



Eckert Seamans Cherin & Mellott, LLC
213 Market Street
8th Floor
Harrisburg, PA 17101

TEL 717 237 6000
FAX 717 237 6019
www.eckertseamans.com

Deanne M. O'Dell
717.255.3744
dodell@eckertseamans.com

August 8, 2017

Via Electronic Filing

Rosemary Chiavetta, Secretary
PA Public Utility Commission
PO Box 3265
Harrisburg, PA 17105-3265

Re: Review of Universal Service and Energy Conservation Programs
Docket No. M-2017-2596907

Dear Secretary Chiavetta:

Enclosed for electronic filing please find Philadelphia Gas Works' Comments to Opinion and Order Entered May 10, 2017 with regard to the above-referenced matter.

Sincerely,

A handwritten signature in blue ink that reads "Deanne M. O'Dell".

Deanne M. O'Dell

DMO/lww
Enclosure

cc: Louise Fink Smith, w/enc. (finksmith@pa.gov)
Tiffany Tran, w/enc. (tiftran@pa.gov)
Sarah Dewey, w/enc. (sdewey@pa.gov)
Joseph Magee, w/enc. (jmagee@pa.gov)
RA-PCLAW-LIURP@pa.gov

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

Review of Universal Service and Energy :
Conservation Programs : Docket No. M-2017-2596907

**PHILADELPHIA GAS WORKS
COMMENTS TO OPINION AND ORDER
ENTERED MAY 10, 2017**

Of Counsel:

Brandon J. Pierce, Esq.
Philadelphia Gas Works
800 West Montgomery Ave.
Philadelphia, PA 19122

Deanne M. O'Dell, Esquire
(Pa. Attorney ID No. 81064)
Eckert Seamans Cherin & Mellott, LLC
213 Market Street, 8th Fl.
Harrisburg, PA 17108-1248
717 237 6000

Date: August 8, 2017

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ATTACHMENT A: Considering Cost Effectiveness, H. Gil Peach, Ph.D., August 2017

I. INTRODUCTION

The Commission initiated a comprehensive review of the entire Universal Service and Energy Conservation (“USEC”) model in its Order entered May 10, 2017, and has invited interested stakeholders to file comments on priorities, concerns, and suggestions for amending and improving any or all aspects of the USEC programs.¹ As directed by the *USEC Investigation Order*, the Commission published a Staff Report on July 14, 2017, in which the Law Bureau outlined the statutory, regulatory, and policy frameworks of existing USEC programs and processes required to initiate any proposed changes.² In the *USEC Investigation Order*, the Commission also stated that it is including as part of its investigation at this docket the currently pending review of the regulations governing low-income usage reduction programs (“LIURPs”)³ as well as the recently initiated study regarding home energy burdens in Pennsylvania.⁴

Philadelphia Gas Works (“PGW”) is a city-owned natural gas distribution company. PGW has offered a low income customer responsibility program (“CRP”) to customers since 1989, when it was designed in cooperation with the Philadelphia Public Advocate. PGW has the largest natural gas customer assistance program (“CAP”) in the Commonwealth and the largest natural gas Universal Service spend in the Commonwealth – by dollar and per individual customer spend. PGW also has the highest percentage of confirmed low income customers in

¹ *Review of Universal Service and Energy Conservation Programs*, Docket No. M-2017-2596907, Opinion and Order entered May 10, 2017 at 3-4 (“*USEC Investigation Order*”).

² *Review of Universal Service and Energy Conservation Programs*, Docket No. M-2017-2596907, Staff Report released July 14, 2017 (“*USEC Staff Report*”).

³ *Initiative to Review and Revise the Existing Low-Income Usage Reduction Program Regulations*, Docket No. L-2016-2557886, 46 Pa.B. 8188 (Secretarial Letter Inviting Comments dated December 16, 2016) (“*LIURP Docket*”).

⁴ *Energy Affordability for Low Income Customers*, Docket No. M-2017-2587711, Opinion and Order entered May 5, 2017.

the Commonwealth (gas and electric). For these reasons, any modifications to Universal Services – particularly those that impact costs – could have an outsized impact on PGW and its customers who fund the Universal Service programs (many of whom are low income, or near low income). Thus, given the significance of this proceeding to PGW and its ratepayers, PGW appreciates this opportunity to provide feedback regarding USEC issues.

As explained more fully below, PGW offers suggestions intended to better streamline processes, provide more transparency regarding Commission expectations for utility reporting, and to address issues related to costs.

II. COMMENTS

A. Access to DHS Data to Facilitate Automatic Customer Enrollment in CRP

The objective of PGW’s CRP is to help low-income residential customers meet their energy needs by offering payment assistance in the form of an affordable bill. CRP is a Percentage of Income Payment Plan (“PIPP”). Thus, PGW determines the CRP “asked-to-pay” amount based on the customer’s household size and income in relation to the Federal Poverty Level (“FPL”).

PGW continually seeks to inform customers about CRP and is supportive of creative ways to enroll more eligible customers in CRP. To that end, PGW’s low-income customers who receive grants through the Low-Income Home Heating Assistance Program (“LIHEAP”) are good candidates for enrollment in CRP. LIHEAP is administered by the Pennsylvania Department of Human Services (“DHS”). At this time, there is no way for PGW to automatically enroll LIHEAP grant recipients into CRP (to the extent that it is beneficial for the customer). PGW also does not have access to income and household size for LIHEAP recipients which would help PGW assess whether a potential low-income customer would benefit from CRP enrollment. Thus, PGW would encourage the Commission to obtain permission from DHS

for utilities to obtain this LIHEAP recipient information from DHS. In the past, the Commission has directed eligible telecommunications carriers (“ETCs”) to utilize the DHS database, the Commonwealth of Pennsylvania Access to Social Services (“COMPASS”) network, to verify or recertify an individual’s Lifeline eligibility.⁵ Enabling utilities to access COMPASS (or another system maintained by DHS) to acquire a customer’s household size and income would be a way to automate enrollment into CRP. Connected to this access, the Commission could authorize all utilities to automatically enroll a LIHEAP recipient into their CAP if the CAP is beneficial for the customer.

Further, PGW recently proposed in its Universal Service Plan filing to increase the duration of recertification for CRP customers from two years to three years for LIHEAP recipients. If the DHS data was made available to PGW, it could likely extend the recertification time even further or eliminate the recertification requirement for LIHEAP recipients. This change would reduce costs for PGW and make participation in CRP easier for customers.

B. Provide More Transparency Regarding Required Reporting Requirements

As noted in the *USEC Staff Report*, utilities are required to provide data annually to the Bureau of Consumer Services (“BCS”) regarding their USEC programs including usage data and allocation of funds.⁶ PGW reports a significant amount of data to the Commission (see, e.g. 52 Pa. Code §§ 56.231, 58.15, 59.82 and 62.5) including some data which may no longer be useful but still requires effort to collect and maintain.

PGW, however, is most concerned with LIURP data reporting to the Commission, ostensibly under section 58.15. For this reporting, Commission staff has created and maintains

⁵ *FCC Lifeline Broadband Order: Carrier and Consumer Awareness; ETC Transition to Streamlined Eligibility Criteria*, Docket No. M-2016-2566383, Final Order entered November 9, 2016 at 7-8.

⁶ *USEC Staff Report* at 5.

control over a non-published “codebook” to which changes are regularly made. Utilities are expected to comply with these changes even if the data required is not data that is currently being collected by the utility or its contractors, and regardless of the time and costs of making changes to collect this data.

An inability of a utility to keep pace with changing data collection and reporting requirements is not an optimal situation for either the utility or the Commission. While PGW does appreciate that the Commission engages in some collaborative development of the “codebook,” the current process still presents difficulties that PGW recommends be addressed. To that end, PGW recommends that a stakeholder process be convened to formulate a list of data that should be reported, with a subsequent rulemaking that sets forth the data that will be required. If there are any areas left open in the rulemaking for future adjustments to data to be collected, the regulation should specify that the utilities will have sufficient time to make related changes, and obtain full cost recovery for such changes.

With respect to other data reported to the Commission through the “Data Dictionary” at 56.231, PGW recommends a continuation of discussions regarding inconsistencies and misinterpretations of data points, as well as the possible removal of some data and addition of other data (particularly related to costs).

C. Cost-Effectiveness and Cost Recovery

The Natural Gas Choice and Competition Act requires that “universal service and energy conservation policies” be “appropriately funded and available” and “operated in a cost-effective manner.”⁷ The Act also requires the Commission to establish for each NGDC an appropriate non-bypassable, competitively neutral cost-recovery mechanism which is designed to allow the

⁷ 66 Pa.C.S. § 2203(8).

utility to recover fully the universal service and energy conservation costs over the life of the universal service programs.⁸

1. Measuring Cost-Effectiveness

PGW incorporates herein its comments filed in the LIURP docket.⁹ Further, PGW would like to submit additional recommendations regarding the utilization of cost effectiveness tests – such as a Total Resource Cost test – in LIURPs and has retained H. Gil Peach, Ph.D. to support some of these recommendations. The recommendations as detailed by Dr. Peach, in Attachment A hereto, are incorporated herein. Adoption of Dr. Peach’s recommendations would provide a more robust method to evaluate LIURP work. In doing so, PGW could better prioritize ratepayers’ investments in LIURP by supporting comprehensive work that meets the purpose of LIURP as set forth in §58.1.

Further, PGW would call attention to pages 19-20 of Dr. Peach’s comments, where he raises the important issue of addressing rental properties in the evaluation of LIURP installations. PGW had raised some preliminary considerations about treating rental properties in its comments to the LIURP Secretarial Letter.¹⁰ In addition to those comments, PGW submits that LIURP investments in customers’ homes must include a consideration about whether the home is a rental or owner-occupied, and if possible, the lifetimes for measures included in a LIURP project should have bearing on the requirements for low-income tenancy at the property. Doing so would protect PGW’s ratepayers’ investments in LIURP, by increasing the perseverance of benefits at the low income rental properties.

⁸ 66 Pa.C.S. § 2203(6). With respect to recoverable costs, lost revenues related to LIURP treatments should also be recoverable, as discussed briefly in Mr. Peach’s comments in Attachment A.

⁹ Comments of Philadelphia Gas Works to Secretarial Letter, Docket No. L-2016-2557886, dated January 30, 2017.

¹⁰ *Id.* at 10-11.

2. Provide More Uniform Definition Of Costs To Be Recovered

While NGDCs are permitted to recover fully the costs of their USEC programs, there appears to be a lack of uniformity about how these costs are defined. Costs are recovered for PGW's USEC programs through a Universal Service and Energy Conservation surcharge. It allows for recovery of: (1) CRP discounts and arrearage forgiveness; (2) Senior Citizen Discount discounts; and; (3) the costs of LIURP. However, this surcharge does not include all costs of all of the programs, such as lost revenues, the administrative (including labor) costs of CRP, and Hardship Fund costs. In addition, utility cost recovery mechanisms may also include additional "bad debt offset" mechanisms as part of rate case proceedings which further erode the ability of utilities to receive full cost recovery and creating a potential disincentive to incur further costs related to their universal service programs. In order to ensure that utilities have full and timely cost recovery for Universal Service costs, PGW would encourage the Commission to provide guidance on the costs recoverable and allowance for utilities to recover all such costs without the need for a rate case or Universal Service Plan filing.

D. Statewide Administrator for Universal Service Programs

The Commission must balance how to reasonably (and cost-effectively) structure USEC programs that offer viable options for low-income consumers without placing negative pressure on: (1) the amount non-low-income customers must pay to support the USEC programs; and, (2) the uncollectible costs that occur from non-payment of utility bills. Ultimately, these USEC issues impact all consumers in Pennsylvania regardless of the service territory in which they reside. To the extent the Commission continues to seek uniform USEC programs and uniform solutions among the varying service territories, consideration of a broader and statewide solution may be warranted. A potential structure for this model could be one in which the Commission sets forth guidance about program structures that the utilities would be required to follow. The

utilities would be required to design their individual USEC programs within the uniform guidelines and would remain responsible for enrolling eligible customers. The utilities would also provide information to the Commission about the costs of these programs. From this information, the Commission would determine a statewide amount to be collected from all of the utilities' non-participating customers. Those collected amounts would be remitted to the statewide administrator and returned to the utilities to cover the costs of the program. The Commission's Telecommunications Universal Service Fund ("USF") could serve as a template for this model.¹¹ Approximately 300 telecommunications service providers contribute to the USF and payments are disbursed monthly to 32 qualified recipients. The USF is administered by a third-party who calculates and assesses the share to be paid by telecommunications companies based on formula in regulations, handles the funds and provides reports to the Commission.

E. Administrative Processes

The process of having a Universal Service and Energy Conservation Plan prepared and approved is lengthy, and often involves providing clarification on a number of issues for the Commission. As a result, Plans often cannot be approved until after the start date of the Plan – this can result in difficulty implementing any changes before the filing of the next Plan, and in examining the results of such changes. PGW would encourage the Commission to change the start date of Plans to the date of final Commission approval of the Plan, and the end date to three years from the approval date. PGW would also encourage the Commission to consider increasing the length of time for a Plan from three years to five years. Such a change has precedent in a LIURP, as PGW's LIURP was approved for a five year period when it was included in PGW's Demand Side Management portfolio. This change would reduce the costs

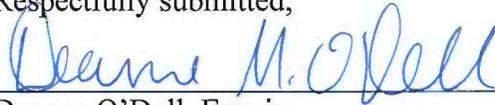
¹¹ 52 Pa. Code §§ 63.161 – 171.

and resources needed to file and approve Plans, and would provide the utility with sufficient time to implement changes and determine whether they are effective. In order ensure that Plans do not become stagnant given this increased length of time, the Commission could permit the utilities to obtain approval in their Plans to have flexibility in implementation for specified areas/pilot programs.

III. CONCLUSION

PGW appreciates this opportunity to provide these comments and looks forward to continued involvement as this investigation progresses.

Respectfully submitted,



Deanne O'Dell, Esquire
(PA Attorney ID No. 81064)
Eckert Seamans Cherin & Mellott, LLC
213 Market Street, 8th Fl.
Harrisburg, PA 17108-1248
(717) 237-6000

Of Counsel:

Brandon J. Pierce, Esq.
Philadelphia Gas Works
800 West Montgomery Ave.
Philadelphia, PA 19122

For Philadelphia Gas Works

August 8, 2017

Attachment A

CONSIDERING COST EFFECTIVENESS

H. Gil Peach, Ph.D., August 2017

The Pennsylvania Public Utility Commission has opened an Initiative to Review and Revise the Existing Low-Income Usage Reduction Program (LIURP) Regulations at 52 Pa. Code §§ 58.1 – 58.18, Docket No. L-2016-2557886. These comments are submitted for the Philadelphia Gas Works in support of this initiative.

I. Low Income Usage Reduction Program (LIURP)

As specified in 52 Pa. Code §58.1, each utility is to establish a “...fair, effective and efficient energy usage reduction program...” to help customers save energy. Conserving energy reduces residential bills – in instances of a Customer Assistance Program percent of income payment plan (PIPP), like PGW’s CRP, conservation provided to CRP customers can reduce the subsidy paid by non-CRP customers. Conservation will reduce residential energy use. This reduces cost of gas purchases and may lower cost of supply. For participants, the program should improve health, safety and comfort levels.

II. Cost Effectiveness

Given this sound policy purpose of LIURP, it is important to be able to both (a) maximize and (b) assess the cost effectiveness of the efficiency investments. Low income households are not able to make these improvements (and the incidental repairs often required to install them). The full cost of LIURP programs are borne by the non-participants; for PGW many of these paying non-participants are themselves low or lower income. Utility low income programs that install measures to save energy are not housing development programs. It is necessary to be careful and prudent in limiting program costs while, at the same time, optimizing program results. Cost effectiveness tests create an objective method to evaluate and prioritize PGW’s ratepayers’ investments in low income weatherization.

A. Simple Payback

Current regulations with the intention of evaluating cost effectiveness (52 Pa. Code § 58.11) specify an on-site energy survey. The cost effectiveness criterion to use in the on-site survey currently in the Pa. Code is based on simple payback (Figure 1).

The installation of a program measure is considered appropriate if it is not already present and performing effectively and when the energy savings derived from the installation will result in a simple payback of 7 years or less. A 12-year simple payback criterion shall be utilized for the installation of side wall insulation, attic insulation, space heating system replacement, water heater replacements and refrigerator replacement when the expected lifetime of the measure exceeds the payback period. (52 Pa. Code §58.11)

FIGURE 1: COST EFFECTIVENESS - SIMPLE PAYBACK APPROACH.

1. Strength of Simple Payback

The simple payback approach was probably a very good way to start LIURP programs. On the plus side, a primary strength of simple payback is that it is easy to understand and to communicate. From a policy perspective, another primary strength of the simple payback calculation is that it does not make use of a discount rate. Specifically, the use of this method is equivalent to use of a discount rate of zero.

For the low-income program area, this precedent is important. As recognized in current PUC regulation, LIURP, specifically, should be "...fair, effective and efficient..." Although there will be some exceptions (for example, if a part of the city is redeveloped, or if other issues in the home prevent continued habitation) it is likely that current low-income housing will remain housing for low-income households or income insufficient households for the life of the measures installed and possibly for the life of the building. I will return to this reality later in discussion of the discount rate. At the outset, however, we can note that the precedent set by the historical policy guidance embedded in 52 Pa. Code §58.11 has been to use the equivalent of a discount rate of zero in calculation of cost effectiveness.

2. Weakness of Simple Payback in 52 Pa. Code §58.11

Just as the simple payback approach has strengths, it also has weaknesses. It is overly simplistic in not capturing the full dimensionality and detail of the cost effectiveness situation. For example, it is not structured to take account of any future maintenance costs. And, it does not consider the time value of money.¹ Also, the current regulations with the intention of evaluating cost effectiveness (52 Pa. Code §58.11) can inappropriately limit complete installation of energy efficient improvements in a home by inappropriately defining maximum measure life. 52 Pa. Code §58.11 specifies a maximum measure life of 12 years for purposes of cost effectiveness calculation. This limitation results, for example, in a measure with a life of 40 years being treated as if it

¹ Though it does not consider the time value of money, the discount rate of zero is one appropriate result for the time value of money for a low-income program.

had a measure life of 12 years, so that 28 years of benefit are excluded from the calculation while all cost is included in the calculation.

B. Total Resource Cost (TRC) Test

PGW currently uses the TRC test for its LIURP. Having implemented a “pure” version of the TRC test,² with learning from practical experience in implementation, the need for certain modification to the TRC for LIURP has become evident to PGW.

1. Strength of the TRC Test in PGW Implementation: Optimization

Use of the TRC rather than simple payback, in the manner implemented by PGW, is an advancement in method. It is an advance because PGW had the measure level savings algorithms programmed in Excel as a contractor tool for use in the on-site surveys. With this tool, the contractors can optimize a package of measures for a home to achieve maximum lifetime savings at least cost. Contractors are incentivized to optimize the package of measures through PGW’s budget allocation process that assigns the LIURP budget to the highest performing contractors biannually. Through this competition, contractors continually seek to improve the cost effectiveness of their portfolio of projects. In contrast, simple payback as specified in 52 Pa. Code §58.11 provides qualified measures and provides limits, but it does not optimize and does not encourage comprehensive weatherization.

2. Weakness of the TRC: Not a Public Purpose Test

The TRC approach, which derives not from the development of low income public purpose programs but from the separate development of Integrated Resource Planning (IRP) for non-low-income Demand Side Management (DSM) programs, is generally regarded as a more sophisticated method for the calculation of cost effectiveness. However, due to its origin in IRP and DSM, the TRC was not designed for cost effectiveness analysis of low-income programs. Low-income programs are essentially public purpose programs and this is not considered in the operation of the “pure” TRC or in its calculation.

In the California Standard Practice Manual (CSPM),³ until recently the primary guide for Demand-Side Management (DSM) cost effectiveness tests in the US and Canada, low

² The version of the TRC implemented was similar to the Pennsylvania TRC as defined for ACT 129 DSM programs, although modified for application to gas measures.

³ California Public Utilities Commission, California Standard Practice Manual: Economic Analysis of Demand-Side Programs and Projects, October 2001, hereinafter “CSPM”.
([http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy - Electricity and Natural Gas/CPUC STANDARD PRACTICE MANUAL.pdf](http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/CPUC_STANDARD_PRACTICE_MANUAL.pdf))

income programs are understood as public purpose programs rather than as resource acquisition programs (although, of course, these programs have the benefit of yielding value in the form of resource acquisition results). The TRC was introduced in an Appendix to the 1984⁴ predecessor to the CSPM. In California, the pure TRC test has been deemed inappropriate for cost effectiveness assessment of low income programs (Figure 2 **Error! Reference source not found.**)⁵.

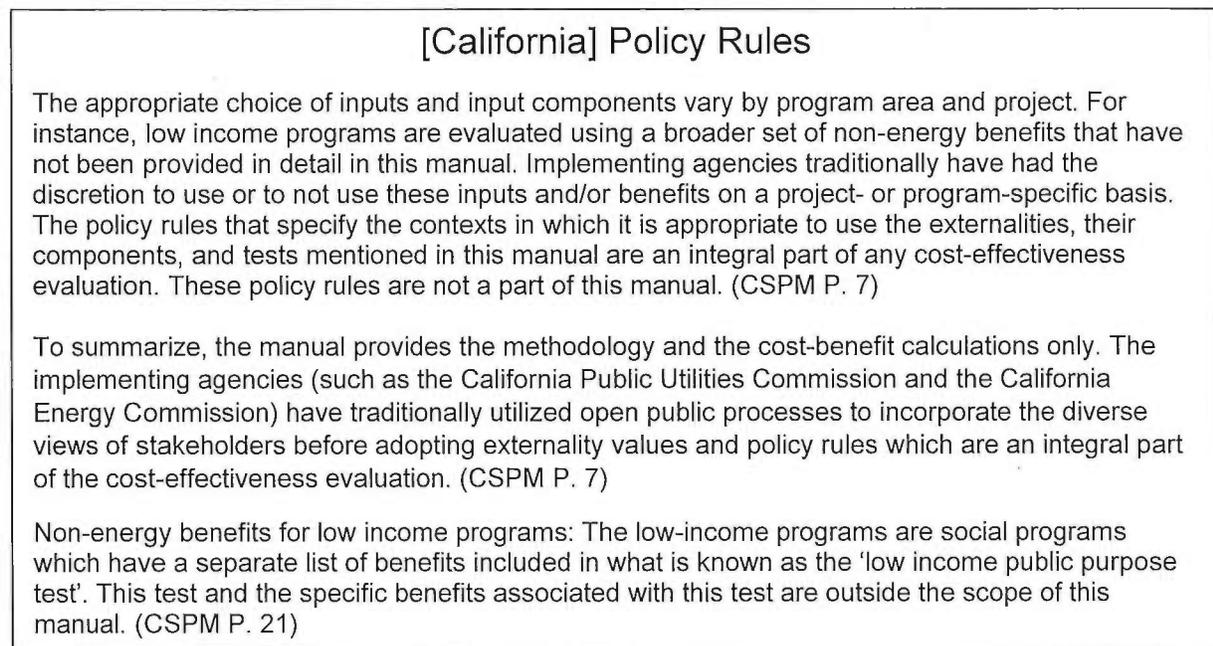


FIGURE 2: EXCLUSION OF LOW-INCOME PROGRAMS FROM CALIFORNIA STANDARD PRACTICE MANUAL.

The California Low Income Public Purpose Test (LIPPT)⁶ referred to in Figure 2 as external to the CSPM was one of the earliest systematic attempts by a state public utility commission to quantify the full range of utility and non-utility benefits that develop from the implementation of a low-income program like LIURP.

⁴ CSPM, P. 1. Originally, the TRC was called the "All Ratepayers Test".

⁵ CSPM, P. 7.

⁶ Tec Market Works, Skumatz Economic Research Associates & Megdahl & Associates, *Final Report: The Low-Income Public Purpose Test (LIPPT), Version 2.0*. California Public Utilities Commission, Prepared for the Reporting Requirements Manual Working Group of the Cost Effectiveness Committee. May 25, 2001.
([http://liob.cpuc.ca.gov/docs/The%20Low%20Income%20Public%20Purpose%20Test%20\(LIPPT\)%20May%2025,%202001.pdf](http://liob.cpuc.ca.gov/docs/The%20Low%20Income%20Public%20Purpose%20Test%20(LIPPT)%20May%2025,%202001.pdf))

Although a separate test outside of the CSPM, the LIPPT is essentially a modified TRC test that approximates a societal test, but is tailored specifically for low-income weatherization programs. One notable outcome of LIPPT analysis rather than TRC analysis is that in the LIPPT counting of all the quantifiable social, participant and utility benefits at least *doubles* the program benefit to cost ratio. This was the first major demonstration that the non-energy benefits of a low-income program like LIURP can be equal to or greater than the energy benefits. Much work has been done in further quantification of non-utility benefits since 2001. At the same time, the LIPPT test comes with a caution that it is not designed to support resource acquisition decisions.⁷

The finding in California for low income programs similar to LIURP that the sum of all quantifiable benefits equal or exceed direct energy benefits has also been shown in national evaluations of US Department of Energy Weatherization Assistance Program (WAP).⁸ Since WAP was first instituted in 1976, it preceded the development of the CSPM tests, including the TRC. The control tool for cost effectiveness, a ratio of savings to investment is applied only at the measure level for WAP and the overall program cost control tool is a separate requirement for fixed average cost per home weatherized, which may change from year to year. Since WAP is administered by state agencies (typically the state energy office or the state housing division) and reports to the US DOE at the federal level, DSM and resource acquisition do not enter in to assessment of program cost effectiveness so a resource acquisition test like the TRC would not be appropriate. Cost effectiveness evaluations of WAP, the federal-state program like LIURP, provide an example of benefit cost calculation when the focus is purely on public purpose.

III. Variety in Cost Effectiveness Approaches for Low Income Programs

For utilities, the variety of approaches to assessing the cost effectiveness of low income programs across the country illustrates that there is no prevailing method for this sector. If you ask in most states, you will likely be told that a TRC test is used to assess cost effectiveness of programs. However, if you look more closely you will find that, for low income weatherization programs, either a modified TRC test is applied or no TRC test is applied. Low income weatherization is predominately treated as a public purpose program. However, the fact is that they are public purpose programs that happen to create value from the perspective of resource acquisition and are often also treated as a demand-side resource. If called a DSM program, it is understood that the program is also a special public purpose program that is different from other DSM programs. If

⁷ Ibid. P. 6.

⁸ For cost effectiveness at the measure level, the federal-state weatherization programs use savings to investment ratios (SIR ratios) calculated using US DOE approved software, rather than the TRC.

called a low-income program and treated separately from DSM, it is recognized that the program also produces direct energy conservation results that may (or may not) be included in DSM accounting depending on the policy position of the jurisdiction.

Here are ten examples that illustrate the variety of approaches to calculation of cost effectiveness for low income weatherization programs:

A. California

As mentioned above, California does not use the TRC test for assessing the cost effectiveness of low income programs.⁹ Although California uses the TRC for DSM programs, since at least 2001 the commission has treated low income programs separately. California also no longer uses the LIPPT test. Currently the two tests applied to low income weatherization in California are the Utility Cost Test or UCT (sometimes called the Program Administrator's Cost Test or PACT) and a modified Participant Cost Test, the PCm test. The UCT insures that the work in the low-income program makes sense from a utility business perspective. The PCm insures that it makes sense from a participant perspective.

- $UCT = (\text{Energy Benefits} + \text{Utility Non-Energy Benefits}) / \text{Utility Costs}$
- $PCm = (\text{Bill Savings} + \text{Participant Non-Energy Benefits}) / \text{Program Costs}$
- Measures that have a UCT and a PCm greater than or equal to 0.25 are included. (Note especially that the test criterion here is not 1.00 as with DSM, but much lower than 1.00 since it is the test criterion for a low-income program.)
- A measure already existing in the program will be retained if the UCT or the PCm is greater than or equal to 0.25 for that measure. (Note, again the use of a criterion less than 1.00.)
- A measure that comes in under 0.25 may be included if it is furnace repair and replacement or water heater repair or replacement. However, heating and water heating may not be installed with program funds in landlord-owned property, since legally that is the responsibility of the landlord. (Again, a criterion less than 1.00 to accommodate public purpose.) This landlord distinction is notable for this proceeding, as it is my understanding that there are similar requirements in Pennsylvania.

⁹ Decision on Large Investor-Owned Utilities 2009-11 Low Income Energy Efficiency (LIEE) and California Alternate Rates for Energy (CARE) Applications. See: Item 17.
http://docs.cpuc.ca.gov/published/AGENDA_DECISION/93393.htm#P1659_326178.

B. Illinois

Illinois does not use the TRC test for assessing the cost effectiveness of low income programs and explicitly exempts low income measures from cost effectiveness testing. Eligibility is set at 80% of area median income.¹⁰

C. Missouri

Missouri does not use the TRC test for assessing the cost effectiveness of low income programs.¹¹

- Programs targeted to low-income customers or general education campaigns do not need to meet a cost-effectiveness test, so long as the commission determines that the program or campaign is in the public interest.

D. Colorado

Colorado requires the TRC test for low income weatherization programs. However, the test is modified.¹²

- For planning a low-income program if the value of the TRC is less than 1.00, that value is multiplied by 1.25. The 25 percent is called the non-energy benefit adder. This is to consider non-utility benefits plus the importance of providing energy to low income customers.
- For *ex post* evaluation of low income programs, if the TRC is less than 1.00, then both the costs and benefits of the low-income program are dropped from the utility's DSM portfolio. If the TRC on *ex post* evaluation is 1.00 or higher, then the low-income program is included in the utility's reported results for its DSM portfolio. A low-income program is not permitted to hurt assessment of the utility's performance results, but it is permitted to help performance results.

E. New Mexico

New Mexico relies on the TRC test with modifications.¹³

¹⁰ Illinois Compiled Statutes, (220 ILCS 5/8-103), Sec. 8-103(f)4-5 Energy efficiency and demand response measures.

¹¹ Missouri Revised Statutes, Chapter 393 §1075, August 28, 2011.

¹² Decision No. C11-0442, Before the Public Utilities Commission of the State of Colorado, Docket No. 10A-554EG, in the matter of the Application of Public Service Corporation of Colorado for Approval of a Number of Strategic Issues relating to its DSM Plan, including Long-Term Electric Energy Savings Goals and Incentives. Order Granting Application with Modifications, Adopted March 30, 2011.

- For low income programs, there is a multiplier of 1.25 for benefits.
- Also, there is a 20% offset for "...the reasonable value of reductions in working capital, reduced collection costs, low or bad-debt expense, improved customer service effectiveness and other appropriate utility system economic benefits associated with low income programs."¹⁴

F. Massachusetts

Massachusetts requires the TRC test for low income programs. However, the test is modified by the addition of extensive benefits. Massachusetts is the state with the most extensive list of quantified and stipulated benefits included in its TRC for all types of DSM. Massachusetts has some of the most highly developed DSM and low-income programs for this reason. An example of the type of study Massachusetts periodically commissions to update health and safety benefits of low-income weatherization is the recent study by Three Cubed and NMR Group.¹⁵ These are only the quantification of health and safety benefits (see referenced study). In determining benefits, Massachusetts provides the most inclusive benefits for consideration and would be of high value for consideration in the PA PUC proceeding,

Outside health and safety, additional values (called Non-Energy Impacts (NEIs) or Non-Resource Impacts (NRIs) include a special benefit for window retrofits; financial savings to the utility as a result of a smaller portion of energy being sold at the low-income rate for all measures that reduce the use of natural gas; and home comfort and home durability benefits for new gas heating systems, hot water systems and thermostats. Also included as special benefits are, reduced maintenance cost for new gas heating systems and new gas heating and hot water systems. Additional special benefits include increased property value associated with new gas heating systems, heating and hot water systems, hot water systems and thermostats.¹⁶

¹³ New Mexico Administrative Code, Title 17 (Residential Programs): 17.7.2.10 & NMAC, 5.3.10,

¹⁴ New Mexico Administrative Code, Title 17 (Residential Programs): 17.7.2.9(B)(4).

¹⁵ *Massachusetts Special and Cross-Cutting Research Area: Low-Income Single-Family Health- and Safety-Related Non-Energy Impacts (NEIs) Study*, August 5, 2016. (<http://ma-eeac.org/wordpress/wp-content/uploads/Low-Income-Single-Family-Health-and-Safety-Related-Non-Energy-Impacts-Study.pdf>)

¹⁶ Increased property value is recognized for both home owners and for the owner of rental properties. There is currently discussion of how to avoid double counting of values such as increased comfort and the increase in property values.

There are also values for less noise in the home, reduced arrearage, lower bad debt and write-offs, fewer terminations and reconnections, fewer customer calls and collections cost, price hedging, and improved marketability of rental units.¹⁷

G. The District of Columbia

Prior to recently adopting the societal test, the District of Columbia has used the TRC test for low income programs. However, while the criterion for a DSM program was set at 1.00, the criterion for a low-income program was set at 0.80. This is another instance of a TRC test with modifications. (Note the use of a criterion less than 1.00 to accommodate public purpose.)

H. Weatherization Assistance Program

The Federal-State Weatherization Assistance Program uses a savings to investment ratio (SIR Ratio) instead of the TRC. The SIR Ratios are the same thing as individual measure savings ratios. They are calculated for each energy saving measure in a proposed package for the home using audit software. The USDOE has an approved list of audit software and the agency conducting the audit and the weatherization must choose a software package on the approved list. Health and safety work required in order to install a gas furnace, and heating equipment such as a gas furnace, are treated outside the cost effectiveness test in a separate allowance, as is administration.

At the measure level, each energy savings measure (but not health and safety improvements or administration) is run separately and each must show a SIR Ratio of 1.00 or better. Health and safety measures are not cost tested in this way. The community agencies report to a state agency and the state agency reports annually to USDOE. For the overall program report to USDOE all costs are reported but there is no overall SIR Ratio. The control tool at the measure level is the SIR Ratio; the control tool at the overall program level is an administered average cost per home.

Individual state guidance for the program varies – in some the emphasis is on gas furnace replacement on the theory that household is unable to replace a failed gas furnace. When a new gas furnace is installed, it often takes almost all dollars allocated for the average home. The program control is on average dollars per home, for which health and safety, heating equipment and administration are added back in to the calculation. The program level control tool is a guideline each year that caps the total average cost per home weatherized.

¹⁷ These value areas are from the Massachusetts Technical Reference Manual, 2015 Program Years – Report Version, Appendix C: Non-Resource Impacts.

States also usually have separate housing money such as from a housing trust fund which can be combined with weatherization funds for a house on an as needed basis. When this is done to cover a furnace replacement the cost is not part of reporting for cost effectiveness.

I. Washington

Washington's commission, the Washington Utilities and Transportation Commission (WUTC), expressed interest in the SIR Ratio in its Hearing Notice of March 23, 2013 for consideration of cost effectiveness of natural gas DSM programs (Figure 3).

Washington permits utilities to choose the TRC or the UCT as a primary test for DSM programs.

The provision of energy-efficiency services to low-income customers is in the public interest, even when such measures do not meet the commission's primary cost effectiveness test.

...Utilities should remove low-income programs from their portfolio-level cost-test analysis, and instead analyze such programs using savings-to-investment ratios.

FIGURE 3: STATE OF WASHINGTON.

This short list of ten examples is suggestive of the wide range of approaches in practice for calculation of cost effectiveness of low income programs.

Though at first glance it may seem that the cost effectiveness of low income weatherization programs can easily be compared across jurisdictions, these examples suggest that cost effectiveness is not easily compared across jurisdictions. The exact nature of the test applied leads to very different realities on the ground as to the cost provision for program administration, the determination of which measures may be installed homes and how benefit-cost is assessed. Generally, it is easier to compare performance of programs within a jurisdiction than across jurisdictions.

IV. Additional Limitations of the TRC Test

Limitations of the pure TRC test include inadequate treatment of benefits, inappropriate selection of the discount rate, the need for the test to take utility context into account and a need to formalize or reaffirm a pathway toward continuing improvements. In principle, the TRC test has remained static since the 1980's; jurisdictions tend to keep the name but to introduce jurisdictional modification to the test. It is unusual to see a pure TRC applied to a low-income weatherization program.

Limitation 1 - All Costs but only one Benefit. When the TRC was introduced in the 1980's, it was introduced into a context in which the concept of DSM was new and in the process of winning its way to acceptance within the sphere of utilities and utility regulation. It is not surprising that this test was acceptable at the time because it was introduced into a planning context that had only had experience with gas supply or electricity generation. Using a test that included all costs but only the therm or kWh benefit violated the normal symmetry rule for assessing cost effectiveness, but it fit the mindset of the planning engineers of that era.

The definition of a test that does not value societal benefits or public policy goals does not work well today and that is why many states have added benefit multipliers to the test or engaged in a meaningful expansion of quantification or stipulation of participant, utility and societal benefits. A full accounting of benefits, as for example in Massachusetts' low income weatherization and the federal-state WAP programs doubles or somewhat more than doubles resultant cost effectiveness.

Limitation 2 – Inappropriate Discount Rate. When DSM programs were introduced, the existing model for both natural gas and electric utilities was a capital investment model to build out infrastructure. In that context, and to win initial acceptance of DSM, it was sensible to propose use of a discount rate equal to the utility cost of capital. PGW, of course, has an advantage as a municipal utility in that it has a lower discount rate since it does not need to provide profit to stockholders. Its weighted average cost of capital (WACC) must cover debt, as with all other utilities, but it does not have to also cover equity. This makes the discount rate lower.

Beyond the use of the WACC, if we look at actual transactions, LIURP cost recovery (excepting lost revenues) follows closely with LIURP expenditures. In cases where this might not happen, it is possible through the regulatory process to configure the timing of recovery more closely or even to project in advance and then match to actuals. So, there is no need to raise funds in a capital market to run the LIURP.

LIURP is a state public purpose program. Public purpose programs are programs that express the values of the polity as expressed through the state legislature, the commission and the judicial system to meet public needs. This is a solid rationale to use a social discount rate, such as a federal bond rate.

For these reasons, use of the utility cost of capital is a current weakness in the pure TRC, and modification is required.

Limitation 3 – Need for Sensitivity to Context. Also, the most appropriate and useful test should be to some extent customizable to meet the different characteristics of different service territories. This means a test that is probably based on the TRC, but modified for low income households and buildings, and with a flexibility to take differences in service territory realities into account. In practice, this might take the form of a limit in the average cost per home to be determined by PGW each year.

Limitation 4 – PA PUC Consideration of the Need for A Path to Further Improvements. It is important to note that moving to reliance on an overly prescriptive test or static test would not be advisable. Should the Commission develop more detailed guidance for cost effectiveness calculation it will be important to expect additional learning beyond that point as the guidance is put into practice and to provide a pathway for further evolution of the method as experience and knowledge improve.

V. The National Standard Practice Manual (NSPM)

The CSPM TRC test was defined in the 1980's and remains formally static with only a few small updates to the CSPM since. The most recent update was in 2001. While the CSPM tests were innovative and useful when introduced in the 1980's, dissatisfaction with the CSPM tests as primary tests has been growing since the early 1990's. Following some years of discussion and consultation across all elements of the community of practice for DSM and low-income programs, including regulators, policy staff, program developers, program delivery agents and contractors, a new national comprehensive manual, the NSPM was introduced in the spring of 2017.¹⁸

The NSPM reflects the distillation of experience with cost effectiveness tests subsequent to the 1980's. The CSPM provided tests from the participant, utility, societal and non-participant perspectives. The NSPM provides for a test from the regulatory perspective, the Resource Value Test or RVT (Figure 4). The RVT is designed to be specialized to fit the priorities, policy context, and perspectives of each regulatory jurisdiction.

The NSPM presents an objective and neutral Resource Value Framework that can be used to define a jurisdiction's primary cost-effectiveness test, which is referred to as a Resource Value Test.

FIGURE 4: THE RESOURCE VALUE TEST (RVT).

A useful part of the NSPM is a standard format for accounting the benefits and costs to be used in cost effectiveness assessments (Figure 5). Depending on which categories on this form have numerical entries, the resultant RVT test could be a pure TRC test, a modified TRC, a UCT, a societal test or a special RVT tailored to the jurisdiction.

¹⁸ The National Efficiency Screening Project, *National Standard Practice Manual for Assessing the Cost-Effectiveness of Energy Efficiency Resources*, May 18, 2017. Figures 6-9 are from the NSPM. (<https://nationalefficiencyscreening.org/national-standard-practice-manual/>)

National Standard Practice Manual Efficiency Cost-Effectiveness Reporting Template

(Version May 2017)

Program/Sector/Portfolio Name:		Date:	
A. Monetized Utility System Costs		B. Monetized Utility System Benefits	
Measure Costs (utility portion)		Avoided Energy Costs	
Other Financial or Technical Support Costs		Avoided Generating Capacity Costs	
Program Administration Costs		Avoided T&D Capacity Costs	
Evaluation, Measurement, & Verification		Avoided T&D Line Losses	
Shareholder Incentive Costs		Energy Price Suppression Effects	
		Avoided Costs of Complying with RPS	
		Avoided Environmental Compliance Costs	
		Avoided Bad Debt, Arrearages, etc.	
		Reduced Risk	
Sub-Total Utility System Costs		Sub-Total Utility System Benefits	
C. Monetized Non-Utility Costs		D. Monetized Non-Utility Benefits	
Participant Costs	<i>Include to extent impacts are part of RVT</i>	Participant Benefits	<i>Include to extent impacts are part of RVT</i>
Low-Income Customer Costs		Low-Income Customer Benefits	
Other Fuel Costs		Other Fuel Benefits	
Water and Other Resource Costs		Water and Other Resource Benefits	
Environmental Costs		Environmental Benefits	
Public Health Costs		Public Health Benefits	
Economic Development and Job Costs		Economic Development and Job Benefits	
Energy Security Costs		Energy Security Benefits	
Sub-Total Non-Utility Costs		Sub-Total Non-Utility Benefits	
E. Total Monetized Costs and Benefits			
Total Costs (PV\$)		Total Benefits (PV\$)	
Benefit-Cost Ratio		Net Benefits (PV\$)	
F. Non-Monetized Considerations			
Economic Development and Job Impacts	<i>Quantitative information, and discussion of how considered</i>		
Market Transformation Impacts	<i>Qualitative considerations, and discussion of how considered</i>		
Other Non-Monetized Impacts	<i>Quantitative information, qualitative considerations, and how considered</i>		
Determination:	Do Efficiency Resource Benefits Exceed Costs? [Yes / No]		

FIGURE 5: COST EFFECTIVENESS REPORTING TEMPLATE.

The development of a SVT is guided by six principles (Figure 6) and seven framework steps (**Error! Reference source not found.**). The differences among the SVT and three of the traditional CSPM

Efficiency as a Resource	EE is one of many resources that can be deployed to meet customers' needs, and therefore should be compared with other energy resources (both supply-side and demand-side) in a consistent and comprehensive manner.
Policy Goals	A jurisdiction's primary cost-effectiveness test should account for its energy and other applicable policy goals and objectives. These goals and objectives may be articulated in legislation, commission orders, regulations, advisory board decisions, guidelines, etc., and are often dynamic and evolving.
Hard-to-Quantify Impacts	Cost-effectiveness practices should account for all relevant, substantive impacts (as identified based on policy goals,) even those that are difficult to quantify and monetize. Using best-available information, proxies, alternative thresholds, or qualitative considerations to approximate hard-to-monetize impacts is preferable to assuming those costs and benefits do not exist or have no value.
Symmetry	Cost-effectiveness practices should be symmetrical, where both costs and benefits are included for each relevant type of impact.
Forward-Looking Analysis	Analysis of the impacts of resource investments should be forward-looking, capturing the difference between costs and benefits that would occur over the life of the subject resources as compared to the costs and benefits that would occur absent the resource investments.
Transparency	Cost-effectiveness practices should be completely transparent, and should fully document all relevant inputs, assumptions, methodologies, and results.

FIGURE 6: SIX PRINCIPLES FOR DEVELOPING A RVT.

- STEP 1** Identify and articulate the jurisdiction's applicable policy goals.
- STEP 2** Include all the utility system costs and benefits.
- STEP 3** Decide which non-utility impacts to include in the test, based on applicable policy goals.
- STEP 4** Ensure that the test is symmetrical in considering both costs and benefits.
- STEP 5** Ensure the analysis is forward looking and incremental.
- STEP 6** Develop methodologies to account for all relevant impacts, including hard to quantify impacts.
- STEP 7** Ensure transparency in presenting the inputs and results of the cost-effectiveness test.

FIGURE 7: SEVEN STEPS TO DEVELOP A RVT.

tests are shown in Figure 8. The primary difference is in perspective – the RVT is specifically designed to take legislative goals and commission goals and policy into account in the development of the test.

Test	Perspective	Key Question Answered	Categories of Costs and Benefits Included
Utility Cost Test	The utility system	Will utility system costs be reduced?	Includes the costs and benefits experienced by the utility system
Total Resource Cost Test	The utility system plus participating customers	Will utility system costs plus program participants' costs be reduced?	Includes the costs and benefits experienced by the utility system, plus costs and benefits to program participants
Societal Cost	Society as a whole	Will total costs to society be reduced?	Includes the costs and benefits experienced by society as a whole
Resource Value Test	Regulator/decision makers	Will utility system costs be reduced, while achieving applicable policy goals?	Includes the utility system costs and benefits, plus those costs and benefits associated with achieving relevant applicable policy goals

FIGURE 8: THE RVT AND THREE CPSM TESTS.

VI. Recommendations for the Commission’s Consideration

My recommendations for an optimal test for application to PGW’s LIURP program are as follows:

- (1) The cost effectiveness test should be customizable to reflect the individual characteristics of PGW's service territory. Philadelphia is unique in many ways. For example, the economy has been improving recently but Philadelphia continues to be the poorest of the nation's 10 largest cities.¹⁹ So, it may be that the test as applied for PGW should be designed to take that reality into account, perhaps through a cap (to be determined annually) on the average cost per home as a control tool. About one-third of households in the city have incomes at or below 150% of poverty and there are a substantial number of households over 150% but below 250% of the federal poverty level in Philadelphia - which is an approximate but reasonable level for income insufficiency. This means that there are many households above the 150% of poverty level that are still income insufficient. This creates an inherent balancing problem and the needs of LIURP non-participants must be carefully balanced with the need to serve LIURP participants. One way to address this balance in budgeting is for PGW's LIURP to prioritize households below 150% with the greatest need, like high usage (particularly by CRP participants since other ratepayers subsidize their actual usage), while maintaining overall LIURP expenditure to a reasonable level that does not overburden the working poor whose incomes are 150% - 250%.
- (2) Second, measure lives used in calculation should be physical measure lives and not be capped at a measure life of twelve years. Some of the measures available for LIURP have lives substantially beyond twelve years. Allowing the benefits for those additional years into the calculations will permit more cost effective major measures to be installed in homes.
- (3) Third, evaluation at the home should be on the measure package optimized for that home, not on the individual measure. It is usually the case that a better job can be done overall by optimizing the measure package. This allows measures that are more cost effective to carry measures that are less cost effective within the package for a home.
- (4) Fourth, there should be case-by-case flexibility to maximize participation and avoid disqualification due to housing stock conditions. According to PGW, in a recent program year 56% of eligible homes, when screened, could not receive comprehensive weatherization measures due to health, safety and structural issues. This is a physical problem that could be addressed in LIURP. PGW proposed a health and safety pilot in its most recent Universal Service and

¹⁹ Pew Charitable Trust, *Philadelphia 2017: The State of the City*, April 06, 2017. (<http://www.pewtrusts.org/en/research-and-analysis/reports/2017/04/philadelphia-2017>)

Energy Conservation Plan submission (2017-2020) which contains an allowance for addressing health and safety conditions outside the cost effectiveness test. I support this pilot proposal, and recommend that as part of this Universal Service proceeding the Commission review establishing a realistic health and safety set aside so that these costs can be assigned to a recoverable cost category outside the operation of the cost effectiveness test.

- (5) Fifth, the regulations should allow flexibility and not prescribe a static test. Energy efficient technologies change and the process of learning by experience with a cost effectiveness test will continue. In any case after the appropriate test is designed and practical experience using it is gained (both at the measure level of designing optimal measure packages for individual homes by service delivery agents and contractors and by PGW at the program level) it is likely that new insights will develop. It is important to consider development of a process or pathway for periodic review of the cost effectiveness test with a procedure for proposal and adoption of incremental improvements to the test.
- (6) Sixth, the test should align with the policy goals of LIURP including the purpose statement of 52 Pa. Code § 58.1 (and any policy goals added to this regulation). Specifically, LIURP is to be "...fair, effective and efficient..." This means that the cost effectiveness test adopted should likewise be fair, effective and efficient.
- (7) Seventh, difficult to quantify impacts such as non-energy benefits should be included by quantifying as best as possible or by using proxies. To account for benefits that cannot be monetized, the threshold for investment should be below 1.00. For example, the District of Columbia uses a criterion of 0.80 for low income weatherization programs and California uses 0.25 at the measure level and permits going below 0.25 for furnaces in areas of California in which they are essential. These stipulations operationalize the public purpose motivation for low income weatherization programs. As expressed by the Washington commission (Figure 3), "The provision of energy-efficiency services to low-income customers is in the public interest, even when such measures do not meet the commission's primary cost effectiveness test." Setting the test criterion for low income weatherization at 0.80 or 0.25 makes it happen.
- (8) Eighth, LIURP investments should be subject to a negative discount rate at or near zero. As discussed earlier, the simple payback guidance in 51 Pa. §58.11 is equivalent to using discount rate of zero. The discount rate is an expression of the relative importance of short-term vs. long-term program impacts, and the choice of the discount rate is a policy decision. The higher the discount rate, the more the cost effectiveness test is oriented toward immediate return. The lower the discount rate (which can be negative) the more the future is valued. The

choice of discount rate has a major impact on the quantitative cost effectiveness result when a test is applied to a home, a building or a program.

To illustrate this point, consider the standard present value formula:

$$PV = V_t \div (1 + r)^t$$

Where PV is the present value of the future value V in year t using a discount rate of r. Using the example of a \$3,200 cost and annual benefits of \$200 for 20 years generates a stream of present values that vary significantly by the discount rate, r, used in the analysis. This is illustrated in Figure 9.

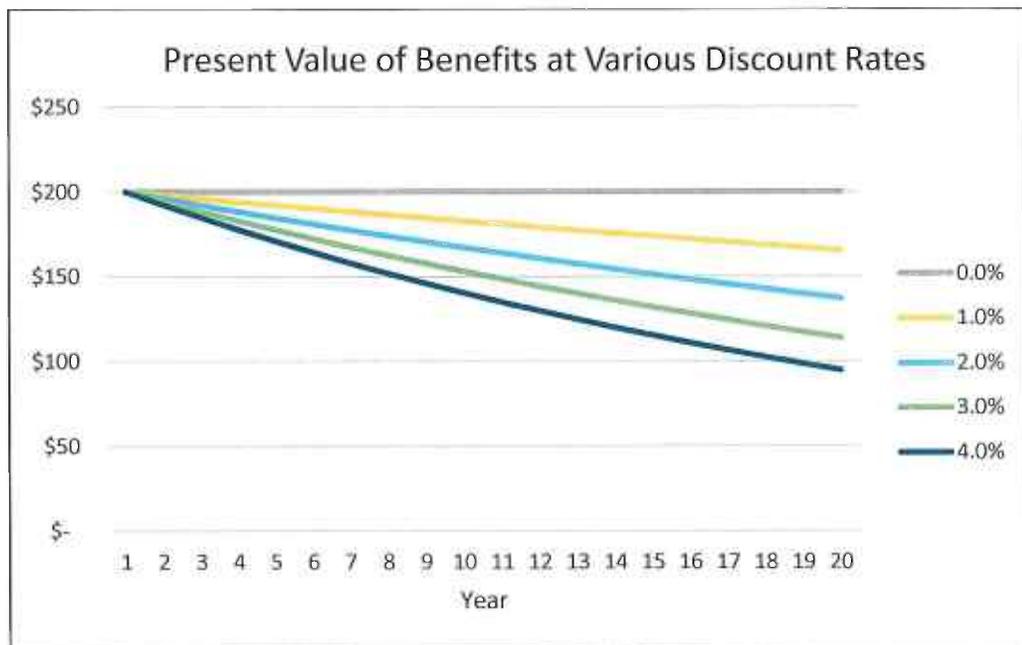


FIGURE 9: EFFECT OF DISCOUNT RATE.

Present value of annual benefits is shown for 5 different discount rates in the figure.²⁰ We assume real (no inflation) discount rates in this example and therefore do not inflate annual benefits. The total present value at different discount rates is represented by the sum of the area under each curve. In the case of no discounting (series labeled 0.0%), the annual benefit of \$200 is worth \$200 for the full 20 years for a total present value of \$4,000. This value parallels a building physics perspective. A drop in total value from future years is evident

²⁰ The standard convention of DSM cost effectiveness analysis is to consider the first-year benefits and costs without discounting so that discounting begins with year two (t=1 at year 2). This is equivalent to assuming that annual benefits and costs happen at the beginning of each year rather than at the end.

from the lower line associated with a discount rate of one percent. As the discount rate moves higher the present value curves fall lower.

The table below shows the total present value from each of the series charted in Figure 9. Net present value (NPV) is the total present value less the initial cost of \$3,200 and the benefit cost ratio is the ratio of total present value to initial cost. Lost value shows the percentage of the non-discounted \$4,000 of value that has been lost from discounting.

TABLE 1: LOSS OF VALUE AS THE FUTURE IS INCREASINGLY DISCOUNTED.

Discount Rate	0.0%	1.0%	2.0%	3.0%	4.0%
Total Present Value	\$ 4,000	\$ 3,645	\$ 3,336	\$ 3,065	\$ 2,827
Net Present Value	\$ 800	\$ 445	\$ 136	\$ (135)	\$ (373)
B/C Ratio	1.3	1.1	1.04	0.96	0.9
Lost Value	0%	9%	17%	23%	29%

This example project passes the B/C and NPV test when the discount rate is two percent but fails at three percent. At a discount rate of three percent 23% of the original value has been lost to discounting. The breakeven discount rate is 2.48% which is the rate at which the total present value of benefits is just equal to the initial cost of \$3,200. This is equivalent to the internal rate of return (IRR) in cash flow analysis.

One factor that is clear is that provision of services in LIURP is not the same kind of question as investing to maximize interest or profit. What makes low-income programs special is that low income households do not have the money to make energy efficiency improvements in their homes or to do the repairs that are often required to install energy efficiency improvements so they can function properly.

Another clear factor of the low-income situation in Philadelphia is that, although there will be some exceptions (for example, if a part of the city is redeveloped, or if other issues in the home cause prevent continued habitation), making a low-income home energy efficient today will likely serve low income residents both now and in the future. That is why it is improper to devalue the future as might be done with an investment for profit. Here there is no question of profit, and there is quite possibly no point in time at which the need for energy efficiency in the home will have less value than any other time.

A further point is noted in the NSPM (P. 78): "The utility system costs of acquiring efficiency resources are typically recovered promptly through reconciling charges, and therefore involve no debt or equity costs." The same is true of the costs of a low-income program. If there is a cost recovery lag, the recovery mechanism can be adjusted to work with or slightly ahead of costs.

These factors considered together, and, consideration of the long-term in assessing the time value of money, coupled with the income-insufficient nature of the low-income household now and in the future reasonably suggest a discount rate of zero.

- (9) Ninth, for all proposals in which remediation of a situation for a customer is complicated by adding health and safety improvements in rental properties it remains to be worked out how to proceed with necessary work where the landlord legally owns the property and improvements would become the property of the landlord (also households where the landlord should or is legally responsible for making the improvements but, for whatever reasons, does not). There will have to be a provision for landlord owned properties for which landlords, for whatever reason, fail to weatherize or make health and safety improvements. There is no easy answer for this problem. In some cities, when city housing agencies take such actions, the landlord is billed and when the bill is not paid eventually the building and land becomes city property. This area will require input of legal expertise. I do not have a clear answer for this problem, but I think it should be identified as an area to be explored and developed in this proceeding.
- (10) Tenth, PGW should have lost revenue recover for LIURP so that this service (and all Universal Service Programs) are cost neutral to the utility. Lost revenue recovery would allow PGW to recover the fixed costs approved by the Commission in its most recent base rate proceeding, so that its provision of LIURP does not inhibit its maintenance and operation of Philadelphia's natural gas distribution system.