervisors in five companies about barriers to employee advancement. After "caring for a dependent," "money problems" were reported more frequently than 19 other potential problems ranging from "understanding work assignments" to "getting along with colleagues." "Financial worry about making ends meet" appears to contribute to absenteeism, distraction on the job, strained relations with supervisors and co-workers, and a number of other factors that reduce productivity.<sup>97</sup>

Other research confirms these findings. One professor at Johns Hopkins University considered the extent to which increased low-income status results in increased overall costs to business. She found a variety of costs to business, reporting:

Poverty. . . produces ill-prepared workers whose lives are easily disrupted by small catastrophes. If the car breaks down, if the kid gets sick, it suddenly becomes impossible to be a reliable worker. Poverty also generates poor health among workers, making them less reliable still and raising the cost of employing them.<sup>98</sup>

These results are confirmed by research looking specifically at the relationship between poverty and business competitiveness. The *Competitive Assessment* of the Indiana economy was prepared by Market Street Services for the Indiana Department of Commerce. According to the final report, released in January 2002, the purpose of that Department of Commerce sponsored study was "to help the State clearly assess its competitive position both in relation to other states and the nation."

The Indiana Department of Commerce study reported: "Regional meeting participants stated time and again that they feel Indiana is a very affordable place to live *for people of all income levels*. Participants felt that the moderate cost of living *helps their competitive* [posture] with other Midwestern states as well as places around the country." (emphasis added). The report noted finally that Indiana should: "keep[...] in mind that pockets of poverty—whether the businesses locate there or not—is not a business climate asset overall."

These findings are consistent with other continuing statements made throughout the Indiana *Competitive Assessment* report about the need, from the perspective of maintaining the competitiveness of Indiana business and industry, to address pockets of poverty to ensure that these pockets are not "left behind."

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<sup>97</sup> "Private Employers and Public Benefits," at 5.

<sup>98</sup> Erica Schoenberger (1999). *The Living Wage in Baltimore: Impacts and Reflections*, John Hopkins University Department of Geography and Environmental Engineering: Baltimore (MD).

The observation here is being increasingly recognized as relevant to various services. “It should be noted that businesses focus on quality of life considerations when making location decisions because they are relevant for attracting a high quality workforce.”<sup>99</sup>

Economic developers are increasingly recognizing the importance of quality of life in business location decisions. Quality of life has been deemed particularly influential for companies involved in research and development and high technology, and in enterprises employing highly skilled workers in information or knowledge-based services and production. Evidence of this observation is a study conducted by Love and Crompton in which they surveyed 174 decision makers of businesses that had initiated, expanded or relocated to Colorado in the previous five years. . .quality of life was considered the second most important factor for prompting the business move and not selecting a specific community, as well as the third most important factor in the final selection of a specific community.<sup>100</sup>

## Summary and Conclusions

The water affordability program to deliver affordable bills as a percentage of household income proposed for the City of Philadelphia will deliver considerable benefits to the City in its capacity as a provider of municipal services. In this regard, an affordable water bill program is analogous to the provision of other public goods.

For example, investments in child care have been found to yield direct benefits to business. On a macro basis, as the Committee for Economic Development has reported, “business and the economy as a whole gain a more productive work force when employees feel confident that their children are secure and learning.”<sup>101</sup> This is not merely a statement of policy, it is a conclusion based on considerable empirical research: “Those companies that have taken steps to address the child care needs of their work force report that they have improved their ability to attract and retain high-quality personnel, thereby enhancing their current work force and their competitiveness.”<sup>102</sup>

Similarly, the Committee for Economic Development stated with respect to financial investment in universal education that:

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<sup>99</sup> Taylor, et al. (2006). *A Cost-Benefit Analysis of Universally-Accessible Pre-Kindergarten Education in Texas*, Bush School of Government and Public Service, Texas A&M University: College Station (TX).

<sup>100</sup> Id. (citations omitted).

<sup>101</sup> Research and Policy Committee (1993). *Why Child Care Matters: Preparing Young Children for a More Productive America*, A Statement by the Research and Policy Committee of the Committee for Economic Development, at 1, Committee for Economic Development: New York.

<sup>102</sup> *Why Child Care Matters*, at 3.

a firm and enduring commitment to excellence in education on the part of America's business community is not merely a matter of philanthropy; it is enlightened self-interest. As employers, taxpayers, and responsible community members, business can regard an investment in education as one that will yield a handsome return.<sup>103</sup>

Precisely the same conclusions can be reached about an investment in affordable water bills. It "is not merely a matter of philanthropy, it is enlightened self-interest." In sum, affordable utility service generates a public benefit that without question are above and beyond the benefits to individual households.

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<sup>103</sup> Research and Policy Committee (1985). *Investing in our Children: Business and the Public Schools, A Statement by the Research and Policy Committee of the Committee for Economic Development*, at 5, Committee for Economic Development: New York.