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March 9, 2010

VIA FEDERAL EXPRESS
James McNulty, Secretary
PA Public Utility Commission
400 North Street, 2nd Fl.
P.O. Box 3265
Harrisburg, PA 17105-3265

Re: Pennsylvania Public Utility Commission v. Philadelphia Gas Works,
Docket Nos. R-2009-2139884; P-2009-2097639

Joint Petition For Interlocutory Review Of A Material Question And Approval Of A Partial Settlement

Dear Secretary McNulty:

On behalf of Philadelphia Gas Works ("PGW") and the Clean Air Council ("Council"), enclosed for filing is a Joint Petition For Interlocutory Review Of A Material Question And Approval Of Settlement ("Petition") for expedited implementation of two residential customer demand side management ("DSM") programs – the Low-Income Retrofit Program and the Comprehensive Residential Heating Retrofit Program – included in PGW's Five-Year DSM Plan in the above referenced proceeding.

The material question requests the Commission to grant the Joint Motion For Partial Summary Judgment ("Motion") for approval of a Stipulation and Partial Settlement ("Settlement") between PGW and the Council for early implementation of these two residential programs. The Motion with the supporting affidavits of Steven P. Hershey, Cristina Coltro, John J. Plunkett and Joseph O. Minott and referenced materials as well as the Settlement are also enclosed.

Please note that the Petition requests the Commission to consider this matter as soon as possible.

Accordingly, PGW and the Council request that the Commission direct that answers to the Motion be filed and served at the same time briefs in response to the Petition must be filed pursuant to 52 Pa. Code § 5.302(b).

PGW and the Council are asking for this expedited schedule because the sooner the Commission considers and approves the Settlement, the sooner PGW can start the process of delivering conservation services to low-income and other residential customers.

Copies of the Petition, Motion with supporting materials, and Settlement have been served upon the parties in accordance with the attached Certificate of Service. Please contact me if I can provide further assistance.

Very truly yours,

Kevin J. Moody

KJM/jls
Enclosure

cc: Chairman, James H. Cawley (w/enc)
Vice Chairman, Tyrone J. Christy (w/enc)
Hon. Robert F. Powelson (w/enc)
Hon. Wayne E. Gardner (w/enc)
Bohdan R. Pankiw (w/enc)
Cheryl Walker Davis, Esq. (w/enc)
Hon. Charles E. Rainey, Jr. (w/enc)
Certificate of Service (w/enc)

CERTIFICATE OF SERVICE

I hereby certify that I have this day served true and correct copies of the following documents upon the participants listed below in accordance with the requirements of § 1.54 (relating to service by a participant): 1) PGW's Joint Petition for Interlocutory Review of a Material Question and Approval of Partial Settlement; 2) Joint Motion for Partial Summary Judgment to Approval Settlement for Expedited Implementation of Residential DSM Programs; and 3) Stipulation and Partial Settlement for Expedited Implementation of PGW's DSM Programs for Residential Customers.

VIA E-MAIL &/OR FIRST CLASS MAIL

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Kevin J. Moody, Esq.

Dated: March 9, 2010

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. P-2009-2097639**
PHILADELPHIA GAS WORKS	:	
	:	
	:	
PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. R-2009-2139884**
PHILADELPHIA GAS WORKS	:	
	:	

JOINT PETITION FOR INTERLOCUTORY REVIEW OF A MATERIAL QUESTION AND APPROVAL OF PARTIAL SETTLEMENT

In accordance with 52 Pa. Code §§ 5.231 and 5.302(a), Philadelphia Gas Works ("PGW" or "Company") and Clean Air Council ("CAC") submit this Joint Petition For Interlocutory Review ("Petition") by the full Commission of a material question and partial settlement requesting early implementation of PGW's proposed Enhanced Low-Income Retrofit ("LI Retrofit") Program and the Comprehensive Residential Heating Retrofit Program (collectively, "the Residential DSM Programs"). These two programs, which are built upon PGW's successful and cost-effective Conservation Works Program ("CWP") will provide free energy audits and cost-effective efficiency measures (such as: air sealing; roof, water heater and pipe insulation; low-flow showerheads; faucet aerators; and up to ten compact fluorescent bulbs per customer) to both low-income and non-low income customers either for free or at deep discounts. Expedited implementation of these programs prior to final resolution of PGW's base rate case is reasonable and in the public interest and will not prejudice any party's right to address any other DSM program issue or the details of program implementation. As the benefits to all firm service customers will be maximized by having these programs in place before the beginning of the next winter heating season, PGW and CAC request that the Commission consider the material question, grant the attached Motion for Partial Summary Judgment ("Motion") and approve the Stipulation and Partial

Settlement ("Settlement") so PGW can begin "ramping-up" these programs to deliver efficiency services to residential customers as soon as possible.

Background

The background of this matter is set forth in Paragraphs 1-15 of the attached Settlement. The material question to be answered is:

> Should the Commission approve the Settlement to permit PGW to implement the Residential DSM Programs proposed in PGW's Five-Year Gas Demand-Side Management ("DSM") Plan pending further review in the rate case and in the detailed implementation process to enable low-income and other residential customers to begin receiving the benefits of reduced and more efficient energy usage as soon as possible before the next winter heating season, and to maximize the reduction of the CRP subsidy paid by non-low income firm service customers?

Reasons For Interlocutory Review

There are compelling reasons why interlocutory review will prevent substantial prejudice or expedite the conduct of the proceeding. PGW expanded its efforts to reduce customers' natural gas usage by filing its comprehensive DSM Plan in April 2009. The DSM Plan generated discussions among the interested parties which resulted in several modifications reflected in the Residential DSM Programs but also delayed Commission consideration of the Plan. Because PGW's proposal remained pending at the time that it filed its base rate case (which the PUC required be filed by the end of December 2009), PGW requested that the DSM petition be consolidated with the base rate proceeding. While consolidation served to save resources and assure an ultimate decision on PGW's DSM Plan as part of the overall rate decision, it also meant that PGW would not be able to begin to implement any of its Plan – even the portions which are clearly beneficial and in the public interest – until the end of 2010, or even later. Such a delay would be unreasonable and not in the public interest.[1]

The issue presented by this Petition, the Motion and the Settlement is whether the Residential DSM Programs may be implemented before the Commission renders its decision on PGW's general rate increase request and DSM Plan. Commission approval of early implementation should be

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[1] While PGW could move forward with the rest of the DSM programs if the Commission so desires, PGW limited early implementation to the Residential DSM Programs to limit the issues and controversy over early implementation.

noncontroversial for several reasons: (1) these programs simply expand to more low-income customers and to non-low income residential customers PGW's CWP which has been acknowledged in Commission audits and reports as well as by independent analysis as successful and efficient; (2) the low-income and high usage residential customers targeted by the Residential DSM Programs are most in need of assistance in implementing energy efficiency measures; (3) the sooner low-income customers are able to begin reducing their natural gas usage, the greater is the benefit to all other firm service customers through reduction of the subsidy provided by these firm customers to low-income customers;[2] and (4) the parties' rights are expressly reserved to address all other issues, such as: (i) changes to program measures; (ii) detailed implementation plans; and (iii) cost allocation and recovery issues. In addition, changes to these programs can be made as a result of discussions during the implementation phase through the Detailed Work Plans required by the Settlement.

WHEREFORE, Joint Petitioners respectfully request that that the Commission: (1) grant this Petition and consider the material question as soon as possible; (2) answer the question in the affirmative and approve the attached Joint Petition For Partial Settlement; and (3) grant any other relief determined to be in the public interest.

Respectfully submitted,

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For: *Clean Air Council*

Abby Pozefsky, Esquire
Senior Vice President and General Counsel
Gregory J. Stunder, Esquire
Philadelphia Gas Works
800 West Montgomery Ave., 4th Floor
Philadelphia, PA 19122

Dated: March 9, 2010

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2 With the exception of the compact fluorescent bulb measures, the economic benefits of the LI Retrofit Program accrue directly not to the low-income customers (because their payments are not based on gas usage) but to all other firm customers through the Customer Responsibility Program ("CRP") and Universal Service and Energy Conservation Charge ("USC") payment mechanism.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. P-2009-2097639**
PHILADELPHIA GAS WORKS	:	
PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. R-2009-2139884**
PHILADELPHIA GAS WORKS	:	

NOTICE TO PLEAD

YOU ARE HEREBY NOTIFIED TO PLEAD TO THE ATTACHED MOTION FOR PARTIAL SUMMARY JUDGMENT WITHIN TWENTY (20) DAYS OF SERVICE HEREOF OR WITHIN SUCH SHORTER PERIOD OF TIME AS DIRECTED BY THE COMMISSION, OR A DEFAULT JUDGMENT MAY BE ENTERED AGAINST YOU.

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Kevin J. Moody, Esquire
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Of Counsel:
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800 West Montgomery Ave.
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Dated: March 9, 2010

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. P-2009-2097639**
PHILADELPHIA GAS WORKS	:	
PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. R-2009-2139884**
PHILADELPHIA GAS WORKS	:	

JOINT MOTION FOR PARTIAL SUMMARY JUDGMENT TO APPROVE SETTLEMENT FOR EXPEDITED IMPLEMENTATION OF RESIDENTIAL DSM PROGRAMS

In accordance with 52 Pa. Code §§ 5.102, 5.231 and 69.401, Philadelphia Gas Works ("PGW" or "Company") and Clean Air Council ("CAC") submit this Joint Motion for Partial Summary Judgment ("Motion") requesting that the Pennsylvania Public Utility Commission ("PUC") approve the attached Stipulation and Partial Settlement ("Settlement")[1] as reasonable and in the public interest. The Settlement provides for expedited implementation of two demand side management (DSM) programs proposed in PGW's Five-Year DSM Plan – the Enhanced Low-Income Retrofit Program and the Comprehensive Residential Heating Retrofit Program (collectively, "the Residential DSM Programs"), which are built upon the beneficial and cost-effective efficiency measures in PGW's currently ongoing Conservation Works Program ("CWP"). These two programs start with no-cost energy audits and identify cost-effective measures available, such as: comprehensive weatherization efforts (door sweeps, weather

[1] The Settlement is attached to this Motion as Exhibit 1.

stripping, caulking, duct sealing); added insulation; heating system improvement and replacement; water heating system improvements (water heater wrapping, low-flow showerheads, faucet aerators); and replacement of incandescent light-bulbs with up to ten (10) more efficient compact fluorescent lamps (CFLs) per customer. These measures are subsequently installed by certified contractors at no cost to low-income customers and at deeply discounted cost to non-low income customers. Approving the Settlement will permit thousands of PGW residential customers to receive conservation services sooner, and enjoy lower bills and more efficient energy use potentially before next winter heating season, rather than having to wait for months to receive these benefits. In support of this motion, PGW and CAC state the following:

Background

1. PGW filed its general rate increase request on December 18, 2009. The filing included the Company's Five-Year DSM Plan.[2]

2. Complaints and protests were filed by various individuals, agencies and entities.[3]

3. The pleadings have closed and hearings are scheduled for the week of May 10, 2010.[4]

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[2] Exhibit 2 (Affidavit of Steven P. Hershey), ¶ 2. The PGW testimony and discovery response referenced in the Settlement are attached to Mr. Hershey's affidavit as Tab A [PGW St. No. 7 (Coltro) at 8-9]; Tab B [PGW St. No. 10 (Plunkett) at 8-12, 14, 24-27; PGW Exh. JJP-4; PGW Exh. JJP-6, pp. 1-3, 11-18, 21, 31-39, 49, 51]; and Tab C [PGW response to OTS-RE-152, with attached "Impact Evaluation of Philadelphia Gas Works' Conservation Works Program Calendar Year 2006 and Comprehensive Treatment Pilot," M. Blasnik & Associates, Final Report – November 19, 2008 ("Blasnik Final Report")]. The affidavits of PGW witnesses Cristina Coltro and John J. Plunkett to support the portions of their testimony and the exhibits attached to Mr. Hershey's affidavit are attached to this Motion as Exhibits 3 and 4, respectively. The affidavit of Joseph O. Minott, Executive Director of Clean Air Council, in support of the Settlement is attached to this Motion as Exhibit 5

[3] Exhibit 2, ¶ 3.

[4] *Id.*, ¶ 4.

4. As a condition of PGW's $60 million emergency/extraordinary rate relief approved by the Commission in December 2008 in Docket No. R-2008-2073938, PGW committed to filing its comprehensive DSM Plan to decrease energy use by its customers to help reduce the Company's future need for rate relief and to mitigate the effect of rate increases on its customers.[5]

5. As stated above and explained in the attached Exhibits, the Residential DSM Programs are built upon PGW's existing CWP,[6] which has been acknowledged to be a successful and efficient cost reduction program.[7] Both Residential DSM Programs would expand existing CWP cost-effective efficiency measures, with the Enhanced Low-Income Retrofit Program ("LI Retrofit") targeting "high use" low-income customer participants in the Company's Customer Responsibility Program ("CRP") and the Comprehensive Residential Heating Retrofit Program ("CRHRP") targeting non-low income "high use" residential customers.[8]

6. These two programs start with no-cost energy audits and identify cost-effective measures available, such as: comprehensive weatherization efforts (door sweeps, weather stripping, caulking, duct sealing); added insulation; heating system improvement and replacement; water heating system improvements (water heater wrapping, low-flow showerheads, faucet aerators); and replacement of incandescent light-bulbs with up to ten (10) more efficient compact fluorescent lamps (CFLs) per customer. These measures are subsequently installed by certified contractors at no cost to low-income customers and at deeply

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5 Exhibit 1, ¶ 1; Exhibit 2, ¶ 7.

6 Exhibit 2: ¶ 9; Tab B, PGW St. 10, p. 11, and PGW Exh. JJP-6, pp. 2, 11, 13, 17, 38.

7 Exhibit 2: Tab A, PGW St. 7, p. 9; Tab C, Blasnik Final Report.

8 Exhibit 1, ¶ 6.c), ¶ 8.b); Exhibit 2: Tab B, PGW St. 10, pp. 12, 14, and PGW Exh. JJP-6, pp. 31, 38.

discounted cost to non-low income customers.[9] As education is particularly important for low-income programs, the energy auditors will have a "kitchen table" discussion with the customer concerning energy saving tips, proper care and maintenance, health and safety information, and the benefits from the various measures.[10]

7. In an effort to deliver the benefits of at least a portion of PGW's proposed DSM Plan as quickly as possible, PGW initiated discussions with all the parties for the early implementation of the Residential DSM programs.[11] CAC had previously intervened in the DSM proceeding and agrees with PGW that there was no reason to delay the distribution of conservation benefits to residential customers until the resolution of PGW's base rate case, in view of the advantageous environmental, energy efficiency, and green-collar jobs impacts that are projected to accrue from implementation of the Residential DSM programs.[12]

8. Accordingly, the attached Settlement provides for expedited implementation of the two residential programs prior to final resolution of PGW's base rate filing to enable low-income and other residential customers to begin receiving the benefits of reduced and more efficient energy usage as soon as possible, and, potentially, before the beginning of the next winter heating season.[13] Both of these residential programs are modeled on PGW's cost-effective CWP program, and there can be no reasonable dispute that these programs will similarly be cost-effective and beneficial to ratepayers.[14] Early implementation will also maximize the reduction of the CRP subsidy to low-income customers paid (under PGW's current

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9 Exhibit 2, Tab B, PGW Exh. JJP-6, pp. 32, 38, 39.

10 *Id.*, p. 39.

11 Exhibit 1, ¶ 14; Exhibit 2, ¶ 5.

12 Exhibit 1, ¶ 15; Exhibit 2, ¶ 6; Exhibit 5 (Affidavit of Joseph O. Minott), ¶s 5, 6(a), (d).

13 Exhibit 1, ¶ 33.

14 Exhibit 2, ¶ 12

Universal Service and Energy Conservation Charge, or "USC") by non-low income firm service customers by reducing natural gas usage by the low-income customers that receive conservation treatment under the Plan.[15]

The Settlement Is Reasonable And In The Public Interest

9. There can be no reasonable dispute that cost-effective programs likely to reduce natural gas usage by PGW's customers are in the public interest and consistent with the law and Commission policy. As noted, the Residential DSM Programs are based upon proven successful cost-effective measures in PGW's existing CWP. PGW's standard CWP program has been found to have an actual benefit/cost ratio ("B/C Ratio") of 1.90; PGW's "pilot" CWP program, which closely reflects the programs proposed to be implemented, has been found to have an actual B/C Ratio of 1.87.[16] Since the Residential DSM programs closely follow the existing CRP programs, the Commission can be reasonably assured that these programs are also cost-effective and will reduce natural gas and electricity usage by PGW's residential customers and save all PGW customers money through lower overall natural gas rates.[17] The Commission can also be assured that PGW has the resources and experience to both implement the programs (through the use of contractors who will be selected via competitive bids) and to verify and measure savings, since it has been doing so since 1990.[18]

10. CAC, a key party that promotes energy conservation and more efficient use of cleaner burning fuels such as natural gas, agrees that expedited implementation of the Residential DSM Programs, as provided in the Settlement, is reasonable and in the public interest. As

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15 Exhibit 1, ¶ 6.c); Exhibit 2, ¶s 12, 23.

16 Exhibit 2, ¶ 9.

17 *Id.*, ¶ 12.

18 *Id.*, ¶ 14; Tab A, PGW St. 7, p. 8-9.

explained in the attached affidavit of Joseph O. Minott, CAC's Executive Director, the public interest is advanced and not harmed by permitting PGW to implement the Residential DSM Programs[19] subject to the ability of parties to collaborate on changes to the programs prior to expedited implementation through the Detailed Work Plans and subject to further investigation of the specific DSM Plan programs and cost recovery/allocation issues, as provided in the Settlement.[20]

11. The Commission should enable utility customers to benefit from DSM programs as soon as possible when it reasonably appears – as here – that the programs are cost-effective and will save customers money.

12. The estimated B/C Ratio (or TRC) of the LI Retrofit Program, 1.69, is squarely within the range of TRCs for the low-income customer programs in the electric distribution company ("EDC") Act 129 and Energy Efficiency Conservation ("EE&C") Plans approved by the Commission,[21] while the estimated B/C Ratio of the CRHRP, 1.74, is squarely within the range of TRCs for similar non-low income residential customer programs in the EDC Act 129 EE&C Plans approved by the Commission.[22]

13. Approving the Settlement will resolve only one limited legal and policy issue – whether expedited and expanded implementation of successful cost-effective efficiency

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19 Exhibit 5, ¶ 5.

20 Exhibit 1, ¶s 19-23. Notably, among the issues reserved is the issue associated with whether PGW's Universal Service and Energy Conservation Charge – which presently recovers the cost of PGW's CWP program from all non-low income firm ratepayers, including commercial and industrial firm customers – should be paid by all firm customers or residential customers only. Again, PGW is <u>not</u> proposing that this issue be decided by this motion for partial summary judgment. Also, PGW is reserving the issue of "lost revenue" recovery for resolution in the rate case.

21 Exhibit 2, ¶ 16.

22 *Id.*, ¶ 17.

measures for residential customers most in need of energy efficiency assistance is reasonable consistent with PUC policy and authorized by the Public Utility Code.[23]

14. Approving the Settlement will not prejudice any party's right to address cost allocation and recovery issues with respect to the DSM Plan or the Residential DSM Programs.[24] Parties will also continue to have the right to review and comment upon PGW's specific implementation plan, which PGW commits to filing thirty days after the PUC order approving early implementation.[25]

15. Approving the Settlement advances the Commission's policy of encouraging settlement of issues to the extent possible. 52 Pa. Code §§ 5.231 and 69.401.

16. Accordingly, the Commission should approve the Settlement as reasonable and in the public interest for the reasons set forth in this Motion, the attached affidavits of Mr. Hershey, Ms. Coltro, Mr. Plunkett and Mr. Minott, and the attached Settlement.

Partial Summary Judgment is Appropriate and Should Be Granted

17. Partial summary judgment may be granted "if the pleadings, depositions, answers to interrogatories and admissions, together with affidavits, if any, show that there is no genuine issue as to a material fact and that the moving party is entitled to a judgment as a matter of law on one or more but not all outstanding issues." 52 Pa. Code § 5.102(d)(2) (relating to standard for grant or denial in part).

18. There is no genuine issue as to any fact material to the limited legal and policy issue presented by the Settlement and this Motion. The material facts are set forth in the attached affidavits and Settlement, and may be summarized as:

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[23] Exhibit 1, ¶ 23.

[24] *Id.*, ¶s 21-23.

[25] *Id.*, ¶s 19-20.

(a) Implementation of energy efficiency and conservation measures is consistent with Commission, City of Philadelphia, Pennsylvania and national energy, economic and environmental policies of improving energy efficiency in end uses of energy resources reducing greenhouse gas emissions and creating "green jobs."[26]

(b) The Residential DSM Programs are built upon beneficial and cost-effective measures in PGW's existing CWP which has been authorized and approved by the PUC, and there can be no reasonable dispute that the Residential DSM Programs will be cost-effective and reduce residential customers' natural gas and electricity use (through the CFL distribution measure).[27]

(c) Implementation of the Residential DSM Programs prior to next winter's heating season will maximize the reduction of the CRP subsidy to low-income customers paid by non-low income firm service customers (under PGW's current USC) by reducing natural gas usage by low-income customers.[28]

19. PGW and CAC are entitled to the relief requested as a matter of law. Section 1319 of the Public Utility Code requires public utilities to implement energy conservation and efficiency programs that the Commission determines to be prudent and cost-effective. PGW's existing CWP is such a program. Accordingly, expedited implementation of an expansion of CWP's cost-effective measures, subject to investigation of specific program elements and plans (through implementation plans) and appropriate cost recovery issues, is consistent with Section 1319, when the Commission has reasonable and reliable indices that the programs are prudent, cost-effective and will save customers money.

20. The Commission has the authority to grant the relief requested. The Commission recently permitted expedited implementation of a portion of an energy efficiency and conservation program of an electric distribution company ("EDC") (distribution of CFLs) pending final resolution of the EDC's Act 129 Energy Efficiency and Conservation ("EE&C") Plan. *Petition of PECO Energy Company for Approval of its Act 129 Energy Efficiency and*

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[26] Exhibit 2: ¶s 19-20, ; Tab B, PGW St. 10, pp. 8, 10, 26-27..

[27] Exhibit 2: ¶s 9, 12; Tab A, PGW St. 7, p. 9; Tab B, PGW St. 10, p. 11, and PGW Exh. JJP-6, pp. 2, 11, 13, 17, 38.

[28] Exhibit 2: ¶ 12.

Conservation Plan and Expedited Approval of its Compact Fluorescent Lamp Program ("PECO CFL Program"), M-2009-2093215, Order entered August 18, 2009.

21. The Commission's rationale for approving expedited implementation of PECO's CFL distribution program supports approval of the attached Settlement permitting expedited implementation of PGW's Residential DSM Programs.

(a) The Commission approved expedited implementation of PECO's CFL distribution program because:

- PECO's CFL program was projected to produce the largest share of the energy consumption reductions under PECO's EE&C Plan and projected to result in a positive benefit/cost ratio (or "TRC"), with issues concerning these estimated energy consumption reduction and benefit/cost ratio estimates reserved for litigation.

- Additional energy savings would be realized as a result of early implementation of the CFL program and the synergy to be realized from leveraging CFL program expenditures with a federal CFL distribution program.

- Issues concerning the cost recovery mechanism and the actual cost recovery from ratepayers, along with any prospective recommendations concerning the CFL program, were also reserved for litigation.

- Approval of expedited implementation of PECO's CFL program "does not preclude the parties and the Commission from addressing any prospective recommendations through the remainder of this proceeding."

PECO CFL Program, Order entered August 18, 2009 at 9.

(b) PGW's Residential DSM Programs should be approved for the same reasons:

- Nearly two-thirds ($74.7 million) of PGW's DSM Plan total savings ($113.1) are projected to result from the Residential DSM Programs.[29]

- The LI Retrofit Program has a positive projected benefit/cost ratio of 1.69, while the CRHRP has a positive projected benefit/cost ratio of 1.74.[30]

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[29] Exhibit 2: ¶ 10; Tab B, PGW St. 10, p. 25 and PGW Exh. JJP-6, Table 1.

[30] Exhibit 2, Tab B, PGW Exh. JJP-6, Table 1.

- Expedited implementation of the LI Retrofit Program will permit to PGW to leverage expedited implementation of the CRHRP.[31]

- Changes to these programs may be made prior to expedited implementation through the Detailed Work Plan process provided in the Settlement.[32]

- Issues concerning cost allocation and recovery are reserved for litigation.[33]

22. Whether to approve the attached Settlement providing for expedited implementation of PGW's Residential DSM Programs ultimately presents a policy question committed to the Commission's sound discretion. The Settlement merely permits PGW to begin expansion of existing CWP cost-effective efficiency measures in time to begin providing benefits in 2010 rather than 2011, and without prejudice to any party's right to address other DSM Plan issues. The Commission should exercise its discretion to permit PGW's customers to begin enjoying the benefits of reduced and more efficient energy use as soon as possible when, as here, the Commission is reasonably assured that these programs are prudent and cost-effective.

23. As the Settlement provides for further investigation of issues concerning implementation of the Residential DSM Programs as well as the DSM Plan at the hearings scheduled in this matter, granting this Motion will not delay the hearings.

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31 Exhibit 1, ¶ 33; Exhibit 2, ¶ 13.

32 Exhibit 1, ¶s 19-20.

33 *Id.*, ¶s 20-23.

Relief Requested

WHEREFORE, Philadelphia Gas Works and the Clean Air Council respectfully request that the Commission grant partial summary judgment and approve expedited implementation of PGW's Enhanced Low-Income Retrofit Program and Comprehensive Residential Heating Retrofit Program in accordance with the terms and conditions of the Stipulation and Partial Settlement between Philadelphia Gas Works and the Clean Air Council.

Respectfully submitted,

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Of Counsel:
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Gregory J. Stunder, Esquire
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Dated: March 9, 2010

EXHIBIT 1

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
	:	**Docket No. P-2009-2097639**
v.	:	
PHILADELPHIA GAS WORKS	:	
PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
	:	**Docket No. R-2009-2139884**
v.	:	
PHILADELPHIA GAS WORKS	:	

STIPULATION AND PARTIAL SETTLEMENT
FOR EXPEDITED IMPLEMENTATION OF PHILADELPHIA GAS WORKS'
DSM PROGRAMS FOR RESIDENTIAL CUSTOMERS

Philadelphia Gas Works ("PGW" or "Company") and Clean Air Council ("CAC") (collectively, "Settling Parties") hereby agree to expedited implementation of the Enhanced Low-Income Retrofit ("LI Retrofit") Program and the Comprehensive Residential Heating Retrofit Program (collectively, "the Residential DSM Programs") proposed in PGW's Five-Year Gas Demand-Side Management ("DSM") Plan. The DSM Plan was filed as part of PGW's pending general rate request on December 18, 2009. Expedited implementation of the Residential DSM Programs pending final resolution of PGW's base rate case will enable low-income and other residential customers to begin receiving the benefits of reduced and more efficient energy usage. The Settling Parties state the following in support of this Stipulation and Partial Settlement:

I. BACKGROUND

1. As a condition of PGW's $60 million emergency/extraordinary rate relief approved by the Commission in December 2008 in Docket No. R-2008-2073938, PGW committed to submit a comprehensive DSM Plan to help reduce the Company's future need for rate relief and to mitigate the effect of that rate relief on its customers.

2. In April 2009, PGW filed a Petition for Approval of a Five-Year Gas Demand-Side Management Plan (Docket No. P-2009-2097639), which included a Narrative Description of the Revised DSM plan and a Workbook (in Excel spreadsheet form) with backup data and support. After that filing, PGW participated in several collaborative meetings and phone calls with interested parties in which the details of the Plan were discussed and additional information provided. PGW also responded to informal discovery and considered suggested modifications to the Plan. The Settlement reflects several modifications proposed by the parties.

3. On December 18, 2009, PGW again filed its DSM Plan, this time as part of its general rate increase filing at Docket No. R-2009-2139884. The filing included an updated Narrative Description and Workbook as well as the prepared direct testimony of John Plunkett, PGW's DSM consultant, and Paul Chernick, PGW's consultant on the revenue effects of the proposed DSM Plan. PGW also filed a Motion to Consolidate the Revised DSM Plan proceeding with PGW's base rate proceeding as a procedural "housekeeping" measure (since the Plan has been included as part of PGW's proposed tariff supplement). The Commission approved consolidation by Order entered February 11, 2010.

4. PGW St. No. 10 (Plunkett), filed as part of its general rate filing supporting data, describes PGW's DSM Plan, explains why, in Mr. Plunkett's view, the proposed Plan should be approved by the PUC, how PGW believes it follows best industry design and implementation

practices, details and describes the proposed program costs and benefits, and discusses the proposed inspection and verification procedures. The Narrative Description of PGW's DSM Plan is attached to Mr. Plunkett's direct testimony as Exhibit JJP-6. As noted, the Plan filed with the rate case represents a revision and update to the April 2009 Revised DSM Plan to address concerns raised and incorporates some of the suggestions made during the collaborative process conducted by PGW after filing the Revised DSM Plan. Generally, the spending levels and timelines for the DSM programs were updated, the estimated benefits recalculated, and the program measures were outlined with greater specificity.

5. PGW St. No. 11 (Chernick) describes the cost-effectiveness of the DSM programs, including the avoided gas and electricity costs, and also the proposed vehicle for recovering the costs of the programs (other than the costs of the LI Retrofit Program which are proposed to be recovered through the existing Universal Service Charge) via an Efficiency-Cost-Recovery Mechanism. As described in Section VII of PGW Exhibit JJP-6, the cost-effectiveness analysis and rate and bill analysis for the DSM programs are contained in a functioning, self-documenting MS Excel workbook posted on PGW's website (and provided on CD to the statutory parties).

6. The evidence submitted by PGW in support of its LI Retrofit Program can be summarized as follows:[1]

a) PGW's LI Retrofit Program is described in Section VI.B. of PGW Exhibit JJP-6, pp. 37-39. The LI Retrofit Program is the cornerstone of PGW's DSM Plan and is built upon PGW's existing Conservation Works Program ("CWP"), which is PGW's version of the PUC mandated Low Income Usage Reduction Program ("LIURP"). PGW's existing CWP was

[1] The descriptions in this paragraph are the assertions of PGW and do not necessarily represent the positions of any other party.

implemented in 1990 and is currently available to customers enrolled in the Customer Responsibility Plan ("CRP") who are "high users." The existing CWP is described in the testimony of PGW witness Cristina Coltro.[2] As described by Ms. Coltro, on average the CWP treats 2,800 houses at a cost of approximately $780 each. The primary measures provided by the existing CWP include:

- Diagnostic audits
- Energy education
- Energy-related home repair
- Programmable Thermostats with automatic clocks
- Blower door guided shell tightening
- Water heater wrap and pipe insulation
- Furnace filters or radiator reflectors
- Hot water conservation devices
- Roof insulation [3]

PGW has also implemented a pilot program which implemented more comprehensive steps for a smaller number of customers (approximately 100).[4] The existing CWP (both the standard and pilot versions) has been evaluated on several occasions and has been determined to be cost-effective, and resulting in material reductions in customer natural gas usage.[5]

b) As explained in PGW's testimony, the primary goal of PGW's LI Retrofit Program is to continue and expand the existing CWP to serve more customers and provide additional cost-effective measures, including:

- Repairing or replacing older and less energy efficient heating systems

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2 PGW St. 7 at 8-9.

3 *Id.* at 9.

4 *Id.*

5 *E.g.*, M. Blasnik & Associates, Impact Evaluation of PGW's Conservation Works Program Calendar Year 2006 and Comprehensive Treatment Pilot (2008).

- Providing comprehensive weatherization services
- Educating customers on ways to reduce their energy along with basic health and safety information
- Raising awareness of energy conservation and encouraging the incorporation of energy saving behavior
- Targeting high-use customers to maximize impact and increase cost-effectiveness
- Streamlining the delivery mechanism through implementation contractors

c) The LI Retrofit Program is projected to provide weatherization services to approximately 3834 customers annually (in total) at a cost of $3.47 per annual Therm saved.[6] The projected total cost in the first full year of the program is $6.7 million.[7] A secondary but significant goal of the LI Retrofit Program is to reduce overall long-term cost of the CRP as paid by all other firm customers. The LI Retrofit Program specifically targets high use customers to maximize savings at a lower marginal cost, which increases the program cost-effectiveness and produces a greater impact on reducing the cost of CRP on remaining ratepayers.

d) The program starts with a no-cost energy audit that identifies all cost-effective measures which are subsequently installed, with the permission of the customer, by certified contractors at no cost to the customer.[8] The LI Retrofit Program measures include comprehensive weatherization efforts such as air sealing (door sweeps, weather stripping, caulking, duct sealing), added insulation, heating system improvement and replacement, water heating system improvements (water heater wrapping, low-flow showerheads, faucet aerators), and replacement of incandescent light-bulbs with up to ten more efficient compact florescent

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6 PGW St. 10 at 20.

7 PGW Exh. JJP-4. The $50,000 spending for calendar year 2010 proposed in the DSM Plan is based upon implementation of the program after PGW's 2010-11 fiscal year beginning September 1, 2010 and after the end of the general rate increase suspension period. As stated in the terms and conditions of Settlement, Commission approval of the Settlement will permit PGW to accelerate spending proposed for calendar year 2011 to calendar year 2010.

8 PGW Exh. JJP-6 at 39.

lamps (CFLs) per customer.[9] As education is particularly important for low-income programs, the energy auditors will have a "kitchen table" discussion with the customer concerning energy saving tips, proper care and maintenance, health and safety information, and the benefits from the various measures.[10]

7. PGW intends to coordinate implementation of the program with other agencies.[11] For example, PGW intends to attempt to leverage Weatherization Assistance Program ("WAP") funding through coordination with the Philadelphia-based DCED contractors, the Philadelphia Housing Development Coordination ("PHDC") and the Energy Coordinating Agency ("ECA"), in order to increase the number of customers served or measures provided.

8. The evidence submitted by PGW in support of its Comprehensive Residential Heating Retrofit Program ("CRHRP") can be summarized as follows:[12]

a) The measures to be offered through the CRHRP are identical to those to be offered through LI Retrofit Program except that the CRHRP will be directed to non-low income residential customers. In addition, customers in the CRHRP will be asked to pay a subsidized fee for specific measures; however, the initial comprehensive energy audits will be free to these customers.[13]

b) The CRHRP targets the 40% of residential non-low income customers with the highest annual consumption of natural gas. The program then works with participating customers to implement cost-effective opportunities identified by a free energy audit. The

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9 *Id.* at 32, 38, 39.

10 *Id.* at 39.

11 PGW Exh. JJP-6 at 2, 12, 14.

12 The descriptions in this paragraph are the assertions of PGW and do not necessarily represent the positions of any other party.

13 PGW St. 10 at 12.

customer is provided with information on affordable financing and assistance in installing the measures. Upon installation, the customer receives an incentive to bring the simple payback of the project down to two years.[14] The projected cost of the CRHRP in the first full year is $2.1 million.[15]

c) For both the LI Retrofit Program and the CRHRP, PGW will issue an RFP and will contract with vendors to provide the actual energy audits and to install the various program measures (just as it does today for CWP). PGW will oversee the general program and monitor vendor performance and overall program results. PGW will be responsible for supervising post-installation inspection and verification of savings.[16]

9. For both the LI Retrofit Program and the CRHRP, PGW intends to take advantage of incremental opportunities to save gas as well as other energy resources, including electricity. Specifically, PGW is proposing that, with the permission of the homeowner, the PGW energy efficiency auditor will replace incandescent light-bulbs with more efficient CFLs at no cost to the customer.[17] The projected electric energy savings that will result from this measure are detailed in PGW's DSM Plan supporting material.[18]

10. PGW estimates total electricity and gas savings from the LI-Retrofit Program of 6,032 BBtu (net) over the 5 year term of the Program.[19] Under the total resource cost (TRC) test, PGW estimates the total and net present value benefits of the LI-Retrofit Program at over $37

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14 *Id.*

15 PGW Exh. JJP-4. As with the LI Retrofit Program, the $100,000 spending for calendar year 2010 proposed in the DSM Plan for the CRHRP is based upon implementation of the program after PGW's 2010-11 fiscal year beginning September 1, 2010 and after the end of the general rate increase suspension period. As stated in the terms and conditions of Settlement, Commission approval of the Settlement will permit PGW to accelerate spending proposed for calendar year 2011 to calendar year 2010.

16 PGW Exh. JJP-6 at 35.

17 *Id.*

18 *Id.*, Table 21.

19 *Id.*, Table 23.

million and $15 million, respectively, with a total resource Benefit/Cost Ratio ("B/C Ratio") or TRC of 1.69.[20]

11. PGW estimates total electricity and gas savings from the CRHRP Program of 5540 BBtu (net) over the 5 year term of the program.[21] Under the TRC test, PGW estimates the total and net present value benefits of the CRHRP Program at over $37.6 million and $16 million, respectively, with a total resource Benefit/Cost Ratio ("B/C Ratio") or TRC of 1.74.[22]

12. PGW's proposed Residential DSM Programs also advances the City, national and Pennsylvania energy, economic and environmental policies of improving energy efficiency in end uses of energy resources, reducing greenhouse gas emissions and creating "green jobs."[23]

13. PGW proposes to recover the cost of the LI Retrofit Program through the existing, approved automatic adjustment clause mechanism for the CWP – the Universal Service and Energy Conservation Charge ("USC").[24] The total projected, five-year cost of the LI-Retrofit Program is $27 million.[25] For costs associated with the CRHRP, PGW is proposing a companion automatic adjustment mechanism: the Efficiency-Cost Recovery Mechanism ("ECRM"). The total projected, five-year cost of the CRHRP is $13.2 million.[26] The ECRM would also recover the costs (including lost revenues specifically associated with the installed natural gas program measures) of the other programs in PGW's DSM Plan from the class of customer receiving the benefit.[27]

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20 *Id.*, Table 1.

21 *Id.*, Table 23.

22 *Id.*

23 PGW St. No. 10 at 8, 10, 26-27.

24 PGW St. 11 at 16. The USC is paid by all firm non-low income customers.

25 PGW Exh. JJP-6 at 38.

26 *Id.* at 31.

27 *Id.*

14. Following PGW's base rate filing, PGW initiated discussions with parties concerning early implementation of some portions of the DSM Plan. Specifically, PGW focused upon the Residential DSM Programs.

a) PGW proposed early implementation of the Residential DSM Programs because, in PGW's opinion: 1) low-income residential customers are most in need of assistance in implementing energy efficiency measures; 2) providing such measures to low-income customers provides significant benefits to both the low-income customers[28] as well as non-low income customers who provide bill subsidies to low-income customers through PGW's CRP and USC payment mechanism;[29] 3) as noted above, PGW's CWP has been independently verified as successful and efficient, and there is no reason that an expansion of that program should not also be successful; 4) the Residential DSM Programs have been shown by Mssrs. Plunkett and Chernick to enhance and expand the benefits now being achieved through the existing CWP (with a calculated B/C Ratio of 1.69 for the LI Retrofit Program and a 1.74 B/C Ratio for the CRHRP); 5) by advancing PUC approval of the Residential DSM Programs, PGW could advance the delivery of benefits by approximately six months, thereby delivering benefits to low-income and other residential customers prior to the next winter heating season; 6) early approval would also permit PGW to deliver both natural gas and electricity savings opportunities (through its proposed CFL distribution measure) prior to the time that electric rate caps will be removed for the electric company that provides service in PGW's territory (PECO) and customers' other energy costs will be in flux; and 7) PGW has an existing, approved tariff mechanism in place (the USC) by which the costs of its existing CWP are recovered and this

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[28] Increasing levels of comfort and safety; lower energy bills if customer drops out of CRP or if the CRP structure is changed in the future; lower electric bills via CFL distribution.

[29] Reduced incremental natural gas costs, reduced USC charges.

mechanism can be used to recover the costs of the LI Retrofit Program; and 8) PGW is willing to defer recovery of costs of the CRHRP until such time as the PUC rules on the reasonableness of the proposed cost recovery mechanism.

15. As a result of discussions among the parties, the Settling Parties agreed: a) to expedited implementation of the Residential DSM Programs as set forth in the following terms and conditions of settlement; and b) to request Commission approval of the Settlement on an expedited basis.

II. TERMS AND CONDITIONS OF SETTLEMENT

16. For the reasons stated above, the Settling Parties agree that expedited implementation of the Residential DSM Programs as provided herein is reasonable and in the public interest.

17. The Settling Parties agree that, following approval by the PUC of expedited implementation of these programs, PGW will focus on expanding its existing CWP by implementation of its LI Retrofit Program. As approval of this Settlement will enable PGW to advance the delivery of benefits to customers by about six months, PGW will take the steps necessary to accelerate spending proposed for calendar year 2011 for the LI Retrofit to 2010 through the use of contractors selected through a Request for Proposals (RFP) process,[30] and will issue a new RFP for expansion of the program. PGW will then ramp-up and implement the CRHRP as proposed, except that PGW will take the steps necessary to accelerate spending proposed for the CRHRP for 2011 to 2010 in the same manner as for the LI Retrofit Program.

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[30] In order to expedite early implementation upon Commission approval, PGW already issued an RFP for a limited expansion of its CWP services. The contractors selected as a result of that RFP will be able to increase production pending issuance of a second, more expansive RFP.

18. PGW will continue to discuss with the Pennsylvania Department of Environmental Protection (DEP) potential American Recovery and Reinvestment Act of 2009 ("ARRA") funding for its DSM programs, including the LI Retrofit and CRHRP, and will make applications to DEP for such funding if there is a reasonable opportunity to secure such funds for any portion of the DSM Plan.

19. Within 30 days of approval by the PUC, PGW shall file a Detailed Work Plan specifically describing how PGW will implement each of the LI Retrofit Program and the CRHRP, which Plans will include, among other things:

(a) Proposed implementation timelines;
(b) Proposed measures;
(c) Proposed RFP timeline for selection of contractors;
(d) Proposed PGW management and supervision protocols;
(e) Proposed coordination with other government and private entities and programs;
(f) Projected program costs;
(g) Proposed 2010 budget amendments necessary to achieve the proposed early implementation of the LI Retrofit and CRHRP.

20. PGW agrees to meet and discuss the Detailed Work Plans with interested parties prior to filing and PUC approval of the Detailed Work Plans. PGW also agrees that interested parties will have the right to submit comments on the detailed plans to the PUC prior to PGW's implementation.

21. The Settling Parties agree that PGW may initially recover the costs associated with the LI Retrofit Program through PGW's existing USC, subject to the reservation of rights set forth in Paragraphs 22 and 23 below. PGW agrees that it shall defer recovery of any costs (including any lost revenue claims) associated with implementing the CRHRP until such time as the PUC rules upon its proposed ECRM. If the PUC declines to approve the ECRM in whole or in part, PGW shall be permitted to make a claim for such deferred costs in its next base rate proceeding. The parties specifically retain the right to challenge any Residential DSM Program

costs proposed to be recovered from ratepayers either through USC, the ECRM (if approved) or in a subsequent rate proceeding.

22. The Settling Parties agree that the issue of customer class cost responsibility for USC charges may continue to be raised in the proceeding.

23. This Settlement resolves one limited issue in this proceeding and is made without any admission against, or prejudice to, any position, which any party might adopt during subsequent litigation of this case, or any other case, with respect to any issue other than expedited implementation of the LI Retrofit Program and the CRHRP pending Commission consideration of PGW's full DSM Plan and base rate filing.

24. This Settlement is conditioned upon the Commission's approval of the terms and conditions contained herein without modification. If the Commission should disapprove the Settlement or modify the terms and conditions herein, this Settlement may be withdrawn upon written notice by any Settling Party to the Commission and all active parties within five (5) business days following entry of the Commission's Order and, in such event, shall be of no force and effect. In the event that the Commission disapproves the Settlement or the Company or any other Settling Party elects to withdraw as provided above, the Settling Parties reserve their respective rights to fully litigate this case, including, but not limited to, presentation of witnesses, cross-examination and legal argument through submission of Briefs, Exceptions and Replies to Exceptions with respect to implementation of the Residential DSM Programs.

25. The Settling Parties agree that the record support for this Settlement is contained in PGW Sts. No. 7 and 10 and PGW Exhibits JJP-4 and JJP-6 Further support for the Settlement can be found in audits and reports regarding the existing CWP, as filed with the Commission and reviewed by the parties.

III. THE SETTLEMENT IS IN THE PUBLIC INTEREST

26. The Settlement is in the public interest because it will provide early customer energy savings while providing for the reduction of the overall cost of natural gas as well as the CRP subsidy paid by other firm customers. The Settlement will permit PGW to begin – before the next winter heating season – expanded implementation of residential customer programs that have a clear track record of being beneficial and cost-effective. More specifically:

- Low-income customers generally as well as high usage low-income and non-low income customers are most in need of assistance in implementing energy efficiency measures
- PGW's Residential DSM Programs are built upon PGW's existing CWP which is acknowledged as successful and efficient, and expanding that program has the greatest chance of also being very successful.
- Providing such proven measures to low-income customers provides significant benefits to both the low-income customers as well as non-low income customers who provide bill subsidies to those low-income customers through PGW's CRP and USC payment mechanism.
- PGW's Residential DSM Programs have calculated B/C Ratios of 1.69 (LI Retrofit Program) and 1.74 (CRHRP).
- Advancing PUC approval of the Residential DSM Programs could advance the delivery of benefits by approximately six months as well as the delivery of benefits to low-income and other residential customers prior to the next winter heating season.
- Early implementation will also permit PGW to deliver the electricity savings opportunities (through its proposed CFL distribution measure) prior to the time that electric rate caps will be removed in its service territory.
- PGW's existing, approved USC provides a tariff cost recovery mechanism by which the costs of expanding the LIURP program may be recovered from remaining firm service ratepayers – subject to investigation and resolution in PGW's base rate proceeding – with recovery of the costs of the CRHRP being deferred until such time as the PUC rules on the reasonableness of the proposed ECRM.

27. Expedited implementation of PGW's LI Retrofit Program is particularly in the public interest because, compared to other Pennsylvania gas utilities, PGW has a higher

proportion of residential customers, a higher proportion of whom have low incomes. PGW's experience in serving these low-income customers and particularly with its successful low-income energy conservation program puts PGW in an especially strong position to implement the LI Retrofit Program quickly. In addition, expedited implementation of the LI Retrofit Program measures will facilitate ramping up and implementing the related CRHRP.

28. The estimated B/C Ratio (or TRC) of the LI Retrofit Program (1.69) is squarely within the range of TRCs for the low income customer programs in the electric distribution company ("EDC") Act 129 and Energy Efficiency Conservation ("EE&C") Plans approved by the Commission.

- *Petition of PECO Energy Company for Approval of its Act 129 Energy Efficiency and Conservation Plan and Expedited Approval of its Compact Fluorescent Lamp Program*, M-2009-2093215, Revised EE&C Plan, 12/23/09, Volume I, p. 45: Residential Low-Income Energy Efficiency Program – TRC 1.72.
- *Petition of PPL Electric Utilities Corporation for Approval of its Energy Efficiency and Conservation Plan*, Docket No. M-2009-2093216, Revised EE&C Plan, 12/15/09, p. 105: Low-income Winter Relief Assistance Program (WRAP) – TRC 0.79; p. 111: Low-income E-Power Wise – TRC 1.42.
- *Joint Petition of Metropolitan Edison Company, Pennsylvania Electric Company and Pennsylvania Power Company for Consolidation of Proceedings and Approval of Energy Efficiency and Conservation Plans*, Docket Nos. M-2009-2092222, M-2009-2112952 and M-2009-2112956, Final EE&C Plans, 2/5/2010; Low Income Sector Program (WARM Plus); MetEd – TRC 2.10 (p. 118 of 143); Penelec – TRC 2.35 (p. 121 of 146); Penn Power – TRC 2.15 (p. 115 of 140).
- *Petition of Duquesne Light Company for Approval of its Energy Efficiency and Conservation and Demand Response Plan, Approval of its Recovery of its Costs through a Reconcilable Adjustment Clause and Approval of Matters Relating to the Energy Efficiency and Conservation Plan*, Docket No. M-2009-2093217, Revised EEC&DR Plan, 12/23/09, p. 47 of 197: Low Income Energy Efficiency Program (LIEEP) – TRC 2.3.
- *Petition of West Penn Power Company d/b/a Allegheny Power for Approval of its Energy Efficiency and Conservation Plan, Approval of Recovery of its Costs through a Reconcilable Adjustment Clause and Approval of Matters Relating to the Energy Efficiency and Conservation Plan*, Docket No. M-2009-2093218, Amended EE&C Plan, 12/21/09, p. 93: Residential Low Income Home Performance Check Up Audit & Appliance Replacement Program– TRC 2.8; p. 99: Residential Joint Utility Management

Program - Low Income Weatherization (LIURP, Home Check Up & Appliance Replacement) – TRC 1.2; p: 105: Residential Low Income Room Air Conditioner Replacement Program – TRC 0.6.

29. The estimated B/C Ratio (or TRC) of the CRHRP (1.74) is squarely within the range of TRCs for similar non-low income residential customer programs in the EDC Act 129 EE&C Plans approved by the Commission.

- *Petition of PECO Energy Company for Approval of its Act 129 Energy Efficiency and Conservation Plan and Expedited Approval of its Compact Fluorescent Lamp Program*, M-2009-2093215, Revised EE&C Plan, 12/23/09, Volume I, p. 59: Whole Home Performance (WHP) Program – TRC 1.42; p. 72: Home Energy Incentives (HEI) Program – TRC 1.60.
- *Petition of PPL Electric Utilities Corporation for Approval of its Energy Efficiency and Conservation Plan*, Docket No. M-2009-2093216, Revised EE&C Plan, 12/15/09, p. 49: Efficiency Equipment Incentive Program – TRC 2.61; p. 59: Energy Assessment & Weatherization Program – TRC 1.23; p. 98: Energy Efficiency Behavior & Education Program – TRC 3.66.
- *Petition of Duquesne Light Company for Approval of its Energy Efficiency and Conservation and Demand Response Plan, Approval of its Recovery of its Costs through a Reconcilable Adjustment Clause and Approval of Matters Relating to the Energy Efficiency and Conservation Plan*, Docket No. M-2009-2093217, Revised EEC&DR Plan, 12/23/09, p. 31 (Fig. 12) of 197: Residential Energy Efficiency Rebate Program (REEP) – TRC 3.0.

30. The Settlement is consistent with the early implementation of PECO's Act 129 CFL program approved by the Commission by Order entered August 18, 2009 in Docket No. M-2009-2093215.

31. The Settlement also advances the City, Pennsylvania and national energy, economic and environmental policies of improving energy efficiency in end uses of energy resources reducing greenhouse gas emissions and creating "green jobs."[31] The Commission's significant support of these policies is shown by the Commission's recent issuance of guidelines for Pennsylvania's smaller EDCs to implement EE&C programs similar to those required for the

[31] PGW St. No. 10 at 8, 10, 26-27.

larger EDCs by Act 129. *Voluntary Energy Efficiency and Conservation Programs*, Docket No. M-2009-2142851, Secretarial Letter dated December 23, 2009.

32. Finally, the Settlement is consistent with Commission policy, rules and practices promoting negotiated settlements. 52 Pa. Code §§ 5.231 and 69.401.

IV. EXPEDITIOUS CONSIDERATION

33. In order to provide the earliest possible low-income customer energy savings and steps to reduce the CRP subsidy paid by other firm customers, and to leverage implementation of PGW's Comprehensive Residential Heating Retrofit Program, the Settling Parties agree to request expeditious consideration and approval of the Settlement by the Commission and to request specifically that the Commission consider the Settlement at the Commission's public meeting scheduled for March 25 or April 15, 2010.

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Dated: March 2, 2010

EXHIBIT 2

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. P-2009-2097639**
PHILADELPHIA GAS WORKS	:	
PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. R-2009-2139884**
PHILADELPHIA GAS WORKS	:	

AFFIDAVIT OF STEVEN P. HERSHEY

Commonwealth of Pennsylvania	:	
	:	ss.
County of Philadelphia	:	

I, Steven P. Hershey, an adult individual, being duly sworn according to law, deposes and says that:

1. I am employed by Philadelphia Gas Works ("PGW" or "Company") as Vice President - Regulatory and External Affairs.

2. I have overall responsibility for PGW's base rate filing in this matter, which was made on December 18, 2009. The filing included the Company's Five-Year Demand-Side Management and Conservation ("DSM") Plan. My direct testimony in this matter provides an overview and summary of PGW's requested base rate increase and an explanation of PGW's proposal to help customers save money and conserve energy by implementing a DSM Plan.

3. Complaints and protests were filed by various individuals, agencies and entities.

4. The pleadings have closed. Hearings are scheduled for the week of May 10, 2010.

5. Following PGW's base rate filing, PGW initiated discussions with parties concerning early implementation of some portions of the DSM Plan. Specifically, PGW focused

upon the Low-Income Retrofit ("LI Retrofit") Program and the Comprehensive Residential Heating Retrofit Program ("CRHRP") (collectively, "the Residential DSM Programs).

6. As a result of these discussions, PGW and the Clean Air Council ("CAC") have entered into a Stipulation and Partial Settlement (Settlement") providing for expedited implementation of the Residential DSM Programs.

7. The facts set forth in the Settlement, which are incorporated herein by reference, are true and correct to the best of my knowledge, information and belief, and PGW expects to be able to prove the same at a hearing held in this matter.

8. The following portions of PGW's direct testimony and related exhibits and discovery response, which are attached hereto, are referenced in the Settlement to support expedited implementation of the Residential DSM Programs prior to final resolution of PGW's base rate case:

(a) PGW St. 7 (Coltro) at 8-9;

(b) PGW St. 10 (Plunkett) at 8-12, 14, 24-27; PGW Exh. JJP-4; PGW Exh. JJP-6, pp. 1-3, 11-18, 21, 31-39, 49, 51;

(c) PGW response to OTS-RE-152, with attached "Impact Evaluation of Philadelphia Gas Works' Conservation Works Program Calendar Year 2006 and Comprehensive Treatment Pilot," M. Blasnik & Associates, Final Report – November 19, 2008 ("Blasnik Final Report").

9. The Residential DSM Programs are based upon proven successful cost-effective measures in PGW's existing CWP. PGW's standard CWP program has been found to have benefit/cost ratio of 1.90; PGW's "pilot" CWP program, which closely reflects the programs proposed to be implemented, has been found to have an actual benefit/cost ratio of 1.87.[1]

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[1] Blasnik Final Report (Nov. 19, 2008), Table 1, Table 12.

10. Under the TRC test, PGW estimates the total and net present value benefits of the DSM Plan at over $113 million and over $55 million, respectively, with a total B/C Ratio or TRC of 1.96.[2]

11. The Commission should approve expedited and early implementation of the Residential DSM Programs because approval is reasonable and in the public interest.

12. Approval of the Settlement is reasonable and in the public interest because approval will provide early customer energy savings while providing for the reduction of the overall cost of natural gas as well as the CRP subsidy paid by other firm customers. The Settlement will permit PGW to begin – before the next winter heating season – expanded implementation of residential customer programs that have a clear track record of being beneficial and cost-effective. More specifically:

- Low-income customers generally as well as high usage low-income and non-low income customers are most in need of assistance in implementing energy efficiency measures
- PGW's Residential DSM Programs are built upon PGW's existing CWP which is acknowledged as cost effective and efficient.
- There is no reasonable basis for concluding that the proposed Residential DSM Programs will not be similarly cost-effective.
- Providing such proven measures to low-income customers provides significant benefits to both the low-income customers as well as non-low income customers who provide bill subsidies to those low-income customers through PGW's CRP and USC payment mechanism.
- PGW's Residential DSM Programs have calculated B/C Ratios of 1.69 (LI Retrofit Program) and 1.74 (CRHRP).
- Advancing PUC approval of the Residential DSM Programs could advance the delivery of benefits by approximately six months as well as the delivery of benefits to low-income and other residential customers prior to the next winter heating season.

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[2] PGW Exh. JJP-6, Table 1.

- Early implementation will also permit PGW to deliver the electricity savings opportunities (through its proposed CFL distribution measure) prior to the time that electric generation rate caps will be removed in its service territory.
- PGW's existing, approved USC provides a tariff cost recovery mechanism by which the costs of expanding the LIURP (CWP) may be recovered from remaining firm service ratepayers – subject to investigation and resolution in PGW's base rate proceeding – with recovery of the costs of the CRHRP being deferred until such time as the PUC rules on the reasonableness of the proposed ECRM.

13. Early implementation of PGW's LI Retrofit Program is particularly in the public interest because, compared to other Pennsylvania gas utilities, PGW has a higher proportion of residential customers, a higher proportion of whom have low incomes.

14. PGW's experience in serving these low-income customers and particularly with its successful low-income energy conservation program puts PGW in an especially strong position to implement the LI Retrofit Program quickly.

15. In addition, early implementation of the LI Retrofit Program measures will facilitate ramping up and implementing the related CRHRP.

16. The estimated B/C Ratio (or TRC) of the LI Retrofit Program (1.69) is squarely within the range of TRCs for the low-income customer programs in the electric distribution company ("EDC") Act 129 and Energy Efficiency Conservation ("EE&C") Plans approved by the Commission.

- *Petition of PECO Energy Company for Approval of its Act 129 Energy Efficiency and Conservation Plan and Expedited Approval of its Compact Fluorescent Lamp Program*, M-2009-2093215, Revised EE&C Plan, 12/23/09, Volume I, p. 45: Residential Low-Income Energy Efficiency Program – TRC 1.72.
- *Petition of PPL Electric Utilities Corporation for Approval of its Energy Efficiency and Conservation Plan*, Docket No. M-2009-2093216, Revised EE&C Plan, 12/15/09, p. 105: Low-income Winter Relief Assistance Program (WRAP) – TRC 0.79; p. 111: Low-income E-Power Wise – TRC 1.42.
- *Joint Petition of Metropolitan Edison Company, Pennsylvania Electric Company and Pennsylvania Power Company for Consolidation of Proceedings and Approval of*

Energy Efficiency and Conservation Plans, Docket Nos. M-2009-2092222, M-2009-2112952 and M-2009-2112956, Final EE&C Plans, 2/5/2010; Low Income Sector Program (WARM Plus); MetEd – TRC 2.10 (p. 118 of 143); Penelec – TRC 2.35 (p. 121 of 146); Penn Power – TRC 2.15 (p. 115 of 140).

- *Petition of Duquesne Light Company for Approval of its Energy Efficiency and Conservation and Demand Response Plan, Approval of its Recovery of its Costs through a Reconcilable Adjustment Clause and Approval of Matters Relating to the Energy Efficiency and Conservation Plan*, Docket No. M-2009-2093217, Revised EEC&DR Plan, 12/23/09, p. 47 of 197: Low Income Energy Efficiency Program (LIEEP) – TRC 2.3.
- *Petition of West Penn Power Company d/b/a Allegheny Power for Approval of its Energy Efficiency and Conservation Plan, Approval of Recovery of its Costs through a Reconcilable Adjustment Clause and Approval of Matters Relating to the Energy Efficiency and Conservation Plan*, Docket No. M-2009-2093218, Amended EE&C Plan, 12/21/09, p. 93: Residential Low Income Home Performance Check Up Audit & Appliance Replacement Program– TRC 2.8; p. 99: Residential Joint Utility Management Program - Low Income Weatherization (LIURP, Home Check Up & Appliance Replacement) – TRC 1.2; p: 105: Residential Low Income Room Air Conditioner Replacement Program – TRC 0.6.

17. The estimated B/C Ratio (or TRC) of the CRHRP (1.74) is squarely within the range of TRCs for similar non-low income residential customer programs in the EDC Act 129 EE&C Plans approved by the Commission.

- *Petition of PECO Energy Company for Approval of its Act 129 Energy Efficiency and Conservation Plan and Expedited Approval of its Compact Fluorescent Lamp Program*, M-2009-2093215, Revised EE&C Plan, 12/23/09, Volume I, p. 59: Whole Home Performance (WHP) Program – TRC 1.42; p. 72: Home Energy Incentives (HEI) Program – TRC 1.60.
- *Petition of PPL Electric Utilities Corporation for Approval of its Energy Efficiency and Conservation Plan*, Docket No. M-2009-2093216, Revised EE&C Plan, 12/15/09, p. 49: Efficiency Equipment Incentive Program – TRC 2.61; p. 59: Energy Assessment & Weatherization Program – TRC 1.23; p. 98: Energy Efficiency Behavior & Education Program – TRC 3.66.
- *Petition of Duquesne Light Company for Approval of its Energy Efficiency and Conservation and Demand Response Plan, Approval of its Recovery of its Costs through a Reconcilable Adjustment Clause and Approval of Matters Relating to the Energy Efficiency and Conservation Plan*, Docket No. M-2009-2093217, Revised EEC&DR Plan, 12/23/09, p. 31 (Fig. 12) of 197: Residential Energy Efficiency Rebate Program (REEP) – TRC 3.0.

18. The Settlement is consistent with the early implementation of PECO's Act 129 CFL program approved by the Commission by Order entered August 18, 2009 in Docket No. M-2009-2093215.

19. PGW's proposed Residential DSM Programs advance the City, national and Pennsylvania energy, economic and environmental policies of improving energy efficiency in end uses of energy resources, reducing greenhouse gas emissions and creating "green jobs."[3]

20. The Commission's significant support of these policies is shown by the Commission's recent issuance of guidelines for Pennsylvania's smaller EDCs to implement EE&C programs similar to those required for the larger EDCs by Act 129. *Voluntary Energy*

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[3] PGW St. No. 10 at 8, 10, 26-27.

Efficiency and Conservation Programs, Docket No. M-2009-2142851, Secretarial Letter dated December 23, 2009.

17. The Settlement is consistent with Commission policy, rules and practices promoting negotiated settlements. 52 Pa. Code §§ 5.231 and 69.401.

18. PGW has committed to continue to seek ARRA funding for these programs as a means of reducing customer costs and further improving the cost-effectiveness of a program that already has a very good payback period and can already demonstrate its cost-effectiveness, as described above.

19. PGW and CAC have requested consideration and approval of the Settlement to provide the earliest possible low-income customer energy savings and steps to reduce the CRP subsidy paid by other firm customers, and to leverage implementation of the CRHRP.

Steven P. Hershey

Sworn and subscribed before me this 5th day of March, 2010.

Signature of official administering oath

My commission expires _____.

NOTARIAL SEAL
SHARON R ORTIZ
Notary Public
PHILADELPHIA CITY, PHILADELPHIA CNTY
My Commission Expires Jul 12, 2013

TAB A

PGW St. 7

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

TESTIMONY OF

CRISTINA COLTRO

ON BEHALF OF
PHILADELPHIA GAS WORKS

DOCKET NO. R-2009-2139884

December 2009

PGW's Outreach program includes:

- Mailing of post cards to all potentially eligible customers;
- Distribution of flyers (English and Spanish) to many organizations throughout the City;
- Outbound and Inbound phone campaigns;
- LIHEAP Cash intake at PGW's Customer Service Centers;
- Field Visits;
- Information on PGW's Website;
- Radio and newspaper ads;
- Participation in Community Events; and
- Public Announcements & Press Releases.

Q. DO YOU HAVE ANY CONCERNS ABOUT THE EFFECTIVENESS OF OUTREACH THIS YEAR?

A. Yes. For reasons that we do not yet fully understand, receipts from the LIHEAP program are substantially below last year's level at this time. DPW has made substantial changes to this year's program, but we do not yet know whether that is the reason for the decline in grants and we do not yet know how the change is affecting customers. We do know that as of December 9, 2009 we are approximately $8.8 million and 21,500 grants below last year and that many families who were shut off for non-payment have failed to restore. Our LIHEAP outreach is as aggressive as it has ever been.

C. Conservation Works Program ("CWP")

Q. PLEASE DESCRIBE PGW'S CWP PROGRAM.

A. The Conservation Works Program ("CWP"), implemented in 1990, was designed to provide cost-effective weatherization measures to customers who are participants in the CRP, and whose usage exceeds the average usage of CRP customers living in similar households. The CWP focuses on PGW's low-income customers, addressing the main factors that influence their energy usage (such as

mechanical and structural systems), and behavioral issues. The goals of the CWP program consist of reducing the gas usage of low-income households in a cost-effective manner, lowering gas bills and improving the payment practices of participating customers.

On average, 2,800 houses are treated each year for approximately $780 each. The primary measures that may be provided by the CWP include:

- Diagnostic audits;
- Energy education;
- Energy-related home repair;
- Programmable Thermostats with automatic clocks;
- Blower door guided shell tightening;
- Water heater wrap and pipe insulation;
- Furnace filters or radiator reflectors;
- Hot water conservation devices - e.g., aerators and showerheads; and
- Roof insulation.

The program has been evaluated and has been determined to be cost-effective. PGW also has a pilot program to assess the efficacy and cost-effectiveness of expanding the treatments in each home. The pilot treatments began in 2006 with the goal of servicing approximately 100 homes. PGW expends approximately $2 million annually for its CWP program. This amount is recovered through PGW's Universal Service Charge.

Q. DOES PGW HAVE OTHER PLANS TO IMPLEMENT CONSERVATION MEASURES?

A. Yes. As part of PGW's Demand Side Management Program, PGW is proposing to expand the CWP to provide services to a greater number of low income customers.

D. Hardship Fund

Q. PLEASE DESCRIBE PGW'S HARDSHIP FUND.

TAB B

PGW St. No. 10

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

TESTIMONY OF

JOHN J. PLUNKETT
GREEN ENERGY ECONOMICS GROUP, INC.

ON BEHALF OF
PHILADELPHIA GAS WORKS

DOCKET NO. R-2009-2139884

DECEMBER 2009

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Exhibit___JJP-5	*Benefits and Costs of Proposed PGW DSM Programs*
Exhibit___JJP-6	*PGW Five-Year Gas Demand-Side Management Plan*

Business customers likewise will enjoy lower operating costs, which will increase profitability. Lower operating costs for City-owned and -managed properties will help ease the burden on the City's residential and business taxpayers as well as reducing the City's operating budget.

The additional income afforded City households and businesses by gas bill savings by PGW programs will further stimulate economic activity as customers spend more on goods and services, some of which will be provided in whole or in part with local labor and other resources. This economic stimulus is an indirect job-producing benefit from lowering gas bills with cost-effective DSM investment and is likely to be several times larger than the direct net benefit created by the PGW DSM portfolio

III. Justification for PGW Gas Conservation Programs

Q. Why is it appropriate for PGW to implement a Demand-Side Management energy efficiency and conservation plan?

A: Improving efficiency in all the end uses of our energy resources is the cornerstone of this nation's energy, economic, and environmental policy goals. In Pennsylvania, the General Assembly has embraced this view by the passage of Act 129 of 2008 which mandates, among other things, the implementation of electric distribution company programs, funded by ratepayers, to promote energy conservation and efficiency improvements. I can think of no valid reason why the Act's mandate for utility distribution company conservation programs should not also apply to natural gas utilities with equal force. Over 30 years of program experience across North America proves that large-scale energy efficiency and conservation investment

portfolios can be efficiently and cost-effectively administered by the distribution utilities responsible for delivering energy service.

Q. Is it particularly important for PGW to implement a DSM plan in comparison to other natural gas utilities?

A: Yes. Such a plan makes particular sense for PGW for several reasons. Its rates are higher than the average for other Pennsylvania natural gas utilities. Compared to other gas utilities in the Commonwealth, it has a higher proportion of residential customers, a higher proportion of whom has low incomes. Moreover, PGW has had a successful low-income energy conservation program for some years. This particular experience puts PGW in an especially strong position to implement the proposed plan.

Q. Will PGW's plan, if implemented, benefit its customers?

A. Yes, significantly. In the narrative description of PGW's plan, which is Exhibit JJP-6 to my testimony, I describe the plan's goals and objectives:

PGW's DSM plan has five broad goals:

- Reduce customer bills;
- Maximize customer value;
- Contribute to the fulfillment of the City's sustainability plan;
- Reduce PGW cash flow requirements;
- Help the Commonwealth and the nation reduce greenhouse gas emissions.

In pursuit of these goals, PGW has designed and will implement the DSM plan according to the following principles:

- Field a portfolio of programs that targets cost-effective gas efficiency savings among all PGW's firm heating customers;

- Maximize delivery efficiency to minimize costs and maximize coverage from the available budget;
- Stage program implementation to permit orderly and sustainable expansion;
- Treat customers in greatest economic need and with most cost-effective opportunities first;
- Support economic development in the City, both directly through more intensive employment of local resources to save natural gas, and indirectly through the economic stimulus generated by increasing the amount of money City households and businesses have available to spend for non-gas goods and services; and
- For retrofit and new construction customers, avoid lost opportunities by seeking comprehensive energy savings of both gas and electric consumption.

Accordingly, PGW's plan will provide benefits not only to its customers but also to the Company, the City and the region.

Q. Given all the other sources of conservation and energy efficiency assistance from federal initiatives, why is it appropriate for PGW to undertake its proposed plan?

A. Because there is such a huge potential for cost-effective savings in PGW's service territory, the gas savings and associated benefits from PGW's investment will be in addition to those resulting from federally-funded efforts.

IV. Proposed PGW Gas Conservation Programs

Q. What kinds of efficiency opportunities does PGW's DSM Plan target?

A: PGW plans to implement a comprehensive portfolio of seven programs to capture energy efficiency and conservation opportunities available through three distinct types of market transactions. The first and largest source of gas savings is to increase energy efficiency of existing buildings by retrofitting them with supplemental measures (like attic insulation) and with early replacement of inefficient equipment with high-efficiency models (like boilers and furnaces). The second source of efficiency savings is to upgrade the efficiency of new gas-using appliances and equipment when purchased in the normal course as those appliances and equipment require replacement. The third type of opportunity to improve efficiency is before a building or renovation is designed and constructed. PGW's DSM portfolio is explicitly designed and planned to achieve cost-effective savings through all three types of market transactions among residential and non-residential customers by introducing programs to address each in the three-stage sequence.

Q. Describe the programs targeting residential customers.

A: There are three programs that target residential customers. The Comprehensive Residential Retrofit Program and its sibling program, the Enhanced Low-Income Retrofit Program, are both built upon a successful low-income weatherization program started by PGW in 1990. These programs provide free energy audits to identify cost-effective weatherization and heating system replacement opportunities. The Enhanced Low-Income Retrofit program targets participants in PGW's low-income program, the Customer Responsibility Program (CRP). Any cost-effective weatherization

measures and heating system retrofits identified by the energy audit will be installed at no cost to the customer.

The Comprehensive Residential Retrofit Program (non-low income) targets the 40% of residential customers with the highest annual consumption of natural gas. The program then works with participating customers to implement any cost-effective opportunities identified by energy audits which PGW will provide free of charge. The customer is provided with information on financing and assistance in installing the measures. Upon installation, the customer receives an incentive to bring the simple payback of the project down to two years.

The Premium Efficiency Gas Appliances and Heating Equipment Program goes up the supply chain to encourage consumers to choose gas powered equipment that is more energy efficient. The program's administrator will work with equipment manufacturers, distributors, retailers, engineers, and contractors to deliver incentives covering 80% of the incremental costs of premium efficiency equipment. Partners will be trained in ways to market the benefits of high efficiency equipment. Technologies covered by this program include high efficiency clothes washers and natural gas powered space and water heating equipment.

Q. Explain the program designs for nonresidential customers.

A: There are four programs that cover nonresidential customers. The Municipal Facilities Comprehensive Efficiency Retrofit Program performs comprehensive retrofits on city owned and operated buildings. The program administrator will work closely with Philadelphia City facility managers, department heads, and financial officers to identify and implement energy efficiency within municipal buildings. The program's main activities are

A: Yes. In helping PGW draft the plan, I carefully examined programs and their results from all over the Northeastern US, as well as efforts in Canada, California, and the Midwestern US.

Q. Can you demonstrate how PGW's programs are modeled on best practices by industry leaders?

A: PGW's proposed program designs incorporate the same proven strategies employed by the nation's most successful natural gas energy efficiency efforts. Programs run by Vermont Gas Systems (VGS), NSTAR (serving the Boston area), and the Southern California Gas Company (SoCalGas) illustrate key features in common with the programs PGW proposes. For example, these three utilities' programs offer both residential and commercial retrofit programs that begin with free energy audits to identify savings and install a variety of low-cost, high-benefit measures. PGW's residential retrofit programs use advanced air-sealing and insulation practices, as well as heating system retrofits. The programs target high-use customers while also allowing self-selected participation. The high-use customers receive assistance and incentives for installing energy efficiency measures identified in the audit, while the low-income participants have cost-effective measures directly installed at no cost to them. And as both an added incentive and an additional source of energy savings, PGW's residential retrofit programs will provide for direct installation of an average of ten high-performance, high-efficiency lamps in each treated household. This improves the program's attractiveness to potential participants, increasing participation, total gas savings, and net economic benefits.

Providing incentives to defray the efficiency cost premium for the purchase of high-efficiency new equipment has been the cornerstone of gas

DSM cost-effectiveness is the TRC test, which accounts for all the benefits and costs to the economy of the efficiency investment, regardless of who enjoys or pays them. This is the test the PUC has adopted for assessing the economic merits of electric utility DSM programs. Benefits are valued at the avoided marginal costs of gas supply, as discussed further in the testimony of PGW witness Chernick. Benefits also include avoided electricity costs for measures that save electricity. Costs consist of the efficiency measure costs and the costs of marketing, technical assistance, management, and other program functions that are more or less fixed with respect to the volume of program activity and/or the number of efficiency measures installed. The net benefits to the economy from cost-effective DSM investment are the difference between the present worth of benefits and costs of the programs over the lifetimes of all the measures installed as a result of the program.

The gas system perspective, by contrast, counts only those benefits and costs of DSM programs that fall within the sphere of costs paid by all gas system ratepayers. It indicates the extent to which a program or portfolio of programs benefits the group of ratepayers supporting the investment. The gas system perspective omits avoided electricity costs from the calculation of benefits; it also omits the portion of efficiency measure costs paid for directly by participants.

Q. What are the lifetime costs and benefits you estimate from implementing PGW's DSM plan?

A: Table 8 is an overview of the cost-effectiveness of PGW's planned portfolio.

Table 8: Cost-Effectiveness Analysis of PGW Portfolio

PROGRAM	Total Resource PV Benefits	Total Resource PV Costs	PGW PV Costs	Total Resource PV Net Benefits	Total Resource B/C Ratio
Comprehensive Residential Heating Retrofit	$ 37,679,103	$ 21,617,885	$ 10,950,799	$ 16,061,218	1.74
Enhanced Low-income retrofit	$ 37,044,268	$ 21,972,192	$ 22,316,612	$ 15,072,076	1.69
Premium efficiency gas appliances and heating equipment	$ 26,519,663	$ 4,740,331	$ 4,740,331	$ 21,779,332	5.59
Commercial and industrial equipment efficiency upgrades	$ 1,656,514	$ 1,366,816	$ 1,170,821	$ 289,698	1.21
Municipal facilities comprehensive efficiency retrofit	$ 3,676,093	$ 3,290,862	$ 1,734,161	$ 385,230	1.12
High-efficiency construction	$ 3,268,894	$ 1,925,587	$ 1,925,587	$ 1,343,307	1.70
Commercial and industrial retrofit	$ 3,313,027	$ 2,040,365	$ 995,061	$ 1,272,662	1.62
Portfolio-Wide Costs		$ 854,207	$ 854,207	$ (854,207)	
Total Portfolio	$ 113,157,561	$ 57,808,244	$ 44,687,579	$ 55,349,317	1.96

The portfolio provides PGW customers benefits with a present value of $113.2 million at a cost, including the customer's own investment, of $57.8, for net benefits to customers of $55.3 million. The present value of PGW's costs is $44.7 million. Almost 85% of benefits, $101 million, come from residential programs with a comparable amount of the cost going to the same programs.

Almost all the programs in the portfolio are highly cost effective with benefit-cost ratios above 1.5, except for the municipal and commercial and industrial equipment programs. The Premium Efficiency Gas Appliances and Heating program is particularly cost effective, providing over $26 million in benefits for under $5 million. Almost one third, or $37 million, of the portfolio's savings comes from the Enhanced Low-income Retrofit Program, the cornerstone of PGW's portfolio.

As stated in Section VIII of the narrative description of PGW's plan, which is an exhibit to my testimony, the cost-effectiveness analysis and rate and bill analysis are contained in a functioning, self-documenting MS Excel workbook which is available upon request for easy review.

Q. How will these net benefits stimulate economic activity?

A. The present worth of net benefits under the TRC represents a long-term injection of wealth into the economy. For residential customers, the reduction in the total costs of gas service means an increase in after-tax disposable income. People can use this extra money to save (which today for most means paying down debt) or spend. Likewise, lower gas bills for business customers mean either increased profit margins, more competitive product and service pricing, or both. Businesses will re-invest the resulting extra profits, or distribute them to owners, or some combination of the two. Either way, the total resource cost savings will stimulate additional business activity.[2]

Moreover, the amount of additional economic activity stimulated by the efficiency investment will end up being several times the net benefits due to re-spending within the local, state, and regional economies. While there is doubtless considerable "leakage" as some spending takes place outside Pennsylvania, the majority of the economic benefits stay at the state and local levels.

This economic activity generated by the net economic benefits of efficiency investment is in addition to the economic activity generated directly by expenditures on the part of both PGW and program participants to install the efficiency measures.

Q. How much additional employment do you estimate that PGW's plan will generate?

---

[2] In macroeconomic terms, economic activity is defined as aggregate demand. It is the sum of consumer spending, business investment, government spending, and the trade balance of the economy in question, in this case, Pennsylvania's.

A: PGW estimates that between 595 and 991 net new jobs will be created through the proposed DSM efforts. Most of the gains come from shifting spending away from the less job-intensive energy sector towards more job-intensive sectors such as food production. Jobs gained in the energy efficiency sector tend to offset potential job losses in the broader energy services sector. Recent studies from the American Council for an Energy-Efficiency Economy (ACEEE) have estimated that up to 90% of new jobs created from DSM efforts stays within the state where the DSM programs are located. Of the 90%, the majority of those new jobs are created close to where savings occur.

VII. Conclusions and Recommendations

Q: What conclusions do you reach?

A: I conclude that the energy efficiency program portfolio advanced in this proceeding by PGW is cost-effective and therefore economically beneficial to PGW's customers and Pennsylvania's economy. In addition to saving money, energy savings from the portfolio will reduce greenhouse gas emissions, benefitting the environment. These proposals, as described above, are also consistent with other leading gas DSM programs approved by other state Commissions and implemented by utilities in those jurisdictions.

Q: On the basis of these conclusions, what are your recommendations to the Commission?

A: I strongly recommend that the Commission order implementation of this program. Any delay in implementation represents delay of the benefits that will occur.

Q: Does this conclude your testimony?

Exhibit___JJP-4: PHILADELPHIA GAS WORKS
DSM PROGRAM PLAN
ANNUAL PROGRAM BUDGETS AND SAVINGS

Program	2010	2011	2012	2013	2014
Annual Budgets (2009$)					
Comprehensive Residential Heating Retrofit	$ 100,000	$ 2,079,620	$ 3,031,268	$ 3,974,140	$ 3,956,590
Enhanced Low-income retrofit	$ 50,000	$ 6,783,440	$ 6,708,440	$ 6,783,440	$ 6,708,440
Premium Efficiency Gas Appliances and Heating Equipment	$ 100,000	$ 659,271	$ 1,702,814	$ 1,627,814	$ 1,702,814
Commercial and Industrial Equipment Efficiency Upgrades	$ -	$ 125,000	$ 274,740	$ 505,666	$ 524,221
Municipal Facilities Comprehensive Efficiency Retrofit	$ -	$ 50,000	$ 667,139	$ 667,139	$ 667,139
High-efficiency Construction	$ -	$ 125,000	$ 342,000	$ 667,501	$ 1,210,002
Commercial and Industrial Retrofit	$ -	$ 75,000	$ 236,361	$ 375,562	$ 459,083
Portfolio Wide Costs	$ 100,000	$ 200,000	$ 200,000	$ 200,000	$ 275,000
Total Porfolio	**$ 350,000**	**$ 10,097,332**	**$ 13,237,763**	**$ 14,876,262**	**$ 15,653,289**
Annual Incremental Energy Saved (BBtu)					
Comprehensive Residential Heating Retrofit	0	57	85	114	114
Enhanced Low-income retrofit	0	101	101	101	101
Premium Efficiency Gas Appliances and Heating Equipment	0	38	115	115	115
Commercial and Industrial Equipment Efficiency Upgrades	0	0	4	9	12
Municipal Facilities Comprehensive Efficiency Retrofit	0	0	16	16	16
High-efficiency Construction	0	0	5	13	26
Commercial and Industrial Retrofit	0	0	8	18	24
Total Porfolio	**0**	**196**	**334**	**385**	**406**

Exhibit JJP-6

Philadelphia Gas Works Five-Year Gas Demand-Side Management Plan

December 18, 2009

Submitted For
Review and Approval By the
Pennsylvania Public Utility Commission

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Philadelphia Gas Works
Five-Year Gas Demand-Side Management Plan

I. SUMMARY

Over the next five years, Philadelphia Gas Works (PGW) plans to implement a portfolio of seven demand-side management (DSM) programs designed to reduce customers' energy consumption through end-use efficiency investments. These programs provide technical and financial services to residential and nonresidential customers to help them upgrade the efficiency with which they use energy in their homes and businesses. PGW plans to invest a total of $58 million[1] ($45 million present worth in 2009 dollars) through 2014 to implement these programs, and expects to save 1,321 Billion British Thermal Units (BBTU) annually by the end of 2014.[2] The portfolio's energy savings also reduce greenhouse gas emissions by 1 million tons of carbon dioxide over the lifetimes of all the measure installed over the five-year DSM plan.

Consumption reductions resulting from the DSM portfolio will lower the amount of natural gas PGW has to procure and deliver to serve its customers. Avoided gas supply costs represent the long-term benefits of PGW's DSM plan over the lifetimes of the efficiency measures installed. Today's present worth of these avoided gas supply costs amounts to $99 million, netting $54 million in present worth of cost reductions to the PGW gas system, or a benefit/cost ratio of 2.2.

By the end of the fifth year of portfolio investment, average non-CRP residential customer bills will decrease by 1.2 percent, compared to what they would have been absent PGW's DSM investment. Average rates for this customer class are projected to be 1.0% higher in 2014.[3] Commercial customers will experience an average rate increase of 0.1% at the end of the five-year portfolio investment, along with average bill reductions of 1.1%. Average rates for industrial customers are projected to decrease by 0.4% at the end of the five-year investment period, resulting in an average bill reduction of 0.8%. After the fifth and final year of program expenditures, the portfolio will continue to produce large bill reductions over the remaining lifetimes of the efficiency measures installed due to the DSM portfolio.

---

1 This is the sum of nominal dollars assuming 2.0% general inflation (mixed-current dollars, undiscounted). Real portfolio spending totals $54 million in 2009 dollars.

2 PGW seeks recovery of the costs of the program, including revenue lost as a direct result of the program.

3 Portfolio spending, activity levels, and savings are all stated in calendar years, as distinct from PGW's fiscal years, which are accounted for in the analysis of rate and bill impacts from the portfolio.

These net cost reductions to all PGW's customers from lower gas and electric requirements will increase household disposable income and strengthen business profitability throughout Philadelphia, stimulating the creation of between 600 and 1,000 jobs.

PGW's gas DSM plan concentrates on residential retrofits in two phases. First, PGW will enhance the existing low-income program by deepening efficiency investment in treated homes and extending program services to more customers in need. After launching the enhanced low-income program in 2011, PGW plans on expanding the program to the City's non-low income residents. Both retrofit programs upgrade the thermal integrity of the building with added insulation and instrumented air sealing, and in some instances also retire old, inefficient gas furnaces and boilers and water heaters and replace them with new, high-efficiency equipment.

The enhanced low-income program will provide efficiency retrofit services free of charge to the individual customer, just as it does currently. For the rest of PGW's residential customers, the comprehensive retrofit program will offer financial incentives calculated to reduce the investment required by the customer to two year's worth of estimated bill savings. In conjunction with the financial incentive, PGW will assist non-CRP residential customers with accessing third-party financing over a minimum of three years for their investment contributions. The objective of this two-part financial strategy is to provide participating customers with immediate positive cash flow. By the end of the initial five year period, PGW plans to have treated 38,153 customers (15,338 low-income and 22,815 non-CRP residential) through both residential retrofit programs, reaching a combined annual pace of 10,834 per year by 2014. PGW plans to continue the program beyond five years with appropriate regulatory approval.

PGW proposes that both residential retrofit programs will also offer free direct installation of a diverse array of high-efficiency lighting products in customers' homes. These additional measures will produce significant cost-effective electricity savings at costs well below what would have been spent to realize them with a stand-alone electric program. PGW will seek planning and cooperation with other programs, but is prepared to proceed independently because of the significant opportunity the residential retrofit program presents to provide incremental energy savings to customers at very low cost.

Another high priority for 2011 is PGW's plan to work with the City to invest in comprehensive efficiency retrofits in City-owned facilities. In doing so, PGW will help the City undertake the technical and economic assessments required for accessing financial incentives and other services offered by Philadelphia Electric ("PECO").

In the second half of 2011, PGW plans to launch a program to increase the efficiency of gas appliances and heating equipment purchased by residential customers; the plan calls for a companion program for business equipment also beginning in 2012. Also to be initiated in 2012 are a business retrofit program and a new instruction/remodel/renovation program investing in gas and electric efficiency improvements. Due in part to the

predominance of electric efficiency savings opportunities compared to gas in commercial buildings, PGW will investigate opportunities to coordinate implementation of these programs with others, but will assume full program administration responsibilities, if partnering proves infeasible.

Table 1 summarizes the present value of costs and benefits of the program portfolio.

Table 1

PROGRAM	Total Resource PV Benefits	Total Resource PV Costs	PGW PV Costs	Total Resource PV Net Benefits	Total Resource B/C Ratio
Comprehensive Residential Heating Retrofit	$ 37,679,103	$ 21,617,885	$ 10,950,799	$ 16,061,218	1.74
Enhanced Low-income retrofit	$ 37,044,268	$ 21,972,192	$ 22,316,612	$ 15,072,076	1.69
Premium efficiency gas appliances and heating equipment	$ 26,519,663	$ 4,740,331	$ 4,740,331	$ 21,779,332	5.59
Commercial and industrial equipment efficiency upgrades	$ 1,656,514	$ 1,366,816	$ 1,170,821	$ 289,698	1.21
Municipal facilities comprehensive efficiency retrofit	$ 3,676,093	$ 3,290,862	$ 1,734,161	$ 385,230	1.12
High-efficiency construction	$ 3,268,894	$ 1,925,587	$ 1,925,587	$ 1,343,307	1.70
Commercial and industrial retrofit	$ 3,313,027	$ 2,040,365	$ 995,061	$ 1,272,662	1.62
Portfolio-Wide Costs		$ 854,207	$ 854,207	$ (854,207)	
Total Portfolio	$ 113,157,561	$ 57,808,244	$ 44,687,579	$ 55,349,317	1.96

IV. PGW DSM PORTFOLIO IMPLEMENTATION

This section addresses three crucial aspects of PGW's management of its gas DSM programs:

- Program administration and management
- Program integration with other programs
- Staged program implementation

A. Program Administration and Management

Program administration and management refers to the set of functions associated with designing, developing, planning program services and activities; contractor supervision; data management and reporting, installation verification of high-efficiency gas measures through the various DSM programs.

1. Implementation Management

PGW is responsible for achieving the performance goals of its DSM investment portfolio, according to the guiding principles for achieving the core objectives of the plan. The scope of PGW's implementation management responsibilities encompasses:

- Customer recruitment and intake
- Opportunity assessment
- Measure installation
- Financial incentive processing
- Inspection and verification
- Data management

2. Staffing and Sourcing

PGW personnel will manage the implementation of energy-efficiency programs. Installation of efficiency measures will be done by independent contractors that PGW will select through competitive, public RFP solicitation. This model builds on PGW's successful experience managing the delivery of its low-income retrofit program to approximately 2,500 customers per year. PGW will also retain outside experts to assist it in preparing specifications for implementation contractor solicitation, assessing competing bids, structuring contracts, and establishing performance goals.

3. Program Marketing and Business Development

PGW will be responsible for all outreach to customers and to members of the supply chain for gas appliances and equipment such as vendors, wholesalers, and manufacturers. A critical component of successful marketing will be market research. PGW will rely on in-house personnel as well as contractors as necessary to develop and execute marketing strategies to maximize participation. PGW will work closely with retrofit program implementation contractors to maximize individual customers' trust and acceptance. PGW will also work with civic and other organizations on coordinated campaigns to maximize participation in targeted areas.

4. Tracking and Reporting

PGW will expand its existing information management systems to track the cost and performance information.

PGW will file regular reports on spending, participation, energy savings, and benefits. The following table presents the information PGW proposes to track and report periodically to the PUC.

Figure 2: Sample Program Annual Report

Program Name

Program Start Date: 1/1/1900
Gross to Net Adjustment Factor: 0%

	Actual Previous Program Year	Actual Current Program Year	Projected Program Year	Projected Next Program Year	Total Program Reported to Date [22]
PARTICIPATION					
Pending [1]	-	-	n/a	n/a	n/a
Analyses/Audits with No Installs [2]	-	-	n/a	n/a	n/a
Analyses/Audits [3]	-	-	-	-	-
Customers with Installations [4]	-	-	-	-	-
COSTS					
Utility Costs [12]	$ -	$ -	$ -	$ -	$ -
Customer Incentives [5]	$ -	$ -	$ -	$ -	$ -
Administration and Management [6]	$ -	$ -	$ -	$ -	$ -
Marketing and Business Development [7]	$ -	$ -	$ -	$ -	$ -
Contractor Costs [8]	$ -	$ -	$ -	$ -	$ -
Inspection and Verification [9]	$ -	$ -	$ -	$ -	$ -
On-site Technical Assessment [10]	$ -	$ -	$ -	$ -	$ -
Evaluation [11]	$ -	$ -	$ -	$ -	$ -
Participant Costs [13]	$ -	$ -	$ -	$ -	$ -
Total [14]	$ -	$ -	$ -	$ -	$ -
BENEFITS [15]					
Annualized BBtu [16]	-	-	-	-	-
Lifetime BBtu [17]	-	-	-	-	-
Peak Day BBtu [18]	-	-	-	-	-
Annualized BBtu [19]	-	-	-	-	-
Weighted Lifetime (years) [20]	-	-	-	-	-

Program Year Activity

End-Use Breakdown	Annualized BBtu Saved [16]	Peak Day BBtu Savings [18]	Number of Customers with Installations [21]	Weighted Lifetime [20]
Heating				
Water Heating				
Air Infiltration				
Heat Recovery				
Shell (envelope)				
Process				
Total				

Descriptions of Fields

[1] Number of customers who requested service who are still waiting to receive it on December 31 of the year specified in the column heading.
[2] Number of customers who had analyses or audits completed during the reporting year, but who have not yet had verified installations by December 31 of the year specified in the column heading.
[3] Number of customers who had analyses or audits completed between January 1 and December 31.
[4] Number of customers with verified installations in the period January 1 to December 31.
[5] Incentive payments to customers and/or trade allies, excluding direct installation costs
[6] Any costs incurred by the utility not directly attributed to items [7]. [8], [9], [10], and [11]
[7] Costs associated directly with the marketing and business development activies of the program
[8] Non-incentive payments to third-party contractors, including direct installation.
[9] Payments to utlity staff or contractors for performing analyses, audits, inspections, and verifications Also includes cost for energy ratings.
[10] Costs incurred from in-depth onsite potential studies. Applies to Municipal and C&I Retrofit programs
[11] Evaluation costs, excluding tracking and reporting expenses.
[12] Sum of items [5] through [11]
[13] Customer expenditures, including loan amount
[14] [12] + [13]
[15] Savings adjusted by the free rider percentage where applicable.
[16] Estimated annual savings for measures installed and verified during the reporting year for a one-year period.
[17] The lifetime estimated BBtu savings for measures installed and verified during the reporting year. Estimated annualized savings times the estimated life of the measure.
[18] Estimated impact of measure on peak day. Since measures are installed throughout the year, does not reflect Mcf avoided on peak day of the reporting year.
[19] Total Mcf saved divided by the total participants.
[20] Average lifetime, in years, of measures in the program weighted by savings.
[21] Number of customers with verified installations of measures within that end-use. Where a customer had more than one measure installed within an end-use, i.e. both wall and attic installation within the "shell" end-use, they are counted only once.
[22] Cumulative activity from program start date until December 31. Individual program start dates are listed on the upper right-hand corner of each summary sheet.

5. Measurement, Verification and Evaluation

PGW will apply the same approach to measurement, verification, and evaluation that it currently employs in the administration of the low-income program.

PGW will establish a technical reference manual codifying and updating methods and assumptions for calculating savings from the full array of prescriptive gas efficiency measures. Specialized retrofit projects, especially for commercial and industrial projects, will be characterized on a customized basis in terms of their lifetime costs and performance. PGW will use these characterizations to calculate and track the economic benefits and costs of both prescriptive and customized efficiency projects.

PGW will also verify that measures are actually installed as recommended and analyzed.

PGW has conducted extensive evaluation of its low-income program, which is delivered by two implementation contractors, DMC/Honeywell and the Energy Coordination Agency of Philadelphia. PGW will continue to use the results of independent evaluation to update savings estimates and redirect program activities. PGW will also develop a program evaluation plan for the entire portfolio to be submitted with its detailed work plans following Commission approval of this DSM plan. The program timetable presented in Section IV.C indicates the timing of the evaluations PGW plans to undertake starting in 2011; the program budgets in Section III.A, above, provide the funds PGW estimates will be required for these studies.

Primary evaluation issues to be addressed in the initial set of evaluations will include:

- Costs and savings from enhanced efficiency services in the both the residential retrofit programs
- Effectiveness of PGW's proposed financial strategies in attracting participants in the non-low income retrofit program
- Effectiveness of PGW's end-user and upstream financial strategies in raising the market penetration of and lowering the price premium for the highest-efficiency heating equipment

In 2014, PGW proposes to conduct a portfolio-wide evaluation of its implementation of its DSM portfolio. This will include a comparative analysis of PGW's performance against that of its peers.

B. Integrated Approach to Customer Efficiency Investment

To maximize value from its gas DSM portfolio, PGW will take advantage of incremental opportunities to save gas as well as other resource savings, including electricity. Decades of DSM program experience prove that failure to do so would lead to missed opportunities, duplication of effort, needlessly high costs, and customer confusion. Incremental energy saving opportunities will also reduce the customer's carbon footprint and increase the ability of PGW customers to pay their gas bills on time and in full. For example, improving building thermal performance will save heating gas as well as electricity used for cooling. Especially for residential customers and small commercial customers, it makes the most sense for PGW or, if feasible, PGW and other partners, to combine forces to offer customers one-stop shopping for efficiency measures addressing electricity and gas. Consequently, PGW will seek to integrate gas efficiency opportunities with other non-gas efficiency efforts. Any cost sharing between PGW and other organizations will be guided by the value of gas benefits relative to the value of other resource savings generated by the programs.

PGW will assume lead responsibility for implementing comprehensive retrofits for City residents and in City-owned and/or managed facilities. PGW will explore the feasibility of partnering with other programs designed and implemented to achieve cost-effective efficiency savings in residential and business construction and in comprehensive business retrofits, but will administer these programs independently, if necessary. PGW will also explore the feasibility of coordinating its residential appliance and heating and business equipment efficiency programs with other programs aimed at the same markets. While PGW believes that such partnering may provide enhanced efficiencies and benefits, this plan does not assume or depend upon cooperation with other organizations.

1. Electric efficiency measures to be integrated into PGW programs

Residential retrofit

PGW plans on integrating two types of electric efficiency measures into its Comprehensive Residential Heating Retrofit and Enhanced Low-Income Retrofit Programs.

In conjunction with its Heating Retrofit activities, PGW will provide direct installation of full range of latest high-efficiency lighting products available in each participating home. The average American household has 30 or more lighting fixtures. PGW contract installers (who will also be doing the heating retrofits) will be trained to install as many compact fluorescent lamps as the customer will accept. The installer will leave behind at least one "multi-pack" of replacement lamps to ensure that customers have ready access to replacement lamps, pending roll-out of a retail efficiency products program by others. A key aspect of this proposal is that, because the net incremental cost of the CFL installations is so low, it will permit the delivery of electric energy efficiency measures to a market segment that it might not otherwise be cost-effective to address.

Lighting direct installation will lead to substantial economic and environmental benefits. Table 5 provides a breakdown of gas and electricity benefits for the comprehensive residential retrofit program.

Table 5

Comprehensive Residential Heating Retrofit: Gas Savings Compared to Electric Savings		
	Gas	Electric
Present Value of Benefits ($2009)	$28,665,111	$ 9,013,992
Present Value of Costs ($2009)	$10,950,799	$ -
Present Value of Net Benefits ($2009)	$17,714,311	$ 9,013,992
Benefit-Cost Ratio	2.62	0.00
Cumulative Annual Energy Saved in 5th Year (Net of Freeriders)	3.7 Million Therms	21.1 GWh
Electric energy saved measured at generation.		

Residential appliances and heating equipment

In addition to incentives for high-efficiency gas appliances and equipment, PGW will assist customers find other programs that may provide supplemental incentives for new purchases of:

- High-efficiency furnaces with ECMs (electrically-commutated motors)
- High-efficiency clothes washers

Prescriptive cost-effectiveness analysis will be performed in advance to establish cost-effectiveness of high-efficiency gas equipment.

Municipal facilities retrofit

PGW will help the City identify other programs that may offer electric efficiency incentives with the goal of providing immediate positive cashflow for comprehensive packages of the following technologies:

- Lighting retrofit (Super T8, T5, LED fixtures; controls; lighting system redesign)
- HVAC retrofit (early retirement; unitary to central conversions; proper sizing of equipment to match load; distribution controls)
- Refrigeration (early retirement, supplemental controls)

PGW will work with the City and state and financial institutions that provide energy loans to structure short-term financing for the balance of capital investment required (gas measures plus electric efficiency investment costs not covered by other incentives).

All efficiency measures (gas and electric) will be subjected to individualized cost-effectiveness analysis to direct investment toward economically optimal packages. The cost-effectiveness analysis for this program does not include the effects of electric efficiency investment, which will increase the net benefits expected from the program.

2. Gas efficiency measures ideally integrated into other programs

In three markets, electricity savings potential is as large as or larger than gas efficiency potential. These are high-efficiency construction (residential and commercial), and commercial and industrial retrofit. PGW plans to work closely on devising financial incentives that address both gas and electric efficiency measures as a package in construction, renovation, and retrofit of commercial and industrial properties, and in new residential construction. PGW will explore the potential to integrate with other parties and programs, but if agreement on integration is not reached, PGW will design the incentives for the gas-saving measures based partly on the incentives and benefits of the related electric-saving equipment.

3. Coordinating with other programs

PGW will investigate opportunities to coordinate the design and implementation of programs promoting high-efficiency appliances and heating equipment with other programs. While not as closely linked as in other markets, PGW programs and other programs addressing electric efficiency should at least have consistent efficiency performance thresholds that do not favor one energy source over the other. PGW will explore the feasibility of coordination with other programs promoting residential appliance and heating equipment efficiency upgrades, and for commercial and industrial equipment efficiency upgrades.

C. Program Staging

As shown in Table 3, PGW plans to scale up DSM spending rapidly and substantially. Fortunately, the bulk of the expansion in terms of money and savings is scaling up and fine-tuning PGW's successful low-income retrofit program. 2011 will therefore focus on scaling up the low-income program. 2011 will also involve designing and launching the comprehensive residential retrofit program, and identifying opportunities for comprehensive efficiency retrofits in City facilities. All programs scale up to their maximum participation rates in 2014. Table 6 shows the relative pace of implementation in each year.

Table 6

PHILADELPHIA GAS WORKS Five Year Gas Demand-Side Management Plan PROGRAM INPUTS						
		Staging % of Maximum Customer Participation in Year				
PROGRAM	Maximum Annual Customer Participation	2010	2011	2012	2013	2014
Comprehensive Residential Heating Retrofit	7,020	0%	50%	75%	100%	100%
Enhanced Low-income Retrofit	3,834	0%	100%	100%	100%	100%
Premium Efficiency Gas Appliances and Heating Equipment	13,581	0%	33%	100%	100%	100%
Commercial and industrial equipment efficiency upgrades	519	0%	0%	33%	75%	100%
Municipal Facilities Comprehensive Efficiency Retrofit	62	0%	0%	100%	100%	100%
High-efficiency Construction	1,700	0%	0%	20%	50%	100%
Commercial and Industrial Retrofit	519	0%	0%	33%	75%	100%

Table 7 offers a more detailed look at each program's time table.

Table 7: Program Implementation Timelines

PHILADELPHIA GAS WORKS
Five Year Gas Demand-Side Management Plan
Program Implementation Timelines

Program Activity	2010				2011				2012				2013				2014			
	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec	Jan - Mar	Apr - Jun	Jul - Sep	Oct - Dec
Comprehensive Residential Heating Retrofit																				
Design, development, planning																				
Contractor solicitation and selection																				
Marketing and business development																				
Program service delivery																				
Evaluation																				
Enhanced Low-income retrofit																				
Design, development, planning																				
Contractor solicitation and selection																				
Marketing and business development																				
Program service delivery																				
Evaluation																				
Premium efficiency gas appliances and heating equipment																				
Design, development, planning																				
Contractor solicitation and selection																				
Marketing and business development																				
Program service delivery																				
Evaluation																				
Commercial and industrial equipment efficiency upgrades																				
Design, development, planning																				
Contractor solicitation and selection																				
Marketing and business development																				
Program service delivery																				
Evaluation																				
Municipal facilities comprehensive efficiency retrofit																				
Design, development, planning																				
Contractor solicitation and selection																				
Marketing and business development																				
Program service delivery																				
Evaluation																				
High-efficiency construction																				
Design, development, planning																				
Contractor solicitation and selection																				
Marketing and business development																				
Program service delivery																				
Evaluation																				
Commercial and industrial retrofit																				
Design, development, planning																				
Contractor solicitation and selection																				
Marketing and business development																				
Program service delivery																				
Evaluation																				

Design, development, planning
Contractor solicitation and selection
Marketing and business development
Program service delivery
Evaluation

PGW also analyzed benefits and costs from the perspective of the utility system. This calculation ignores the costs not borne or avoided by PGW, i.e., the costs participants pay themselves. While not a true indicator of economic merit, it does provide a reasonable indication of the extent to which the investment represents a good use of ratepayer funds. We provide results for the gas system alone and for the electricity system from electric efficiency measures. The electric system analysis does not reflect any electric utility contribution toward the administrative costs of the residential programs. Nor does the analysis reflect any total resource benefits or costs of other electric efficiency measures besides lighting and air conditioning in the residential retrofit programs, or any electric efficiency measures in the commercial and industrial programs.

Two measures of cost-effectiveness are presented. The net benefits are the difference between benefits and costs. This is the most indicative of economic merit, since it calculates the magnitude of the welfare gain. Maximizing net benefits from the portfolio maximizes customer value. The benefit/cost ratio (BCR) is also presented as a rough indicator of relative value. Maximizing the BCR does not necessarily lead to maximum customer value; doing so would automatically leave behind cost-effective savings, i.e., gas savings that cost less than the supply they avoid.

Figure 3 graphically depicts the net benefits of each program. The maroon bar is the magnitude of net benefits for each program, reading off the top horizontal scale. The blue bar is the program's BCR, read off the bottom horizontal scale.

VI. PGW GAS DSM PROGRAM DESCRIPTIONS

Following are narrative descriptions of each of the seven DSM programs PGW plans to implement over the next five years. Each program description summarizes the target market, efficiency technologies, marketing strategy, delivery and over sight, and participation and savings goals.

The first four programs have more detail due to the earlier start of program activities. The last three programs have less detail since the level of detail required for full-scale launch in 2011 would be premature. Throughout 2011, PGW will work on designing and implementing pilot versions of these programs. The latter two are particularly difficult to characterize in more detail because PGW has yet to work out how the design and implementation of these programs will be integrated and coordinated with other parties.

A. Comprehensive Residential Heating Retrofit (Home Performance with ENERGY STAR™)

A comprehensive retrofit program designed for high-use heating customers, this program utilizes the existing federal Home Performance with ENERGY STAR™ program to identify potential technologies that private contractors then use with customers.

Comprehensive Residential Heating Retrofit					
	2010	2011	2012	2013	2014
COSTS (2009$)					
Customer Incentives	$ -	$ 1,401,356.45	$ 2,102,034.67	$ 2,802,712.89	$ 2,802,712.89
Administration and Management	$ 50,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00	$ 100,000.00
Marketing and Business Development	$ 50,000.00	$ 50,000.00	$ 50,000.00	$ 50,000.00	$ 50,000.00
Contractor Costs	$ -	$ 484,388.28	$ 726,582.42	$ 968,776.56	$ 968,776.56
Inspection and Verification	$ -	$ 43,875.75	$ 52,650.90	$ 52,650.90	$ 35,100.60
On-site Technical Assessment	$ -	$ -	$ -	$ -	$ -
Evaluation	$ -	$ -	$ 75,000.00	$ -	$ 75,000.00
TOTAL:	**$ 100,000.00**	**$ 2,079,620.48**	**$ 3,031,267.99**	**$ 3,974,140.35**	**$ 3,956,590.05**
GAS SAVINGS (BBtu)					
Annual Incremental:	-	57	85	114	114
Cumulative Annual:	-	57	142	256	369

1. Target Market

The Comprehensive Residential Heating Retrofit Program is designed to help residential customers with higher than average gas usage find ways to improve the energy efficiency of their homes. The program targets the 40% of residential customers with the highest annual energy consumption. Using recent consumption data, an eligible home will use 81 MCF per year. Currently, there are 35,107 eligible customer households. After the consumption criteria have been met, all one to four unit owner occupied residences are eligible. For non-owner occupied homes, explicit approval must be obtained from the landlord before an energy audit may be scheduled.

2. Target Measures

The program utilizes an energy audit to address low-cost maintenance issues and identify cost-effective weatherization early-replacements of furnaces and clothes washers. Incentives will be provided on a project level and not at the individual measure level. Please see the Financial Strategies section for more detail on project incentives.

The basis of the program is an energy audit, in which a "core treatment" is administered and further efficiency opportunities are identified at no cost to the customer. The core treatment consists of a walk-through where the auditor will perform basic low-cost treatments and maintenance, including but not limited to:

1. A blower-door test to quantify the amount of air leakage and determine what additional air-sealing measures would be required. These typically include door sweeps, weather stripping and caulking.

2. An examination of the home's HVAC system and the implementation of some low-cost measures such as duct sealing, radiator bleeding repairs, and the installation of radiator reflectors. For furnaces, often a "clean, test, and tune" (CTT) service, including filter replacement, will get the furnace burning efficiently and avoid the need for early replacement.

3. Measures to increase the efficiency of water heating, such as fixing hot water leaks, water heater wrapping, and installing low-flow showerheads and faucet aerators.

4. With the permission of the homeowner, the auditor will replace incandescent light-bulbs with more efficient compact fluorescent lamps (CFLs) at no cost to the customer.

After the walkthrough, the auditor will have a sit down presentation to discuss measures to be installed and their associated savings. The auditor will discuss the customer's energy usage goals, as well as potential benefits to the customer's health, comfort, safety, and quality of life. The auditor will also provide literature on savings tips and any efficiency programs for which the customer may be eligible. Measures that the auditor will test for cost-effectiveness fall into three categories: weatherization, heating system, and hot water usage.

Weatherization efforts, beyond those offered through the core treatment, are mainly focused on increasing roof and attic insulation, although all cost-effective insulation will be explored. Roof repairs will be made where needed to make insulation effective. Implementers will also install an under-porch partition where deemed appropriate. An under-porch partition is an insulated and sealed wall to partition off the section of basement areas that extend underneath the front porch of some homes.

In examining heating systems, two main measures are utilized, the first being set back thermostats. To achieve maximum savings, extensive training is provided along with the installation of the thermostats. In houses with multiple occupants, the thermostat is used to maintain a steady setting, returning to a customer-established baseline ever few hours, rather than the typical set-up/set-back strategy. The program will also target early replacement of heating systems with high-efficiency units. A high-efficiency furnace must have at an Annual Furnace Utilization Efficiency[7] (AFUE) of 85% or higher.

3. Marketing and Outreach

PGW will determine how to best divide marketing efforts and how to utilize network connections to leverage marketing. Both customers and energy service providers such as contractors and material and equipment suppliers will be covered by the plan. Table 15 describes a variety of potential marketing efforts geared towards customer enrollment along with sample market actors.

Table 15: Marketing Efforts to Drive Customer Adoption of Program

Technique	Description	Market Actors
Brochures	Program promotional materials for distribution through various marketing activities. Brochures will be provided in multiple languages.	PGW
Targeted Direct Mailings	Individual letters (separate from bills) addressed to customers with high savings potential.	PGW
Bill Inserts	Inserting program information into the bills of the customers.	PGW
Email Blasts	Standardized emails that are sent to a distribution list. This is a low cost way to reach a large audience	PGW
Website	Program information that is accessible online. In addition, application forms will be available for electronic submission.	PGW
Canvassing	Going door-to-door to get customers to enroll in the program. If customers are not home, promotional program material will be left behind.	PGW

[7] AFUE shows the percentage of fuel energy converted into heat. A higher number indicates less energy consumption for the same amount of heat.

Technique	Description	Market Actors
Seasonal Press Releases	Coordinating awareness with seasonal heating demand.	PGW
Print/Radio Advertising	Promotional spots will include in-language advertisements to target various customer segments.	PGW
Community Events	Participation in local community events with the potential to reach eligible customers. This will usually be done in cooperation with other local/state organizations	PGW and Local/State Government
Cross-promotion	Coordination with other programs, retailers & manufacturers to promote a menu of programs	PGW, Retailers, Manufacturers, and other Organizations
Coordination with Local Agencies	Working with a variety of local agencies to make them aware of the program and to have the agencies encourage their clients to enroll. Potential organizations include those that serve seniors, single-mothers, or provide housing aid.	PGW, Community Development Corporations, and other Non-profit Organizations
Customer Contact	Training customer service representatives to notify customers of their eligibility for the program.	PGW
Telemarketing	Targeting specific customers for contact over the phone and direct solicitation for enrollment in the program.	PGW Sub-contractor

Other efforts will be pursued beyond driving customer enrollment. PGW will work to educate and raise awareness of energy efficiency efforts amongst contractors and suppliers of material and equipment. Potential actions include training sessions and general workshops on installing and servicing energy efficient measures. Through coordination and cooperation, PGW will develop and implement a comprehensive marketing strategy to reach both users and suppliers of energy efficiency services.

4. Delivery and Oversight

A customer contacts PGW. After eligibility has been established, PGW schedules an audit with the customer. The audit consists of a core treatment (described in the Target Measures section), assessment of savings potential, and a discussion of the options with the customer. After the initial audit, PGW negotiates with the customer on measure

options, costs, and incentives. When a package of measures and an acceptable incentive have been agreed upon, the customer is responsible for overseeing the installation of the agreed upon measures. PGW will provide a list of certified contractors and any further assistance as needed. PGW then verifies that the installation was correct and that the customer knows how to use the new equipment before the incentive is paid. As detailed above, most of the customer interaction is handled by a subcontractor, which in turn is overseen by PGW.

PGW selects the subcontractor through a competitive bid process and then trains and works with the subcontractor to market the program, providing customer data as appropriate for determining eligibility and carrying out marketing efforts. PGW also oversees the general program budget. In its role as overseer, PGW will monitor vendor performance and overall program results, including customer satisfaction and market responsiveness. To encourage the subcontractor to seek deeper savings, an incentive will be provided if certain savings goals are exceeded. If the subcontractor fails to achieve a lower threshold of savings, they will pay a predefined penalty. PGW will independently verify savings through a number of random onsite inspections.

The subcontractor works on marketing and outreach with PGW. They provide the energy audit and oversee the installation of measures and payment of incentives. They also provide their own post-installation inspection and verification of savings. They work together with PGW on raising awareness and training contractors and coordinating with other state and local programs.

5. Financial Strategies

PGW will work with the customer to determine financing options and establish a basis for customer cash flow. Using these projections, PGW will provide an incentive that buys the project down to a two-year simple payback. All CFLs will be offered at no cost to the customer to achieve maximum savings from basic lighting opportunities.

Financing options will be offered through PGW's cooperation with other state and local programs. The most relevant, being the Keystone HELP program, which offers both secured and unsecured, below market rate loans for energy efficiency retrofits to Pennsylvania residents. PGW will work with Keystone HELP to make sure that program requirements align, and that only one energy audit will be required. PGW will also reach out to local banks and credit unions, to put together a range of offers on loans for energy efficiency retrofits.

In the following example, the customer is presented a project that will cost a total of $910. PGW in this case would offer an incentive of $267, leaving $643 for the customer to contribute toward the investment. This is two years' worth of expected bill savings which last 15 years. In conjunction with the financial incentive offer, PGW would help the customer access financing for three years through a source such as Keystone HELP. At an interest rate of 6%, the annual payments on the loan total $235. As shown in the

table below, the customer puts no money down, and enjoys a net positive cash flow of $87, more than a third of the annual cost of servicing the loan.

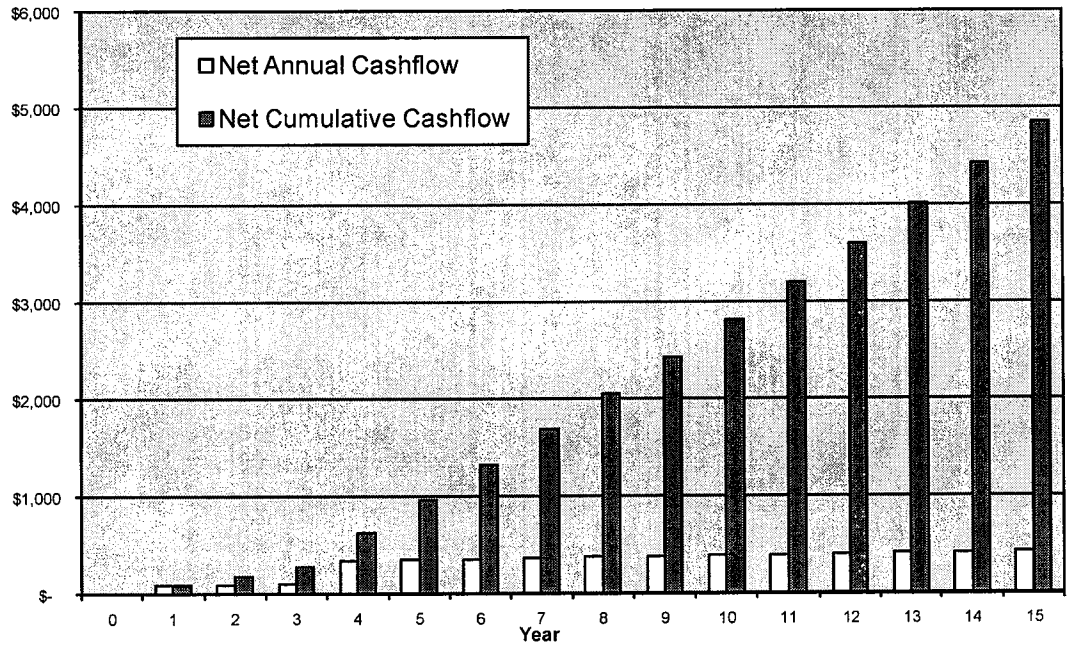
Table 16: Cash Flow from Typical Residential Retrofit Project

Year	Annual Payments (Principal & Interest)	Annual Electric Savings	Annual Natural Gas Savings/ (Costs)	Net Annual Cashflow	Net Cumulative Cashflow
0				$ -	$ -
1	$ (235)	$ 17	$ 305	$ 87	$ 87
2	$ (235)	$ 17	$ 311	$ 93	$ 179
3	$ (235)	$ 17	$ 317	$ 100	$ 279
4	0	$ 18	$ 323	$ 341	$ 620
5	0	$ 18	$ 330	$ 348	$ 968
6	0	$ 18	$ 336	$ 355	$ 1,322
7	0	$ 19	$ 343	$ 362	$ 1,684
8	0	$ 19	$ 350	$ 369	$ 2,053
9	0	$ 20	$ 357	$ 376	$ 2,430
10	0	$ 20	$ 364	$ 384	$ 2,814
11	0	$ 20	$ 371	$ 392	$ 3,205
12	0	$ 21	$ 379	$ 399	$ 3,605
13	0	$ 21	$ 386	$ 407	$ 4,012
14	0	$ 22	$ 394	$ 416	$ 4,428
15	0	$ 22	$ 402	$ 424	$ 4,851

The following figure is a graphical representation of the customer's cash flow over the lifetime of the installed measures.

Figure 6

Cash Flow



B. Enhanced Low-income Retrofit

The Enhanced Low-income Retrofit Program seeks to provide cost-effective energy savings to low-income customers who participate in PGW's Customer Responsibility Program (CRP). A secondary goal of the program is to reduce the overall long-term cost of the CRP as paid by all firm customers. In general, the program makes the customer's homes more energy efficient and comfortable by:

- Repairing or replacing older and less energy efficiency heating systems
- Providing comprehensive weatherization services
- Educating customers on ways to reduce their energy along with basic health and safety information
- Raising awareness of energy conservation and encouraging the incorporation of energy saving behavior
- Targeting high-use customers to maximize impact and increase cost-effectiveness
- Streamlining the delivery mechanism through implementation contractors

Enhanced Low-income Retrofit					
	2010	2011	2012	2013	2014
COSTS (2009$)					
Customer Incentives	$ -	$ 6,019,695.67	$ 6,019,695.67	$ 6,019,695.67	$ 6,019,695.67
Administration and Management	$ 50,000.00	$ 150,000.00	$ 150,000.00	$ 150,000.00	$ 150,000.00
Marketing and Business Development	$ -	$ -	$ -	$ -	$ -
Contractor Costs	$ -	$ 529,158.24	$ 529,158.24	$ 529,158.24	$ 529,158.24
Inspection and Verification	$ -	$ 9,586.20	$ 9,586.20	$ 9,586.20	$ 9,586.20
On-site Technical Assessment	$ -	$ -	$ -	$ -	$ -
Evaluation	$ -	$ 75,000.00	$ -	$ 75,000.00	$ -
TOTAL:	**$ 50,000.00**	**$ 6,783,440.11**	**$ 6,708,440.11**	**$ 6,783,440.11**	**$ 6,708,440.11**
GAS SAVINGS (BBtu)					
Annual Incremental:	-	101	101	101	101
Cumulative Annual:	-	101	201	302	402

1. Target Market

Any customer participating in PGW's Customer Responsibility Program (CRP) is eligible for participation in the Enhanced Low-income Retrofit Program. Started in 1990, the CRP is a low-income payment assistance program available to any residential customer with gross household income at or below 150% of the federal poverty level (FPL). Participants pay a fixed percentage of their income (between 8 and 10 percent) to maintain gas service[8]. To be considered for the Enhance Low-income Retrofit Program, customers must be 1) an owner occupied one to four residential dwelling units OR 2) renters who pay for their own natural gas heat and have a natural gas account in their name.

To effectively utilize the programs resources, PGW will specifically target customers that have been identified as heavier users of natural gas. In a previous pilot program, PGW has found that targeting high use customers produces larger savings at a lower marginal cost[9]. By targeting higher use customers PGW can increase the program cost-effectiveness and have a greater impact on reducing the cost of the CRP on ratepayers.

2. Delivery and Oversight

Customer eligibility requirements are met through participation in the CRP. PGW encourages enrollment in the program through direct mailing, telemarketing, bill inserts, public relations, and community outreach (please see the Marketing Strategies section for further detail). The low income retrofit program offers the same energy efficiency services that the Comprehensive Residential Heating Retrofit Program offers, but at no cost to the customer. This leads to a slight difference in procedure.

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8 *Universal Service and Energy Conservation Plan – 2008 to 2010.* Philadelphia Gas Works. June 1, 2007.

9 See conclusions from Blasnik, Michael. *Philadelphia Gas Works' Conservation Works Program Calendar Year 2006 and Comprehensive Treatment Pilot.* M. Blasnik & Associates: November 19, 2008.

The subcontractor performs an energy audit and identifies all cost-effective measures. With the permission of the customer, the subcontractor oversees measure installation by certified contractors. The subcontractor then verifies installation and pays the contractor. PGW will process payments to the subcontractor and undertake a number of random inspections to (1) ensure that measures have been correctly installed and savings are being achieved, (2) guarantee that program guidelines have been met, and (3) collect customer feedback.

3. Target Measures

The measures offered through the Enhanced Low Income Program are identical to the options offered through the Comprehensive Residential Heating Retrofit Program. Available measures include comprehensive weatherization efforts such as air sealing and added insulation as well as heating system replacement and low-flow showerheads and aerators for faucets. Education is particularly import within the low income program, and Energy Auditors will have a "kitchen table" discussion on energy saving tips, proper care and maintenance, health and safety information, and the benefits from the various measures.

4. Marketing and Outreach

In marketing the Enhanced Low Income Program, PGW will determine a comprehensive marketing approach. Marketing efforts will focus on specific subgroups to drive participation. High use customers will be targeted since they provide the greatest potential for savings and net benefits. Efforts will be made to reach all participants in the CRP through direct mailings, bill inserts, and email blasts. The Marketing and Outreach section of the Comprehensive Residential Heating Retrofit Program contains a comprehensive list of marketing activities.

Strategies that are specifically designed for the Enhanced Low Income Program include 1) Targeted mailings of high usage customers 2) Bill inserts for all CRP participants 3) Outreach to organizations serving the same target market 4) Door-to-door canvassing in under-utilized neighborhoods and 5) Telemarketing efforts focused on the highest usage customers. Since eligibility for the program is achieved through participation in the CRP, participants who have online account access will be able to enroll in the program directly through their online customer portal. After submitting a request, the program administrator will contact the customer to schedule an energy audit.

5. Financial Strategies

All cost-effective efficiency measures are installed at no cost to the customer. This drives higher participation levels, which in turn leads to higher net-benefits and a reduction in the overall long-term cost of the CRP for rate payers.

C. Measure Inputs

Table 21 provides additional information used to characterize the efficiency measures analyzed.

Table 21

MEASURE INPUTS (Program Year 1, 2010)
24-Nov-09 14:16

Portfolio

					Natural Gas Savings		Electricity Savings						Operation and Maintenance Costs		Utility Customer Incentives	
					Usage		Energy	Capacity	Coincidence Factors				Baseline Equipment Components/Maintenance			
Measure Name	Program ID (e.g., A or B)	Measure Life (years)		Incremental Installed Cost or Full Cost for Retrofit (2009$)	1 = NG Base 2 = NG Space Heat 3 = NG DHW 4 = NG User Defined 5 = NG User Defined	Natural Gas Saved (MMBtu/yr)	Annual kWh Saved	Maximum Load Reduction (kW)	Summer Generation Capacity (% of Maximum)	Winter Gener. Capacity (% of Maximum)	Transm. Capacity (% of Maximum)	Distribution Capacity (% of Maximum)	Component 1 Life (years)	Component 1 Replacement Cost (2009$)	Electric Utility Customer Incentive (2009$)	Gas Utility Customer Incentive (2009$)
[0]	[1]	[2]		[4]	[5]	[6]	[7]	[12]	[13]	[14]	[15]	[16]	[29]	[30]	[37]	[38]
Comprehensive Residential Heating Retrofit	A	15		$910	2	16.19	167	0.278	70%	0%	70%	70%				$303
CFL direct install	A	6.5		$9.59			63	0.054	8%	30%	8%	8%	0.86	$0.50		$9.59
Enhanced Low-Income Retrofit	B	15		$1,474	2	26.22	134	0.223	70%	0%	70%	70%				$1,474
CFL direct install	B	6.48		$9.59			63	0.054	8%	30%	8%	8%	0.86	$0.50		$9.59
Premium Efficiency Gas Appliances and Heating Equipm	C	15		$104	3	8.50										$104
Commercial and Industrial Equipment Efficiency Upgrade	D	15		$928	3	22.71										$696
Municipal Facilities Comprehensive Efficiency Retrofit	E	15		$10,591	2	259.09										$0
High-Efficiency Construction	F	15		$613	2	15.01										$613
Commercial and Industrial Retrofit	G	15		$1,856	3	45.41										$619

E. Energy Savings

Table 23 provides a year-by-year breakdown of electricity and gas savings by program.

Table 23

Year:	Total	2010	2011	2012	2013	2014
Portfolio						
Incremental annual MWh Saved (Net at meter)		0	5,730	7,130	8,530	8,530
Incremental annual MWh Saved (In prog, at meter)		0	5,730	7,130	8,530	8,530
Cumulative annual MWh Saved (Net, at meter)		0	5,730	12,860	21,390	29,920
Cumulative annual MWh Saved (Net, at gen.)		0	6,647	14,918	24,812	34,707
Incremental annual Summer kW Saved (Net at meter)		0	1,598	2,016	2,433	2,433
Incremental annual Summer kW Saved (In prog, at meter)		0	1,598	2,016	2,433	2,433
Cumulative annual Summer kW Saved (Net, at meter)		0	1,598	3,614	6,048	8,481
Cumulative annual Summer kW Saved (Net, at gen.)		0	1,854	4,192	7,015	9,838
Incremental annual BBtu Gas Saved (Net)		0	196	334	385	406
Incremental annual BBtu Saved (In prog)		0	196	334	385	406
Cumulative annual BBtu Saved (Net)		0	196	530	915	1,321
Lifetime BBtu Saved (Net)	19,817	0	2,938	5,011	5,772	6,096
Comprehensive Residential Heating Retrofit Program Tot						
Incremental annual MWh Saved (Net at meter)		0	2800	4200	5599	5599
Incremental annual MWh Saved (In prog, at meter)		0	2800	4200	5599	5599
Cumulative annual MWh Saved (Net, at meter)		0	2800	6999	12599	18198
Cumulative annual MWh Saved (Net, at gen.)		0	3248	8119	14614	21110
Incremental annual Summer kW Saved (Net at meter)		0	835	1253	1670	1670
Incremental annual Summer kW Saved (In prog, at meter)		0	835	1253	1670	1670
Cumulative annual Summer kW Saved (Net, at meter)		0	835	2088	3758	5429
Cumulative annual Summer kW Saved (Net, at gen.)		0	969	2422	4360	6297
Incremental annual BBtu Gas Saved (Net)		0	57	85	114	114
Incremental annual BBtu Saved (In prog)		0	57	85	114	114
Cumulative annual BBtu Saved (Net)		0	57	142	256	369
Lifetime BBtu Saved (Net)	5,540	0	852	1278	1705	1705
Enhanced Low-income Retrofit Program Total						
Incremental annual MWh Saved (Net at meter)		0	2930	2930	2930	2930
Incremental annual MWh Saved (In prog, at meter)		0	2930	2930	2930	2930
Cumulative annual MWh Saved (Net, at meter)		0	2930	5861	8791	11722
Cumulative annual MWh Saved (Net, at gen.)		0	3399	6799	10198	13597
Incremental annual Summer kW Saved (Net at meter)		0	763	763	763	763
Incremental annual Summer kW Saved (In prog, at meter)		0	763	763	763	763
Cumulative annual Summer kW Saved (Net, at meter)		0	763	1526	2289	3052
Cumulative annual Summer kW Saved (Net, at gen.)		0	885	1770	2655	3541
Incremental annual BBtu Gas Saved (Net)		0	101	101	101	101
Incremental annual BBtu Saved (In prog)		0	101	101	101	101
Cumulative annual BBtu Saved (Net)		0	101	201	302	402
Lifetime BBtu Saved (Net)	6,032	0	1508	1508	1508	1508
Premium Efficiency Gas Appliances and Heating Equipm						
Incremental annual BBtu Gas Saved (Net)		0	38	115	115	115
Incremental annual BBtu Saved (In prog)		0	38	115	115	115
Cumulative annual BBtu Saved (Net)		0	38	154	269	385
Lifetime BBtu Saved (Net)	5,772	0	577	1732	1732	1732
Commercial and Industrial Equipment Efficiency Upgrad						
Incremental annual BBtu Saved (In prog)		0	0	4	9	12
Cumulative annual BBtu Saved (Net)		0	0	4	13	25
Lifetime BBtu Saved (Net)	368	0	0	59	133	177
Municipal Facilities Comprehensive Efficiency Retrofit Pr						
Incremental annual BBtu Gas Saved (Net)		0	0	16	16	16
Incremental annual BBtu Saved (In prog)		0	0	16	16	16
Cumulative annual BBtu Saved (Net)		0	0	16	32	48
Lifetime BBtu Saved (Net)	718	0	0	239	239	239
High-Efficiency Construction Program Total						
Incremental annual BBtu Gas Saved (Net)		0	0	5	13	26
Incremental annual BBtu Saved (In prog)		0	0	5	13	26
Cumulative annual BBtu Saved (Net)		0	0	5	18	43
Lifetime BBtu Saved (Net)	650	0	0	77	191	383
Commercial and Industrial Retrofit Program Total						
Incremental annual BBtu Gas Saved (Net)		0	0	8	18	24
Incremental annual BBtu Saved (In prog)		0	0	8	18	24
Cumulative annual BBtu Saved (Net)		0	0	8	26	49
Lifetime BBtu Saved (Net)	736	0	0	118	265	353

EXHIBIT 1

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
	:	**Docket No. P-2009-2097639**
v.	:	
PHILADELPHIA GAS WORKS	:	
PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
	:	**Docket No. R-2009-2139884**
v.	:	
PHILADELPHIA GAS WORKS	:	

STIPULATION AND PARTIAL SETTLEMENT
FOR EXPEDITED IMPLEMENTATION OF PHILADELPHIA GAS WORKS'
DSM PROGRAMS FOR RESIDENTIAL CUSTOMERS

Philadelphia Gas Works ("PGW" or "Company") and Clean Air Council ("CAC") (collectively, "Settling Parties") hereby agree to expedited implementation of the Enhanced Low-Income Retrofit ("LI Retrofit") Program and the Comprehensive Residential Heating Retrofit Program (collectively, "the Residential DSM Programs") proposed in PGW's Five-Year Gas Demand-Side Management ("DSM") Plan. The DSM Plan was filed as part of PGW's pending general rate request on December 18, 2009. Expedited implementation of the Residential DSM Programs pending final resolution of PGW's base rate case will enable low-income and other residential customers to begin receiving the benefits of reduced and more efficient energy usage. The Settling Parties state the following in support of this Stipulation and Partial Settlement:

E. Energy Savings

Table 23 provides a year-by-year breakdown of electricity and gas savings by program.

Table 23

Year:	Total	2010	2011	2012	2013	2014
Portfolio						
Incremental annual MWh Saved (Net at meter)		0	5,730	7,130	8,530	8,530
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Cumulative annual BBtu Saved (Net)		0	57	142	256	369
Lifetime BBtu Saved (Net)	5,540	0	852	1278	1705	1705
Enhanced Low-income Retrofit Program Total						
Incremental annual MWh Saved (Net at meter)		0	2930	2930	2930	2930
Incremental annual MWh Saved (In prog, at meter)		0	2930	2930	2930	2930
Cumulative annual MWh Saved (Net, at meter)		0	2930	5861	8791	11722
Cumulative annual MWh Saved (Net, at gen.)		0	3399	6799	10198	13597
Incremental annual Summer kW Saved (Net at meter)		0	763	763	763	763
Incremental annual Summer kW Saved (In prog, at meter)		0	763	763	763	763
Cumulative annual Summer kW Saved (Net, at meter)		0	763	1526	2289	3052
Cumulative annual Summer kW Saved (Net, at gen.)		0	885	1770	2655	3541
Incremental annual BBtu Gas Saved (Net)		0	101	101	101	101
Incremental annual BBtu Saved (In prog)		0	101	101	101	101
Cumulative annual BBtu Saved (Net)		0	101	201	302	402
Lifetime BBtu Saved (Net)	6,032	0	1508	1508	1508	1508
Premium Efficiency Gas Appliances and Heating Equipm						
Incremental annual BBtu Gas Saved (Net)		0	38	115	115	115
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Cumulative annual BBtu Saved (Net)		0	38	154	269	385
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Commercial and Industrial Equipment Efficiency Upgrad						
Incremental annual BBtu Saved (In prog)		0	0	4	9	12
Cumulative annual BBtu Saved (Net)		0	0	4	13	25
Lifetime BBtu Saved (Net)	368	0	0	59	133	177
Municipal Facilities Comprehensive Efficiency Retrofit Pr						
Incremental annual BBtu Gas Saved (Net)		0	0	16	16	16
Incremental annual BBtu Saved (In prog)		0	0	16	16	16
Cumulative annual BBtu Saved (Net)		0	0	16	32	48
Lifetime BBtu Saved (Net)	718	0	0	239	239	239
High-Efficiency Construction Program Total						
Incremental annual BBtu Gas Saved (Net)		0	0	5	13	26
Incremental annual BBtu Saved (In prog)		0	0	5	13	26
Cumulative annual BBtu Saved (Net)		0	0	5	18	43
Lifetime BBtu Saved (Net)	650	0	0	77	191	383
Commercial and Industrial Retrofit Program Total						
Incremental annual BBtu Gas Saved (Net)		0	0	8	18	24
Incremental annual BBtu Saved (In prog)		0	0	8	18	24
Cumulative annual BBtu Saved (Net)		0	0	8	26	49
Lifetime BBtu Saved (Net)	736	0	0	118	265	353

TAB C

OFFICE OF TRIAL STAFF INTERROGATORIES

PHILADELPHIA GAS WORKS

Docket No. R-2009-2139884

OTS-RE-152-D Reference Company Exhibit JJP-6, page 49. State how the following items are calculated and provide supporting documentation:

A. Incremental Installed Cost or Full Cost for Retrofit.

B. Natural Gas Saved (MMBtu/yr).

C. Annual Kwh saved.

D. Gas Utility Customer Incentive.

Response Provided By: John Plunkett

Response:

Please see "PGW Revised DSM Plan Workbook 112409 - additional calcs 020410.xls" provided in response to OTS II-23for the detailed calculation of the fields. The items in question are located in the tab titled "Measure Inputs".

A. The "Incremental Installed Cost or Full Cost for Retrofit" comes from multiplying the "Natural Gas Saved" by the installed or incremental costs for those savings. In the case of the Comprehensive Residential Retrofit Program, the Enhanced Low-Income Retrofit Program, and the Premium Efficiency Gas Appliances and Heating Equipment, the cost of the savings comes from the CWP pilot program (see attached: Impact Evaluation of Philadelphia Gas Works' Conservation Works Program Calendar Year 2006 and Comprehensive Treatment Pilot dated November 19, 2008).

   For CFL direct installs, the cost is the installed cost of a CFL as stated in the GMP Energy Efficiency Fund Compliance Report (9/11/08)

   For the Commercial and industrial equipment efficiency upgrades, Municipal Facilities Comprehensive Efficiency Retrofit, and High-efficiency Construction Commercial and Industrial Retrofit are based on costs achieved by NSTAR on non-residential programs in 2007 and Terasen's planned spending in 2009 (both documents are provided in response to OTS-RE-88-D)

B. The "Natural Gas Saved (MMBtu/yr)" field is calculated by multiplying an estimated percentage savings by the forecasted per-customer gas usage.

C. For CFL direct installs, the "Annual kWh Saved" field is the annual kWh savings for a single CFL as stated in the GMP Energy Efficiency Fund Compliance Report (9/11/08)

   For the Comprehensive Residential Heating Retrofit Program and the Enhanced Low-income Retrofit Program, the "Annual kWh Saved" is based on 2005 data from the United States Energy Information Administration (See attached table).

D. For CFL direct installs, the "Gas Utility Customer Incentive" is the installed cost of a CFL as stated in the GMP Energy Efficiency Fund Compliance Report (9/11/08)

   For all other measures, the "Gas Utility Customer Incentive" is a percentage of the "Incremental Installed Cost or Full Cost for Retrofit" based on the program type.

Impact Evaluation of
Philadelphia Gas Works'
Conservation Works Program Calendar Year 2006
and Comprehensive Treatment Pilot

A Report To

Philadelphia Gas Works

Prepared By:

Michael Blasnik

M. Blasnik & Associates

Final Report – November 19, 2008

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I. EXECUTIVE SUMMARY

Philadelphia Gas Works' Conservation Works Program (CWP) is designed to provide cost-effective energy savings to PGW's low income customers who participate in the Customer Responsibility Program (CRP) – a special subsidized payment plan for low-income customers. CWP is intended to reduce the overall long-term ratepayer costs of CRP. This report provides an evaluation of the energy saving impacts of CWP for houses completed during the calendar year 2006 and the results for a new Comprehensive Treatment Pilot program operated in 2006 and 2007.

Program Description

CWP is delivered by two program contractors that each employ a slightly different treatment approach: the non-profit Energy Coordinating Agency of Philadelphia (ECA) and the for-profit Honeywell. In 2006, CWP treatments were completed on 2,567 houses: 1,060 by ECA and 1,507 by Honeywell. The main program treatments were:

- energy education and basic health and safety checks were provided to all houses;
- some basic low-cost and maintenance measures were provided to all houses as needed, including minor home repairs and air sealing, water heat wraps, low flow faucet aerators and showerheads, hot water leak repairs, furnace filter replacements, radiator bleeding, radiator reflectors, etc.;
- set back thermostats with education were provided to two thirds of all houses;
- roof insulation was installed in one third of all houses, targeting homes believed to have sound roofs and needing insulation; and,
- blower-door guided air sealing was performed in a separate site visit for nearly all Honeywell jobs, while ECA reportedly used a blower door to aid in air sealing during the first site visit.

Both CWP contractors employ a "low-cost" treatment approach with limited installation of typical major weatherization measures such as insulation and no heating system replacements. Instead, the program focused on low cost and educational measures, such as clock thermostats, and only provided major measures in the cases considered the most cost-effective. Treatment costs averaged $707 for ECA and $613 for Honeywell. Administrative costs were also low, averaging $130 per completed unit when including contractor and PGW costs, yielding a total program cost averaging $782 per unit.

In 2006, PGW initiated a Comprehensive Treatment Pilot. The objective of the Pilot was to assess the added value and potential cost-effective of providing a more comprehensive array of treatments including heating system replacements, roof repairs needed to make insulation effective, and other more extensive weatherization treatments and home repairs. A key evaluation objective was to assess the performance of the Pilot to date.

Evaluation Approach

The primary evaluation objectives were to: (1) assess the energy savings achieved by CWP and the Pilot, (2) explore the relative performance of the two primary contractors, (3) examine the savings by measure, (4) assess the impacts on bill payment behavior, and (5) assess cost-effectiveness. The evaluation did not assess many other potential benefits of the program.

The evaluation involved collecting, formatting, cleaning and matching databases provided by PGW, ECA, and Honeywell. Gas savings were evaluated using a standard pre/post analysis of weather-normalized actual monthly usage data. A comparison group composed of houses treated in 2007 was used to reflect for any non-program trends in usage.

Evaluation Findings

Table 1 summarizes the energy savings and cost-effectiveness of CWP and the Pilot.

TABLE 1. CWP 2006 AND PILOT 2006 & 2007 IMPACT SUMMARY

	Energy Savings (ccf/yr)				Cost Effectiveness		
Group	Pre Use	Gross Savings	Net Savings	% Save	Value of Savings	Program Costs	Benefit/Cost Ratio
CWP							
ECA (n=853)	1966	160	159	8.1%	$1,832	$869	2.11
Honeywell (n=1314)	1264	74	100	7.9%	$1,245	$721	1.73
Total Program (n=2167) (Total N=2567)	1540	108	123	8.0%	$1,488	$782	1.90
Pilot Program							
ECA (n=57)	2540	417	394	15.5%	$5,153	$2,377	2.17
Honeywell (n=4)	*2021*	*274*	*265*	*13.1%*	*$3,500*	*$2,600*	*1.35*
Total Program (n=61) (Total N=128)	2506	407	385	15.4%	$4,585	$2,454	1.87

Notes: Program costs include all treatment and administrative costs. Savings were valued as the present value of projected avoided wholesale gas costs (not retail rates) using a 5.9% discount rate. Honeywell Pilot results italicized to highlight large uncertainty.

CWP and the Pilot both produced significant energy savings and were highly cost-effective – producing about $2 in energy savings for every program dollar spent. In aggregate, CWP and the Pilot cost $2.3 million and are estimated to provide $4.4 million worth of gas savings over the life of the measures. ECA's CWP work effectively targeted high use customers and produced larger and more cost-effective energy savings than Honeywell. Overall CWP savings declined slightly from 2005 due to lower savings by Honeywell and a larger proportion of the work being performed by Honeywell.

Pilot program savings averaged nearly 400 ccf/yr which is comparable to other LIURP efforts in Pennsylvania that provide comprehensive treatments. The Pilot program costs were actually considerably lower than is typical for these other programs, implying that it compares quite favorably in terms of cost-effectiveness.

Program Measure Performance

We statistically disaggregated savings for major program measures and found that:

- **Roof Insulation:** Honeywell's roof insulation produced very cost-effective savings of 122 ccf/yr, nearly double the savings of ECA's insulation which did not appear quite cost-effective.
- **Setback Thermostats:** ECA's savings from setback thermostats was an impressive 141 ccf/yr, equal to about 8.5% of heating usage and providing a simple payback of about one winter month. Honeywell's savings from thermostats were much lower at 19 ccf, but still cost-effective.

- **Blower Door Air Sealing:** The savings from Honeywell's blower door guided air sealing work remained fairly modest at 30 ccf, similar to 2005 but well below the level reached several years earlier when Honeywell targeted high use customers and achieved much larger measured air leakage reductions. This work is still cost-effective, but not nearly as cost-effective as it had been when employed in high use homes. ECA's air sealing work was performed during core treatment and involved specific leak sealing, although they indicate that a blower door was often used to guide this work even though leakage measurements and costs were not reported.
- **Heating System Replacement:** Heating systems were replaced in about half the ECA Pilot participants analyzed. The eight houses that received a high efficiency condensing heating system replacement averaged a remarkable 848 ccf/yr in savings, worth about $1,600 in annual bill reductions and yielding a simple payback of less than three years on the average $3,723 total treatment cost. Although the sample size is quite small, the savings were consistently high and the statistical uncertainty was estimated at ±145 ccf. Houses that received a conventional new heating system (~80% efficiency) had average savings of 394 ccf/yr. Although the overall program was cost-effective for these homes, the heating system replacement did not appear to be worthwhile.

Conclusions & Recommendations

In 2006, CWP continued to produce solid energy savings at a very modest cost, producing about $2 worth of energy savings for every dollar spent on the program.

ECA has continued to effectively target high use homes, providing more energy savings more cost-effectively than Honeywell. These savings have come primarily from effective installations of setback thermostats which appear to have a simple payback of about one winter month. Honeywell's work is also cost-effective and they actually achieved greater savings than ECA for homes with comparable pre-treatment usage levels, but their failure to target high users led to their continuing decline in performance.

The main recommendations from the 2005 evaluation report still hold. CWP's savings may be improved if:

- Honeywell targeted high use customers and could better emulate ECA's effectiveness with thermostats and under porch partitions; and,
- ECA achieved Honeywell's effectiveness with roof insulation, where ECA's performance continues to lag, and Honeywell's past effectiveness with air sealing (from when they targeted high use homes).

The differences between the contractors in terms of measure selection and measure effectiveness are substantial, although usage targeting dominates the savings comparison each year. The differences in savings should be further examined, perhaps including field inspections, and approaches should be developed to help both contractors pursue the most effective approaches to targeting, measure selection, and installation.

The Comprehensive Treatment Pilot program has produced solid savings results thus far – averaging nearly 400 ccf per home and proving to be as cost-effective as CWP. The savings in homes that received condensing heating systems appear especially impressive – averaging 848 ccf/yr, providing $5000 in net benefits, and yielding a 3 year simple payback. The Pilot program should be continued and refined to target homes that have high usage and are also good candidates logistically for condensing furnace replacements. Although few results were available for Honeywell's Pilot efforts, their apparent aversion to heating system replacements should be re-examined.

II. PROGRAM DESCRIPTION AND EVALUATION APPROACH

The Philadelphia Gas Works' Conservation Works Program (CWP) is designed to provide cost-effective energy savings to PGW's low income customers who participate in the Customer Responsibility Program (CRP). CRP is a payment plan which allows low-income customers to maintain gas service if they pay a fixed percentage of their income for service: either 8%, 9% or 10% of income depending on the household income as a percentage of the poverty level. CWP is intended to reduce the long-term costs of CRP to ratepayers.

CWP began in 1990 and was delivered by the Energy Coordinating Agency of Philadelphia (ECA) for the first six program years. In 1997, the program added Honeywell as a second contractor and each contractor was given some program design flexibility. Both contractors designed low cost program approaches focused on providing energy education, thermostats, and low-cost measures to many houses and providing more extensive air sealing and roof insulation work in targeted houses. Program spending per home has been much lower than other Pennsylvania gas utility LIURP programs. Results of the CWP evaluations since 1997 are summarized in Table 2.

TABLE 2. CWP EVALUATION RESULTS BY CONTRACTOR: 1997 – 2005

	1997	1999	2000	2001	2003	2005
ECA						
Pre-Treatment Usage (ccf/unit)	1843	1675	1213	1496	1304	1952
Net Savings (ccf/unit)	187	167	137	112	107	157
% Net Savings	10.1%	10.0%	11.3%	7.5%	8.2%	8.1%
Cost ($/unit)	$530	$499	$502	$521	$483	$744
Honeywell						
Pre-Treatment Usage (ccf/unit)	1220	1566	1424	1839	1873	1340
Net Savings (ccf/unit)	131	102	122	156	188	119
% Net Savings	10.7%	6.5%	8.6%	8.5%	10.0%	8.9%
Cost ($/unit)	$423	$555	$496	$624	$816	$736

The evaluations found that whichever contractor targeted high use customers more effectively produced the greatest gas savings in almost every year. Somewhat surprisingly, the targeting of high users varied from year to year for each contractor even though evaluation results consistently found that targeting was effective. The evaluations also found a pattern of ECA achieving greater savings from setback thermostats while Honeywell produced greater savings from roof insulation and more extensive use of blower door guided air sealing.

Although the prior CWP evaluations have found the program to be highly cost-effective, the absolute amount of gas savings per home has not been very large compared to other LIURP efforts around the state. CWP has taken the approach of serving many homes in a low cost manner to produce cost effective savings. Most other utility LIURP efforts have focused more on comprehensive treatments that entail much higher costs per home but also can yield much higher savings. To assess the relative impacts and cost-effectiveness of a more comprehensive program approach, PGW initiated the Comprehensive Treatment pilot program in 2006. This pilot allowed a wider range of program measures including heating system replacements, roof repairs needed to make insulation effective, and other more extensive weatherization treatments and home repairs.

The focus of this evaluation report is to update prior evaluation results and assess the impacts and cost-effectiveness of the Comprehensive Treatment pilot.

A. Program Description

The CWP program design in 2006 was similar to the design in prior years for both contractors. The key program elements were:

- All houses received energy education and basic health and safety checks;
- All houses received a "core treatment" including basic low-cost and maintenance measures as needed such as minor air sealing, filter replacements, radiator bleeding, radiator reflectors, water heat wraps, low flow faucet aerators and showerheads, and hot water leak repairs;
- Two thirds of homes received set back thermostats with intensive education. A relatively novel approach is employed in some houses with multiple occupants where the thermostat is used to maintain a steady setting, returning to a customer-established baseline every few hours, rather than the typical set-up/set-back strategy;
- Roof insulation was installed in about 30% of the homes treated by each contractor, based on roof condition and the need for insulation; and,
- Blower-door guided air sealing was performed in a separate site visit by Honeywell for about two thirds of the homes, while ECA reportedly included the blower door during the initial visit to most homes but did not separately report blower door related costs or leakage measurements. ECA's air sealing approach focused more on addressing specific leakage points.

The Comprehensive Treatment pilot was implemented slightly differently by each contractor. Both contractors identified high use customers for recruitment into the pilot and both used a more comprehensive in-home diagnostic audit to further determine whether a home was good candidate for the pilot. ECA screened out homes that did not qualify for a heating system replacement or major heating system repair. Honeywell screened out homes if they did not provide a high savings opportunity that would be missed by the standard CWP design and limits. The ECA approach focused more on heating system replacement as the key pilot measure while Honeywell focused more on weatherization related repairs and the need for extensive insulation and air sealing work. Honeywell took a much more cautious approach toward heating system replacement. In both cases, any homes excluded from the pilot were treated under standard CWP.

Program Production, Treatments, and Costs

Overall, CWP treatments were completed in 2,567 houses during 2006 – 1,060 by ECA and 1,507 by Honeywell. The Comprehensive Treatment pilot completed 54 homes in 2006 and another 74 homes in 2007.

Table 3 summarizes the measure installation rates and costs based on program tracking system data.

TABLE 3. MEASURE INSTALLATION RATES & PROGRAM COSTS PER HOME

	CWP 2006			Pilot Program (06/07)		
	ECA	**HW**	**All**	**ECA**	**HW**	**All**
# of Participants	1060	1507	2567	84	44	128
Measure Installation Rates						
Thermostats	68%	66%	67%	44%	66%	52%
Air Sealing w/ Blower Door (any)	~	81%		~	89%	
- Air Sealing w/ Blower Door >$100 spent		67%			84%	
- Median CFM50 Reduction (>$100 spent, >0 reduction)		946				
Roof Insulation	33%	32%	32%	35%	89%	54%
Heating System replacement	0%	0%	0%	48%	7%	34%
Program Costs (averaged over all houses)						
Insulation Costs	$288	$209	$241	$299	$779	$464
Thermostat Costs	$48	$38	$42	$31	$37	$33
Blower-Door Air Sealing Costs	~	$153	$90	~	$273	$94
Heating System Replacement	$0	$0	$0	$1,232	$210	$881
Other: audit, core measures, education, repairs, etc.	$372	$214	$279	$653	$1,193	$839
Total Measure Costs	$707	$613	$652	$2,215	$2,492	$2,310
Contractor Administration	$139	$85	$107	$139	$85	$120
PGW Administration	$23	$23	$23	$23	$23	$23
Total Program Cost ($/home)	$869	$721	$782	$2,377	$2,600	$2,454

Notes: As in prior evaluations, a house was considered to have received insulation if the insulation cost exceeded $100. For air sealing, we show data used a $100 threshold and no threshold. Program measure costs are the average cost per home served by the program, not the average cost of the measure when installed.

CWP contractors spent an average of $652 per home on measures and, including contractor and utility administrative costs, $782 in total program costs. The costs were slightly higher than the $740 average from 2005. Measure installation rates and costs were similar to 2005 although ECA's average measure spending increased by $90 per home due to increased spending on insulation and other core treatments. Honeywell provided air sealing to slightly fewer homes than in 2005. Instead of listing blower door work as a line item cost, ECA performed specific air sealing measures in the core treatment visit, reportedly with the aid of a blower door in most cases. ECA included the air sealing treatments within the "core" treatment costs while Honeywell billed separately for blower door work.

The Comprehensive Treatment pilot program involved somewhat different program tracking information than regular CWP. ECA included separate records for CWP and Pilot treatments with about half the pilot homes included in both. Honeywell provided a completely separate tracking system for the pilot program and included a spending category called "extraordinary measure". We received tracking system data for 54 pilot homes completed in 2006 (40 ECA, 14 Honeywell) and 74 more homes completed in 2007 (44 ECA, 30 Honeywell). We combined the pilot treatment information for both years of the pilot and summarized the key identifiable measures.

ECA spent nearly all of the extra pilot funds on heating system replacements and did not appear to perform insulation or other measures more frequently than in CWP. The higher spending on the "Other" category compared to CWP mostly represents home repairs (including heating systems). ECA Measure costs averaged just $573 per home for the 44 homes that did not receive a heating system replacement compared to $2,721 for the 40 homes that did. For Honeywell, the pilot funds went to more insulation measures, some more air sealing, just 3 heating system replacements, and a significant amount of funds toward the "extraordinary measure" category (included in the "Other" category in the table). These extraordinary measure items are not identified specifically in the tracking data but presumably include many weatherization-related home repairs.

ECA often refers CWP clients to the Philadelphia WAP, for which they are a contractor, if a home needs more extensive treatments than they provide through CWP. These referrals out of CWP may affect the make-up of their CWP treatment group in unknown ways and complicates any direct comparison of savings between contractors.

B. CWP Participant Characteristics

Table 4 summarizes basic demographics for 2006 CWP participants along with data for the full CRP population (based on data from 2003 on 116,000 CRP accounts).

TABLE 4. 2006 CWP PARTICIPANT DEMOGRAPHICS

Characteristic	ECA	Honeywell	All Participants	2003 CRP Population
Female-headed Household	81%	82%	81%	81%
Median Income	$10,716	$10,326	$10,452	$8,760
Median % of Poverty	76%	77%	77%	72%
Household size	2.5	2.1	2.3	2.7
Senior Household	17%	15%	16%	8%
Employed HH member	24%	29%	27%	35%

As in prior years, the CWP participants included more senior households, with fewer occupants and higher incomes compared to the CRP population. These difference may be due to CWP's focus on single family homes and targeting of higher use customers.

Pilot program demographics are not shown since sample sizes were small and data collection problems with Honeywell led to no demographic data for most of their pilot homes. However, ECA's pilot participants appeared to include more seniors (29%) than regular CWP does.

C. Evaluation Approach

The primary evaluation objectives were to (1) assess the energy savings provided by CWP and the pilot, (2) explore the relative performance of the contractors, (3) examine the savings by measure, (4) assess bill payment impacts, and (5) assess the cost-effectiveness of CWP and the pilot. The evaluation did not include quantifying other potential program impacts such as: health, safety and comfort benefits, environmental emission reductions, water and electricity savings (from low flow devices and reduced furnace run-time), and housing stock improvements and preservation.

We evaluated gas savings using a standard pre/post treatment/comparison design. The monthly gas usage data from before and after treatment was weather-normalized for the participants and for a comparison group drawn from later (mostly 2007) participants. The weather-normalization approach employed was similar to the widely used PRISM software and estimates weather-adjusted annual energy consumption

of each house based on monthly usage data and daily outdoor temperature data. Gross savings for each house are calculated as the difference in the normalized annual consumption between the pre and post treatment periods. We performed this analysis for all participant accounts that had sufficient data.

In order to estimate the net savings achieved by the program, a comparison group was also analyzed to reflect changes in usage which may have occurred without the program. We created a comparison group using CWP participants treated during 2007 and early 2008. We removed any true post-treatment data and then subtracted 390 days from the actual treatment date to create pseudo pre and post periods. The net savings were calculated as the gross savings for participants minus the average change in usage found for the comparison group. We used stratification based on pre-treatment usage as needed to make the comparison group reflect the distribution of usage within the treatment group.

Data Collection

The evaluation involved collecting, formatting, cleaning and matching databases provided by PGW, ECA, and Honeywell. PGW provided databases that included monthly usage, billing, and payment histories. PGW also acted as the conduit for ECA and Honeywell's program tracking databases which contain information on who was treated and the quantities, costs, and dates of treatments. Daily temperature data were obtained from the National Weather Service.

One problem encountered in the data collection was that Honeywell's tracking system for the Pilot was not provided until late in the evaluation process and was not available in time for PGW staff to include those pilot customer accounts in their internal data request for usage and payment data. This delay prevented the evaluation of energy savings for the vast majority of Honeywell pilot homes noted below.

Usage Analysis

The treatment group for the gas usage analysis included 2,567 CWP participants from 2006, 54 Pilot participants from 2006, and 74 Pilot participants from 2007. The 2007 Pilot participants were included in an attempt to increase the Pilot sample size by including some homes with sufficient data for analysis that may span less than a full year. The comparison group was composed of 1931 homes treated by CWP in 2007 and early 2008. We found matching PGW usage data for 2,522 of the 2006 CWP participants (98%), 1,884 comparison group cases (98%), and 87 Pilot participants (68%). The Pilot matching rate was 99% for ECA (83 of 84) and 9% for Honeywell (4 of 44) due to their late data submission.

We eliminated cases from the analysis if we could not develop reliable usage estimates or the apparent change in usage was extreme[1]. We found that some ECA comparison group cases experienced a large apparent increase in usage, particularly if their pre-usage was much less than 1600 ccf/yr. This usage increase is a "regression to the mean" type of bias created by ECA's consistent targeting of high users for 2006 and 2007 – if 2007 participation required that 2006 usage was greater than some level then any usage below that level in 2005 would lead to an apparent usage increase when comparing 2005 to 2006. We addressed this problem by removing all ECA comparison group cases that had pre-use less than 1600 ccf or a change in apparent usage of more than 30%. This problem had not been found in prior CWP evaluations primarily because usage targeting was inconsistent, especially between adjacent years.

As in prior evaluations, we stratified the participant and comparison group cases into 7 categories of pre-treatment usage and then weighted the comparison group cases to match the usage patterns of the participants for each net savings calculation (overall and breakouts). This approach provides a better matched comparison group for estimating net savings.

[1] Usage results were considered unreliable if the data spanned fewer than 210 days (180 days for pilot cases) or fewer than 40% of a typical year's degree days, or the uncertainty in normalized usage was >=20%, or the fit of the usage to weather was poor (r-squared<.=70), or heating or baseload usage was negative, or the normalized annual consumption estimate was <=300 ccf/yr, or the change in total usage was greater than 65% or the change in heating or baseload usage was more than 100%.

III. FINDINGS: GAS SAVINGS

The usage analysis data screens removed 14% of the matched CWP participant cases and 31% of the matched comparison group cases (22% from regular screens and 9% from "regression to the mean" screening), For the Pilot program, the screening removed 44% of the cases -- almost entirely from 2007 participants with too little post-treatment usage data. The savings analysis samples totaled 2,167 CWP participants, 1,306 comparison group cases and 49 pilot participants.

A. Overall Gas Savings Results

Table 5 summarizes the results from the usage analysis.

TABLE 5. GAS USAGE & SAVINGS RESULTS

		Usage (ccf/yr)		Savings (ccf/yr)		% Net Savings	
	# Units	Pre	Post	Gross	Net	% Total	% Heat
CWP Participants							
CWP ECA	853	1966	1806	160	**159 (±18)**	8.1%	9.6%
CWP Honeywell	1314	1264	1190	74	**100 (±12)**	7.9%	9.9%
All CWP	2167	1540	1432	108	**123 (±13)**	8.0%	9.7%
Pilot Participants							
Pilot ECA	57	2540	2123	417	**394 (±60)**	15.5%	17.7%
Pilot Honeywell	*4*	*2021*	*1746*	*274*	***265 (±207)***	*13.1%*	*14.8%*
All Pilot	61	2506	2099	407	**385 (±58)**	15.4%	17.5%
Comparison Group						% Gross Savings	
Raw	1306	1674	1689	-15		-0.9%	-1.1%
Weighted – All CWP	1306	1544	1559	-15		-1.0%	-1.2%
Weighted – CWP ECA	1306	1950	1949	1		0.1%	0.1%
Weighted – CWP Honeywell	1306	1280	1306	-26		-2.0%	-2.6%
Weighted – All Pilot	842	2318	2296	22		0.9%	1.1%
Weighted – Pilot ECA	842	2321	2298	23		1.0%	1.1%
Weighted – Pilot Honeywell	544	2271	2262	9		0.4%	0.5%

Notes: ± figures are 90% confidence intervals on the mean savings. Net savings are calculated using a weighted comparison group based on 7 strata of pre-treatment usage to match comparison cases to each specific participant group. Honeywell Pilot results are shown in italics to indicate very large uncertainty due to the very small sample size.

CWP participants experienced significant net gas savings averaging 123 ccf/yr., equal to about 8% of pre-treatment usage and worth about $230 in retail bill reductions. As in 2005, ECA was much more effective than Honeywell at targeting high use customers and produced substantially greater savings. Overall CWP savings declined by 16 ccf compared to 2005, primarily due to a greater proportion of homes being served by Honeywell as well as a 19 ccf decline in Honeywell's average savings. ECA's savings were essentially identical to 2005 results.

Pilot program net savings averaged 385 ccf, equal to 15% of the pre-treatment usage and worth about $730 in annual retail bill reductions. As expected, Pilot participants had very high pre-treatment usage due to contractor targeting. Although the sample size is modest at just 61 homes, the average Pilot savings are more than three times the CWP savings and the difference is highly statistically significant. Note that the Pilot results are almost entirely based on ECA participants due to the data collection delays with the Honeywell Pilot.

B. Pilot Program Savings Patterns

The small number of Pilot participants with savings results limited the depth of analysis feasible. Still, it appears that the homes that received a heating system replacement saved much more gas than those that did not. These findings are summarized in Table 6.

TABLE 6. PILOT PROGRAM GAS USAGE & SAVINGS BY HEATING SYSTEM TREATMENT (CCF/YR.)

	ECA				Honeywell			
Measure Group	#Units	Pre-Use	Net Savings	% Save	#Units	Pre-Use	Net Savings	% Save
Heating System Replacement	29	2315	519	22%	0			
80% Heating System	21	2259	394	17%	0			
Condensing Heating System	*8*	*2462*	*848*	*34%*	0			
No Heating System Replacement	28	2774	264	10%	*4*	*2021*	*265*	*13%*

Notes: Italics indicate sample sizes of less than 10 homes. Differences between groups only show an association, not necessarily cause and effect. Net savings based on usage-stratified comparison groups.

Net savings averaged 519 ccf/yr for the 29 homes that received a new heating system compared to just 264 ccf for the 32 homes that did not. Even with the small sample sizes, this difference was highly statistically significant (each savings estimate had a ±80 ccf 90% confidence interval). Although ECA planned to install as many high efficiency (92%) condensing heating systems as possible, there were challenges in properly venting these systems in rowhouses due to code required clearances. Ultimately, 21 of the 29 heating systems installed in the analysis sample were standard 80% efficient systems. These homes saved an average of 394 ccf. In the 8 homes where ECA was able to install a high efficiency system, the savings average 848 ccf!. The savings were so consistently high in these homes – ranging from 471 to 1379 ccf, with a median of 954 ccf – that the 90% statistical confidence interval was ±145 ccf, ranging from 703 ccf to 993 ccf. The average savings of 848 ccf are worth $1600 per year at retail rates and yield a simple payback of less than three years on the $3723 total treatment cost for these homes.

Although the sample is small, ECA's Pilot appears to be producing impressive gas savings, especially for homes where condensing furnaces were installed. The approach of targeting homes with very high usage and including heating system replacement as a measure appears sound. The effectiveness of Honeywell's Pilot effort can't be determined due to the very small sample. However, Honeywell's apparent decision to avoid heating system replacements may represent a lost opportunity. A larger scale evaluation of more pilot homes may be worth pursuing in the future to refine these savings estimates.

C. CWP Gas Savings Patterns

The mean pre-treatment annual gas usage for CWP participants was 1966 ccf for ECA and 1264 ccf for Honeywell. Figure 1 shows the distribution of pre-treatment usage for CWP customers by contractor and Figure 2 shows the relationship between usage and net savings.

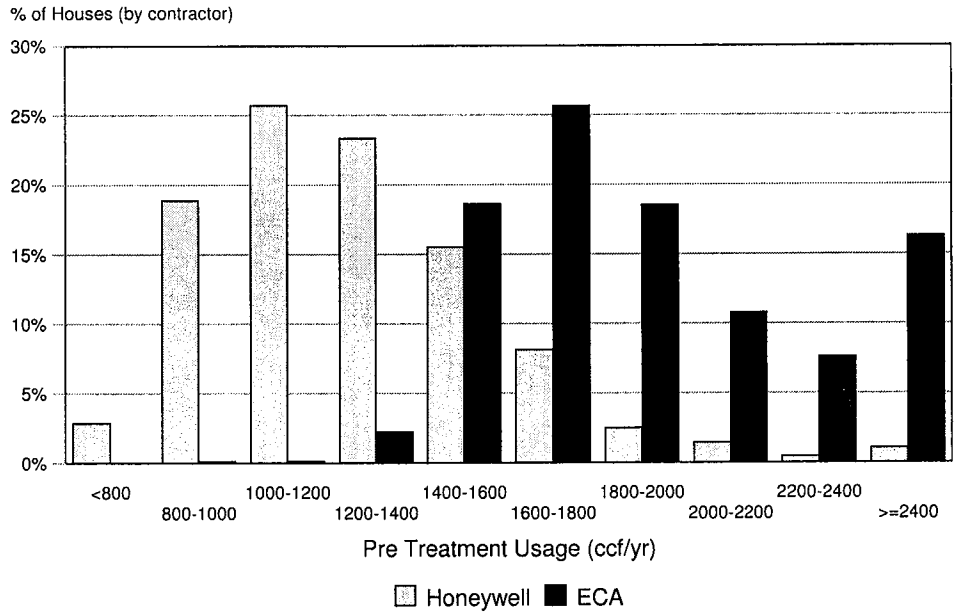

Figure 1. Distribution of pre-treatment gas usage by contractor (CWP)

As in the 2005 evaluation -- ECA treated almost entirely high use houses while Honeywell treated mostly moderate use houses. Just 0.2% of ECA's clients used less than 1200 ccf compared to 47% of Honeywell's while 80% of ECA's clients used more than 1600 ccf/yr. compared to 14% of Honeywell's.

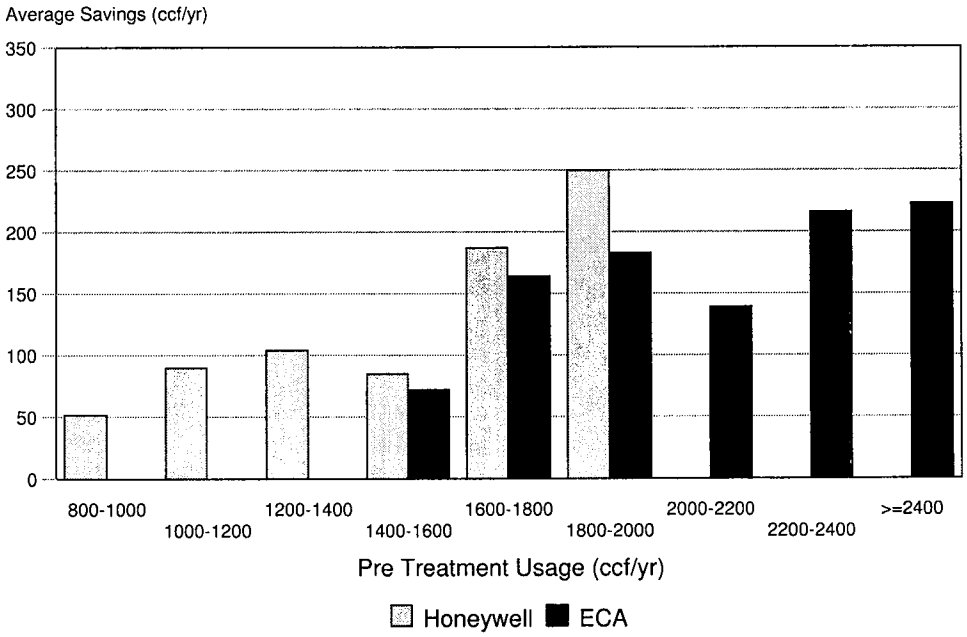

Figure 2. CWP Average Net Savings by Pre-Treatment Usage by Contractor

The savings/usage relationship is apparent for both contractors, especially in the middle range of usage, but there are anomalies for both as well. Honeywell actually achieved greater savings than ECA in each

of the three usage categories where both contractors have results implying that ECA's better targeting of high use homes is responsible for their higher overall savings.

Characteristics of High and Low Savers

Table 7 summarizes some characteristics of high, mid, and low saving CWP participants. High savers were defined as the top quartile of gross savings (i.e., the highest 25% of savers, which meant savings greater than 234 ccf/yr) and low savers were defined as the bottom quartile of savings (<-42 ccf/yr). Mid savers were the middle half of houses that saved between -42 ccf/yr and 234 ccf/yr.

TABLE 7. CHARACTERISTICS OF HIGH, MID, AND LOW SAVERS IN CWP

	ECA			Honeywell		
Characteristics	**High**	**Mid**	**Low**	**High**	**Mid**	**Low**
# Houses	306	356	191	235	729	350
% of Homes treated	36%	42%	22%	18%	55%	27%
Pre-Usage (ccf/yr.)	2098	1866	1940	1486	1233	1179
% homes with Pre-use <1200 ccf	0%	0%	1%	19%	51%	59%
% homes with Pre-use >1800 ccf	67%	44%	49%	15%	4%	2%
Net Savings (ccf/yr.)	440	108	-197	390	108	-112
Savings % (of total)	21%	6%	-10%	26%	9%	-10%
Treatments						
Roof Insulation	39%	33%	25%	61%	32%	15%
Thermostat	78%	69%	50%	75%	65%	63%
Blower Door Air Sealing	~	~	~	80%	66%	59%
Measure Costs	$803	$696	$601	$897	$599	$475

ECA participants were twice as likely to high savers as Honeywell participants. High savers generally had higher pre-treatment usage, more major measures installed, and more money spent on treatments than low savers. The variations in usage, roof insulation installation rates, and overall spending is wider for Honeywell than ECA. The patterns in the data suggest that Honeywell achieves higher savings primarily by performing more insulation and air sealing work in some homes which tend to have somewhat higher usage while ECA achieves higher savings in many cases by targeting homes with very high usage and having success with thermostat setbacks.

The table also shows that ECA's low saver category had much lower savings than Honeywell's on an absolute basis although only slightly lower in terms of percentage savings. Many of the participants that experienced large "negative savings" most likely had changes in usage unrelated to the program treatments that may have had a percentage impact (e.g., changes in thermostat setting or heating efficiency), resulting in larger absolute usage increases for ECA due to their higher pre-treatment usage.

Savings and Measures Performed

Table 8 shows net gas savings broken out for groups of CWP participants based on the measures which they received.

TABLE 8. CWP GAS USAGE & NET SAVINGS FOR KEY MEASURE GROUPS (CCF/YR.)

	ECA				Honeywell			
Measure Group	**#Units**	**Pre-Use**	**Net Savings**	**% Save**	**#Units**	**Pre-Use**	**Net Savings**	**% Save**
Roof Insulated	287	1911	212	11%	426	1444	174	12%
Roof Not Insulated	566	1994	132	7%	888	1177	64	6%
Thermostat (with education)	579	1956	204	10%	867	1281	111	9%
No Thermostat	274	1988	64	3%	447	1230	79	7%
Blower Door Air Sealed	~				874	1307	115	9%
Not Blower Door Air Sealed	~				440	1177	70	6%
Core Treatment & Education Only	179	2013	21	1%	183	1121	51	5%
Major Measure Combinations: Core Treatment, Education &...								
Tstat Only (No Roof, No Seal)	387	1985	183	9%	205	1164	63	5%
Roof Only (No Tstat, No Seal)	95	1940	144	7%	14	1501	180	12%
Seal Only (No Tstat, No Roof)	~				155	1209	63	5%
Seal & Tstat (No Roof)	~				345	1200	72	6%
Roof & Tstat (No Seal)	192	1897	246	13%	38	1396	156	11%
Roof & Seal (No Tstat)	~				95	1434	145	10%
Roof & Seal & Tstat	~				279	1451	187	13%

Notes: Differences between groups only show an association, not necessarily cause and effect. ECA did not perform blower door guided air sealing separately, so results are missing for those categories but some air sealing is part of their core treatments. Each net savings value employs a weighted comparison group to match pre-treatment usage for the participants.

The table shows, as expected, that savings are larger for homes that received the major measures of insulation, thermostats, and air sealing. ECA has far fewer treatment categories with results because they did not report specific costs or test results for blower door guided air sealing. The results for ECA are remarkably similar to the 2005 evaluation findings in virtually every measure group – all but one of the group savings results are within 10 ccf of the 2005 results. ECA continues to produce very high savings in homes where a setback thermostat is the only major measure installed. The Honeywell savings results are generally similar to the 2005 results but have considerably more variability and mostly lower savings for the multiple measure groups. Roof insulation appears to provide the key savings for Honeywell.

It is tempting to attribute the differences in savings between treatment groups to the measures that define them but this reasoning can be faulty since other factors also vary between the groups. Weatherization programs are not designed experiments where treatments are randomly assigned. Instead, houses are treated based on opportunity. For example, houses which get roof insulation may differ from houses which don't in terms of the condition of the house or the likelihood that they received other major measures. The higher savings in these houses may be due in part to these other factors. Therefore, differences in group savings should not be interpreted as indicating cause and effect, but only associations. More sophisticated approaches are needed to estimate specific impacts.

Statistical Analysis of Factors Associated with Savings

We examined the relationships between CWP gas savings, usage, treatments, housing characteristics, and demographics using regression analysis. The goals in this application included estimating savings from individual measures and identifying other factors associated with savings. We employed a combination

of standard and robust regression methods and developed conclusions based on a combination of careful statistics and a grounding in prior measure savings from CWP and other programs. Still, regression model results are not unassailable and strong conclusions about cause and effect are difficult to make due to issues with data quality; large unexplained savings variability; and the potential that unobserved factors may play a significant role in the observed savings.

To estimate the incremental savings for specific measures, we modeled the gas savings as a function of the major treatments. We restricted the analysis to homes with a higher level of usage analysis reliability (with a standard error of normalized usage less than 7%). In prior year evaluations, savings from the major measures were found to differ between ECA and Honeywell and so separate interaction variables were included to estimate these effects. The results from this analysis are summarized in Table 9.

TABLE 9. INCREMENTAL MEASURE SAVINGS ESTIMATES

	Savings (ccf/yr.)	
Measure	**ECA**	**Honeywell**
Roof Insulation	63	122
Thermostat	141	19
Blower Door Air Sealing >$200	~	30
Under Porch Partition	47	~

Notes: Savings estimates from regression model of saving with variables: roof insulation, thermostat, blower door air sealing (>$200), ECA thermostat, ECA insulation, and Honeywell job each as indicator variables. Estimated using 2,033 participants and 1,229 comparison group cases with CV(NAC)<7%. Coefficients were statistically significant at 1% level, except for Honeywell thermostat and air sealing savings which were significant at the 10% level, and ECA Under Porch Partition (p<.12).

Roof insulation savings are estimated at 122 ccf for Honeywell and 63 ccf for ECA. These savings are lower than the 139 ccf and 87 ccf estimated in the 2005 evaluation, and even lower than the savings found in 2003. The apparent reduction in savings from this measure over time and the low absolute level of estimated savings for ECA jobs may be worth exploring through field inspections using infra-red to assess insulation quality.

Thermostat savings are generally similar to the 2005 evaluation findings (which were 132 ccf for ECA and 25 ccf for Honeywell). ECA thermostat installations appear to be providing much larger savings than Honeywell's in absolute and percent terms (8.5% of heating usage vs. 1.9%). ECA's savings have been growing each year while Honeywell's savings have been declining since reaching a high of 87 ccf in 2001. Although ECA's targeting of high use customers should enhance thermostat savings, the differences appear to be too large to be fully explained by that difference. Honeywell may need to re-examine it's approach to thermostats.

Honeywell's **blower door guided air sealing** savings were estimated at 30 ccf/yr, about equal to the 2005 result of 32 ccf/yr. Savings from the evaluations of 2001 and 2003 were much larger – more than 100 ccf/yr. -- and the recorded leakage reductions were also much larger (2230 and 2601 CFM50) than the 880 CFM50 median reduction found in this analysis sample. The decline in savings can be mostly attributed to Honeywell no longer targeting high use customers who tend to have leakier homes that provide greater air sealing opportunities.

The **under porch partition** retrofit is only used by ECA and involves constructing an insulated and sealed wall to partition off basement areas that extend underneath front porches in some homes. Prior evaluations found savings ranging from 91 to 137 ccf/yr for this treatment but these estimates were all based on small samples. The 2006 analysis indicates lower savings of 47 ccf, but with considerable

uncertainty (±47) due to a sample of just 45 homes. The average cost for the treatment was $260 in the sample homes, indicating a good payback even using this lower savings estimate.

In addition to estimating measure savings, we examined demographic and housing characteristics to assess relationships with savings. We analyzed these factors by incorporating them into the measure savings model to assess whether savings differences are explained by factors other than the treatments. As in prior years, we found that households with employment income tended to save more than those without (by about 23 ccf) after accounting for the mix of treatments received. Unlike in prior evaluations, we did not find any difference in savings between senior households and other households.

C. Participation in Other Energy Programs

Some CWP participants also participate in other energy-related programs targeted to low income households. In addition, ECA sometimes treats potential CWP clients under the Weatherization Assistance Program (WAP) instead of providing the more limited treatments available under CWP. These referrals may affect ECA's CWP savings in unknown ways. Both contractors also refer clients to other home repair programs such as the heater hotline, BSRP, and SHARP in addition to providing CWP treatments. Some clients also seek out programs such as WAP on their own.

ECA operates multiple energy programs in Philadelphia and provided copies of their databases for four programs: the Heater Hotline, WAP, WRAP, and Cool Homes programs. Heater Hotline provides heating system repairs and a few replacements and ECA is one of two primary contractors. Heating system repairs are generally not expected to save energy. ECA is also one of two WAP contractors in Philadelphia which provides weatherization and includes additional heating system repairs and replacements provided under the CRISIS program. ECA operates two smaller programs -- WRAP provides comprehensive services and white roof coating to a targeted area of the city and Cool Homes provides white roof coatings and related cooling measures.

We cross referenced all participants served by ECA in these other programs from 2005 through 2007 with the CWP participants and found some overlap. Among 2006 CWP participants, we found:

- 321 CWP homes also participated in Heater Hotline (13% of the CWP population);
- 107 CWP homes participated in WAP (4%); and,
- No CWP homes participated in WRAP or Cool Homes.

The participation in the other programs came both before and after CWP treatments and may not have had much impact on the observed gas savings. We explored the savings impact by adding terms in the measure savings regression model to represent WAP and Heater Hotline participation. This analysis found estimated that WAP was associated with 29 (±35) ccf of additional savings while heater hotline was associated with 16 (±22) ccf of added savings. Neither savings value was statistically significant. When multiplied by the participation rates, the overall impact on the observed program savings was estimated at a negligible 3 (±3) ccf/yr.

D. Sample Representativeness

The average savings for the houses in the analysis sample may not represent the average savings for all houses treated by CWP if the data collection and cleaning process resulted in a sample for analysis that differs from the full participant group. Table 10 compares the savings analysis sample with the full 2006 participant population served by each contractor on several key factors.

TABLE 10. CHARACTERISTICS OF CWP SAMPLE VS. CWP PARTICIPANT POPULATION

	ECA		Honeywell	
Characteristic	**Sample**	**Population**	**Sample**	**Population**
# Units	853	1060	1314	1507
Pre-Use median (ccf/yr)	1826	1846	1220	1224
Roof Insulated	34%	33%	32%	32%
Thermostat	68%	68%	66%	66%
Blower Door Air Sealed	~	~	67%	67%
Total Measure Cost	$713	$707	$619	$613

Note: Pre-use for the population does not include 32 ECA jobs and 20 Honeywell jobs where no usage analysis results were available for the pre-treatment period.

The houses included in the analysis appear virtually identical to the overall participant population. This finding should be expected since the sample attrition rate was very low.

IV. FINDINGS: BILL PAYMENT

Evaluating the impacts of a program on customer bill payments is typically a challenging task. Some of the key challenges include:

- bias can arise if one restricts the analysis to customers with complete data because those with the worst payment behavior get disconnected and therefore don't have a full set of bills;
- actual gas usage amounts vary with the weather, which can differ between years in the analysis;
- factors unrelated to the program, such as changes in fuel assistance program rules or grant formulas or general demographic/economic changes can have a large influence on payment behavior, requiring that comparison be made using the same time frames for all homes if possible;
- appropriate comparison groups are difficult to develop because future participants, which work well for an energy impact analysis, may be biased towards customers with better payment behavior since they managed to maintain service until they were treated in the future; and,
- data from utility accounting systems is often complex to decipher and can involve transactions related to prior periods

The fact that CWP participants are all in CRP (at least at time of treatment) allows the analysis to focus on testing specific hypotheses. If bill amounts are fixed at a percentage of income, then bills should not be affected by CWP savings and neither should payments, indicating that the CWP bill savings should accrue to ratepayers as a reduced cost for operating CRP. We tested this hypothesis in the 2003 evaluation and found it was generally supported by the data, although some small proportion of the savings apparently accrued to the customers, perhaps related to less than 100% CRP bills. The 2005 evaluation found more mixed results with customer payments and bill coverage apparently increasing after program participation.

We repeated the payment and bill analysis for the 2006 participants. We used calendar year 2005 as the pre-treatment period and July 2006 through June 2007 as the post treatment period. These choices restricted our participant group to customers treated from January 2006 through June 2006 but allowed us to create a comparison group from July-December 2007 participants. We eliminated customers if either the pre or post years had zero totals for bills or payments or the number of bills in the period was less than 11 or greater than 13. These criteria were primarily designed to deal with customers that had data problems. The analysis period for payments was offset 15 days into the future to better reflect payments applied to the bills in the period rather than bills in a prior period.

Over the analysis timeframe, gas rates increased while the post-treatment winter was 7% milder than the pre-treatment winter. These changes combined with other potential shifts in factors such as fuel assistance, incomes, and other demographic trends which could affect payment behavior make the analysis challenging. Table 11 summarizes the results of the bill payment analysis.

TABLE 11. CWP BILL PAYMENT ANALYSIS: TOTAL ANNUAL BILL AND PAYMENT AMOUNTS

	Participants (n=1034)				Comparison Group (n=596)		
Bill / Payment	**Pre**	**Post**	**Change**	**Net Change**	**Pre**	**Post**	**Change**
Bill : current asked-to-pay	**$1032**	**$1126**	**+$94**	**+$171**	**$1204**	**$1127**	**-$77**
Payments							
# Customer Payments	10.5	10.1	-0.4	-0.4	10.2	10.2	0
Customer Payments	**$1032**	**$1042**	**+$10**	**+$105**	**$1147**	**$1052**	**-$95**
Fuel Assistance & Other Payments	$182	$181	-$1	-$24	$152	$175	+$23
Total Payments	$1214	$1223	+$9	+$81	$1299	$1227	-$72
Shortfall (asked to pay – Customer $)	$0	$84	+$84	+$66	$57	$75	+$18
Shortfall (asked to pay – Total Pay $)	-$182	-$97	+$85	+$90	-$95	-$100	-$5

The table shows that the billed amounts (asked to pay, not full retail) increased by $94 for participants and decreased by $77 for the comparison group. Since CRP bills should only vary with customer income, the observed changes are most likely due to changes in the proportion of bills rendered as CRP bills rather than regular retail bills combined with changes in incomes. The net decrease in bills for the comparison group may reflect some comparison group members enrolling in CRP during the analysis timeframe.

Customer payments increased by an average of $10 for participants while declining by an average of $95 for the comparison group, yielding a net $105 increase in customer payments. The number of payments stayed about the same – decreasing by 0.4 per participant. In terms of bill coverage, participant customer payments covered 100% of their pre-treatment asked-to-pay bill amounts and 93% of their post-treatment bill amounts. For the comparison group, payments covered 95% of the pre-treatment bills and 93% of the post-treatment bills.

Fuel assistance stayed the same for the participants but increased by $23 on average for the comparison group. This finding is consistent with prior evaluations and can be explained by the fact that when customers enroll in CWP they are likely to also apply for fuel assistance which causes the comparison group assistance to increase.

The table also shows the bill "shortfall" based on the asked to pay amount using customer payments and also using total payments. The customer payment shortfall increased by $84 for participants and by $18 for the comparison group, yielding an estimated net $66 increase in the shortfall. In terms of total payments, both groups had negative shortfalls which can occur because fuel assistance payments are applied to the CRP shortfall and not the current bill. The net change in total shortfall was a $90 increase. In the post period, both groups' had nearly identical bill and payment amounts

Given that shifts in asked-to-pay amounts should be unrelated to CWP interventions and customer payments should also be unaffected, it is difficult to draw any strong conclusions from this payment analysis. The data show that customer bill payments and coverage increased for participants and that overall payments exceeded billed amounts for both groups in the post-treatment year. Overall, there is no reason to doubt that all or nearly all of the savings from CRP accrue to ratepayers, although this analysis provides limited support for any conclusion.

V. COST EFFECTIVENESS

The ultimate purpose of an impact evaluation is to assess whether the program was a worthwhile expenditure of resources and to suggest methods for improving cost-effectiveness. Standard cost-benefit analysis is limited by the relative ease of quantifying program costs compared to the difficulty in quantifying all benefits, including those beyond energy savings, particularly for low-income programs. For this evaluation, we followed PA PUC guidelines to assess cost effectiveness.

A. Program Costs, Benefits, and Assumptions

In the analysis we included all program costs and only counted the avoided cost of the gas saved as a benefit. Gas costs have been highly variable in recent years and projections have considerable uncertainty. We used PGW's latest IRP planning assumptions for estimating wholesale and retail gas costs, although these projections already seem too low given recent price changes and volatility. The GCR forecast ranged from $1.02/ccf to $1.12/ccf in future years after starting at $1.23/ccf in 2006. Retail rate projections ranged from $1.73/ccf to $1.90/ccf.

In calculating the present value of the lifetime energy savings, we assumed a 15 year measure life for thermostat savings, a 25 year measure life for all other measures, and a discount rate of 5.9%. These assumptions result in a lifetime present value of $10.46 per annual ccf for 15 year measures and $13.67 per annual ccf for 25 year measures.

CWP and Pilot results were assessed separately with administrative costs allocated per unit served. The pilot program cost-effectiveness was based on all homes treated in 2006 and 2007 to be consistent with the usage analysis. The breakout of results for Honeywell is particularly uncertain due to the sample of just four homes in the savings analysis.

B. Cost Effectiveness Results

The present value of the energy impacts were compared to the program costs and summarized as a benefit-cost ratio. A ratio greater than 1 indicates that the value of the quantified program impacts is greater than the costs. The results of this analysis are shown in Table 12.

TABLE 12. COST BENEFIT ANALYSIS CWP 2006 AND PILOT 2006 & 2007

	Overall	ECA	Honeywell
Aggregate ($ millions):			
Utility Savings (p.v. avoided costs)	$4.41 million	$2.38 million	$2.03 million
- Utility Cost	$2.32 million	$1.12 million	$1.20 million
= Net Utility Benefit	$2.08 million	$1.25 million	$0.83 million
Benefit/Cost Ratio (=Savings / Costs)	1.90	2.12	1.69
CWP: per Participant:			
Utility Savings (p.v. avoided costs)	$1,488	$1,832	$1,245
- Utility Cost	$782	$869	$721
= Net Utility Benefit	$705	$963	$524
Benefit/Cost Ratio	1.90	2.11	1.73
Pilot: Per Participant:			
Utility Savings (p.v. avoided costs)	$4,585	$5,153	*$3,500*
- Utility Cost	$2,454	$2,377	$2,600
= Net Utility Benefit	$2,131	$2,776	*$900*
Benefit/Cost Ratio	1.87	2.17	*1.35*

Note: Honeywell Pilot savings results are based on just four homes and therefore have considerable uncertainty.

The table shows that the program was very cost-effective – reducing gas costs by $4.4 million over the lifetime of the measures, nearly double the total program cost of $2.3 million. The benefit/cost ratio of 1.90 is a little less than the 2.13 found in the 2005 evaluation primarily due to Honeywell producing lower savings than in 2005 and also producing a larger proportion of the work. As in 2005, ECA's work was more cost-effective than Honeywell's, providing a BCR of 2.12 compared to Honeywell's 1.69. ECA's CWP work produced $963 in net benefits per participant compared to $524 for Honeywell.

The Pilot program appears to achieve about the same average Benefit/Cost ratio as CWP, which makes sense since it produces nearly three times the savings at nearly three times the cost per participant. For ECA, the Pilot results are really a combination of very high savings for homes receiving heating system replacements and modest savings for homes that did not. The Pilot design should work toward maximizing the number of homes that can receive cost-effective heating system replacements.

In terms of a simple payback based on retail rates, CWP provided a payback of about 3.3 years with bill savings of $236/yr and a cost of $782. The payback was 2.9 years for ECA's work and 3.8 years for Honeywell's work. The Pilot program payback averaged 3.7 years with savings of $665 and a cost of $2,454.

In any analysis, the program would appear even more cost-effective if one included the value of other program benefits such as impacts on the environment, the local economy, and electricity and water usage.

Cost-Effectiveness of Program Measures

Table 13 summarizes the cost-effectiveness of specific measures based on the measure savings estimates and costs. Heating system replacement savings were included by estimating the savings as the simple group savings differences found for ECA's Pilot homes as shown in Table 6.

TABLE 13. ESTIMATED COST-EFFECTIVENESS OF SELECTED MEASURES

Measure	Gas Savings	Measure Life	Savings (p.v.)	Cost	Benefit/ Cost Ratio
ECA					
Roof Insulation	63	25	$861	$876	0.98
Thermostat	141	15	$1,476	$70	21.08
Under Porch Partition	47	25	$642	$261	2.46
Heating System Replacement : 80%	130	25	$1,777	$2,433	0.73
Heating System Replacement: Condensing	584	25	$7,982	$2,991	2.67
Honeywell					
Roof Insulation	122	25	$1,667	$660	2.53
Thermostat	19	15	$199	$58	3.43
Blower Door Air Sealing (>$100 spent)	30	25	$410	$216	1.90

As in prior years, ECA's thermostats provided the largest benefit-to-cost ratio, producing $21 in savings for every dollar spent. Roof insulation was quite cost-effective for Honeywell but slightly non-cost effective for ECA. Blower-door guided air sealing was fairly cost-effective for Honeywell as were Under porch Partitions for ECA.

The 80% heating system replacements in the Pilot do not appear to be cost-effective, although the savings are based on a simple group difference between the 21 Pilot homes receiving 80% furnaces and the 28 Pilot homes not receiving any new furnace. A larger analysis sample would be needed to develop a more accurate impact estimate, but thus far it does not appear cost-effective. In addition, one should not expect this measure to be cost-effective unless the existing system had very low efficiency (e.g., coal conversion or gravity warm air).

The condensing furnace replacements appear to be highly cost-effective and produce nearly $8,000 worth of gas savings for an investment of about $3,000. Although the saving estimate has considerable uncertainty, the results thus far are quite promising and imply that this measure would be cost-effective even if the usage threshold were lowered somewhat. It may be worth refining the Pilot to target homes that have high usage and also appear to provide a feasible way to install a condensing furnace. Each such installation that could be identified may capture about $5,000 worth of net present value.

C. Other Program Impacts

Beyond the impacts included in the cost-effectiveness analysis, CWP may provide other benefits to the participants, utilities, ratepayers, and society at large. The following list briefly mentions some of these potential benefits of effective weatherization programs which have been cited, and occasionally quantified, in other studies[2]:

- electricity savings in gas heated houses due to reduced furnace run time and reduced air conditioning loads from attic insulation and air sealing work (approximately 100 kWh/yr would be a reasonable guess for CWP's impacts, saving participants about $15/yr);
- water savings from leak repair work (savings averaging 6% of water use worth $18/yr were found from CWP work in a study of ECA's TEAM REACH project) ;

[2] For an overview of many of these issues and studies, see *Finding Methods to Estimate Social Benefits of Low-Income Energy Efficiency Programs*, L.M. Megdal and M. Piper, in proceedings of 1994 ACEEE Summer Study on Energy Efficiency in Buildings, pp. 1.119-1.131, ACEEE, 1994.

- reduced emission of pollutants such as NOx and SOx and greenhouse gasses including CO2 due to reduced burning of gas – the CWP savings of 123 ccf/yr/home should reduce CO2 emissions by about 1,500 pounds per home per year, or a total of 4 million pounds per year of greenhouse gas reductions;
- local employment and other economic benefits due to the greater labor intensity of energy efficiency compared to energy supply;
- preservation and improvement of the low-income housing stock;
- reduced risk of fires precipitated by lack of utility service (from use of space heaters, unconventional heating sources, candles) or caused by unsafe heating or water heating equipment;
- reduced risk of illness or death caused by faulty combustion equipment or lack of heat, particularly for the most susceptible groups such as seniors, small children, and people with existing illnesses or disabilities;
- reduced social costs associated with low income households living without utility service such as: temporary moves and overcrowding, potential homelessness, and time spent by client and/or social service agencies getting service restored;
- improved comfort, expanded usable living space, and associated health benefits;
- reduced gas emergency service calls and potential for explosions due to safety checks.

This list of potential benefits is undoubtedly incomplete but captures some of the factors which may otherwise be neglected when assessing program value. The existence of these benefits from CWP is unknown and remains unvalued. Some of these benefits may not be applicable to the low cost approach employed in CWP's design. However, some of these benefits (e.g., electric, water, environmental, economic) undoubtedly exist and their exclusion from the cost-effectiveness analysis values them at zero, by default. This fact should be considered when examining cost-benefit results.

VI. Comparison to Prior Years & Other Programs

In addition to cost-effectiveness, CWP can be assessed in terms of its performance relative to itself in prior years and relative to similar programs operated elsewhere. Figure 3 graphs the average savings for each contractor compared to the pre-treatment usage for each of the past seven impact evaluations covering program years 7, 9 and 10 (which ended in August of 1997, 1999, and 2000 respectively) and calendar years 2001, 2003, 2005, and 2006. The current 2006 results are shown with the larger black circles. The sloping line shows 10% savings for reference.

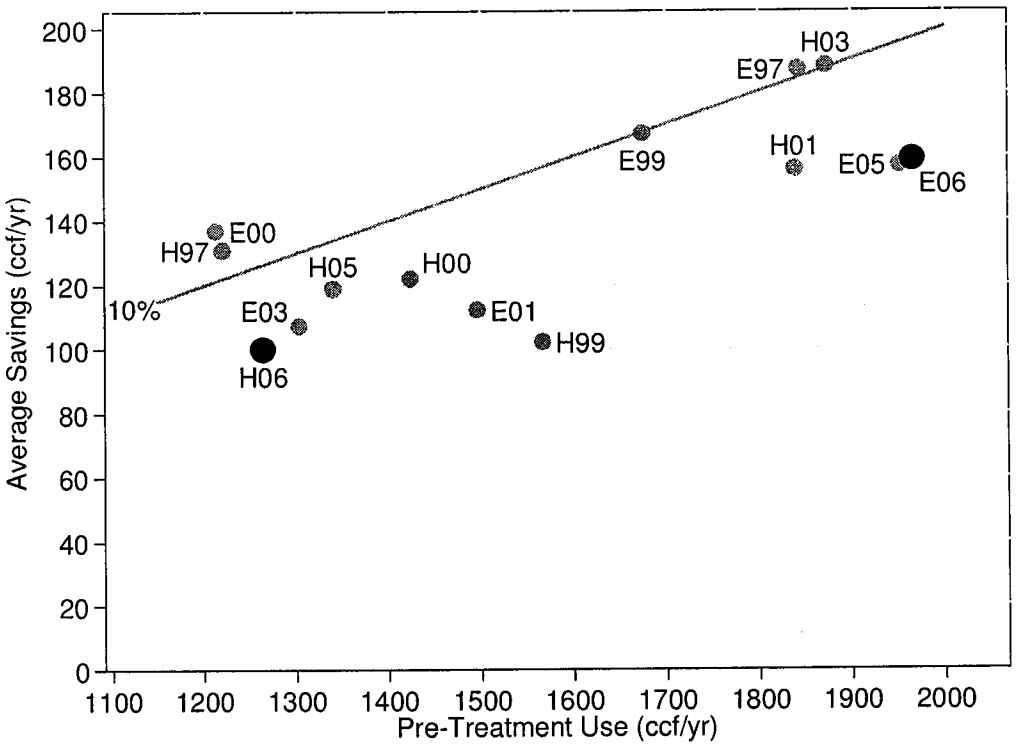

Figure 3. Trends in CWP Savings and Pre-Treatment Usage

The figure shows that higher savings are generally associated with higher usage and also illustrates how ECA has been targeting high users in recent years while Honeywell has not. Honeywell's savings are the lowest of all evaluations shown.

Table 14 summarizes the CWP results and ECA's Pilot results along with evaluation results from prior years and from several other low income weatherization studies. CWP compares quite favorably to other programs. The Pilot program compares quite well with other comprehensive efforts such as the

Columbia Gas Warm Choice results. Warm Choice has slightly larger savings at 407 ccf, but costs more than twice as much.

TABLE 14. CWP 2006 COMPARED TO EARLIER YEARS AND OTHER PROGRAMS

Program	# units	Savings (ccf/yr)	Cost ($/unit)	$ Cost per ccf/yr saved	%Savings
CWP 2006:					
Net: CWP 2006 – ECA	853	159	$869	5.47	8.1%
Net: CWP 2006 – Honeywell	1314	100	$721	7.21	7.9%
Net: Pilot 2006 - ECA	57	394	$2,377	6.03	15.5%
CWP Prior Years:					
Net: CWP 2005 – ECA	1179	157	$744	4.74	8.1%
Net: CWP 2005 – Honeywell	1084	119	$736	6.18	8.9%
Net: CWP 2003 – ECA	1775	107	$483	4.51	8%
Net: CWP 2003 – Honeywell	671	188	$816	4.34	10%
Net: CWP 2001 – ECA	1745	112	$521	4.65	8%
Net: CWP 2001 – Honeywell	878	156	$624	4.00	9%
Net: CWP PY 10 – ECA	1364	137	$502	3.66	11%
Net: CWP PY 10 – Honeywell	1456	122	$496	4.07	9%
Net: CWP PY 9 – ECA	1160	167	$499	2.99	10%
Net: CWP PY 9 – Honeywell	1261	102	$555	5.44	7%
Net: CWP PY 7 – ECA	79	187	$530	2.83	10%
Net: CWP PY 7 – Honeywell	58	131	$423	3.23	11%
Other Programs:					
Columbia Gas of PA Warm Choice 2005	166	407	$5537	13.60	21%
Louisville Gas & Electric 1995	457	186	$1355	7.28	12%
New Hampshire HWAP 2005	27	277	$4253	15.35	22%
Ohio HWAP 1994 – single family	2209	324	$2375	7.33	23%
National WAP 1989 - mod. climate	2243	182	$1550	8.52	12%
Iowa HWAP 2004	633	295	$5682	19.26	25%
Vermont HWAP 2000	25	145	$3227	22.26	13%

Note: Costs have not been adjusted for inflation.

CWP continues to produce more first year savings per dollar spent than any other program examined and results from the Pilot program thus far continue this impressive legacy.

VII. CONCLUSIONS AND RECOMMENDATIONS

In 2006, CWP continued to produce solid energy savings at a very modest cost, producing nearly $2 worth of energy savings for every dollar spent on the program.

ECA has continued to effectively target high use homes, providing more energy savings more cost-effectively than Honeywell. These savings have come primarily from effective installations of setback thermostats which appear to have a simple payback of about one winter month. Honeywell's work is also cost-effective and they actually achieved greater savings than ECA for homes with comparable pre-treatment usage levels, but their failure to target high users led to their continuing decline in performance.

The recommendations from the 2005 evaluation report still hold. CWP's Program savings may be improved if:

- Honeywell targeted high use customers and could better emulate ECA's effectiveness with thermostats and under porch partitions; and,
- ECA achieved Honeywell's effectiveness with roof insulation, where ECA's performance continues to lag, and their past effectiveness with air sealing (from when they targeted high use homes).

The differences between the contractors in terms of measure selection and measure effectiveness are substantial, although usage targeting dominates the savings comparison each year. . The differences in savings between contractors should be further examined and approaches should be developed to help both contractors pursue the most effective approaches to targeting, measure selection, and installation.

The Comprehensive Treatment Pilot program has produced solid savings results thus far – averaging nearly 400 ccf per home and proving to be as cost-effective as CWP. The savings in homes that received condensing heating systems appear especially impressive – averaging 848 ccf/yr, providing $5000 in net benefits, and yielding a 3 year simple payback. The Pilot program should be continued and refined to target homes that have high usage and are good candidates for condensing furnace replacements. Although few results were available for Honeywell's Pilot efforts, their apparent aversion to heating system replacements should be re-examined.

VIII. STUDY LIMITATIONS

This evaluation, like virtually all weatherization program evaluations, was designed to estimate the impacts of an on-going program, not an experiment. The lack of a true experimental design – random assignment of treatments to cases – coupled with the shifting nature of the program design and targeting, the changing environment in which the participants and program operates, and the typically non-random pattern of sample attrition, create the potential for biased results. We have attempted to assess these potential biases and control for them in several ways. The following caveats should be considered in interpreting the study results.

Gas Savings

The net gas savings results are believed to be reliable indicators of the savings achieved by CWP and the relative performance of the contractors. The Pilot program results have greater uncertainty, especially for Honeywell where only four homes were evaluated. The savings for the eight homes that received condensing furnaces also has large uncertainty, but the high savings are not due to merely a couple of outliers but are fairly consistent, which is reflected in the relatively narrow confidence interval.

The analysis of patterns in savings for CWP including estimates of measure-specific savings are believed to be useful indicators of factors associated with savings, but have considerable uncertainty. The inherently high variability in savings between houses and the potential for unknown factors correlated with measure installations to affect results make conclusions from the regression analysis tenuous. Savings results also may have been affected by supplemental heat usage and unknown participation in other housing or energy programs.

Bill Payment Analysis

The bill payment analysis has considerable uncertainty in the specific numbers provided due to a variety of potential biases inherent in the analysis. Based on common sense, with approximate support from the data, it is highly likely that the vast majority of the program savings accrue as reductions in the cost of CRP.

Cost Effectiveness

The cost-effectiveness analysis entails large uncertainty in the future price of gas, but the estimate employed is believed to be fairly conservative. The measure lifetime assumptions of 15 to 25 years also entail considerable uncertainty and could overstate program benefits. However, the program benefits exceed the costs by such a large margin that it is highly unlikely that the program is not cost-effective.

Overall

Although some of the specific findings have considerable uncertainty for the reasons described above, the major findings of this study and overall program cost-effectiveness estimates are unlikely to be affected materially by any of these issues. The main energy savings figures are reasonably reliable and the impact of the potential biases identified are expected to be fairly small, particularly with regard to the overall cost effectiveness.

EXHIBIT 3

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. P-2009-2097639**
PHILADELPHIA GAS WORKS	:	
PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. R-2009-2139884**
PHILADELPHIA GAS WORKS	:	

AFFIDAVIT OF CRISTINA COLTRO

Commonwealth of Pennsylvania	:	
	:	ss.
County of Philadelphia	:	

I, Cristina Coltro, an adult individual, being duly sworn according to law, deposes and says that:

1. I am employed by Philadelphia Gas Works ("PGW" or "Company") as the Vice President-Customer Affairs.

2. I am providing this affidavit to support PUC approval of the Stipulation and Partial Settlement ("Settlement") between PGW and the Clean Air Council providing for expedited implementation of PGW's Low-Income Retrofit ("LI Retrofit") Program and Comprehensive Residential Heating Retrofit Program ("CRHRP") (collectively, "the Residential DSM Programs"), two DSM programs for residential customers built upon PGW's existing Conservation Works Program ("CWP").

3. As part of PGW's general rate increase filing, I provided direct testimony identified as PGW St. 7, two pages of which addressing the existing CWP are attached to the Affidavit of Steven P. Hershey submitted in support of approval of the Settlement.

4. PGW St. 7 was prepared by me or under my direct supervision and control.

5. The facts set forth in PGW St. 7 are true and correct to the best of my knowledge, information and belief, and I expect to be able to prove the same at a hearing held in this matter.

Cristina Coltro

Sworn and subscribed before me this 5 day of March, 2010.

Signature of official administering oath

My commission expires _____.

NOTARIAL SEAL
SHARON R ORTIZ
Notary Public
PHILADELPHIA CITY, PHILADELPHIA CNTY
My Commission Expires Jul 12, 2013

EXHIBIT 4

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. P-2009-2097639**
PHILADELPHIA GAS WORKS	:	
	:	
	:	
PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. R-2009-2139884**
PHILADELPHIA GAS WORKS	:	

AFFIDAVIT OF JOHN J. PLUNKETT

State of Vermont	:	
	:	ss.
County of Addison	:	

I, John J. Plunkett, an adult individual, being duly sworn according to law, deposes and says that:

1. I am a partner in and president of Green Energy Economics Group, Inc., a small energy consultancy I co-founded in 2005.

2. I have been involved in the review or preparation of many gas and electricity demand side management ("DSM") investment plans over the past two decades.

3. I have testified before the Pennsylvania Public Utility Commission ("PUC") on several occasions since 1985 concerning energy efficiency investment and DSM.

4. Since its inception in 2000, I have been engaged as a senior advisor for Efficiency Vermont, the nation's first statewide "energy-efficiency utility."

5. I have consulted on energy efficiency and conservation at the national and provincial levels in China for several non-governmental organizations since 2003.

6. I am providing this affidavit to support PUC approval of expedited implementation for expedited implementation of PGW's Low-Income Retrofit ("LI Retrofit") Program and Comprehensive Residential Heating Retrofit Program ("CRHRP") (collectively, "the Residential DSM Programs"), two DSM programs for residential customers built upon PGW's existing Conservation Works Program ("CWP"). I understand that a Stipulation and Partial Settlement ("Settlement") between PGW and the Clean Air Council provides for the implementation of these two programs pending further examination in and final resolution of PGW's general rate increase filing.

7. As part of PGW's general rate increase filing, I provided direct testimony and exhibits identified as PGW St. 10 and PGW Exhibits JJP-1 through JJP-6. Certain pages of PGW St. 10 and PGW Exh. JJP-4 and JJP-6 are attached to the Affidavit of Steven P. Hershey submitted in support of approval of the Settlement.

8. The purpose of my direct testimony is fourfold: first, to explain why in my opinion it is important that PGW have an appropriately structured and reasonably sized DSM plan; second, to describe the DSM program portfolio that PGW proposes to implement over the next five years; third, to present the program expenditures and gas savings planned for each year, and the supporting calculation of benefits and costs to PGW's customers and its overall economy over the lifetime of all the measures installed as a result of implementing the portfolio; and fourth, to demonstrate that the programs PGW proposes follow best industry design and implementation practices.

9. PGW St. 10, PGW Exh. JJP-4 and PGW Exh. JJP-6 were prepared by me or under my direct supervision and control.

10. The facts set forth in PGW St. 10, PGW Exh. JJP-4 and PGW Exh. JJP-6 are true and correct to the best of my knowledge, information and belief, and I expect to be able to prove the same at a hearing held in this matter.

John J. Plunkett

Sworn and subscribed before me this 5 day of March, 2010.

Signature of official administering oath

My commission expires 2/10/2011.

EXHIBIT 5

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
	:	**Docket No. P-2009-2097639**
v.	:	
PHILADELPHIA GAS WORKS	:	
PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
	:	**Docket No. R-2009-2139884**
v.	:	
PHILADELPHIA GAS WORKS	:	

AFFIDAVIT OF JOSEPH O. MINOTT

IN THE COMMONWEALTH OF PENNSYLVANIA :
SS
COUNTY OF PHILADELPHIA :

I, Joseph O. Minott, an adult individual, hereby depose and state that:

1. I am the Executive Director of the Clean Air Council (the "Council"), which, together with Philadelphia Gas Works ("PGW"), is filing a Stipulation and Partial Settlement for Early Implementation of Philadelphia Gas Works' DSM Programs for Residential Customers (the "Stipulation and Partial Settlement") in the above-captioned proceeding.

2. The Council is a non-profit, member-supported organization with offices located in Philadelphia, Pennsylvania, and Harrisburg, Pennsylvania. The Council's mission is to protect everyone's right to breathe clean air. Through public education, community advocacy, and government oversight, the Council works to ensure the enforcement of environmental laws.

With over 40 years of advocacy and results, including the City of Philadelphia's smoking ban, to its credit, the Clean Air Council is one of the Delaware Valley's preeminent environmental organizations.

3. On April 20, 2009, Philadelphia Gas Works ("PGW") filed a Revised Petition for Approval of Energy Conservation and Demand-Side Management Plan in Docket No. P-2009-2097639. The Demand-Side Management Plan (hereinafter "DSM Plan") outlines seven portfolio programs that PGW hopes to implement over the course of the next five years. The aim of the five-year plan, as proposed by PGW, is to reduce the carbon footprint of current PGW customers, to save PGW customers money on their gas bills, to take steps toward more sustainable uses of scarce natural resources by the City of Philadelphia, and to reduce PGW's financial requirements via a reduction in the total amount of natural gas purchased and delivered by PGW.

4. Given the Council's mission of protecting the public's right to breathe clean air and ensuring the enforcement of environmental laws, the Council intervened in the DSM Plan Proceeding on behalf of the public interest of the residents of the City of Philadelphia, including PGW's residential customers, as well as the residents of the Commonwealth. The public at large has a direct and substantial interest in PGW's proposed plan to reduce overall greenhouse gas emissions and consumer usage of natural gas, and in PGW's proposed creation of 600 to 1,000 jobs, many of which will be green-collar jobs.

5. After reviewing the pleadings, testimony on behalf of PGW (including the direct testimony of John J. Plunkett and Paul Chernick) and supporting exhibits thereto, and other information that PGW provided both informally and through discovery in the above-captioned proceeding, the Council concludes that early implementation of the residential components of the

proposed DSM Plan, as set forth in the Stipulation and Partial Settlement, is reasonable and in the public interest.

6. The Council's conclusions regarding the reasonableness of early implementation, and its decision to join in the Stipulation and Partial Settlement, are based primarily on record support in PGW Sts. No. 7 and 10 and Exhibits JJP-1 through JJP-6 and the following facts:

(a) PGW's proposed Residential DSM programs advance local, statewide and national energy, economic and environmental policies through improving energy efficiency in end uses of energy resources, reducing greenhouse gas emissions, and creating green jobs.

(b) PGW's proposed LI Retrofit Program is a continuation and expansion of the CWP (PGW's LIURP). The LI Retrofit Program seeks to reduce the overall costs of the Customer Responsibility Program ("CRP") upon the average ratepayer. By expanding this program, PGW will provide long-term cost effective services to high-use CRP participants that include: repairing or replacing older and less energy efficient heating systems; providing comprehensive weatherization services; educating customers on ways to reduce their energy consumption along with basic health and safety information; raising awareness of energy conservation and encouraging the incorporation of energy-saving behavior; targeting high-use customers to maximize impact and increase cost-effectiveness; and streamlining delivery mechanisms through implementation contractors.

(c) The DSM Plan includes the Comprehensive Residential Heating Retrofit Program (CRHRP). This program will be offered to non-low income high-use customers (approx. 40% of customers with the highest natural gas usage), and is identical to the LI Retrofit. CRHRP participants will receive a free audit, but the customer must cover the subsidized fee of any installations. Besides the subsidy, an as-of-yet undetermined incentive will be provided to bring the simple payback of the project down to two years.

(d) Early implementation of the LI Retrofit Program will provide low income customers who are enrolled in the CRP with access to weatherization methods that they otherwise would not be able to afford. This in turn relieves the burden that is placed on the regular ratepayers, who subsidize low-income participants' bills. Furthermore, independent evaluations of PGW's current CWP program have verified its success and cost-effectiveness. PGW has represented that expedited implementation to expand an already successful program will allow PGW to provide more of the low income customers who are currently enrolled in the CRP with weatherization services six months earlier than anticipated, in time for the next winter season. In light of these facts, there does not appear to be good reason to delay implementation until 2011.

(e) If the Commission approves the early implementation of these programs, PGW has agreed that it will focus first on expanding its existing CWP by implementation of its LI Retrofit Program. PGW has further agreed that it will

work to accelerate spending intending for 2011 to implement LI Retrofit efforts in 2010, and subsequently take steps to use spending originally intended for the CRHRP in 2011 to implement this program in 2010.

(f) Testimony given by Mr. Plunkett in PGW's St. No. 10 provides greater detail regarding the benefits and measures needed to implement the proposed DSM program. Furthermore, PGW has acknowledged concerns that have been raised during this process, and spearheaded a collaborative process, which led to the incorporation of suggestions made by non-PGW employees or consultants during this process.

(g) Exhibit JJP-6 and Mr. Chernick's testimony in PGW St. No. 11 assert the cost-effectiveness of the proposed DSM programs, including, without limitation, avoided gas and electricity costs. Exhibit JJP-6, a MS Excel workbook available on the PGW website, provides rate and bill analysis for the DSM programs.

(h) PGW's proposed LI Retrofit and CRHRP will also provide customers with electricity savings. The participants in these programs will receive free CFL light bulbs to replace their current incandescent bulbs. According to PGW's exhibit JJP-6, Table 23, the estimated total electricity and gas savings from LI-Retrofit is 6,032 BBtu (net) over 5 years. The estimated total electricity and gas savings from CRHRP is 5,540 BBtu (net) over 5 years. Under the total resource cost (TRC) test, PGW estimates that the total net and gross value benefits are over $37 million and $15 million, respectively, with a total TRC of 1.69. CRHRP's estimated net and gross value benefits are over $37.6 and $16 million, respectively, with a total resource Benefit/Cost Ratio or TRC of 1.74.

(i) Even with early implementation, PGW will continue to hold discussions with the Pennsylvania Department of Environmental Protection (DEP) about potential American Recovery and Reinvestment Act of 2009 funding for all DSM programs, including the two residential weatherization programs. Moreover, PGW has agreed to make applications to DEP for such funding if there is a reasonable opportunity to secure such funds for any portion of the DSM plan.

(j) PGW has agreed to file Detailed Work Plans for the implementation of each of the Enhanced LI Retrofit and CRHRP, within 30 days of the Commission's approval of the Partial Settlement. PGW has committed to working with all interested parties in the development of the Detailed Work Plans.

(k) PGW has agreed to defer recovery of all costs associated with implementation of the CRHRP until such time as the PUC rules on PGW's proposed cost recovery mechanism, thus preserving CRHRP cost recovery issues for full litigation in the base rate case. Accordingly, PGW will bear the risk that its proposed cost recovery mechanism may not be approved in the base rate case proceeding.

(l) Cost recovery for the Enhanced LI Retrofit Program will be achieved through the existing Universal Service Charge, subject to the following reservations of rights:

  (i) The issue of customer class cost responsibility for USC charges may continue to be raised in the proceeding;

  (ii) The Partial Settlement is only intended by the Settling Parties to resolve the limited issue of expedited implementation of the LI Retrofit Program and the CRHRP pending Commission consideration of PGW's full DSM Plan and base rate filing, and is made without any admission against, or

prejudice to, any position that any party might adopt during subsequent litigation of this case, or any other case, with respect to any other issue.

(m) PGW has represented that, compared to other Pennsylvania gas utilities, PGW has a higher proportion of residential customers, a high percentage of whom have low incomes. PGW has experience servicing and providing conservation measures for low-income customers through its existing CWP, which places PGW in a strong position to implement the proposed LI Retrofit Program quickly and offer conservation measures to more of the low-income customers who are enrolled in the CRP.

Joseph O. Minott

Sworn to and Subscribed

Before me this 5th day

Of March, 2010

Notary Public

NOTARIAL SEAL
Margaret M Chapman
NOTARY PUBLIC
City of Philadelphia, Philadelphia County
My Commission Expires 07/30/2012