OSBA Statement No. 1

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	Docket No. R-2017-2586783
PHILADELPHIA GAS WORKS	:	

Direct Testimony and Exhibits of

ROBERT D. KNECHT

On Behalf of the

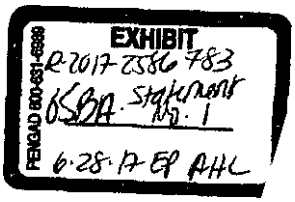
Pennsylvania Office of Small Business Advocate

Topics:

Revenue Requirement Policy
Financial Overview
Cost Allocation
Revenue Allocation
Rate Design

Date Served: May 16, 2017

Date Submitted for the Record: _____



DIRECT TESTIMONY OF ROBERT D. KNECHT

1. Witness Identification and Summary of Conclusions

Q. Mr. Knecht, please state your name and briefly describe your qualifications.

A. My name is Robert D. Knecht. I am a Principal of Industrial Economics, Incorporated ("IEc"), a consulting firm located at 2067 Massachusetts Avenue, Cambridge, MA 02140. I specialize in the economic analysis of basic industries. My consulting practice currently consists primarily of the preparation of analysis and expert testimony in the field of regulatory economics on a variety of topics. I obtained a B.S. degree in Economics from the Massachusetts Institute of Technology in 1978, and a M.S. degree in Management from the Sloan School of Management at M.I.T. in 1982, with concentrations in applied economics and finance. I am appearing in this proceeding on behalf of the Pennsylvania Office of Small Business Advocate ("OSBA"). My résumé and a listing of the expert testimony that I have filed in utility regulatory proceedings during the past five years are attached in Exhibit IEc-1.

Q. Please describe your assignment in this matter.

A. The OSBA requested that I review the filing and interrogatory responses submitted by the Philadelphia Gas Works ("PGW" or "the Company") in this proceeding, to evaluate whether the rates proposed for small business customers are consistent with sound economics and regulatory principles. My analysis addresses a variety of issues and topics in the Company's filing. However, my evaluation of the Company's filing does not constitute an exhaustive review. If I have not addressed a particular issue, it cannot be inferred that I agree with the Company's proposal for that topic.

Also, I submitted testimony in each of the Company's last two base rates proceeding, namely the emergency rate relief proceeding in 2007 (Docket R-00061931) and the follow-up base rates proceeding in 2009 (Docket R-2009-2139884). In this testimony I refer to the latter as the Company's last base rates proceeding. Some sections of this testimony draw heavily on my previous work.

Q. How is the balance of your testimony organized?

A. This testimony is organized as follows:

- Section 2 addresses, from an economic (i.e., non-legal) perspective, the revenue requirement policy implications of PGW's status as a cash-flow regulated utility with no access to equity capital other than ratepayers;
- Section 3 presents a brief summary of the changed financial status of the Company since its last base rates proceeding;
- Section 4 reviews my assessment of cost causation and the PGW proposed Class Cost of Service Study ("CCOSS");
- Section 5 addresses revenue allocation issues;
- Section 6 addresses rate design issues.

2. Revenue Requirement Policy

Q. Do you have any general comments with respect to the costs that the Commission should allow PGW to recover, given its status as a cash-flow regulated utility?

A. I do. To a large extent, the Commission focuses on rate-of-return regulated utilities. For those utilities, rates are generally set based on test year costs, inclusive of a reasonable rate of return on rate base. In measuring costs, however, the Commission can exclude costs that it deems should not be reasonably allowed in utility rates. Such "disallowed" costs include costs associated with imprudent management decisions, but also can include costs such as high management salaries, lobbying expenses, attorney fees and other activities that the Commission does not find appropriate for utility rates.

As a cash-flow regulated utility, however, PGW is a different animal. PGW has only one source of equity capital: ratepayers. One way or another, if PGW incurs a cost, ratepayers will pay the bill. The Commission could decide to exclude certain of PGW's forecast costs from the revenue requirement used to set rates. However, as long as PGW is legally able to spend the money, those costs will inevitably appear in future rates. In effect, when PGW incurs expenses that the Commission did not authorize, it increases its

debt financing above the level intended by the Commission. This increase in debt will eventually manifest itself as a higher interest coverage requirement and therefore as higher rates in some future rate proceeding.

Therefore, from a practical perspective, the Commission should only exclude costs from PGW's proposed revenue requirement which the Commission can legally prevent PGW from incurring. Efforts to exclude costs that PGW fully intends to incur anyway will not be effective unless the Commission has some way to stop PGW from incurring those costs.

Q. If return on equity is not relevant for PGW, what it the purpose of its net income?

A. For a cash flow regulated utility, the need for net income reflects several key factors. However, all of these are based on the fact that net income is an equity contribution to the utility by ratepayers.

First, the utility's current and target capitalization ratios affect the net income requirement. If, for example, the regulator determines that the target debt to capital ratio for the utility should be 70 percent, and the current ratio is 10 percent, the regulator will need to allow for sufficient positive net income over some reasonable period to reach the target.

A corollary to this factor is the need to be cognizant of the utility's interest coverage requirements for its financing. Generally, if a utility has a sound capital structure or is at least steadily improving its capital structure, it will have sufficient income or cash flow to meet its obligations. However, in the event it does not, net income may need to be supplemented to ensure that the debt coverage ratios are achieved.

Second, net income may be required as an equity contribution for new net plant. If the utility's capital expenditures exceed its depreciation expense, this growth in net plant must be financed. While a portion of the new plant can be financed with debt, some ratepayer equity must also be provided to prevent a deterioration of the debt to capital ratio.

Third, if a utility has significant other cash requirements that are not reflected on the going-forward income statement, net income is needed to meet a portion of those requirements. Thus, for example, if the utility has significant past service pension and benefit liabilities (that have already been written off the income statement), ratepayers must provide some of the cash to meet those obligations.

Q. Will the rate increase that the Company proposes in this proceeding provide a future benefit to ratepayers?

A. In theory, yes. However, that theory comes with some very big "ifs."

When PGW's rates increase, it is theoretically able to reduce its debt, or at least slow the growth of debt financing below that which would have existed without the increase. Reducing the debt has the direct benefit of reducing the annual interest costs incurred by PGW. However, for every dollar contributed by ratepayers, the ratepayers will only get back a *few pennies* every year in reduced *interest costs*. Thus, reducing debt now represents a significant economic transfer from current ratepayers to future ratepayers. In addition, because (even now) PGW's debt costs are relatively low compared to the cost of capital of its customers (particularly small business customers), ratepayers are likely to be, in total, economically worse off if rates are increased in order to reduce PGW's debt financing.

However, a material improvement in its capital structure can have a secondary benefit in the form of reducing the *interest rate* that it pays on all debt. As PGW is seen to be less risky by the financial community, the interest rate that it pays on new debt issues may decline. Unfortunately, quantifying this benefit with any degree of accuracy is difficult.

Further, these potential future benefits are contingent on PGW being able to use the rate increase to reduce debt (or other liabilities). Unfortunately, if PGW's income begins to rise, it is likely to face increased pressure from a variety of stakeholders who want "a piece of the action." These stakeholders could potentially include labor unions (seeking above-market employee benefits), management (seeking higher compensation), the City of Philadelphia (seeking fees in lieu of taxes), suppliers, attorneys, economic and DSM

consultants, etc. Raising rates will provide zero future economic benefits to ratepayers if the increased rates simply inure to the benefit of other stakeholders.

Q. What, then, are the implications for the Commission of your observations regarding the future benefit of rate increases?

A. The Commission should focus on ensuring that contributions by ratepayers benefit ratepayers and not other parties. One way to achieve that objective is to "starve the beast." The power of PGW's stakeholders to extract additional rents from PGW can be minimized by keeping rate increases to the bare minimum necessary to avoid a financial crisis. By keeping rates as low as possible, the Commission keeps PGW in a heightened state of alert with respect to controlling costs. In my view, this has generally been the approach taken by the Commission (and ratepayer advocates) for rate regulation of PGW for much of the past two decades.

In the alternative, and to the extent it is legally feasible, the Commission could require that specific dollar amounts be set aside each year for the express purpose of retiring debt, or be specifically invested in external funds that cannot be raided by other stakeholders.

Therefore, I recommend to the Commission that, if it decides to increase rates in order to benefit future ratepayers at the expense of current ratepayers, it should do so in a way that requires PGW to use the rate increase for that purpose.

3. Financial Background

Q. Please provide a summary of the Company's capitalization ratio since the last base rates case.

A. Table IEc-1 below provides PGW's debt, city equity and capitalization ratios for FY 2009, for FY 2015, FY 2017, and FY 2021. For FY 2015, I include the ratios as forecast by PGW at the settlement of the last base rates case, and the ratios at the end of 2015 but before the implementation of certain significant accounting changes. For FY 2017, I include the Company's forecast as of the end of FY 2015 but before the accounting changes and the Company's current forecast. For FY 2021, I use the forecast at the end of FY 2015 before accounting changes, and the current forecast. Note that the earlier

forecast assumed a $40 million increase in FY 2018 and a $20 million further increase in 2021, while the current forecast assumes a $70 million increase in FY 2018.

Table IEc-1
PGW Capitalization Rates
($mm)

		Debt	Equity	Total	Debt to Capital
FY 2009	Actual	1,162.6	243.6	1,406.2	82.7%
FY 2015	2009 F'cast	1,000.5	540.3	1,540.8	64.9%
	2015 Est.*	1,012.9	454.3	1,467.2	69.0%
FY 2017	2015 Est.*	1,128.5	565.9	1,694.4	66.6%
	Current Est.	1,150.8	30.4	1,181.2	97.4%
FY 2021	2015 Est.*	996.4	902.6	1,899.0	52.5%
	Current Est.	1091.2	370.1	1,461.3	68.7%

* Before accounting changes per GASB 68, 71 and 75.

Q. Please review the capitalization changes from FY 2009 to FY 2015.

A. As shown in Table IEc-1, the Company reported in the last base rates case that it was heavily leveraged, with city equity representing only about 17 percent of capital. With the settlement increase in that proceeding, the Company forecasted that it would be able to substantially improve its capitalization rate, such that the share of equity would increase to over 35 percent. As it turned out, the Company generally was able to improve its equity ratio, albeit to 31 percent, at least before it adopted certain accounting methodology changes. While there were a number of factors which contributed to this variance, one significant effect was that the Company began incurring the $18 million annual city fee (or, more precisely, not having the city fee waived) in FY 2011 rather than in FY 2014 as forecast. This lost $54 million represents more than half of the negative variance in equity improvement.

Other major variances between forecast and actual performance in this period were lower contribution margin ($61 million), higher than expected pension costs ($25 million),

higher than expected distribution and A&G costs ($51 million), and lower than expected health insurance/OPEB ($65 million).[1]

Overall, however, the Company's financial condition substantially improved over the 2009 to 2015 time period, as measured on a consistent accounting basis. Coming out of the last base rates case, the Company forecasted a total net income of $333 million before the city fee, from FY 2010 to FY 2015. Before the accounting changes, the actual net income before the city fee for that period was $304 million. Thus, overall, from a financing perspective, the rate increase in the last case achieved nearly all of what it was designed to do over that period.

Q. Please describe your understanding of the impacts of the accounting changes to which you referred above.

A. Because I am not a certified public accountant, and because my assignment with respect to PGW's revenue requirement is limited, I have only a rudimentary understanding of the accounting changes. However, with those caveats, over the past two years, PGW implemented two very significant accounting changes which had a huge negative impact on the Company's balance sheet.

First, at the end of FY 2015, the Company adopted GASB 68 and GASB 71. These policies generally required PGW to report net unfunded pension liabilities, as well as net pension deferred inflows and outflows, on its balance sheet. These changes affected the financial statements retrospectively from FY 2013 to FY 2015. As of the end of FY 2015, the net effect on the balance sheet appears to be an increase in liabilities of $194 million, most or all of which served to reduce reported city equity. Moreover, the pension liability on the balance sheet has continued to grow, such that the FY 2017 net pension liability is about $250 million.

Second, in FY 2017, the Company is adopting GASB 75, which will generally require it to report past service liabilities for post-employment benefit costs on the balance sheet.

[1] The negative variance for contribution margin presumably reflects the offsetting effects of increased DSIC revenue and reduced customer revenues associated with customer migration to Rate IT. The latter issue is discussed in more detail in Section 4.

This change appears to have increased liabilities and reduced city equity by about $260 million.

As I understand the Company's accounting treatment, while it does recognize these liabilities on the balance sheet, the costs have not yet been reflected on the income statement. Thus, on a going forward basis, the Company's forecasts for operating costs presumably include the amortization of these liabilities. As such, these liabilities do not impose an extra cash flow burden on PGW above and beyond the expense requirements on the income statement.

At the end of the day, however, these changes have almost eliminated PGW's equity, and its debt to capital ratio is forecast to increase to over 97 percent at year-end FY 2017.

It is, however, important to recognize that this does not imply that ratepayers have not been making very significant equity contributions to PGW over the past six years. What this situation means is that PGW's financial status as of the last base rates case was actually much worse than its balance sheet indicated. Had PGW applied GASB 68, 71 and 75 in FY 2009, it is reasonably likely that it would have been in a significant negative net equity position.

Finally, I note that PGW reports that the credit rating agencies were well aware of this situation for "several" years prior to the adoption of these policies, and so too presumably was PGW's owner.[2] As a representative of a ratepayer advocate, it is distressing to observe that PGW's owner decided to cease waiving the annual city fee beginning in FY 2011, despite the dire financial circumstances of this utility.

Q. Please comment on PGW's financial performance over the past two years.

A. PGW's net income has been somewhat lower than that in the preceding years, averaging about $33 million (before city fee), compared to an average of over $50 million for the 2010 to 2015 period, and $62 million over the FY 2013 to 2014 period. Much of the decline in income from 2013 and 2014 appears to be related to pension expense. At this writing, it is not clear to me whether the continually rising pension costs are related to the

[2] OSBA-I-10.

accounting changes, other changes that affect the unfunded pension liabilities (e.g., return on fund asset), the Company offering early retirement benefits to manage the size of its workforce, or other factors.

Nevertheless, even with the pension cost increases, the Company forecasts net income of $22 million for FY 2017, before its proposed $70 million rate increase goes into effect.

Q. How does PGW's proposed net income requirement for the FY 2018 to FY 2022 period compare to the forecast income requirement coming out of the last base rates case?

A. To put this response in perspective, as shown in Table IEc-1 above, the Company's total capitalization in FY 2017, before the current proposed rate increase, is about the same as that in FY 2009, before the last base rate increase.

As I indicated earlier, the settlement forecast coming out of the last case was for average net income (after city fee) of $50 million from FY 2010 to FY 2015, and a reduction in the debt to capital ratio from 82.7 percent to 64.9 percent (17.8 percentage points). In the current proceeding, the Company forecasts average net income of $88 million from FY 2018 to FY 2022, and a reduction in the debt to capital ratio from 97.4 percent to 68.7 percent (28.7 percentage points). Moreover, rather than declining, the Company's proposed net income generally increases over this forecast period, as the amortization costs for past service liabilities decline.

Thus, either way you look at it, the Company's proposed $70 million increase in this proceeding is a substantially more aggressive proposal than that approved by the Commission in the last base rates case. An annual rate increase on the rough order of $30 to $35 million would be more comparable.

4. Cost Allocation

Q. What is the purpose of a utility's class cost of service study ("CCOSS")?[3]

A. The most important criterion for setting regulated utility rates is the cost incurred by the utility for providing the service.[4] To assign costs to specific customers, utilities aggregate customers into rate classes, within which the customers have similar load sizes, seasonal consumption, peak demand patterns, and other characteristics. A CCOSS is an analytical tool with which the utility's total cost (or "revenue requirement") is allocated among each of the rate classes. These allocated costs are then used as a key input in determining the total revenues that the utility plans to recover from each rate class through tariff rates.

In using the results from a CCOSS to develop class revenue requirements, utilities and regulatory authorities usually have a longer-term goal of moving the revenue recovered from each class as close as possible to the costs allocated to that class. Thus, rate classes whose revenues substantially exceed allocated costs are assigned either relatively low rate increases or rate decreases. Rate classes whose revenues are well below allocated costs are assigned relatively larger rate increases than those classes whose revenues are only slightly below allocated costs.

In addition to class revenue requirement issues, a CCOSS can provide useful cost information regarding the specific nature of utility tariff charges. In particular, a CCOSS provides a cost basis for the relative magnitude of the various individual tariff charges, including the customer charge, demand charges and commodity charges.

Q. How does a CCOSS assign costs to the various rate classes?

A. The underlying principle of a CCOSS is that costs are assigned to the rate classes that *cause* the utility to incur those costs. This principle of cost causation is both equitable and economically efficient. It is equitable because costs are borne by those customers

[3] The study which assigns costs to each of the utility's tariff rate classes is called by a variety of names, including cost allocation study, fully allocated cost study, cost of service study, etc. I adopt the terminology used by PGW in this testimony.

[4] The Commonwealth Court affirmed this basic principle, referring to cost of service as the "polestar" criterion. Lloyd v. Pennsylvania Public Utility Commission, 904 A.2d 1010, 1020 (Pa. Cmwlth. 2006).

who cause them. It is economically efficient because the price signal for consumption from a particular rate class is reasonably consistent with the cost incurred by the utility to provide the service. In that way, the consumer receives the correct price signal for determining whether he should purchase more or less of the utility service. In effect, the consumer balances the value that he receives from the purchase of that service against the utility's cost of providing the service.

Q. Please provide an overview of your review of the Company's CCOSS model.

A. The Company retained Mr. Philip Hanser of the Brattle Group to prepare and explain its CCOSS model in this proceeding. Mr. Hanser developed an electronic CCOSS model and various supporting workpapers. Much of the detail of the CCOSS electronic model and associated workpapers is shown in hardcopy format in Exhibits PQH-1 through PQH-11 in Volume III of the Company's filing. Unfortunately, unlike other Pennsylvania utilities with which I have worked, the Company declined to provide an electronic working version of the CCOSS model, citing the proprietary nature of the model.[5] Mr. Hanser did indicate that the model could be fully validated from the information presented in the filing, and that he would simulate the model for any particular cost allocation scenario that an intervenor might have.[6]

Unfortunately, the printout is not sufficient for me to validate the model, most particularly with respect to the lack of labor cost detail in the printout. As is common practice, the PGW CCOSS functionalizes, classifies and allocates general plant values based on labor costs. Without the labor cost detail, the model cannot be validated. I have requested that detail, but it is not available at this writing.

Nevertheless, I developed an alternative electronic version of the CCOSS model, albeit a somewhat less voluminous version than that submitted by the Company. For the most part, I was able to replicate or closely approximate the results of the Company's filed

[5] I&E-RS-1-D. The Company's unwillingness to provide a working version of the model is a little curious, in that the model appears to be, if not identical, extremely similar to a CCOSS model owed by Black & Veatch, and which I believe was developed by Mr. Howard Gorman (who served as the Company's cost allocation expert in the last base rates case). As Black & Veatch has been willing to allow parties to use the electronic model in at least one other jurisdiction, subject to confidentiality agreements, it is not clear why PGW is unwilling to do so.

[6] I&E-RS-1-d.

study, save for the development of the labor cost factors which I implemented through an adjustment mechanism. With that adjustment, my "near replication" of the Company's CCOSS produces the revenue requirements shown in Table IEc-2 below, compared to the Company's filing. As shown, the revenue requirement differences for the major classes are quite small. It is likely that the differences for the NGV and other small classes are due, at least in part, to the absence of significant digits for those classes in Company's printout.

Table IEc-2
Comparison of Class Revenue Requirements
($000)

	PWG CCOSS	RDK Near Replication	Percent Difference
Residential Non-Heat	13,379	13,399	0.1%
Residential Heat	439,798	439,798	0.0%
Commercial Non-Heat	11,402	11,402	-0.1%
Commercial Heat	63,385	63,282	-0.2%
Industrial Non-Heat	1,652	1,643	-0.5%
Industrial Heat	4,021	3,999	-0.5%
Municipal Non-Heat	1,076	1,076	0.0%
Municipal Heat	4,976	4,948	-0.6%
PHA GS	1,771	1,771	0.0%
PHA Rate 8	4,072	4,042	-0.7%
NGV	19	18	-5.6%
Interruptible Sales	35	34	-2.0%
GTS/IT	14,844	14,840	0.0%
Total	**560,432**	**560,430**	**0.0%**

Source: Exhibit PQH-3, RDK Workpapers

Q. What are the most significant cost items in a CCOSS for a NGDC?

A. For most NGDCs, the largest components of net plant are mains, services and meters. PGW is no exception, as mains represent about 52 percent of net distribution plant, services 37 percent and meters 14 percent. Because depreciation, return and income tax costs are based directly on rate base, and because distribution O&M costs and A&G costs

generally follow the allocation of plant costs, the allocation of mains and services plant has a very large impact on overall cost allocation.[7]

The issues involved in cost allocation for these accounts are quite different, however. Mains cost allocation issues involve "joint use" assets, and the allocation of these costs is subject to very different philosophies of cost causation. In this proceeding, the Company advances a philosophy of mains cost causation that is not consistent with the Commission's decision in the 2009 rate case, in which these issues were fully litigated.

Services and meters plant, on the other hand, are costs that are related to specific customers. In theory, no arbitrary *allocation* of these costs is necessary, and all that is needed is to simply assign the each customer's cost to the rate class under which the customer takes service. However, like some other NGDCs, PGW appears to have little information as to the actual costs incurred for individual customers or classes. Moreover, PGW does not appear to have attempted to develop any kind of detailed analysis of how these costs are incurred for the various customer classes. Unfortunately, the Company's information systems have little in the way of cost differentiation among services and types of meters, and the Company's CCOSS must rely on somewhat heroic assumptions to assign those costs among the various rate classes.

One other major cost factor for PGW is the treatment of universal service costs. Unlike all other utilities in Pennsylvania who assign these costs solely to the residential class, PGW assigns the costs for its universal service programs among all firm service rate classes, although it exempts customers who receive virtually firm service under Rate IT from any share of these costs.

Thus, despite the patina of precision in the many pages of detailed values in the CCOSS provided in Volume III of the Company's filing, the PGW CCOSS results are not consistent with precedent and are substantially unsupported. I address these issues below, and, in several areas, I offer alternatives to the Company's approach. However, my analysis is even more constrained than is the Company's, as I obviously have much less access to the Company's underlying cost information. As such, I acknowledge that

[7] Mr. Hanser makes a similar statement at page 10 of his testimony.

the Commission should have only very limited confidence in the accuracy of these studies.

4.1 Mains Cost Allocation

Q. Please describe the basic issues involved in gas utility mains cost causation.

A. Gas distribution mains are installed to meet two basic objectives: (a) to connect the customer with the interstate pipeline system (or other gas supply sources) and (b) to be able to transport sufficient gas to meet the demand of customers downstream under extreme peak conditions.

Having stated that, however, it is not easy to develop an analytical model capable of reflecting these cost causation factors reasonably. Ideally, the cost of any particular segment of main would only be allocated to those specific customers who are served downstream from that segment. In practice, undertaking such an analysis can be detailed, costly and time consuming. Nevertheless, with the significant improvements in computer modeling of gas distribution systems, one would expect that this approach should become more feasible as time passes.

Q. Has the Company developed such an approach?

A. Except for the direct assignment of mains costs for Rate GTS customers (discussed further below), it has not.

Q. What are the "more traditional" approaches to mains cost classification?

A. In place of the detailed modeling approaches, various analytical models are used. These methods generally focus on the following questions:

- What causation factors best correlate with mains costs?
- Are mains costs causally related to the number of customers? And, if so, how should the "customer component" of mains costs be derived?
- How should mains costs that are not causally related to number of customers be allocated among the various rate classes?

Regarding the first question, the traditional cost allocation parameters include throughput, peak demand, and number of customers. As a matter of terminology, a throughput allocation factor is equivalent to an "energy" allocator, a "commodity" allocator, and an "average demand" allocator.[8]

Regarding the second question, the common sense argument (to which I generally subscribe) is that more footage of mains must be installed to interconnect many small customers than to connect one large customer. (This common sense argument is supported by aggregate industry statistical analysis.[9]) As such, mains footage is causally related to the number of customers, and therefore mains costs are partially customer-related. However, some experts disagree, and conclude that no component of mains costs is causally related to customer count.

Relatively recent Commission precedent indicates that the Commission has rejected the use of a customer component for gas distribution utilities in Pennsylvania, including the Company's 2007 base rates case.[10] However, more recent Commission precedent for electric distribution utilities, where the conceptual arguments regarding cost causation are

[8] Average demand is generally measured as annual throughput divided by 365 days. As such, it is arithmetically equivalent to annual throughput when used as an allocation factor. The ratio of average demand to peak day demand is generally referred to as load factor. High load factor customers typically use gas for manufacturing process applications; low load factor customers often rely on gas primarily for heating purposes.

[9] See, for example, a report prepared by Black & Veatch for Gaz Métropolitain, at http://publicsde.regie-energie.qc.ca/projets/235/DocPrj/R-3867-2013-B-0005-Demande-Piece-2013_11_15.pdf, pages 12-16.

[10] In a case involving PPL Gas at Docket No. R-00061398, the Commission approved an allocation of all mains costs using a variant on the A&E allocation method advanced by the utility expert witness. In that proceeding, the approved weighting was 40 percent to average demand and 60 percent to excess demand. This weighting was not based on system load factor. PA PUC et al. v. PPL Gas Utilities Corporation, R-00061398, Order Entered February 8, 2007, page 112 – 114. Also, in PGW base rates case at Docket No. R-00061931, PGW proposed to classify some mains costs as customer-related and the balance as demand-related, and proposed to allocate demand-related costs using a peak demand allocator. In that matter, the Commission concluded that no mains costs should be classified as customer-related, and that mains costs should be allocated using a variant of the A&E allocation method advanced by the expert from what was then the Commission's Office of Trial Staff. In the PGW proceeding, the approved weighting was 50 percent to average demand and 50 percent to excess demand. This weighting was also not based on system load factor. See PA PUC v. Philadelphia Gas Works, R-00061931, Recommended Decision, July 24, 2007, page 63, and PA PUC v. Philadelphia Gas Works, R-00061931, Order Entered September 28, 2007, page 80.

similar, supports the recognition of a customer component for joint-use distribution plant allocation.[11]

Q. What method does the Company propose to use to classify mains costs in this proceeding?

A. The Company's filed CCOSS assumes that mains costs are 50 percent related to peak demand and 50 percent related to customer count. Mr. Hanser subscribes to the philosophy that cost causation for mains plant and related O&M costs is, in part, proportional to the number of customers served.[12]

To the best of my knowledge, Mr. Hanser relies on his judgment in selecting the 50 percent classification factor. As such, Mr. Hanser has chosen not to use one of the standard methodologies for classifying mains costs, such as the minimum system method or the zero-intercept method. These methods are generally based on the theory that the cost of a gas distribution system with zero or minimal load carrying capability should be classified as customer-related, and the costs to expand the minimum system to the actual system should be classified as demand-related. In my view, these methods, even if the data are available, are not particularly well-supported by logical cost models for gas distribution systems, and could either over- or under-state the customer component of costs.[13] As such, it is not clear that Mr. Hanser's use of judgment is any worse or any better than these traditional "mathematical" approaches.

Q. Once the costs are classified, what methods are used for allocating those costs?

---

[11] For example, PPL Electric has used a minimum system methodology for many years for secondary system plant, and subsequently expanded the minimum system method to primary system plant in its 2010 and 2012 base rates cases. This methodology was fully litigated and explicitly approved by the Commission. *Pa. PUC v. PPL Electric Utilities Corp.*, Docket No. R-2010-2161694, at 46 (Order entered December 21, 2010), and *Pa. PUC v. PPL Electric Utilities Corp.*, Docket No. R-2012-2200597, at 113 (Order entered December 28, 2011.)

[12] See OSBA-I-17. In adopting this approach, Mr. Hanser departs substantially both from Commission precedent and the mains cost allocation methodology used in the Company's last base rates proceeding, despite his statement at page 8 of his testimony indicating that he has not made any methodology changes. Also curiously, Mr. Hanser's colleague Mr. Graves appears to conclude that gas distribution utility operating costs are not proportional to customer count. See OSBA-I-11.

[13] For parties experiencing sleep deprivation, my analytical review of cost functions for gas distribution utilities and the relevance of the zero-intercept methodology was presented at http://publicsde.regie-energie.qc.ca/projets/235/DocPrj/R-3867-2013-C-ACIG-0028-Preuve-RappExp-2015_02_26.pdf.

A. Customer-related costs are reasonably consistently allocated on the basis of average number of customers.

Demand-related costs, on the other hand, are subject to alternative allocation treatment. The traditional allocation methods include three general approaches, namely a peak demand method, a peak-and-average ("P&A") method, and an average-and-excess ("A&E") method.

Because mains must be sized to meet the design day peak demand of all downstream customers, I conclude that the peak demand method is more consistent with cost causation.

Other analysts, however, favor the P&A method, in which allocation factors represent a weighted average, most often 50/50, of a throughput allocator and a peak demand allocator. Relative to the peak demand method, this approach assigns more cost to customers who use gas on a more level basis throughout the year (high load factor customers), and less cost to customers whose gas use is primarily for heating purposes.

The A&E allocation factor is a weighted average of average demand (i.e., throughput) and "excess" demand. Excess demand is measured as the difference between peak demand and average demand. Because this allocation factor consists of an average demand component and a "peak minus average" demand component, it is typically more similar in magnitude to a peak demand allocator than to a P&A allocator. However, this observation depends on the weighting factor used to derive the A&E factor. Under certain specific conditions, namely when the weighting factor is based on the average load factor of all the customer classes and there is no diversity of demand between rate classes, the A&E factor is identical to the peak demand factor.

In Pennsylvania, recent Commission precedent for gas utilities generally supports the use of an A&E allocation method. However, for electric utilities, Commission precedent supports the use of a peak demand allocator (combined with a customer component for distribution costs).

By way of comparison, Table IEc-3 below compares the relative allocation factors to the Company's method for allocating mains costs for the major firm service rate classes.

Table IEc-3
Comparison of Firm Service Mains Cost Allocation Factors

Class	Throughput	Peak Demand	Customer Count	PGW Cust/ Demand	Commis-sion A&E	50/50 P&A
Residential	55.9%	65.7%	94.1%	79.9%	62.2%	60.8%
Commercial	17.0%	17.0%	5.0%	11.0%	17.0%	17.0%
Industrial	1.3%	1.3%	0.1%	0.7%	1.3%	1.3%
Municipal	1.6%	2.0%	0.2%	1.1%	1.9%	1.8%
PHA GS	0.2%	0.3%	0.4%	0.3%	0.3%	0.3%
PHA Rate 8	0.7%	0.9%	0.2%	0.6%	0.9%	0.9%
Rate IT	23.1%	12.8%	0.1%	6.4%	16.4%	17.9%

Note: These allocators exclude values for Rate GTS as mains costs are directly assigned. The values include those for Rate IT, as those customers are provided with virtually firm distribution service.
Source: Exhibit IEc-3

Q. How did the Company develop the class peak demand factors used in deriving its allocation factor for the assignment of demand-related mains costs among the various customer classes?

A. I do not know. In most NGDC base rates proceedings, as part of my analysis of cost allocation methods, I review the workpapers used to develop design day allocation factors. Because most customers are not daily metered, a variety of different techniques are used to develop class-specific design-day demands. In this proceeding, the Company reports what it calls "design day sales" for the firm service rate classes in Exhibit PQH-8G and "design day usage of mains allocator" in Exhibit PQH-8H. Because the numerical values for the firm service classes are identical in the two exhibits, it must reasonably be inferred that the values in Exhibit PQH-8G reflect the design day demand for all customers in the class.

In OSBA-I-19, OSBA referenced those two exhibits and requested that the Company provide the workpapers supporting the "design day sales" values shown in Exhibit PQH-8G. The Company responded simply that "[d]esign day sales for each rate class is not available." As the Company's class load factors appear to be directionally reasonable, I

relied on them in developing this testimony. However, time permitting, I will attempt to review the Company's calculations and will update my analysis as necessary, if the Company's workpapers are provided.

4.2 Services

Q. How does PNG allocate service line costs?

A. Despite the fact that service investment represents nearly 30 percent of the Company's entire claimed rate base in this proceeding, the Company apparently has very little information regarding how it incurs these costs among rate classes. The Company is apparently only able to differentiate replacement cost estimates for service lines that are (a) 1.25 inches or smaller and, (b) 2 inches and larger in diameter. For cost allocation purposes, PGW derives the average cost of replacing existing service lines in 2016 in those two categories, producing values of $1,806 and $8,414 per service respectively.

To derive the cost per customer for cost allocation, the Company assigns services in each of these two cost categories to the various classes, and then applies various adjustment factors. PGW's only basis for the adjustment factor is that this is the value used in the last proceeding.[14] A summary of the assumed services cost allocators is shown in Table IEc-4 below. This table also compares the indexed per-customer cost of a service to the indexed per-customer average class demand. Thus, for example, the average industrial customer is 14.3 times as large as a residential customer, whereas the assumed service cost is 4.7 times as large.[15]

[14] OSBA-I-21. Curiously, it appears that the Company's CCOSS in the last proceeding used an adjustment factor of 2 times for Rate IS and GTS/IT, whereas the current approach used a factor of 3 times. From my testimony in the last case, it appears that the Company indicated then that these values were ". . . based on estimates provided by PGW's Field Engineering Department nearly ten years ago." Thus, at best, these values are 17 years old, and have no specific analytical support.

[15] This general relationship is not surprising, in that there are typically significant economies of scale for service lines.

Table IEc-4 Service Cost Index Comparison: PGW Method Residential Class = 1.0					
	Base Service Cost	Adjustment Factor	Per Customer Service Cost	PGW Service Cost Index	PGW Demand Cost Index
Residential	$1,806	1.0	$1,806	1.0	1.0
Commercial	$1,806	1.5	$2,709	1.5	4.9
Industrial	$8,414	1.0	$8,414	4.7	14.3
Municipal NH	$1,806	1.5	$2,709	1.5	7.0
Municipal H	$8,414	1.0	$8,414	4.7	21.5
PHA GS	$1,806	1.0	$1,806	1.0	1.2
PHA Rate 8	$8,414	1.0	$8,414	4.7	7.4
NGV	$8,414	1.0	$8,414	4.7	4.0
IS	$8,414	3.0	$25,242	14.0	11.2
GTS/IT	$8,414	3.0	$25,242	14.0	227.2
Source: OSBA-I-21, Exhibit IEc-3.					

Q. Beyond the fact that there is little underlying data support for the adjustment factors, do you have any additional concerns about the Company's method?

A. Yes. First, the Company does not appear to attempt to reflect that there are wide variations in the number of customers per service line in the various rate classes. As shown in the response to OCA-VII-14, the Municipal and PHA rate classes generally have 3 to 4 customers per service line, whereas the Residential, Commercial and Industrial classes are on the rough order of 2 customers per service. These ratios should be reflected in the analysis.

Second, the end result of the Company's method is that the service cost index for Commercial customers is 1.5, which is generally higher than the indexes that I observed in other recent Pennsylvania NGDC CCOSSs. This observation also applies to the Industrial, Municipal and PHA Rate 8 classes. Compared to other NGDCs, PGW's method generally assigns more costs to non-residential classes.

Third, the Company's method produces various anomalies. For example, despite the fact that the average Municipal Heat customer is substantially larger than the average

Industrial customer, and nearly three times the size of the average PHA Rate 8 customer, the Company assumes the service cost per customer is the same for all three classes. Similarly, while the average Industrial customer is 2.9 times larger than the average Commercial customer, the Industrial service cost is deemed to be 3.1 times higher, implying some diseconomies of scale, which is unusual for services costs.

Q. How have you allocated services costs in your CCOSS?

A. For the purposes of this testimony, I have not modified the Company's method. However, should further discovery or Company rebuttal testimony shed some light on this topic, I will update my analysis accordingly. Moreover, I reiterate my recommendation from the Company's last base rates case that it develop a more accurate services allocation method, particularly in light of the very significant costs in this category.

8.3 Meters

Q. How do gas utilities usually assign meters costs to rate classes?

A. Utilities generally use some version of a direct assignment method. Where plant records are sufficiently detailed, the costs of meters are linked to customers or customer classes, and the costs can simply be assigned to the appropriate class. Other utilities use some variation on a direct assignment method. Typically this takes the form of identifying the number and types of meters that serve the customers within a particular class, either based on actual meters type or replacement meters type. A unit cost value for each type of meter is then derived from either plant records or market conditions, and applied to the number of meters by type for each class. Summing the results by class produces a reasonable allocation factor for meters.

Q. How does PGW assign meters plant by class?

A. PGW uses meters replacement cost values, and attempts to estimate the replacement cost of meters for each of the various classes. To do so, it uses the following method:

Residential meters costs are derived based on a weighted average of meters with 250, 425 and 630 cubic feet per hour (cf/h) of capacity, but virtually all meters are assumed to be the smallest size. The smaller PHA class meters allocator is also assigned this cost.

All commercial, industrial, municipal, NGV and PHA Rate 8 meters costs are derived based on the replacement cost of an 800 cf/h meter, except that costs for the industrial, municipal heat and PHA Rate 8 customers are increased by 50 percent. PGW provides no basis for this 50 percent factor, other than this factor was used in the last base rates proceeding.[16] In so doing, it appears that the Company uses the replacement cost for 16 800 cf/h meters to set the cost values for virtually all of the Company's non-residential customers, with the only distinction being an arbitrary cost factor.

Meters costs for the interruptible sales class are based on a weighted average of meters replacement costs for meters with capacities of 1,500, 2,000, 3,000, 5,000, 7,000 and 11,000 cf/h. Thus, meters costs for the 4 interruptible sales customers are based on the weighted average replacement costs for 280 meters. I could not locate any explanation for this discrepancy from the Company.

Meters cost for the GTS/IT class are based on a weighted average costs of meters with 16,000 cf/h of capacity, plus meters cost for 4", 6" and 8" "turbo" meters.

In short, it appears that PGW has very little information regarding replacement meters cost by customer class, particularly for the customers in the Commercial, Industrial, Municipal and PHA rate classes.

Q. Are there reasons to believe that the Company's meters cost allocation method does not produce reasonable results for the non-residential classes?

A. Yes. In particular, the Company's approach appears to be biased against the commercial class. First, the Company relies on the cost of an 800 cf/h meter for commercial customers, but then indicates that every commercial customer could be served by smaller meters, whose costs used to derive the residential class average meters costs. Since many commercial customers are of a size similar to residential customers, it is surprising that the Company completely ignores smaller meters cost in estimating Commercial class meter costs.

[16] OSBA-I-22(b).

Second, relative to Residential class meters, the Company's method shows substantial economies of scale for all rate classes, except for the Commercial class, and the NGV and PHA Rate 8 class. A comparison of the relative per-customer peak demand and the relative meters cost is shown in Table IEc-5 below. As shown, for example, the average customer in the municipal class is 16.5 times larger than a residential customer, and the meters cost is 6.3 times higher. This is unsurprising as scale economies for most utility services generally show that larger customers are less expensive (per unit) to serve. However, for Commercial, the average customer is 4.9 times the size of a Residential customer, and the meters cost is 4.7 times as expensive. PGW's method implies that there are no scale economies at all, at least for Commercial customers.

Third, the Company's method assumes that meters costs for Municipal Heat and Industrial Heat customers are of equal cost, despite the fact that Municipal Heat customers have average demand that is some 50 percent more than the Industrial Heat customers.

Table IEc-5
Meter Cost Index Comparison: PGW Method
Residential Class = 1.0

	Per Customer Demand	PGW Meter Cost Index
Residential	1.0	1.0
Commercial	4.9	4.7
Industrial	14.3	7.1
Municipal	16.5	6.3
PHA GS	1.2	1.0
PHA Rate 8	7.4	4.7
NGV	4.0	4.7
IS	11.2	6.5
GTS/IT	227.2	18.2
Source: OSBA-I-22, Exhibit IEc-3.		

Q. For this testimony and your modified CCAS, how do you allocate meters costs?

A. Lacking any other information, I rely on the Company's replacement cost values by meter size, and I rely on the Company's calculation for the Residential class, based on the

assumption that the vast majority of customers are served by 250 cf/h meters. For the Commercial class, consistent with the Company's response that all customers can be served by meters up to 630 cf/h, I use an average of the 250 and 425 cf/h meters costs for the Non-Heat customers, and the cost for the 630 cf/h meters costs for the Heat customers. I consider this to be a conservative modification, in that it is likely that many Commercial Heat customers can be served by a smaller meter.

For the Industrial, Municipal, PHA Rate 8, and NGV classes, I observe that PGW's replacement cost values show little in the way of economies of scale above the 250 cf/h meter up to 2,000 cf/h. For these other classes, I therefore scale up the unit meters costs from the Commercial Heat class in proportion to the average per-customer demands for those classes. For the remaining classes, PHA GS, IS and GTS/IT, I use the Company's replacement cost estimates.

The meters cost indexes that result from my proposal are shown in Table IEc-6 below:

Table IEc-6
Meter Cost Index Comparison: RDK Method
Residential Class = 1.0

	Per Customer Demand	RDK Meter Cost Index
Residential	1.0	1.0
Commercial	4.0	2.4
Industrial	14.2	7.3
Municipal	16.5	8.4
PHA GS	1.2	1.0
PHA Rate 8	7.4	3.7
NGV	4.0	2.1
IS	11.2	6.5
GTS/IT	227.2	18.2

Source: OSBA-I-22, Exhibit IEc-3.

While my recommended method is superior to the Company's approach, I acknowledge that this is a crude estimate, based on the limited information available. While I believe that, in general, the use of replacement meters costs is a reasonable approach, I

recommend that the Company make a more careful effort to determine what specific types of replacement meters would be used for the specific mix of customers in each of the non-residential rate classes.

4.4 Interruptible Transportation and GTS

Q. The Company's CCOSS includes a "IT/GTS" class. What is the nature of this service?

A. Gas Transportation Service (Rate "GTS") is, not surprisingly, a basic gas transportation service that has both firm and interruptible options. However, eligibility for both options is grandfathered, limited to those customers who were taking service under this rate prior to September 1, 2003. Moreover, delivery charges for both firm and interruptible schedules are negotiated between the customer and PGW and are not based on tariff rates. PGW reports that there are currently only two customers remaining on Rate GTS, with forecast test year volume of approximately 12.1 Bcf.[17] It is my understanding that these customers are located in close proximity to interstate pipeline gate stations, and are served with dedicated facilities.

In contrast, Rate IT is interruptible transportation service. It consists of more than 400 customers, who must demonstrate that they can continue to operate under a gas supply interruption with alternative fuel capability.[18] For rate design purposes, Rate IT is segregated into five volumetric categories (A through E). Overall, Rate IT customers are substantially larger on average than Industrial or Municipal "firm service" customers.

[17] See PICGUG-I-5. For this testimony, I rely on the filed test year values, which are based on three customers. The test year GTS volume in my workpapers is estimated from the Company's CCOSS and Exhibit PQH-9A.

[18] PGW's CCOSS indicates that there are more than 420 Rate IT customers in the FPFTY. Exhibit PQH-9A indicates that there are 412 Rate IT customers in the FPFTY.

Tariff charges include a customer charge (which increases with customer size) and a tariffed volumetric charge (decreasing with customer size).[19]

Q. Is there a reason that cost allocation to these two rate classes merits more consideration in this proceeding?

A. Yes. The Company proposes to substantially change its philosophy of rate design for Rate IT customers in this proceeding. In particular, the Company proposes to establish "floor" tariff prices for Rate IT service based on its cost allocation results, but then will transition to a negotiated tariff structure in which rates would be set between the tariff floor price and the corresponding firm service tariff rate.[20]

Q. Do you agree with the Company's strategy for modifying the Rate IT tariff structure?

A. I agree that the existing model is broken. As PGW witness Mr. Moser explains, customers taking Rate IT service are receiving firm service, or at least nearly firm service, at a rate far below that of similarly situated customers. Moreover, Rate IT customers are generally receiving service at a cost well below that of the most common alternative fuels. Finally, the heavily discounted Rate IT rates are causing many firm service customers to switch to Rate IT, for the very simple reason that they receive virtually firm service at a very low rate. Mr. Moser indicates that Rate IT throughput increased from 0.15 Bcf in 2002 to 11.8 Bcf in 2016. Moreover, these switching customers are able to avoid a plethora of PGW charges that currently apply to firm service customers, including the USEC, the OPEB charge, the energy efficiency charges, and the DSIC markup.

---

[19] PGW's cost allocation study also includes a separate interruptible sales ("IS") category, which includes customers taking service under Rates LBS, BP and CG. Rates for these customers consist of a tariff customer charge plus a bundled sales/delivery charge. The sales/delivery charge is negotiated, but generally set based on the cost of alternative fuels, and the revenues from that charge are fully credited to the PGC through the "IRC" mechanism. In effect, IS customers provide little revenue for distribution service, and thus exhibit a significant shortfall in the CCOSS. While I disagree with this approach, it was subject to considerable debate and approved by the Commission (Docket No. M-00021612). Moreover, because alternative fuel prices have recently been well above the cost of gas, service under this tariff is declining. For those reasons, I have not contested the Company's proposal for those services in this testimony.

[20] Mr. Moser indicates that the floor rates for Rate IT are set based on costs, pursuant to Mr. Hanser's calculations. However, my review of Mr. Hanser's calculations for Rate IT is that the rates simply represent a specific percentage increase above the current rates, and that they are not linked to allocated costs. See Exhibit PQH-9A.

However, I disagree with the Company's proposed approach. I believe that the Company would be much better served by calling Rate IT what it really is, namely transportation service for large customers (e.g., Rate "LT"). Such a rate LT would have a cost-based tariff rate *ceiling*, from which PGW would be able to negotiate rate discounts that reflect the benefits of the interruptibility of specific customers, the cost of alternative fuels, and other factors that may affect the economic viability of the customer.

This approach would be superior for a few reasons. The first is customer acceptability. It will be much easier for a customer to accept a negotiated *discount* from a tariff rate ceiling, than to accept a price *surcharge* above a tariff rate floor. The Company's approach is frankly poor marketing. Second, negotiated discounts to full tariff rates for large customers are common in Pennsylvania, whereas PGW's proposal is not. Third, my proposed approach simplifies the cost allocation problem associated with interruptible service. Since Rate IT customers are receiving nearly firm *distribution* service, it is difficult to determine the value of the customer's interruptibility in a CCOSS, particularly as it may vary considerably from customer to customer, depending on the customer's location in the system. Thus, the tariff rate should reflect costs of firm or near firm service, and costs should be allocated recognizing the firm nature of the service provided. Finally, PGW's proposal to use firm service rates for the much smaller Industrial or Municipal customers likely serve to overstate the cost of providing service to these much larger customers. As discussed above, the Rate IT customers tend to have higher average load factors, and should benefit from the economies of scale for services and meters costs. As such, setting a maximum tariff rate based on the costs specifically for these customers is a more accurate approach.

Q. What are the cost causation issues related to the allocation of gas distribution costs to interruptible customers, particularly those who receive near firm service?

A. In addressing cost causation and interruptible gas service, it is important to distinguish between issues of gas supply and gas distribution. Unfortunately, for PGW, this distinction can be a little murky.

For gas supply service, interruptible service provides a benefit in that upstream pipeline and/or storage costs can be reduced or avoided. Thus, for example, during extreme

weather conditions, the gas supplier can shut off its interruptible customers, and it therefore only needs to contract for sufficient upstream capacity to meet firm service customer needs. Thus, depending on the limits on interrupting the customer, the cost of upstream capacity for interruptible customers is less than that for firm service customers (and arguably zero, to some analysts). However, for most NGDCs base rates proceedings, the upstream benefits to gas supply are not relevant, since most interruptible service customers take transportation service from the NGDC and purchase their gas supplies directly (and the gas utilities do not offer interruptible gas supply service). To the extent that transportation customers wish to avoid upstream gas supply capacity costs, they can self-interrupt as necessary and desired. If these customers purchase some load balancing capability from the utility, that issue is resolved in the annual Section 1307(f) gas cost proceedings, as it affects upstream capacity costs.

However, unlike most Pennsylvania NGDCs, PGW includes some significant costs related to production and storage equipment (notably its LNG facilities) in its base rates revenue requirement. This policy goes back to PGW's restructuring proceeding in 2002 at Docket No. M-00021612, and I do not propose to revisit it here. However, the inclusion of these costs in base rates means that, unless these costs are somehow benefiting the distribution system in general, they should not be allocated to transportation service customers, including the interruptible transportation customers.[21]

In contrast, some utilities offer a service that may be interrupted for distribution reasons, rather than gas supply reasons. Being able to interrupt certain customers can provide significant cost savings to the utility, in that the utility can avoid needing to add expensive *distribution* capacity to meet periods of very high demand. Thus, for components of the distribution system which serve many customers, particularly weather-sensitive customers, interruptible load can provide savings, because the utility need only plan its system to meet the peak demands of the firm service customers. This is

[21] If these costs are truly related only to providing supply and load balancing, they should be allocated only to sales customers and recovered in a charge that applies only to non-shopping customers, such as the MFC or GPC. If, however, the LNG facility provides distribution system benefits as well as load balancing, then some portion of the costs of that facility should be assigned to all customers who receive firm distribution service.

particularly true for components of the distribution system that are at or near their physical constraints.

However, interruptible customers provide little or no benefit to those components of the distribution system that serve only a few customers, or which are dedicated to the interruptible customer. The utility obviously cannot interrupt the customer at all times, and therefore at least some components of the distribution system are causally related to the interruptible demands of those customers.

Thus, the value of any particular *distribution* interruptible customer to the system is heavily dependent on the geography of the system, the location of the customer, the extent to which the interruptible customer relies on mains that also serve substantial firm service loads, and the extent to which the distribution system used by the customer is near its physical constraints during peak periods.

In that light, the extent to which a customer is actually interrupted can be an indicator of whether the customer is providing value to the system.

Q. What has the Company indicated with respect to the actual level of interruptions for its Rate IS customers?

A. At page 30 of his testimony, Mr. Moser indicates that PGW has not interrupted its Rate IT customers for many years, and at page 32 he indicates that Rate IT customers have been interrupted only once in the past 20 years, in 2004. He goes on to indicate that the Company expects that it may need to husband its LNG capacity in the future, and interrupt Rate IT customers on occasion. In response to OSBA-I-31(e), it appears that Mr. Moser indicates only that it will interrupt Rate IT customers when they fail to supply sufficient gas to the city gate to meet their needs, albeit infrequently. In effect, Rate IT customers appear to benefit substantially from the LNG capacity, although somewhat less than full firm service.

Q. Does PGW interrupt its Rate IT customers for distribution system reasons?

A. Not to my knowledge. However, in response to OSBA-I-31(d), the Company does indicate that if the Rate IT customers were to convert to firm service, it would incur additional costs, including distribution costs. As such, there is some reason to believe

that the Company might interrupt Rate IT customers in order to avoid distribution system expansion costs, although the Company was not particularly expansive about when or how that might happen.

Q. How does PGW propose to allocate production and storage costs to Rate IT and Rate GTS customers?

A. With respect to production and storage costs, PGW generally assigns those costs based on design day demand for all firm service customers, both sales and transportation, but excluding Rates IT and GTS (as well as interruptible sales). Some gas supply expenses are allocated based on sales customer throughput, which also excludes Rates IT and GTS, as well as other transportation volumes.

In effect, from a cost allocation standpoint, PGW assumes that Rate IT and GTS customers get no benefit from the LNG facilities, or any other production or storage facilities.

Q. How does PGW propose to allocate distribution system costs to Rate IT and Rate GTS customers?

A. I begin with the caveat that PGW's method is not entirely clear to me at this writing, and I will update this testimony as necessary when additional information is available.

For Rate GTS, PGW indicates that it is able to identify the specific mains facilities used to serve the GTS customers, and it directly assigns those costs. However, PGW also assigns mains costs to the combined Rate IT/GTS class using the 50/50 customer/demand split. The allocation factor used to assign the demand-related portion of mains costs to this combined class is called "design day usage of mains allocator," and is shown in Exhibit PQH-8H. The allocator includes a value of 101,381 mcf/day for the combined GTS/IT class. The Company's workpapers for this value, provided in response to PICGUG-III-1, appear to suggest that this value includes an estimate of design day requirements for Rate IT customers, and a demand value for one of the Rate GTS customers. However, the Company's response to OSBA-I-30(b) indicates explicitly that

design day demand for Rate IT customers is not used in the CCOSS for mains cost allocation.[22]

This inconsistency becomes more perplexing when PGW's P&A cost allocation study is considered, as presented in OCA-VII-7. In my experience, when the P&A method is applied, mains (and other distribution demand) costs are normally allocated based 50 percent on peak demand and 50 percent on commodity throughput. Under that approach, interruptible customers who provide a significant system benefit by being interruptible would typically be assigned the commodity related costs, but not the demand-related component of the P&A allocator. However, in the Company's simulation for OCA, PGW appears to take the reverse approach and assigns the 50 percent peak demand-related portion to the GTS/IT class in the same manner it does in its own CCOSS, but then allocates zero to the class based on commodity. In effect, PGW appears to assume that the GTS/IT class has a peak demand but with no actual throughput.

Thus, for mains costs, it is unclear what PGW's cost causation philosophy is, based on the parameters in the CCOSS.

For other distribution demand-related costs, including compressors and system measuring equipment, PGW again assigns costs to the GTS/IT class based on the "design day usage of mains" allocator.

Q. What approach do you use in your version of the CCOSS for Rate IT and GTS customers?

A. First, I have made an estimate of the impact of splitting the two classes. I take this approach for a few reasons. First, the cost causation parameters are substantially different for the two classes, notably with respect to the directly assigned facilities. Second, the GTS customers are grandfathered in eligibility for the class and are subject to negotiated rates. In contrast, setting Rate IT rates will require the use of allocated costs

[22] Note also that this value is not consistent with the methodology used in the Company's last base rates case, in which peak demand for Rate IT/GTS was set at the average daily throughput for the class. This change also conflicts with Mr. Hanser's statement at page 8 of his testimony that no significant changes have been made to the Company's CCOSS methodology.

under any of the options under consideration, including the existing method, PGW's proposed method, and my proposed method.

Second, for production and storage costs, I judgmentally reflect the fact that the production and storage facilities provide some benefit to IT/GTS customers by using a 50/50 combination of firm and total demand for allocation purposes. Since PGW assigns all firm transportation customers a full share of the production/storage costs, it is only reasonable that the interruptible customers who similarly benefit from these costs should be assigned some reasonable share.

Third, for distribution cost allocation, I retain the Company's direct assignment of mains costs for Rate GTS. As I indicated earlier, I hope that NGDCs continue to move toward more use of direct assignment methods for mains. For Rate IT customers, consistent with Mr. Moser's testimony, I treat the customers as if they receive firm *distribution* service. For the demand allocation factor, the Company's response to PICGUG-III-1 presents a design day demand value for the Rate IT customers (implying a load factor of a little over 40 percent) and I use that value to derive the A&E allocator. For Rate GTS, I use the class average day demand, consistent with the approach used in the last PGW base rates proceeding.

For mains cost allocation, I exclude demand and throughput related to Rate GTS, because those costs are directly assigned. However, I do include the demands from Rate GTS for other distribution demand-related costs, consistent with PGW's filed method.

I acknowledge that this approach is based on limited information about the Company's method, as well as my lack of success in eliciting useful information from the Company about when and how Rate IT customers may be interrupted. Exhibit IEc-3 represents my best estimate based on information available at this time.

4.5 Universal Services Costs

Q. Please describe PGW's rate design for recovery of costs related to its universal service programs.

A. PGW has three universal service programs, namely a customer assistance program for low-income customers (the Customer Responsibility Program or "CRP"), a conservation

program for low-income customers (alternatively called the CRP Home Comfort Program, Enhanced Low-Income Retrofit Program, and the Conservation Works Program), and a grandfathered Senior Citizen Discount ("SCD") program. The costs for these programs are recovered in a volumetric charge called the Universal Service and Energy Conservation Surcharge ("USEC"). The USEC applies to all firm service customers. It does not currently apply to interruptible sales customers or to transportation customers taking GTS/IT service. The total annual cost of PGW's universal service programs is on the order of $55 million.

PGW proposes to continue this mechanism for recovery of universal service costs in the current proceeding.

Q. Is PGW's proposed approach for recovery of universal service costs reasonable?

A. No. It is not reasonable to recover the costs of these programs from non-residential customers because non-residential customers are not eligible to participate in these programs. If a residential customer encounters hard economic times, he or she is able to go to PGW's local service center and apply for reduced rates under PGW's CRP. If a small businesswoman encounters difficult economic times, she has no such opportunity. There is therefore no causal relationship between PGW's universal service costs and non-residential customers.

The Commission has recognized this cost causation principle for other Pennsylvania utilities on numerous occasions.[23]

Moreover, in adopting the EE&C energy conservation programs for electric distribution utilities in Act 129, the legislature also recognized that costs should be assigned to rate classes based on eligibility for the program. This treatment is conceptually similar to the universal service cost issue, in that it is not possible to directly assign the costs of the EE&C programs only to the beneficiaries of the program, as that would significantly limit the utilities' ability to induce customers to undertake conservation efforts. However, in Act 129, the legislature recognized that costs for individual programs should be allocated based on class eligibility for the program, and not spread widely across all rate classes.[24]

There is nothing fundamentally different about PGW's universal service costs that would justify alternative and inconsistent cost allocation treatment.

Finally, from a practical perspective, assigning costs for the universal service programs to all rate classes imposes a burden on all hearing participants, including the OSBA. By including universal service costs in the revenue requirement for small business customers, the OSBA has an obligation to ensure that these programs are properly

---

[23] OSBA counsel informs me of the following: The Commission has specifically declined to allocate universal service costs to non-residential customers in numerous gas proceedings, including the following: (a) Valley Energy, Inc. at Docket No. R-00049345; (b) Equitable Gas Company at Docket No. P-00052192; and (c) PPL Gas Utilities Corporation at Docket No. R-00061398. The Commission has also declined to allocate universal service costs to non-residential customers in numerous electric proceedings, including the following: (a) PPL Electric Utilities Corporation at Docket No. R-00049255, and (b) Metropolitan Edison Company and Pennsylvania Electric Company at Docket Nos. R-00061366 and R-00061367. The OCA appealed the Commission's decision in the Metropolitan Edison Company and Pennsylvania Electric Company case to the Commonwealth Court. The Commonwealth Court affirmed the Commission's decision with regard to allocating universal service costs solely to the residential class. Popowsky v. Pennsylvania Public Utility Commission, 960 A. 2d 189 (Pa. Cmwlth. 2008). Furthermore, in the Customer Assistance Programs: Funding Levels and Cost Recovery Mechanisms Final Investigatory Order, Docket No. M-00051923 (Order entered December 18, 2006), the Commission decided it will continue its current policy of allocating CAP costs only to residential customers, in that only residential customers are eligible for universal service programs. Specifically, the Commission stated: "*After careful consideration of the comments and the arguments presented, the Commission will continue its current policy of allocating CAP costs to the only customer class whose members are eligible for the program – residential customers.* ***The Commission believes that we should not initiate a policy change that could have a detrimental impact on economic development and the climate for business and jobs within the Commonwealth.***" (emphasis added)

[24] 66 Pa C.S. §2806.1(a)(11). "Cost recovery to ensure that measures approved are financed by the same customer class that will receive the direct energy and conservation benefits."

designed, effective and necessary. Because no other Pennsylvania utility assigns these costs in this manner, the OSBA generally does not have the resources to retain the necessary specialized experts in these fields, and has been forced to rely on my limited skills. This has led to some of my earlier recommendations regarding these programs that appear to have been extremely unwelcome to the Company, notably my recommendation to end the SCD, my recommendation to include an economic incentive in the CRP, and my observations regarding the apparent failure of the Company's low-income conservation programs to have any noticeable effect on aggregate usage. By recovering these costs solely from the Residential class, the detailed and complicated issues surrounding these programs can be addressed by the parties who are directly affected, who have more specialized expertise, and who generally have larger budgets for these issues than the advocates for business customers.

Q. Mr. Knecht, you made a similar proposal relating to the USEC in PGW's 2007 base rates case. Why was your proposal rejected in that proceeding?

A. In the recommended decision, Administrative Law Judges Fordham and Jones concluded:

> *The arguments and authorities cited by OSBA and PICGUG are reasonable. However, PGW, OCA and Action Alliance also have valid arguments. It is clear that the Commission is moving to have the costs of universal service programs assigned to the residential customers. In the previous proceedings, a cost of service study was not available. Therefore, the issue can be addressed in this proceeding. Nevertheless, based on the amount of the increase and the revenue allocation that we are proposing, OSBA's proposal would be overwhelming to the residential customers. Although that the entire cost would not be reassigned at one time, when we look at the final year, the increase of 3.8% in addition to the current base rate increase and any increases in the GCR result in rate shock. This is not gradualism. It should be noted that we are recommending First Dollar Relief which means that the residential customers will be assigned the majority of the rate increase. We cannot burden these customers with an increase in the universal service costs also. Consequently, we are recommending that PGW's current allocation of universal service costs be retained and OSBA's proposal be rejected.*[25]

In its Order, the Commission approved both the ALJs' recommendation and the ALJs' accompanying rationale:

> *We will adopt the ALJs' recommendation regarding allocation of the USEC program. We agree with the ALJs' reasoning that a realignment of the costs in this proceeding*

[25] Recommended Decision, Docket No. R-00061931, July 24, 2007, pages 80-81.

would simply overburden the residential classes given that we are adopting the ALJs' recommendation regarding allocation of the $25 million increase. Because that substantial realignment goes far to bring all rate classes closer to a cost of service basis, we find that our decision on this one issue is consistent with the principles enunciated in Lloyd. As we have noted, Lloyd has not eliminated the principles of rate shock and gradualism, but it has required that we be guided primarily by cost of service. In the over-all context of this proceeding, one can hardly argue that application of the principles of gradualism and rate shock concerns to this one issue depart from Lloyd given the revenue allocation approach adopted for the primary $25 million increase.

From my non-legal perspective, I interpret these decisions as agreeing with the cost causation basis for my proposal, but rejecting the proposal on the basis of rate shock.

Q. Will this change in cost allocation result in rate shock?

A. By itself, changing the cost allocation methodology for universal service has no impact on rates. As discussed in the next section, I include the rate shock and rate gradualism impacts of moving rate responsibility for universal service costs to the residential class in the context of overall revenue allocation for this proceeding. However, as I recommend the same overall increase for the Residential class as does the Company, I do not believe that the Company can claim rate shock as a reason not to adopt this recommendation in this proceeding.

Q. Mr. Knecht, you made a similar proposal relating to the USEC in PGW's 2010 base rates case. Why was your proposal not adopted in that proceeding?

A. That matter was resolved by settlement. I am advised by OSBA counsel that the settlement of that matter has no precedential impact for the current proceeding.

Q. How did you incorporate this allocation change in your CCOSS?

A. I allocated the direct program costs for the CRP, SCD and ELIRP to the residential classes, based on throughput. I also allocated the customer accounts expense in Account 904 and the customer service costs related to the CRP that are included in the Account 903 allocator to the residential classes only.

4.6 Other Cost Allocation Issues

Q. Do you have any other concerns regarding the Company's CCOSS?

A. Yes. The PGW CCOSS has a variety of major and minor inconsistencies with normal cost allocation practice, as detailed below:

- The depreciation reserve accounts do not match up with the associated gross plant accounts, in contrast to normal practice. I have requested additional detail regarding the depreciation reserve, but this information is not available at this writing.

- Depreciation expense is allocated in aggregate, rather than account by account as is standard practice.[26] In Exhibit IEc-3, I use account specific allocation of depreciation expense from OSBA-I-6, and I apply the same allocation factor to each depreciation account as used for the corresponding plant account.

- PGW classifies universal service costs as customer-related, but allocates them volumetrically. This method is internally inconsistent, and distorts the customer-related cost values for rate design purposes. As discussed above, I allocate these costs among the residential classes based on volumes, and I classify these costs as demand/throughput related.

- PGW classified regulatory commission expenses as customer-related, but allocates them based on rate base. This method is internally inconsistent, and distorts the customer-related cost values for rate design purposes. Because the assessments are generally based on revenue, I classify and allocate these costs based on distribution revenues.

- PGW classifies and allocates the (surprisingly large) Account 880 Other Distribution Expense based only on customer plant. This account comprises the cost of maps and records, distribution office expense, labor/expense not elsewhere recorded, research, development and demonstration expense. Given the general nature of this account, these costs would be more accurately allocated based on overall distribution plant.

- PGW classifies uncollectibles costs as customer-related. As uncollectibles costs are essentially a tax on paying ratepayers, there is no causation basis for classifying these

[26] Also, there appears to be a glitch in the PGW allocation of depreciation costs. The Company indicates that it functionalizes, classifies and allocates total depreciation expense on the basis of gross plant. However, for example, the GTS/IT class represents 3.796 percent of plan but is assigned 4.072 percent of depreciation cost. Without a working version of the model, I cannot interpret this discrepancy.

costs as either customer or demand related. To avoid distorting the cost basis for the customer charge, I classify these costs as demand-related.

- PGW proposes to allocate the systems-related costs associated with meter reading (Account 902) on the basis of revenues.[27] Meter reading costs and related systems are not proportional to the overall throughput of the customer which drives revenue, and are more typically allocated on the basis of number of customers. I have modified the meter reading allocator to be based solely on number of customers.

- PGW allocates Account 877 Operating Expense for Measuring and Regulating Equipment (City Gate) based on peak demand and Account 891 Maintenance of Measuring and Regulating Equipment (City Gate) based on throughput. For consistency with the allocation of the associated plant account, I allocate both based on peak demand.

- For distribution rents and operating/maintenance expense for supervision and engineering, PGW classifies the costs based on plant accounts but allocates the costs based on labor expense. This approach is internally inconsistent, and adds needless complexity to the model. I both classify and allocate these costs based on distribution plant.

- The Company allocates the costs for the Commercial Resource Center among the commercial and industrial classes based on customer count, in developing the Account 903 allocation factor. Although it is likely that larger customers cause PGW to incur more costs than smaller customers, I did not modify this allocation method.

- Manufactured gas expense is not related to current service, and is a leftover of a previous era when all customers were gas supply customers. I allocate those costs

[27] OSBA-I-23.

based on total throughput, as all customers are similarly responsible (or not responsible) for these costs.[28]

- The Company's allocators for mains/services expense (DISTMS-D and DISMS-C) do not appear to be based on mains/services plant as is normal practice but appear to match the distribution labor allocator for demand costs and the general distribution plant allocator for customer costs. I modify the allocator to be based on mains/services plant.

- The Company classifies industrial metering equipment as demand-related, and then appears to improperly exclude it from the allocator for meters O&M costs. Consistent with normal practice I classify these costs as customer-related.

- PGW does not allocate any meters/regulators O&M expense to the NGV, IS and IT/GTS rate classes, despite the fact that there is significant investment for those assets assigned to those classes. I include those classes in the allocator for those costs.

- The Company's base rates revenue allocator is modified to include distribution revenue, USEC revenue, IS rate revenue (excluding IRC) and GTS/IT revenue.

4.7 Impact of Alternative CCOSS

Q. Based on the information available at present and the calculations discussed above, what is the impact of your alternative CCOSS relative to the Company's CCOSS?

A. A comparison of the class revenue requirements is shown in Table IEc-7 below. Not surprisingly, my cost allocation approach assigns significantly higher costs to the Rate IT and Rate GTS classes, since I assign them cost responsibility for the production, storage and distribution assets from which they benefit. Although this appears to be a very large increase in costs for these classes, I note that the per-mcf cost for Rate IT in my CCOSS is $2.47, well below the costs for the Industrial and Municipal classes, reflecting the higher load factor and economies of scale in serving these larger customers.

[28] Based on information available at present, I apply this allocator only to the O&M costs for manufactured gas. *Some plant costs may need to be similarly allocated, when information becomes available.*

Overall costs allocated to the Residential class vary only moderately, but reflect a large increase due to the reassignment of universal service costs, a large decrease due to the elimination of the customer component of mains costs, and a significant decrease due to the shift of costs to the IT and GTS classes.

The Commercial, Industrial and PHA Rate 8 classes are assigned higher costs with the elimination of the customer component for mains, but benefit overall through the change to the universal service cost allocation, as well as the impact of changes to some of the other allocation factors discussed above. The Municipal class exhibits a similar tradeoff, but with a different overall impact (due to the average larger customer size and lower load factor).

The very large reduction in the PHA GS class results from significant reductions in both the shift of universal service costs to the residential class and the elimination of the customer component of mains costs.[29]

Table IEc-7
Class Revenue Requirements ($000)

	PGW CCOSS	RDK CCOSS	Percent
Residential	453,177	442,914	-2.3%
Commercial	74,787	62,834	-16.0%
Industrial	5,673	4,507	-20.5%
Municipal	6,052	6,328	4.6%
PHA GS	5,843	1,501	-74.3%
PHA Rate 8	4,091	3,371	-17.6%
NGV	19	16	-16.1%
Interruptible Sales	35	79	127.1%
Rate IT	14,844	35,181	161.9%
Rate GTS		3,694	
Total	**560,430**	**560,431**	**0.0%**

Source: Exhibit PQH-3, IEc-3

[29] At this writing, it is my understanding that the PHA class does not benefit from the universal service programs. However, if those classes do benefit, Exhibit IEc-3 should be modified accordingly.

Q. Exhibit IEc-3 shows that the unit cost in dollars per mcf of providing distribution service to Commercial customers is lower than that for providing service to Municipal customers and only modestly higher than the cost of serving Industrial customers, despite the fact that these customers are, on average, considerably larger. Can you explain this result?

A. I certainly acknowledge that this is an unusual result. However, this result occurs from a combination of Commission precedent and PGW's cost parameters.

First, for mains costs, the Commission has determined that no customer component should be used for allocation, and therefore there are no economies of scale for serving larger customers. Moreover, while the Commission does incorporate peak demand in its allocation factor, the Industrial class load factor is about the same as that for the Commercial class, and the Municipal class load factor is lower. This is the opposite of the usual parameters, where larger customers tend to have higher load factors. Thus, the Commission's method actually assigns a higher unit mains cost to the Municipal class than to the Commercial class.

Second, regarding services, I used the Company's methodology, which assigns considerably higher services costs to the Industrial and Municipal Heat class. The end result of the Company's method is that the unit cost for services for the Industrial Heat class is higher than that for the Commercial Heat class, whereas the unit cost for Municipal Heat is only slightly lower. In effect, the Company assumes there are diseconomies of scale in services costs. This, of course, is one more reason for the Company to develop a reasonable services cost allocator.

Third, as explained above, the Company's replacement meters cost estimates show no economies of scale as customer size increases, so there are no economies of scale for this cost item either. Moreover, while meters plant represents about 10 percent of distribution plant, meters-related O&M expense represents some 26 percent of distribution O&M costs.

Fourth, the Company reports a significant cost for marketing to industrial accounts in Account 908, which, on a per mcf basis, is more costly than similar costs assigned to the

Commercial class (even recognizing the effect of the Commercial Resource Center costs assigned in Account 903).

5. Revenue Allocation

Q. What is revenue allocation?

A. Revenue allocation is the assignment of the dollar net increase or decrease to each of the Company's rate classes in a base rates proceeding. In contrast, *rate design* determines how the allocated revenue is recovered from individual ratepayers within each class. From a cost recovery standpoint, revenue allocation addresses *inter-class* cross-subsidization issues, while rate design addresses *intra-class* cross-subsidization issues.

Q. What are the primary economic and regulatory criteria for revenue allocation?

A. In general, allocated cost is the primary criterion used by regulators in the revenue allocation process. Most utilities and regulators adopt a policy in a base rates proceeding of attempting to move revenues more into line with allocated costs by varying the magnitude of the rate increases for the individual classes. However, regulators also subject the rate increases to other non-cost criteria of ratemaking. Of the traditional rate design criteria, the most common non-cost considerations in the revenue allocation process are:

- the *gradualism* principle (or avoidance of "rate shock"), in which large rate increases for individual customers or classes of customers are avoided; and
- the *value of service* principle, which is often used to mitigate rate increases for customers or customer classes with relatively elastic demand. [30]

Using these criteria, the utility will develop a proposal for assigning the increase in the revenue requirement among the classes that reflects both cost and non-cost considerations. With this proposal, the CCOSS can be simulated at both present and

[30] See, for example, Principles of Public Utility Rates, Second Edition, Bonbright, Danielsen, Kamerschen, 1988, pages 383 to 387. Note that the criteria in this text apply to the overall development of a utility rate structure. The criteria that I discuss in this testimony are those that apply to the revenue allocation portion of the process, which is only one aspect of the overall development of utility rates.

proposed rates to evaluate the magnitude of "progress" has been made toward the policy of achieving cost-based rates.

Q. What is the Company's proposed revenue allocation?

A. The Company's revenue allocation and its proposed rate design changes are provided in Mr. Dybalski's testimony. Because the Company's filing does not appear to include a full proof of revenue analysis at both present and proposed rates, I requested that the Company provide one in OSBA-I-28(a). Unfortunately, the Company only provided a proof of revenue and current rates. However, using that analysis and Mr. Dybalski's testimony, I derived the PGW proof of revenue that is shown in Exhibit IEc-3. In general, the revenue allocation that results from Mr. Dybalski's reported rates and the Company's proof of revenue is very similar to Mr. Dybalski's reported revenue allocation. However, this is subject to the following limitations:

First, the Company's revenue allocation to the Rate IT class is provided in Exhibit PQH-9A and cited by Mr. Dybalski. Unfortunately, the revenues reported in that exhibit do not appear to be consistent with the current tariff charges for Rate IT. For example, for IT-A customers, the Company shows $991,699 in total revenue at current rates, but applying the customer charge of $125 to customer months of 1,260 produces $157,500 in current rates revenue and applying the $1.88 volumetric charge to reported deliveries of 426,654 mcf produces revenue of $802,110, for a total of implied current revenues of $959,610. Based on traditional proof of revenue analysis, I calculate a proposed increase of $5.7 million from Rate IT, compared to the $5.5 million reported by the Company.

Second, the Company does not zero out its DSIC in the test year as would be normal practice for other NGDCs, presumably because PGW's DSIC is forward looking and based on capital spending rather than expense.[31] However, the Company also does not appear to include the impact of the higher rates on potential DSIC revenues. PGW's DSIC revenues are capped at 7.5 percent of distribution rate revenues. With the rate increase, PGW would presumably have more "headroom" in the DSIC cap, and its DSIC revenues would increase, if eligible capital spending is sufficiently high. While I have

[31] Even if PGW were to zero out the DSIC in the test year, it would presumably re-appear in the subsequent year at the full 7.5 percent value, effectively imposing a second large increase on ratepayers.

accepted this approach in my analysis, I believe the effective increase requested by the Company is somewhat higher than that reported, due to this second order effect.

Third, the Company does not appear to reflect the impact of its proposed rate changes on the universal service charge. Increases in the Residential base rates charges will presumably have an impact on CRP costs. Under the Company's proposal, those increases in costs would be partially shifted to other rate classes through the USEC mechanism. I do not believe the Company reflected that impact in its reported revenue allocation. As I propose to shift cost responsibility for this program to the Residential class, this second order effect has no impact on my evaluation.

Q. Is the Company's revenue allocation consistent with its own CCOSS results?

A. Not particularly. However, because my CCOSS method is substantially different from the Company's approach, I will comment only briefly on the anomalies in the Company's proposed revenue allocation. First, the Company's proposed revenue increase for the Rate IT class ($5.5 million) is well in excess of the revenue shortfall for the combined Rate IT/GTS class ($2.6 million), producing a proposed revenue-cost ratio of 120 percent. This increase is presumably based on the Company's view that its own CCOSS does not reasonably assign costs to that class. Second, the Company proposes a very large percentage increase for the PHA GS class, at over 27 percent of base rate revenues. This increase produces a revenue-cost ratio for that class which increases from 85 percent to 107 percent. It is unclear why such a large increase is deemed necessary. Third, the Company's CCOSS shows that both the Industrial and the Commercial rate classes are already producing revenues in excess of allocated cost. However, the Company proposes a material rate reduction for the Industrial class, and a material rate increase for the Commercial class, such that the revenue-cost ratios for the two classes move from near parity at 103 percent to 97 percent and 110 percent respectively. It is unclear why the Company proposes to treat these classes so differently.

Q. What does your CCOSS imply for revenue allocation?

A. Subject to all of the caveats regarding my CCOSS analysis that I listed in the previous section, Table IEc-8 shows the revenue shortfall at present rates, both in dollar terms and as a percentage of existing rates.

Table IEc-8 Implications of RDK CCOSS for Revenue Allocation		
	Shortfall at Present Rates ($000)	**Percent of Base Rate Revenue**
Residential	(57,630)	-15.9%
Commercial	14,531	19.2%
Industrial	1,396	24.0%
Municipal	(734)	-13.4%
PHA GS	(2)	-0.1%
PHA Rate 8	(100)	-3.1%
NGV	4	21.2%
IS	(62)	-366.1%
IT	(24,077)	-220.1%
GTS	(2,438)	-195.1%
Total	**(69,113)**	**-14.8%**
Source: Exhibit IEc-3		

Q. Regarding the Rate IT class, your CCOSS indicates that current rate revenues are far below allocated costs. What do you recommend for revenue allocation in this proceeding?

A. For revenue allocation purposes, I accept the Company's proposed increase of $5.7 million (as shown in my proof of revenues), an increase of about 52 percent. In implementing this increase, I recommend that the Company establish a cost-based tariff rate for the class, and then agree to negotiate rate discounts that will produce this overall increase. As with the Company's proposal, I recommend that these initial rates be set for the greater of three years or the current contract, and then re-negotiated. As I indicated earlier, establishing a maximum tariff rate based on allocated cost should produce a significantly lower overall maximum rate than that proposed by the Company.

In accepting the Company's dollar proposal, I acknowledge that this magnitude increase would normally violate the traditional rules of thumb for rate gradualism, in that this increase is more than three times the system average. In this case, this large increase is justified because (a) many of the current Rate IT customers gained a significant rate

decrease by converting to this service option, with virtually no degradation of service, and (b) if this increase does, in fact, impose significant hardship on particular customers such that load and margins are threatened, the Company can negotiate a lower rate.

Q. For the other rate classes, what do you recommend for revenue allocation in this proceeding, based on the information currently available to you?

A. First, I accept the Company's proposed increase of $59 million for the Residential class. This will increase the class revenue-cost ratio to a little over 100 percent. In effect, the class will cover its costs, but will contribute very little to the massive shortfall from the Rate IT and GTS classes. While a large increase for this class would probably be justified under normal rate gradualism parameters in order to make some contribution to that shortfall, I am aware of the intense political nature of ratemaking for PGW's residential class, and I conclude that the Company has set the increase at the maximum it thinks it can obtain. Also, without getting into the details of Residential class rate design, my proposal is that the USEC for Residential customers be increased to reflect transfer of cost responsibility to that class, but that this increase be offset by reducing the volumetric charge proposed by PGW.

I set the increase for the IS and GTS class at zero, as these are negotiated rates. I set the increase for NGV at zero as its revenue cost ratio is well above unity.

The Municipal and PHA classes both exhibit a revenue shortfall at present rates. As the Commercial and Industrial classes are already making a substantial contribution to the shortfall from the IT and GTS classes, I propose to assign the maximum reasonable increase to Municipal and PHA. Again, recognizing the political considerations for PGW, I set a very conservative maximum increase for these classes, at 1.25 times system average, or about 18.5%.

Even with those increases, an overall shortfall remains, which must be recovered from the Commercial and Industrial classes. I therefore propose modest increases for these classes, of approximately 3 percent.

A summary of my revenue allocation is shown in Table IEc-9 below.

Table IEc-9 RDK Revenue Allocation Proposal					
	Shortfall at Current Rates ($000)	Current Revenue-Cost Ratio	RDK Revenue Allocation	Percent Increase	Proposed Revenue-Cost Ratio
Residential	(57,630)	87%	59,000	16.3%	100%
Commercial	14,531	123%	2,366	3.1%	127%
Industrial	1,396	131%	170	2.9%	135%
Municipal	(734)	88%	1,012	18.5%	104%
PHA GS	(2)	100%	270	18.5%	118%
PHA Rate 8	(100)	97%	598	18.5%	115%
NGV	4	127%	0	0.0%	127%
IS	(62)	21%	0	0.0%	21%
IT	(24,077)	31%	5,696	52.1%	48%
GTS	(2,438)	34%	0	0.0%	34%
Total	**(69,113)**	**87%**	**69,113**	**14.8%**	**100%**
Source: Exhibit IEc-3					

As shown, my proposed revenue allocation results in a reasonably balanced sharing of the large shortfall from the Rate IT and GTS classes among the non-residential classes, although the Commercial and Industrial classes will continue to bear the largest burden.

6. Rate Design Issues

Q. Please describe the Company's proposed tariff structure for the Rate GS Commercial service.

A. The Company's current and proposed GS Commercial tariff is shown in Table IEc-10 below.

Table IEc-10 PGW Current and Proposed GS Commercial Tariff				
		Current	PGW Proposed	Percent Change
Customer Charge	$/mo.	$18.00	$27.00	50.0%
Commodity Charge	$/Mcf	4.5984	4.8108	4.6%
Merchant Function (MFC)*	$/Mcf	0.0116	0.0359	209.5%
Gas Procurement (GPC)*	$/Mcf	0.0400	0.0228	-43.0%
Gas Cost Rate (GCR)*	$/Mcf	4.1879	4.1879	0.0%
Universal Service (USEC)	$/Mcf	1.1335	1.1335	0.0%
OPEB Charge	$/Mcf	0.3386	0.3386	0.0%
Energy Conservation	$/Mcf	0.0724	0.0724	0.0%
DSIC**	$/Mcf	0.4972	0.4972	0.0%
Volumetric Excl. GCR	**$/Mcf**	**6.6917**	**6.9112**	**3.3%**

* Applies to gas sales customers only. Both the MFC and GPC may require adjustments as discussed below.

** As noted earlier, the Company does not appear to include the effect of a rate increase on DSIC headroom.

Source: Exhibit IEc-3

Q. If your revenue allocation proposal is accepted, how should this proposed design be modified?

A. First, the USEC charge would be eliminated, and the revenue requirement shifted to the commodity charge. Second, the Company needs to make corrections to the GPC and MFC discussed below. And third, since I propose a lower overall revenue requirement for the class, the increases to the customer and commodity charges should be scaled back. Based on my review, it would be reasonable to simply scale back the proposed increases to those two charges in proportion to the increased revenues derived at the full revenue requirement. In so doing, the volumetric increase should reflect the net combined effect of the reduction in USEC and increase in commodity charge. In short, this would be a proportional scaleback.

Q. Do you have any other observations regarding the Company's proposed rate design?

A. Yes, I am flagging two numerical errors in the Company's filed presentation that arose in OSBA discovery, which I expect the Company will correct in subsequent filings.

First, at OSBA-I-25, the Company indicates that it overstated the administrative costs associated with gas supply in deriving the Gas Procurement Charge ("GPC"). Correcting this error should serve to reduce the GPC (and will presumably require offsetting increases elsewhere).

Second, at OSBA-I-26, the Company confirms that it incorrectly included some of the uncollectibles costs associated with the CRP in the merchant function charge ("MFC"). Correcting this error will serve to reduce the MFC percentages, and require offsetting increases elsewhere.

Q. Does this conclude your direct testimony?

A. Yes, it does.

EXHIBIT IEc-1

RÉSUMÉ AND EXPERT TESTIMONY LIST

FOR

ROBERT D. KNECHT

Overview

Mr. Knecht has more than 30 years of practical economic consulting experience, focusing on the energy, utility, metals and mining industries. For the past 20 years, Mr. Knecht's practice has primarily involved providing analysis, consulting support and expert testimony in electric and gas industry regulatory matters. Mr. Knecht's work includes many aspects of utility regulation, including industry restructuring, cost unbundling, cost allocation, rate design, rate of return, customer contributions, energy efficiency programs, smart metering programs, treatment of stranded costs and utility revenue requirement issues. He has worked for state advocacy agencies, industrial customer groups, law firms, regulatory agencies, government agencies and utilities, in both the United States and Canada. He has provided expert testimony in more than one hundred separate utility proceedings.

In addition to his work with regulated utilities, Mr. Knecht has consulted on international industry restructuring studies, prepared economic policy analyses, participated in a variety of litigation matters involving economic damages, and developed energy industry forecasting models.

Education

Master of Science, Management (Applied Economics and Finance), Sloan School of Management, M.I.T.

Bachelor of Science, Economics, Massachusetts Institute of Technology

Select Project Experience

For nearly twenty years, Mr. Knecht has provided consulting services, analysis and expert testimony before the Pennsylvania Public Utility Commission on all manner of regulatory proceedings to the **PENNSYLVANIA OFFICE OF SMALL BUSINESS ADVOCATE**. In addition to expert testimony, Mr. Knecht has assisted OSBA with the development and preparation of public policy positions, litigation strategy, and longer term strategy.

For the **INDUSTRIAL GAS USERS ASSOCIATION**, Mr. Knecht provided consulting and expert witness services in a generic cost allocation proceeding involving Gaz Métro before the Régie de l'énergie in Québec.

For the **NEW BRUNSWICK PUBLIC INTERVENER**, Mr. Knecht provides consulting and expert witness services in a variety of regulatory proceeding before the New Brunswick Energy and Utilities Board involving Enbridge Gas New Brunswick. Mr. Knecht's testimony has addressed issues of load forecasting, costs forecasting, cost of capital, allocation of corporate overhead costs, utility cost allocation, revenue allocation, market-based rate design, cost-based rate design, and rate decoupling.

For **L'ASSOCIATION QUÉBÉCOISE DES CONSOMMATEURS INDUSTRIELS D'ÉLECTRICITÉ (AQCIE) AND LE CONSEIL DE L'INDUSTRIE FORESTIÈRE DU QUÉBEC (CIFQ)**, over the past fifteen years, Mr. Knecht has provided analysis, consulting advice and expert testimony before the Régie de l'énergie in regulatory matters involving Hydro Québec Distribution and TransÉnergie. This work includes revenue requirement, power purchasing, cost allocation, treatment of cross-subsidies, and rate design.

For the **INDEPENDENT POWER PRODUCERS SOCIETY OF ALBERTA**, Mr. Knecht provided consulting advice, analysis and expert testimony before the Alberta Energy and Utilities Board in a series of proceedings involving the restructuring of the electric utility industry, the unbundling of rates, and the development of transmission rates.

IEc

INDUSTRIAL ECONOMICS, INCORPORATED

ROBERT D. KNECHT

EXPERT TESTIMONY SUBMITTED IN REGULATORY PROCEEDINGS

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-2016-2580030	Pennsylvania Public Utility Commission	UGI Penn Natural Gas	April 2017	Pennsylvania Office of Small Business Advocate	Test year, load forecast, O&M expenses, rate base, rate of return, cost allocation, rate design, EE&C program, capacity assignment
Matter 336	New Brunswick Energy & Utilities Board	New Brunswick Power	January 2017	New Brunswick Public Intervener	Financial forecast, equity requirement, depreciation life, variance mechanisms, cost allocation, rate design
Matter 338	New Brunswick Energy & Utilities Board	Generic	December 2016	New Brunswick Public Intervener	Retail petroleum margins
Matter 330	New Brunswick Energy & Utilities Board	Enbridge Gas New Brunswick	September 2016	New Brunswick Public Intervener	Revenue requirement, investment test, customer retention initiatives, cost allocation, rate design
R-2016-2537359	Pennsylvania Public Utility Commission	West Penn Power Company	July 2016	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design.
R-2016-2537355	Pennsylvania Public Utility Commission	Pennsylvania Power Company	July 2016	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design.
P-2016-2537609, 2537594	Pennsylvania Public Utility Commission	UGI Central Penn Gas, UGI Penn Natural Gas	July 2016	Pennsylvania Office of Small Business Advocate	Waiver of DSIC cap.
P-2016-2543523	Pennsylvania Public Utility Commission	UGI Utilities, Inc., Electric Division	July 2016	Pennsylvania Office of Small Business Advocate	Default service procurement.
R-2016-2529660	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania, Inc.	June 2016	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design.
R-2015-2469275	Pennsylvania Public Utility Commission	PPL Electric Utilities Corporation	May 2016	Pennsylvania Office of Small Business Advocate	Default service procurement plan.
R-2015-2518438	Pennsylvania Public Utility Commission	UGI Utilities, Inc., Gas Division	April 2016	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design, energy efficiency and conservation program.

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
P-2016-2521993	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania, Inc.	April 2016	Pennsylvania Office of Small Business Advocate	Waiver of DSIC cap.
M-2015-2477174	Pennsylvania Public Utility Commission	UGI Utilities, Inc., Electric Division	February 2016	Pennsylvania Office of Small Business Advocate	Energy efficiency and conservation plan review and development.
Matter No. 306	New Brunswick Energy & Utilities Board	Enbridge Gas New Brunswick	February 2016	New Brunswick Public Intervenor	Financial review, investment prudence, revenue requirement, cost allocation, rate design, market-based pricing.
P-2015-2511333, 2511351, 2511355, 2511356	Pennsylvania Public Utility Commission	Metropolitan Edison, Pennsylvania Electric, Pennsylvania Power, West Penn Power	January 2016	Pennsylvania Office of Small Business Advocate	Default service procurement plans, purchase of receivables.
P-2015-2501500	Pennsylvania Public Utility Commission	Philadelphia Gas Works	October 2015	Pennsylvania Office of Small Business Advocate	DSIC rate design under cash flow regulation, capital structure
P-2014-2459362	Pennsylvania Public Utility Commission	Philadelphia Gas Works	June 2015	Pennsylvania Office of Small Business Advocate	Demand side management programs, rate decoupling mechanism, incentive mechanism, cost-benefit analysis.
R-2015-2469275	Pennsylvania Public Utility Commission	PPL Electric Utilities	June 2015	Pennsylvania Office of Small Business Advocate	Misc. revenue requirement issues, cost allocation, rate design
R-2015-2468056	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	June 2015	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design, customer contribution policy
R-2015-2461373	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	April 2015	Pennsylvania Office of Small Business Advocate	Load balancing rates, reconciliation
R-2014-2456648	Pennsylvania Public Utility Commission	Peoples TWP LLP	March 2015	Pennsylvania Office of Small Business Advocate	Load balancing rates, reconciliation
R-3867-2013	Régie de l'énergie, Québec	Société en commandite Gaz Métro	February 2015	l'Association des Consommateurs de Gaz	Distribution cost allocation

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-3888-2014	Régie de l'énergie, Québec	Hydro Québec TransÉnergie	December 2014	AQCIE/CIFQ	Transmission customer contribution policy
R-2014-2428744 R-2014-2428742	Pennsylvania Public Utility Commission	Pennsylvania Power Company, West Penn Power Company	November 2014	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design
M-2014-2430781	Pennsylvania Public Utility Commission	PPL Electric Utilities	October 2014	Pennsylvania Office of Small Business Advocate	Smart meter procurement, rate design
Matter No. 253	New Brunswick Energy & Utilities Board	Enbridge Gas New Brunswick	September 2014	New Brunswick Public Intervenor	Financial review, investment prudence, revenue requirement, cost allocation, rate design, market-based pricing.
P-2014-2417907	Pennsylvania Public Utility Commission	PPL Electric Utilities	July 2014	Pennsylvania Office of Small Business Advocate	Default service procurement, class eligibility, reconciliation
R-2014-2406274	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	June 2014	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design
R-2014-2407345	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	June 2014	Pennsylvania Office of Small Business Advocate	Customer contribution policy, alternative financing mechanism
R-2014-2408268	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2014	Pennsylvania Office of Small Business Advocate	Gas procurement sharing mechanism, cost allocation
R-2014-2397237	Pennsylvania Public Utility Commission	Pike County Light & Power (Electric)	April 2014	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design
R-2014-2397353	Pennsylvania Public Utility Commission	Pike County Light & Power (Gas)	April 2014	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation
R-2014-2399598	Pennsylvania Public Utility Commission	Peoples TW Phillips	March 2014	Pennsylvania Office of Small Business Advocate	Gas procurement, design day demand, cost allocation rate design, retainage
P-2013-2389572 (Remand)	Pennsylvania Public Utility Commission	PPL Electric Utilities	February 2014	Pennsylvania Office of Small Business Advocate	Time of use rates, net metering rates

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
Matter 225	New Brunswick Energy & Utilities Board	Enbridge Gas New Brunswick	January 2014	New Brunswick Public Intervenor	Financial review, investment prudence, revenue requirement, cost allocation, rate design, market-based pricing.
P-2013-2391368, P-2013-2391372, P-2013-2391375, P-2013-2391378	Pennsylvania Public Utility Commission	Metropolitan Edison, Pennsylvania Electric, Pennsylvania Power, West Penn Power	January 2014	Pennsylvania Office of Small Business Advocate	Default service procurement, cost allocation, rate design
Matter No. 214	New Brunswick Energy & Utilities Board	Generic	November 2013	New Brunswick Public Intervenor	Maximum retail margins for motor fuel and residential heating oil.
Matter No. 171	New Brunswick Energy & Utilities Board	New Brunswick Power	September 2013	New Brunswick Public Intervenor	Amortization method for deferral costs associated with refurbishing Point Lepreau Generating Station
C-2013-2367475	Pennsylvania Public Utility Commission	PPL Electric Utilities	August 2013	Pennsylvania Office of Small Business Advocate	Forecasting and reconciliation of default service electric costs and revenues.
P-2011-2277868, I-2012-2320323	Pennsylvania Public Utility Commission	Generic	August 2013	Pennsylvania Office of Small Business Advocate	Ratemaking treatment for customers in overlapping NGDC service territories ("gas-on-gas").
P-2013-2356232	Pennsylvania Public Utility Commission	UGI Central Penn Gas, UGI Penn Natural Gas, UGI Utilities (Gas Division)	July 2013	Pennsylvania Office of Small Business Advocate	Program design, cost recovery and rate design for alternative system expansion financing pilot program ("GET Gas")
R-2013-2355886	Pennsylvania Public Utility Commission	Peoples TWP LLC	July 2013	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design
R-2013-2361764, R-2013-2361763, R-2013-2361771	Pennsylvania Public Utility Commission	UGI Central Penn Gas, UGI Penn Natural Gas, UGI Utilities (Gas Division)	July 2013	Pennsylvania Office of Small Business Advocate	Unaccounted-for gas.

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
Matter No. 178	New Brunswick Energy & Utilities Board	Enbridge Gas New Brunswick	July 2012	NB Public Intervenor	System expansion economic test, test year revenue requirement, cost allocation, rate design, treatment of stranded costs.
R-2012-2290597	Pennsylvania Public Utility Commission	PPL Electric Utilities	June 2012	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design
R-2012-2293303	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2012	Pennsylvania Office of Small Business Advocate	Treatment of pipeline credits
AUC ID #1633	Alberta Utilities Commission	Alberta Electric System Operator	April 2012	Powerex, Northpoint Energy Solutions, Cargill	Economic efficiency issues for allocation of constrained transmission capacity.
P-2008-2060309	Pennsylvania Public Utility Commission	PPL Electric Utilities	December 2008	Pennsylvania Office of Small Business Advocate	Default electric supply procurement
R-2008-2073938	Pennsylvania Public Utility Commission	Philadelphia Gas Works	December 2008	Pennsylvania Office of Small Business Advocate	Revenue requirement, financial cash flows, cost allocation, rate design.
P-2008-2044561	Pennsylvania Public Utility Commission	Pike County Light & Power	October 2008	Pennsylvania Office of Small Business Advocate	Electric default service procurement
R-3673-2008	Régie de l'énergie, Québec	Hydro Québec Distribution	August 2008	AQCIE/CIFQ	Electric supply contract modifications.
1550487	Alberta Utilities Commission	ENMAX Power Corporation	July 2008	D410 Group	Formula-based (performance-based) ratemaking; ratepayer-supplied equity contributions.
R-2008-2039417 et al.	Pennsylvania Public Utility Commission	UGI Utilities (Gas Division)	July 2008	Pennsylvania Office of Small Business Advocate	Design day demand forecast.
R-2008-2039284	Pennsylvania Public Utility Commission	UGI Penn Natural Gas	July 2008	Pennsylvania Office of Small Business Advocate	Revenue sharing, gas supply costs.

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-2008-2039634	Pennsylvania Public Utility Commission	PPL Gas Utilities	July 2008	Pennsylvania Office of Small Business Advocate	Lost and unaccounted-for gas, gas supply costs.
A-2008-2034045	Pennsylvania Public Utility Commission	UGI Utilities, PPL Gas Utilities	June 2008	Pennsylvania Office of Small Business Advocate	Public benefits of proposed sale.
R-2008-2011621	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2008	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design.
R-2008-2028039	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2008	Pennsylvania Office of Small Business Advocate	Gas supply cost functionalization; cost reconciliation method, sharing mechanisms.
R-3648-2007	Régie de l'énergie, Québec	Hydro Québec Distribution	April 2008	AQCIE/CIFQ	Electric supply contract modifications.
R-2008-2021348	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2008	Pennsylvania Office of Small Business Advocate	Sharing mechanisms, gas supply contracts.
R-2008-2012502	Pennsylvania Public Utility Commission	National Fuel Gas Distribution Company	March 2008	Pennsylvania Office of Small Business Advocate	Transportation and sales customer rate design, design day forecasts.
R-2008-2013026	Pennsylvania Public Utility Commission	T.W. Phillips Gas and Oil Company	March 2008	Pennsylvania Office of Small Business Advocate	Rate design treatment of capacity release revenues.
P-00072342	Pennsylvania Public Utility Commission	West Penn Power d/b/a Allegheny Power	February 2008	Pennsylvania Office of Small Business Advocate	Default service electricity procurement, rate design, reconciliation.
2007-004	New Brunswick Board of Commissioners of Public Utilities	New Brunswick Power Distribution and Customer Service Corporation	November 2007	New Brunswick Public Intervenor	Cost allocation, revenue allocation, rate design.
R-3644-2007	Régie de l'énergie, Québec	Hydro Québec Distribution	October 2007	AQCIE/CIFQ	Cost allocation, revenue allocation, rate design.

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
P-00072305	Pennsylvania Public Utility Commission	Pennsylvania Power Corporation	July 2007	Pennsylvania Office of Small Business Advocate	Default electric service procurement.
R-00072334	Pennsylvania Public Utility Commission	UGI Penn Natural Gas, Inc.	July 2007	Pennsylvania Office of Small Business Advocate	Asset management arrangement, gas procurement.
R-00072333	Pennsylvania Public Utility Commission	PPL Gas Utilities Corporation	July 2007	Pennsylvania Office of Small Business Advocate	Design day forecasting, gas procurement.
R-00072155	Pennsylvania Public Utility Commission	PPL Electric Utilities Corporation	July 2007	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design, energy efficiency.
R-00049255 (Remand)	Pennsylvania Public Utility Commission	PPL Electric Utilities Corporation	May 2007	Pennsylvania Office of Small Business Advocate	Revenue allocation.
R-00072175	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania, Inc.	May 2007	Pennsylvania Office of Small Business Advocate	Gas procurement.
R-00072110	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2007	Pennsylvania Office of Small Business Advocate	Gas procurement, margin sharing mechanisms.
R-00061931	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2007	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, retail gas competition.
P-00072245	Pennsylvania Public Utility Commission	Pike County Light & Power Company	March 2007	Pennsylvania Office of Small Business Advocate	Default service procurement, rate design.
R-00072043	Pennsylvania Public Utility Commission	National Fuel Gas Distribution Company	March 2007	Pennsylvania Office of Small Business Advocate	Design day requirements.
C-20065942	Pennsylvania Public Utility Commission	Pike County Light & Power Company	November 2006	Pennsylvania Office of Small Business Advocate	Wholesale power procurement by provider of last resort.
R-3610-2006	Régie de l'énergie, Québec	Hydro Québec Distribution	November 2006	AQCIE/CIFQ	Post-patrimonial generation cost allocation; cross-subsidization; rate design.
P-00052188	Pennsylvania Public Utility Commission	Pennsylvania Power Company	September 2006	Pennsylvania Office of Small Business Advocate	Affidavit: POLR rates, wholesale to retail.

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-00061493	Pennsylvania Public Utility Commission	National Fuel Gas Distribution Corporation	September 2006	Pennsylvania Office of Small Business Advocate	Rate of return, load forecasting, cost allocation, revenue allocation, rate design, revenue decoupling.
R-00061398	Pennsylvania Public Utility Commission	PPL Gas Utilities Corporation	August 2006	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue allocation, rate design.
R-00061365	Pennsylvania Public Utility Commission	PG Energy/Southern Union Company	July 2006	Pennsylvania Office of Small Business Advocate	Merger savings, cost allocation, revenue allocation, rate design.
R-00061519	Pennsylvania Public Utility Commission	PPL Gas Utilities Corporation	July 2006	Pennsylvania Office of Small Business Advocate	Design day weather and throughput forecasts; gas supply hedging.
R-00061518	Pennsylvania Public Utility Commission	PG Energy/Southern Union Company	July 2006	Pennsylvania Office of Small Business Advocate	Design day weather and throughput forecasts; gas supply hedging.
A-125146	Pennsylvania Public Utility Commission	UGI Utilities, Inc., Southern Union Company	June 2006	Pennsylvania Office of Small Business Advocate	Public benefits of proposed sale of PG Energy to UGI; asset management agreement.
R-00061355	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2006	Pennsylvania Office of Small Business Advocate	Gas supply and hedging plan; procedural issues
R-00061296	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2006	Pennsylvania Office of Small Business Advocate	Gas procurement and procedural issues.
R-00061246	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	March 2006	Pennsylvania Office of Small Business Advocate	Gas procurement; unaccounted for gas retention rates.
2005-002 Refiling	New Brunswick Board of Commissioners of Public Utilities	New Brunswick Power Distribution and Customer Service Company	February 2006	New Brunswick Public Intervenor	Cost allocation, rate design.
P-00052188	Pennsylvania Public Utility Commission	Pennsylvania Power Company	December 2005	Pennsylvania Office of Small Business Advocate	Cost allocation and rate design for POLR supplies.
R-3579-2005	Régie de l'énergie, Québec	Hydro Québec Distribution	November 2005	AQCIE/CIFQ	Generation cost allocation; cross-subsidization; revenue allocation.
2005-002	New Brunswick Board of Commissioners of Public Utilities	New Brunswick Power Distribution and Customer Service Company	August 2005	New Brunswick Public Intervenor	Cost allocation, rate design.

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-00050538	Pennsylvania Public Utility Commission	PG Energy	July 2005	Pennsylvania Office of Small Business Advocate	Gas procurement diversification.
R-00050540	Pennsylvania Public Utility Commission	PPL Gas Utilities Corporation	July 2005	Pennsylvania Office of Small Business Advocate	Gas procurement, hedging, retention rates, sharing mechanism.
R-00050340	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2005	Pennsylvania Office of Small Business Advocate	Gas procurement, hedging and diversification.
R-3563-2005	Régie de l'énergie, Québec	Hydro Québec Distribution	April 2005	AQCIE/CIFQ	Generation cost allocation; industrial demand response.
R-00050264	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2005	Pennsylvania Office of Small Business Advocate	Gas procurement, risk hedging, financing costs in the gas cost rate.
R-00050216	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	March 2005	Pennsylvania Office of Small Business Advocate	Gas supply procurement and forward pricing policies.
EB-2004-0542	Ontario Energy Board	Union Gas Limited	March 2005	Tribute Resources Inc.	Cost allocation and rate design for service to embedded storage pools.
R-00049884	Pennsylvania Public Utility Commission	Pike County Light and Power (Gas Service)	January 2005	Pennsylvania Office of Small Business Advocate	Fair rate of return, cost allocation, class revenue assignment.
R-00049656	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	December 2004	Pennsylvania Office of Small Business Advocate	Fair rate of return, uncollectibles costs, automatic rate adjustments, cost allocation, rate design.
R-3541-2004	Régie de l'énergie, Québec	Hydro Québec Distribution	November 2004	AQCIE, CIFQ	Allocation of post-patrimonial generation costs.
C-20031302	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	July 2004	Pennsylvania Office of Small Business Advocate	Customer assistance program funding and cost allocation.
R-049255	Pennsylvania Public Utility Commission	PPL Electric Utilities Corporation	June 2004	Pennsylvania Office of Small Business Advocate	Transmission and distribution cost allocation, rate design, automatic distribution increases.
P-042090 et al.	Pennsylvania Public Utility Commission	Philadelphia Gas Works	June 2004	Pennsylvania Office of Small Business Advocate	Collections and universal service cost issues.
RP-2003-0203	Ontario Energy Board	Enbridge Gas Distribution	May 2004	Vulnerable Energy Consumers Coalition et al.	Cost allocation, rate design for pipeline and storage costs.

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-049157 P-042090	Pennsylvania Public Utility Commission	Philadelphia Gas Works	April 2004	Pennsylvania Office of Small Business Advocate	Cash receipts reconciliation clause.
R-049108	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	March 2004	Pennsylvania Office of Small Business Advocate	Uncollectible cost responsibility for standby charges.
Application 1306819	Alberta Energy and Utilities Board	ENMAX Power Corporation	January 2004	Calgary Industrial Group Calgary Building Owners	T&D cost allocation, rate design, ratepayer equity funding.
R-3492-2002 Phase 2	Régie de l'énergie, Québec	Hydro Québec Distribution	November 2003	AQCIE, CIFQ	Rate policy, cross-subsidization.
R-038168	Pennsylvania Public Utility Commission	National Fuel Gas Distribution	July 2003	Pennsylvania Office of Small Business Advocate	Cost allocation, deficiency assignment, rate design, pension cost reconciliation, rate of return.
R-3492-2002 Phase 1	Régie de l'énergie, Québec	Hydro Québec Distribution	January 2003	AQCIE, AIFQ	Cost allocation; maintenance of historical cross-subsidization.
M-021612	Pennsylvania Public Utility Commission	Philadelphia Gas Works	September 2002	Pennsylvania Office of Small Business Advocate	Natural gas restructuring, cost allocation, rate unbundling.
R-027385	Pennsylvania Public Utility Commission	PG Energy (Southern Union)	July 2002	Pennsylvania Office of Small Business Advocate	Purchased gas cost incentive mechanisms.
1250932	Alberta Energy and Utilities Board	Aquila Networks Canada (Alberta) Ltd.	July 2002	Senior Petroleum Producers Association	Distribution plant and cost allocation, rate design.
R-027204	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2002	Pennsylvania Office of Small Business Advocate	Purchased gas cost incentive mechanisms, rate design.
R-3477-2001	Régie de l'énergie, Québec	Hydro Québec Distribution	May 2002	AQCIE, AIFQ	Classification/allocation of generation costs, subject to constant unit cost constraint.
1248859	Alberta Energy and Utilities Board	ESBI Alberta Limited	March 2002	IPPSA	Transmission congestion management principles.
R-016378	Pennsylvania Public Utility Commission	Philadelphia Gas Works	August 2001	Pennsylvania Office of Small Business Advocate	Cost of gas; commodity price forecasting.
R-016179	Pennsylvania Public Utility Commission	Columbia Gas of Pennsylvania	May 2001	Pennsylvania Office of Small Business Advocate	Recovery of CAP costs; PGC treatment of pipeline credits.

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-005277	Pennsylvania Public Utility Commission	PFG Gas Inc. and North Penn Gas Company	November 2000	Pennsylvania Office of Small Business Advocate	Cost allocation, rate design.
R-3443-2000	Régie de l'énergie, Québec	Société en commandite Gaz Métropolitain	November 2000	Industrial Gas Users Association (ACIG)	Tariff unbundling.
990005	Alberta Energy and Utilities Board	ESBI Alberta Limited	November 2000	IPPSA	Location-based credits for transmission rates.
R-005119	Pennsylvania Public Utility Commission	PG Energy (Southern Union)	July 2000	Pennsylvania Office of Small Business Advocate	Cost allocation, rate design, weather normalization.
R-994788	Pennsylvania Public Utility Commission	PFG Gas, Inc. and North Penn Gas Company	February 2000	Pennsylvania Office of Small Business Advocate	Natural gas restructuring, retail access, tariff design.
R-994785	Pennsylvania Public Utility Commission	National Fuel Gas Distribution Corp.	December 1999	Pennsylvania Office of Small Business Advocate	Natural gas restructuring, retail access, tariff design.
R-994783	Pennsylvania Public Utility Commission	PG Energy, Inc.	November 1999	Pennsylvania Office of Small Business Advocate	Natural gas restructuring, retail access, tariff design.
99005	Alberta Energy and Utilities Board	ESBI Alberta Limited (Transmission Administrator)	September 1999	IPPSA	Transmission tariff cost allocation, rate design, industry restructuring.
RE95080	Alberta Energy and Utilities Board	Alberta Power Limited	December 1998	Independent Power Producers Society of Alberta and SPPA	Electric industry restructuring, rate unbundling, cost allocation and rate design.
RE95081	Alberta Energy and Utilities Board	TransAlta Utilities Corporation	November 1998	IPPSA and Senior Petroleum Producers Assn.	Industry restructuring, cost allocation, rate design.
Expansion Feasibility Test	Public Utilities Board of Manitoba	Centra Gas Manitoba	August 1998	Simplot Canada Limited	Expansion feasibility and customer contribution methodology.
R-984280	Pennsylvania Public Utility Commission	PG Energy, Inc.	August 1998	Pennsylvania Office of Small Business Advocate	Cost allocation, revenue deficiency assignment, rate design.
EO97070455	New Jersey Board of Public Utilities	Atlantic City Electric Company	February 1998	New Jersey Board of Public Utilities	Industry restructuring, audit of unbundled rates.
R-973981	Pennsylvania Public Utility Commission	Allegheny Power (West Penn Power)	January 1998	Pennsylvania Office of Small Business Advocate	Industry restructuring, cost unbundling, cost allocation, and rate design.

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
R-973954	Pennsylvania Public Utility Commission	Pennsylvania Power & Light	August 1997	Pennsylvania Office of Small Business Advocate	Restructuring, stranded costs, market price forecasting, cost allocation, and rate design.
1996 Electric Utility Tariff Applications	Alberta Energy & Utilities Board	TransAlta Utilities, Alberta Power Edmonton Power, Grid Company of Alberta	October 1996	Independent Power Producers Society of Alberta (IPPSA)	Industry restructuring; transmission cost allocation and rate design.
R-963612	Pennsylvania Public Utility Commission	PG Energy, Inc.	October 1996	Pennsylvania Office of Small Business Advocate	Cost allocation and rate design -- direct and rebuttal.
R-953444	Pennsylvania Public Utility Commission	Trigen-Philadelphia Energy Corp.	November 1995	Pennsylvania Office of Small Business Advocate	Steam energy cost rate -- direct and rebuttal.
R-953406	Pennsylvania Public Utility Commission	T.W. Phillips Gas & Oil Company	October 1995	Pennsylvania Office of Small Business Advocate	Weather normalization, cost allocation and rate design.
R-953297	Pennsylvania Public Utility Commission	UGI Utilities, Inc. (Gas Division)	May 1995	Pennsylvania Office of Small Business Advocate	Cost allocation and rate design -- direct and surrebuttal.
R-943271	Pennsylvania Public Utility Commission	Pennsylvania Power & Light	April/May 1995	Pennsylvania Office of Small Business Advocate	Cost allocation and rate design -- direct and rebuttal.
EBRO 488	Ontario Energy Board	Natural Resource Gas Limited	November 1994	Natural Resource Gas Limited	Customer classification, cost allocation and rate design.
RE92071	Alberta Public Utilities Board	Alberta Power Limited	November 1994	Independent Power Producers Society of Alberta	Cost allocation and rate design for export transmission service.
R-942986	Pennsylvania Public Utility Commission	West Penn Power Company	August 1994	Pennsylvania Office of Small Business Advocate	Cost allocation and rate design.
R-932862	Pennsylvania Public Utility Commission	UGI Utilities, Inc. (Electric Division)	March 1994	Pennsylvania Office of Small Business Advocate	Cost allocation and rate design -- direct, rebuttal and surrebuttal.
EBRO 485, and Generic Direct Purchase Hearings	Ontario Energy Board	Consumers' Gas Company, Ltd.	August 1993, September 1993.	Canadian Independent Gas Marketing Association	Classification and allocation of marketing and administrative costs.
Hearings for Cost of Service and Rate Design	Nova Scotia Utility and Review Board	Nova Scotia Power, Inc.	May 1993	Bowater Mersey Paper Company, Ltd.	Classification of bulk power costs, rate design for interruptible service and other rate design issues.

DOCKET #	REGULATOR	UTILITY	DATE	CLIENT	TOPICS
Generic Hearing #4	Board of Commissioners of Public Utilities, New Brunswick	New Brunswick Power Corporation	November 1991	Large Power Users Group	Review of cost allocation and rate design.
EBRO-473	Ontario Energy Board	Consumers' Gas Company, Ltd.	October 1991	Ontario Energy Board Staff	Cost allocation and rate design.
EBRO-470	Ontario Energy Board	Union Gas, Ltd.	February 1991	Ontario Energy Board Staff	Cost allocation and rate design; evaluation of load shifting study.
Rate Area Boundaries Hearings	Prince Edward Island Public Utilities Commission	Maritime Electric Co., Ltd.	February 1991	PEI Island Department of Energy and Forestry	Customer classification by geographical area.
EBRO-467	Ontario Energy Board	Centra Gas, Ltd.	January 1991	Ontario Energy Board Staff	Cost allocation and rate design for technology, cogen and bypass.
Arbitration Hearings	Arbitrator	ARINC, Inc.	July 1990	ARINC Inc.	Cost allocation and rate design for aircraft to ground data communications service.
EBRO-462	Ontario Energy Board	Union Gas, Ltd.	January 1990	Ontario Energy Board Staff	Seasonal cost allocation study, and allocation of costs to export markets.
NSPC-857	Nova Scotia Board of Commissioners of Public Utilities	Nova Scotia Power Corp.	February 1989	Interruptible industrial customers	Cost allocation and rate design of interruptible electric service.

May 2017

EXHIBIT IEc-2

REFERENCED INTERROGATORY RESPONSES

I&E-RS-1-D

OCA-VII-7

OCA-VII-14

OSBA-I-6

OSBA-I-10

OSBA-I-11

OSBA-I-17

OSBA-I-19

OSBA-I-21

OSBA-I-22

OSBA-I-23

OSBA-I-25

OSBA-I-26

OSBA-I-28

OSBA-I-30

OSBA-I-31

PICGUG-I-5

PICGUG-III-1

Note: Due to both the volume and the electronic nature of the responses and many attachments to the referenced interrogatories, copies of the responses are not attached to this testimony. I am advised by counsel that OSBA will undertake the necessary steps to have these responses entered into the record in this proceeding during the hearings in this matter.

EXHIBIT IEc-3

RDK MODIFIED CLASS COST OF SERVICE STUDY

DIRECT TESTIMONY VERSION

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS Direct Testimony

$000

Summary of COSS	Total	Residential	Commercial	Industrial	Municipal	PHA GS	PHA Rate 8	NGV	Int. Sales	IT	GTS
Revenues											
Current Distribution Revenue	400,218	323,088	63,968	4,886	4,328	1,271	2,664	13	0	0	0
Proposed Rate Increase											
Interruptible Gas Revenue	17	0	0	0	0	0	0	0	17	0	0
USEC Revenue	53,687	39,010.9	11,858	924	1,134	188	564	7	0	0	0
Forfeited Discounts	7,853	7,842	11	0	0	0	0	0	0	0	0
Misc. Service Revenue	1,206	981	187	14	12	4	8	0	0	0	0
GTS/IT Revenue	12,190	0	0	0	0	0	0	0	0	10,940	1,250
Other Gas Revenue	4,634	3,752	754	41	64	18	5	0	0	0	0
Revenue Adjustments	217	176	35	2	3	1	0	0	0	0	0
Total Gas Revenues	**480,022**	**374,849**	**76,814**	**5,867**	**5,541**	**1,482**	**3,241**	**20**	**17**	**10,940**	**1,250**
Turn-ons and dig ups [sic]	1,883	1,771	94	2	3	7	3	0	0	2	0
Customer Installations	6,382	6,382	0	0	0	0	0	0	0	0	0
Rental Income	166	125	22	2	2	1	1	0	0	13	0
Interest/Dividend	2,010	1,512	268	20	28	7	16	0	0	154	5
Misc. Non-Oper. Income	855	644	167	12	20	3	9	0	0	0	0
Total Revenues	**491,318**	**385,284**	**77,364**	**5,903**	**5,594**	**1,499**	**3,271**	**20**	**17**	**11,108**	**1,256**
Revenue per GJ	**6.42**	**26.97**	**14.84**	**14.34**	**11.20**	**15.43**	**9.80**	**3.29**	**1.02**	**0.77**	**0.09**
Operating Expenses											
Production	5,335	3,282	797	53	72	16	22	0	16	559	518
Storage	11,514	7,881	2,040	151	239	38	112	0	0	764	287
Transmission	0	0	0	0	0	0	0	0	0	0	0
Mains/Services	32,136	21,066	5,066	383	547	98	283	2	4	4,664	24
Measuring/Regulation	35,991	30,296	3,668	218	437	107	205	0	1	858	200
Other Distribution O&M	16,910	12,323	2,078	154	214	53	136	1	2	1,583	366
Customer Accounts	55,507	52,469	2,814	82	31	64	32	0	0	16	0
Customer Service	44,616	44,376	37	118	1	3	1	0	0	78	1
Admin & General	177,792	134,447	22,882	1,639	2,329	534	1,148	5	35	13,072	1,702
Total Operating Expense	**379,801**	**306,141**	**39,382**	**2,798**	**3,869**	**913**	**1,939**	**9**	**58**	**21,595**	**3,097**
Depreciation	**47,180**	**36,371**	**5,710**	**417**	**594**	**153**	**375**	**2**	**6**	**3,370**	**183**
Taxes Other Than Income	**8,437**	**6,365**	**1,084**	**77**	**112**	**25**	**54**	**0**	**2**	**634**	**84**
Return on Rate Base	**125,013**	**94,038**	**16,658**	**1,215**	**1,753**	**410**	**1,003**	**5**	**14**	**9,587**	**330**
Total Cost of Service	**560,431**	**442,914**	**62,834**	**4,507**	**6,328**	**1,501**	**3,371**	**16**	**79**	**35,185**	**3,694**
Cost per mcf	$7.49	$12.87	$6.01	$5.53	$6.32	$9.03	$6.77	$2.61	$4.76	$2.47	$0.28
Rate Base	**1,188,370**	**893,923**	**158,347**	**11,549**	**16,660**	**3,900**	**9,539**	**49**	**131**	**91,135**	**3,136**
Revenue-Cost Ratio	**86%**	**85%**	**122%**	**130%**	**88%**	**99%**	**96%**	**126%**	**21%**	**31%**	**34%**
SHORTFALL	(69,113)	(57,630)	14,531	1,396	(734)	(2)	(100)	4	(62)	(24,077)	(2,438)

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

Summary of COSS	Alloc. Factor	Total	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Revenues																
Current Distribution Revenue		400,218	6,084	317,004	9,202	54,766	1,614	3,272	835	3,493	1,271	2,664	13	0	0	0
Proposed Rate Increase																
Interruptible Gas Revenue	E2I	17	0	0	0	0	0	0	0	0	0	0	0	17	0	0
Current USEC Revenue	E1X	53,687	475.4	38,535	1,655	10,203	310	614	212	922	188	564	7	0	0	0
Forfeited Discounts	RFD	7,853	145	7,697	2	10	0	0	0	0	0	0	0	0	0	0
Misc. Service Revenue	REVT	1,206	19	962	27	160	5	10	2	10	4	8	0	0	0	0
GTS/IT Revenue		12,190													10,940	1,250
Other Gas Revenue	E2F	4,634	46	3,706	105	649	11	30	14	50	18	5	0	0	0	0
Revenue Adjustments	E2F	217	2	174	5	30	1	1	1	2	1	0	0	0	0	0
Total Gas Revenues		**480,022**	**6,771**	**368,078**	**10,996**	**65,818**	**1,940**	**3,927**	**1,064**	**4,477**	**1,482**	**3,241**	**20**	**17**	**10,940**	**1,250**
Turn-ons and dig ups [sic]	C1	1,883	73	1,698	18	76	1	2	1	2	7	3	0	0	2	0
Customer installations	C1R	6,382	263	6,119	0	0	0	0	0	0	0	0	0	0	0	0
Rental Income	RB	166	3	122	3	19	0	1	0	2	1	1	0	0	13	0
Interest/Dividend	RB	2,010	40	1,472	35	233	6	14	4	24	7	16	0	0	154	5
Misc. Non-Oper. Income	O1S	855	6	638	19	148	3	9	3	17	3	9	0	0	0	0
Total Revenues		**491,318**	**7,156**	**378,128**	**11,070**	**66,294**	**1,951**	**3,953**	**1,073**	**4,522**	**1,499**	**3,271**	**20**	**17**	**11,108**	**1,256**
Revenue per GJ		**6.42**	**16.14**	**10.83**	**7.53**	**7.31**	**7.10**	**7.25**	**5.69**	**5.50**	**8.92**	**6.51**	**3.29**	**1.02**	**0.77**	**0.09**
Operating Expenses																
Production		5,335	40	3,242	111	686	16	37	14	57	16	22	0	16	559	518
Storage		11,514	72	7,810	229	1,811	42	109	35	204	38	112	0	0	764	287
Transmission		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mains/Services		32,136	324	20,743	638	4,428	115	268	87	460	98	283	2	4	4,664	24
Measuring/Regulation		35,991	1,163	29,134	356	3,312	74	144	64	373	107	205	0	1	858	200
Other Distribution O&M		16,910	346	11,977	283	1,795	47	107	34	180	53	136	1	2	1,583	366
Customer Accounts		55,507	1,270	51,200	512	2,302	19	62	10	20	64	32	0	0	16	0
Customer Service		44,616	575	43,801	7	30	33	85	0	1	3	1	0	0	78	1
Admin & General		177,792	3,559	130,887	2,859	20,024	501	1,138	375	1,954	534	1,148	5	35	13,072	1,702
Total Operating Expense		**379,801**	**7,348**	**298,793**	**4,994**	**34,388**	**847**	**1,951**	**620**	**3,249**	**913**	**1,939**	**9**	**58**	**21,595**	**3,097**
Depreciation		**47,180**	**1,065**	**35,305**	**763**	**4,946**	**124**	**293**	**92**	**503**	**153**	**375**	**2**	**6**	**3,370**	**183**
Taxes Other Than Income		**8,437**	**169**	**6,196**	**134**	**950**	**24**	**54**	**18**	**94**	**25**	**54**	**0**	**2**	**634**	**84**
Return on Rate Base		**125,013**	**2,463**	**91,575**	**2,169**	**14,489**	**365**	**850**	**277**	**1,475**	**410**	**1,003**	**5**	**14**	**9,587**	**330**
Total Cost of Service		**560,431**	**11,045**	**431,870**	**8,061**	**54,773**	**1,360**	**3,147**	**1,007**	**5,321**	**1,501**	**3,371**	**16**	**79**	**35,185**	**3,694**
Cost per mcf		**$7.49**	**$26.33**	**$12.70**	**$5.52**	**$6.08**	**$4.97**	**$5.81**	**$5.39**	**$6.54**	**$9.03**	**$6.77**	**$2.61**	**$4.76**	**$2.47**	**$0.28**
Rate Base		**1,188,370**	**23,413**	**870,510**	**20,616**	**137,732**	**3,470**	**8,078**	**2,637**	**14,024**	**3,900**	**9,539**	**49**	**131**	**91,135**	**3,136**
Revenue-Cost Ratio		**86%**	**61%**	**85%**	**136%**	**120%**	**143%**	**125%**	**106%**	**84%**	**99%**	**96%**	**126%**	**21%**	**31%**	**34%**
SHORTFALL		**(69,113)**	**(3,888)**	**(53,742)**	**3,009**	**11,521**	**591**	**805**	**65**	**(799)**	**(2)**	**(100)**	**4**	**(62)**	**(24,077)**	**(2,438)**

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

Rate Base		Alloc. Factor	Gross	Acc. Dep'n	Net Book	Demand/Commodity													
						Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Gas Plant in Service																				
	Franchises & Consents	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
301-3	Other Intangible Plant	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
304-347 Production Plant		D2	60,359	(34,623)	25,736	25,736	160	17,456	513	4,048	95	243	78	456	85	251	1	1	1,709	641
360-364 Storage Plant		D2	145,112	(95,160)	49,952	49,952	311	33,882	995	7,857	184	472	152	885	165	487	1	2	3,316	1,244
Transmission Plant		NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																				
374	Land and Land Rights	DPD	101		101	101	1	62	2	15	0	1	0	2	0	1	0	0	16	1
375	Structures and Improvements	DPD	2,707		2,707	2,707	17	1,652	55	400	10	24	8	42	8	24	0	0	438	29
376	Mains	M2	773,759	(282,895)	490,864	490,864	3,078	302,319	10,189	73,279	1,892	4,404	1,452	7,684	1,472	4,373	24	67	80,629	0
376	Mains GTS	GTS	7,574	(7,574)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
377	Compressor Equipment	D1	1,255		1,255	1,255	7	780	23	181	4	11	3	20	4	11	0	0	153	57
378	Meas&Reg. Sta. Equip - Gen'l	D1	17,886		17,886	17,886	107	11,117	326	2,578	60	155	50	290	54	160	0	1	2,176	816
380	Services	C3	705,810	(355,556)	350,254	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
381	Meters	C2	75,453	(39,464)	35,989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
382	Meter Installations	C2	94,565		94,565	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
383	Regulators	C1S	2,202		2,202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
384	Regulator Installations	C1S	4,142		4,142	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
385	Meas&Reg. Sta. Equip. - Ind.	C3I	314		314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
387	Other Equipment	DPD	3,980	(61,295)	(57,315)	(57,315)	(355)	(34,924)	(1,125)	(8,408)	(214)	(503)	(168)	(899)	(170)	(506)	(1)	(5)	(9,267)	(605)
Subtotal - Distribution Plant			1,689,748	(746,784)	942,964	455,498	2,850	280,956	9,421	67,985	1,749	4,085	1,346	7,149	1,368	4,063	22	61	74,144	998
General Plant																				
389	Land and Land Rights	LL	3,713		3,713	2,053	14	1,331	40	287	7	17	6	79	6	15	0	1	263	37
390	Structures and Improvements	LL	82,900		82,900	45,846	320	29,727	903	6,402	158	375	128	652	135	344	2	15	5,864	822
391	Office Furniture and Equipment	LL	108,966		108,966	60,261	421	39,074	1,187	8,415	208	493	168	857	177	453	3	20	7,707	1,080
392	Transportation Equipment	LL	40,027		40,027	22,136	154	14,353	436	3,091	76	181	62	315	65	166	1	7	2,831	397
393	Stores Equipment	LL	755		755	418	3	271	8	58	1	3	1	6	1	3	0	0	53	7
394	Tools shop & garage eqmt	LL	10,723		10,723	5,930	41	3,845	117	828	20	48	17	84	17	45	0	2	758	106
396	Power operated eqmt	LL	1,235		1,235	683	5	443	13	95	2	6	2	10	2	5	0	0	87	12
397	Communications eqmt	LL	20,815		20,815	11,511	80	7,464	227	1,607	40	94	32	164	34	86	1	4	1,472	206
398	Misc. equipment	LL	14,279	(146,255)	(131,976)	(72,997)	(509)	(47,325)	(1,437)	(10,142)	(257)	(597)	(204)	(1,039)	(211)	(548)	(1)	(25)	(9,335)	(1,308)
Subtotal - General Plant			283,413	(146,255)	137,158	75,852	529	49,183	1,494	10,592	262	620	212	1,079	223	570	3	25	9,701	1,360
Total Plant			2,178,632	(1,022,822)	1,155,810	607,038	3,850	381,477	12,423	90,482	2,289	5,420	1,788	9,568	1,840	5,372	27	89	88,870	3,543
Other Rate Base Items																				
131	Accts Rcbl Gas	E1X	70,158		70,158	70,158	621	50,358	2,163	13,333	405	803	277	1,205	246	737	9	0	0	0
131	Materials & Supps.	OM	9,768		9,768	6,076	55	4,581	83	590	15	35	11	59	12	32	0	1	521	79
131	Prepaid accts	OM	5,342		5,342	3,323	30	2,505	46	323	8	19	6	32	7	17	0	1	285	43
131	Gas/LNG in storage	E3	38,344		38,344	38,344	313	31,258	638	5,030	84	261	117	451	153	32	1	7	0	0
131	Accts Pble Gas	E1X	(12,110)		(12,110)	(12,110)	(107)	(8,932)	(373)	(2,301)	(70)	(139)	(48)	(208)	(43)	(127)	(2)	0	0	0
131	Accts Pble Other - Labor	LL	(22,271)		(22,271)	(12,317)	(86)	(7,986)	(243)	(1,720)	(42)	(101)	(34)	(175)	(36)	(93)	(1)	(4)	(1,545)	(221)
131	Accts Pble Other O&M	OM	(22,271)		(22,271)	(13,854)	(127)	(10,445)	(190)	(1,346)	(33)	(79)	(26)	(133)	(28)	(73)	(0)	(3)	(1,186)	(181)
131	Customer deposits	REVD	(2,935)		(2,935)	(2,935)	(16)	(2,162)	(65)	(389)	(11)	(23)	(8)	(24)	(9)	(19)	0	0	0	0
131	Accrued Interest	RB	(15,202)		(15,202)	(8,508)	(54)	(5,470)	(181)	(1,301)	(34)	(78)	(26)	(135)	(27)	(74)	(0)	(1)	(1,097)	(50)
131	Acc'd taxes/wages	OM	(16,263)		(16,263)	(10,116)	(92)	(7,627)	(139)	(983)	(24)	(58)	(19)	(98)	(20)	(53)	(0)	(2)	(865)	(132)
Sub-Total Other Rate Base			32,560	0	32,560	58,061	506	46,141	1,739	11,236	297	640	252	972	256	380	7	(1)	(3,912)	(453)
TOTAL RATE BASE			2,211,192	(1,022,822)	1,188,370	665,100	4,356	427,618	14,161	101,718	2,586	6,060	2,040	10,540	2,096	5,752	34	87	84,959	3,092

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

Rate Base		Alloc. Factor	Gross	Acc. Dep'n	Net Book	Total C	Customer Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Gas Plant In Service																				
	Franchises & Consents	ND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
301-3	Other Intangible Plant	ND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
304-347 Production Plant		D2	60,359	(34,623)	25,736	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360-364 Storage Plant		D2	145,112	(95,160)	49,952	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Plant		ND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																				
374	Land and Land Rights	DPD	101		101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
375	Structures and Improvements	DPD	2,707		2,707	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
376	Mains	M2	773,759	(282,895)	490,864	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
376	Mains GTS	GTS	7,574	(7,574)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
377	Compressor Equipment	D1	1,255		1,255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
378	Meas&Reg. Sta. Equip. - Gen'l	D1	17,886		17,886	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
380	Services	C3	705,810	(355,556)	350,254	350,254	12,925	300,379	4,735	20,169	547	1,409	298	1,755	1,235	2,814	12	37	3,911	28
381	Meters	C2	75,453	(39,464)	35,989	35,989	1,262	29,328	367	3,569	58	89	69	402	121	221	1	2	496	4
382	Meter Installations	C2	94,565		94,565	94,565	3,316	77,062	966	9,379	153	234	181	1,056	317	582	1	4	1,304	9
383	Regulators	C1S	2,202		2,202	2,202	90	2,103	0	0	0	0	0	0	9	0	0	0	0	0
384	Regulator Installations	C1S	4,142		4,142	4,142	170	3,956	0	0	0	0	0	0	16	0	0	0	0	0
385	Meas&Reg. Sta. Equip. - Ind.	C1I	314		314	314	0	0	0	0	53	135	0	0	0	0	0	0	125	1
387	Other Equipment	DPD	3,980	(61,295)	(57,315)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Distribution Plant			1,689,748	(746,784)	942,964	487,466	17,763	412,827	6,068	33,118	811	1,867	549	3,212	1,697	3,617	14	43	5,837	41
General Plant																				
389	Land and Land Rights	LL	3,713		3,713	1,660	60	1,395	19	131	3	7	2	12	5	8	0	0	16	0
390	Structures and Improvements	LL	82,900		82,900	37,054	1,340	31,153	416	2,930	74	154	48	270	113	188	1	1	361	3
391	Office Furniture and Equipment	LL	108,966		108,966	48,705	1,761	40,949	547	3,852	97	203	64	355	149	248	1	2	475	3
392	Transportation Equipment	LL	40,027		40,027	17,891	647	15,042	201	1,415	36	75	23	130	55	91	0	1	174	1
393	Stores Equipment	LL	755		755	337	12	284	4	27	1	1	0	2	1	2	0	0	3	0
394	Tools shop & garage eqmt.	LL	10,723		10,723	4,793	173	4,030	54	379	10	20	6	35	15	24	0	0	47	0
396	Power operated eqmt	LL	1,235		1,235	552	20	464	6	44	1	2	1	4	2	3	0	0	5	0
397	Communications eqmt	LL	20,815		20,815	9,304	336	7,822	104	736	18	39	12	68	28	47	0	0	91	1
398	Misc. equipment	LL	14,279	(146,255)	(131,976)	(58,489)	(2,113)	(49,569)	(662)	(5,005)	(112)	(269)	(77)	(469)	(181)	(308)	(1)	(2)	(625)	(5)
Subtotal - General Plant			283,413	(146,255)	137,158	61,306	2,217	51,543	688	4,848	122	255	80	447	188	312	1	2	598	4
Total Plant			2,178,632	(1,022,822)	1,155,810	548,772	19,980	464,370	6,757	37,966	933	2,123	629	3,659	1,885	3,929	15	46	6,435	46
Other Rate Base Items																				
131	Accts Rcbl Gas	E1X	70,158		70,158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	Materials & Supps.	OM	9,768		9,768	3,692	133	3,104	45	294	7	16	5	25	11	18	0	0	34	0
131	Prepaid accts	OM	5,342		5,342	2,019	73	1,697	25	161	4	8	2	13	6	10	0	0	19	0
131	Gas/LNG in storage	E3	38,344		38,344	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	Accts Pble Gas	E1X	(12,110)		(12,110)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	Accts Pble Other - Labor	LL	(22,271)		(22,271)	(9,954)	(360)	(8,369)	(112)	(787)	(20)	(41)	(13)	(73)	(30)	(51)	(0)	(0)	(97)	(1)
131	Accts Pble Other O&M	OM	(22,271)		(22,271)	(8,417)	(304)	(7,076)	(104)	(670)	(17)	(35)	(10)	(54)	(26)	(43)	(0)	(0)	(78)	(1)
131	Customer deposits	REVD	(2,935)		(2,935)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	Accrued interest	RB	(15,202)		(15,202)	(6,671)	(241)	(5,666)	(81)	(461)	(11)	(26)	(8)	(45)	(23)	(38)	(0)	(1)	(79)	(1)
131	Acc'd taxes/wages	OM	(16,263)		(16,263)	(6,147)	(222)	(5,167)	(75)	(489)	(12)	(26)	(8)	(41)	(19)	(33)	(0)	(0)	(57)	(0)
Sub-Total Other Rate Base			32,560	0	32,560	(25,503)	(924)	(21,477)	(302)	(1,953)	(48)	(105)	(32)	(176)	(81)	(142)	(0)	(1)	(258)	(2)
TOTAL RATE BASE			2,211,192	(1,022,822)	1,188,370	523,270	19,056	442,893	6,455	36,014	884	2,018	597	3,483	1,804	3,787	15	44	6,177	44

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS Direct Testimony

$000

Depreciation/Taxes	Alloc. Factor	Total	Demand/Commodity														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Gas Plant in Service																	
Franchises & Consents	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Intangible Plant	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Plant	D2	1,178	1,178	7	799	23	185	4	11	4	21	4	11	0	0	78	29
Storage Plant	D2	2,167	2,167	13	1,470	43	341	8	20	7	38	7	21	0	0	144	54
Transmission Plant	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																	
Land and Land Rights	DPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Structures and Improvements	DPD	75	75	0	46	2	11	0	1	0	1	0	1	0	0	12	1
Mains	M2	13,598	13,598	85	8,375	282	2,030	52	122	40	213	41	121	1	2	2,234	0
Mains GTS	GTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Compressor Equipment	D1	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Meas&Reg. Sta. Equip. - Gen'l	D1	319	319	2	199	6	46	1	3	1	5	1	3	0	0	39	15
Services	C3	17,582	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meters	C2	1,946	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meter Installations	C2	2,333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Regulators	C1S	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Regulator Installations	C1S	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meas&Reg. Sta. Equip. - Ind.	C1I	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Equipment	DPD	123	123	1	75	3	18	0	1	0	2	0	1	0	0	20	1
Subtotal - Distribution Plant		36,087	14,118	88	8,696	292	2,106	54	127	42	221	42	126	1	2	2,305	17
General Plant																	
Land and Land Rights	LL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Structures and Improvements	LL	1,613	892	6	579	18	125	3	7	2	13	3	7	0	0	114	16
Office Furniture and Equipment	LL	3,248	1,796	13	1,165	35	251	6	15	5	26	5	13	0	1	230	32
Transportation Equipment	LL	2,037	1,127	8	731	22	157	4	9	3	16	3	8	0	0	144	20
Stores Equipment	LL	17	10	0	6	0	1	0	0	0	0	0	0	0	0	1	0
Tools shop & garage eqmt.	LL	361	200	1	129	4	28	1	2	1	3	1	1	0	0	26	4
Power operated eqmt	LL	59	33	[illegible]	21	1	5	0	0	0	0	0	0	0	0	4	1
Communications eqmt	LL	745	412	3	267	8	58	1	3	1	6	1	3	0	0	53	7
Misc. equipment	LL	382	211	1	137	4	29	1	2	1	3	1	2	0	0	27	4
Subtotal - General Plant		8,463	4,680	33	3,035	92	654	16	38	13	67	14	35	0	2	599	84
TOTAL HTY DEPRECIATION		**47,894**	**22,142**	**142**	**13,999**	**451**	**3,285**	**83**	**196**	**65**	**347**	**67**	**194**	**1**	**4**	**3,125**	**184**
TOTAL FPFTY DEPRECIATION		**47,180**	**21,812**	**140**	**13,790**	**444**	**3,236**	**81**	**193**	**64**	**342**	**66**	**191**	**1**	**4**	**3,079**	**181**

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS Direct

$000

Depreciation/Taxes	Alloc. Factor	Total	Customer														
			Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Gas Plant in Service																	
Franchises & Consents	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Intangible Plant	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Plant	D2	1,178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Plant	D2	2,167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Plant	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																	
Land and Land Rights	DPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Structures and Improvements	DPD	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mains	M2	13,598	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mains GTS	GTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Compressor Equipment	D1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meas&Reg. Sta. Equip. - Gen'l	D1	319	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Services	C3	17,582	17,582	649	15,079	238	1,012	27	71	15	88	62	141	1	2	196	1
Meters	C2	1,946	1,946	68	1,586	20	193	3	5	4	22	7	12	0	0	27	0
Meter Installations	C2	2,333	2,333	82	1,901	24	231	4	6	4	26	8	14	0	0	32	0
Regulators	C1S	38	38	2	36	0	0	0	0	0	0	0	0	0	0	0	0
Regulator Installations	C1S	62	62	3	59	0	0	0	0	0	0	0	0	0	0	0	0
Meas&Reg. Sta. Equip. - Ind.	C1I	8	8	0	0	0	0	1	4	0	0	0	0	0	0	3	0
Other Equipment	DPD	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Distribution Plant		36,087	21,969	803	18,661	281	1,437	36	85	23	136	77	168	1	2	259	2
General Plant																	
Land and Land Rights	LL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Structures and Improvements	LL	1,613	721	26	606	8	57	1	3	1	5	2	4	0	0	7	0
Office Furniture and Equipment	LL	3,248	1,452	53	1,221	16	115	3	6	2	11	4	7	0	0	14	0
Transportation Equipment	LL	2,037	911	33	766	10	72	2	4	1	7	3	5	0	0	9	0
Stores Equipment	LL	17	8	0	7	0	1	0	0	0	0	0	0	0	0	0	0
Tools shop & garage eqmt.	LL	361	161	6	136	2	13	0	1	0	1	0	1	0	0	2	0
Power operated eqmt	LL	59	26	1	22	0	2	0	0	0	0	0	0	0	0	0	0
Communications eqmt	LL	745	333	12	280	4	26	1	1	0	2	1	2	0	0	3	0
Misc. equipment	LL	382	171	6	144	2	13	0	1	0	1	1	1	0	0	2	0
Subtotal - General Plant		8,463	3,783	137	3,180	42	299	8	16	5	28	12	19	0	0	37	0
TOTAL HTY DEPRECIATION		**47,894**	**25,752**	**940**	**21,841**	**324**	**1,736**	**43**	**101**	**28**	**163**	**88**	**187**	**1**	**2**	**296**	**2**
TOTAL FPFTY DEPRECIATION		**47,180**	**25,368**	**926**	**21,515**	**319**	**1,710**	**43**	**99**	**28**	**161**	**87**	**184**	**1**	**2**	**291**	**2**

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

O&M Expenses		Alloc. Factor	Total	Demand/Commodity													
				Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
701-743	Manufactured Gas Exps.	E1.	2,968	2,968	17	1,360	58	356	11	21	7	32	7	20	0	1	559	518
804	City Gate Purchases	E2I	14	14	0	0	0	0	0	0	0	0	0	0	0	14	0	0
812	LNG for utility opns.	E2	(6,487)	(6,487)	(66)	(5,187)	(147)	(909)	(35)	(42)	(20)	(69)	(25)	(7)	(0)	(3)	0	0
813	Other gas supply	E2	8,840	8,840	87	7,068	200	1,238	21	58	27	94	35	9	0	3	0	0
Production Expenses			5,335	5,335	40	3,242	111	686	16	37	14	57	16	22	0	16	559	518
Storage Expenses		D2	11,514	11,514	72	7,810	229	1,811	42	109	35	204	38	112	0	0	764	287
Transmission Expenses		ND	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Expenses																		
870	Opns S&E	DP	2,018	964	6	588	20	142	4	9	3	15	3	9	0	0	156	10
871	Load dispatch	E1	1,650	1,650	9	756	32	198	6	12	4	18	4	11	0	0	311	288
874	Mains/Services	MS	4,617	2,426	15	1,480	50	359	9	22	7	38	7	21	0	0	395	24
875	Meas. Sta. Gen'l	D1	2,102	2,102	12	1,306	38	303	7	18	6	34	6	19	0	0	256	96
876	Meas. Sta. Ind.	C1I	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
877	Meas. Sta. CityGate	D1	550	550	3	342	10	79	2	5	2	9	2	5	0	0	67	25
878	Meter/regulator	MR	18,417	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
879	Cust. Install.	C2P	5,642	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
879PLP	Cust. Install. PL	C1R	3,746	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
880	Other	DP	12,935	6,180	38	3,771	127	913	24	55	18	96	18	55	0	1	999	65
881	Rents	DP	7	3	0	2	0	0	0	0	0	0	0	0	0	0	1	0
885	Maint. S&E	DP	300	143	1	87	3	21	1	1	0	2	0	1	0	0	23	2
887	Maint. Mains	M2	25,719	25,719	161	15,840	534	3,839	99	231	76	403	77	229	1	4	4,225	0
889	Maint. Meas. Sta. Gen'l	D1	1,184	1,184	7	736	22	171	4	10	3	19	4	11	0	0	144	54
890	Maint. Meas. Sta. Ind.	C1I	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
891	Maint. Meas. Sta. CityGate	D1	487	487	3	303	9	70	2	4	1	8	1	4	0	0	59	22
892	Maint. Services	C3	1,800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
893	Maint. Meters/Regs.	MR	3,810	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Distribution Expenses			85,037	41,408	255	25,211	844	6,097	157	366	121	641	123	365	2	5	6,635	586
Customer Accounts																		
901	Supervision	C8	1,109	327	5	322	0	0	0	0	0	0	0	0	0	0	0	0
902	Meter Reading	C1	785	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
903	Records&Collections	C8	26,657	7,861	114	7,742	1	4	0	0	0	0	0	0	0	0	0	0
904	Uncollectible	C4	16,495	16,495	287	15,637	81	465	3	21	0	0	0	0	0	0	0	0
904CRP	A&G Exps Transferred - Sales	USC	10,461	10,461	126	10,335	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Customer Accts.			55,507	35,144	533	34,037	82	469	3	21	0	0	0	0	0	0	0	0
Customer Svc. & Info.																		
908	Customer Assistance	C9	1,617	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
908CAP	EURP	USC	3,859	3,859	47	3,812	0	0	0	0	0	0	0	0	0	0	0	0
480CRP	CRP Shortfall	USC	36,351	36,351	438	35,913	0	0	0	0	0	0	0	0	0	0	0	0
480SEN	Senior Discounts	USC	2,789	2,789	34	2,755	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Cust. Svc.			44,616	42,999	518	42,481	0	0	0	0	0	0	0	0	0	0	0	0

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

O&M Expenses		Alloc. Factor	Total	Demand/Commodity													
				Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA R8	NGV	Int. Sales	FT	GTS
Administrative & General																		
Various	Labor Related	LL	162,345	89,781	627	58,215	1,768	12,537	310	734	251	1,278	264	674	4	30	11,483	1,609
924	Plant Related	DP	4,853	2,318	14	1,415	48	343	9	21	7	36	7	20	0	0	375	24
928	Regulatory Commission Exps	REVT	5,157	5,157	80	4,114	115	683	20	41	10	43	17	34	0	0	0	0
929	Duplicate charges credit	D15	(913)	(913)	(6)	(682)	(20)	(158)	(4)	(9)	(3)	(18)	(4)	(10)	0	0	0	0
930	Gen'l Advert.	LL	6,020	3,329	23	2,159	66	465	11	27	9	47	10	25	0	1	426	60
931	Rents	LL	330	182	1	118	4	25	1	1	1	3	1	1	0	0	23	3
Sub-Total A&G			177,792	99,856	740	65,339	1,980	13,895	347	814	274	1,388	294	745	4	31	12,307	1,697
TOTAL O&M			379,801	236,256	2,158	178,119	3,246	22,958	566	1,347	444	2,291	470	1,244	7	53	20,265	3,088
TOTAL DEPRECIATION			47,180	21,812	140	13,790	444	3,236	81	193	64	342	66	191	1	4	3,079	181
TAXES OTHER THAN INCOME		LL	8,437	4,666	33	3,025	92	652	16	38	13	66	14	35	0	2	597	84
TOTAL RETURN @ 7.604%		R8	125,013	69,967	458	44,984	1,490	10,700	272	638	215	1,109	220	605	4	9	8,937	325
TOTAL REVENUE REQUIREMENT			$60,431	332,700	2,788	239,919	5,272	37,546	935	2,216	736	3,808	771	2,075	12	67	32,878	3,678

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct

$000

O&M Expenses		Alloc. Factor	Total	Customer														
				Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
701-743	Manufactured Gas Exps.	E1	2,968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
804	City Gate Purchases	E2I	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
812	LNG for utility opns.	E2	(6,487)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813	Other gas supply	E2	8,840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Expenses			5,335	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Expenses		O2	11,514	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Expenses		NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Expenses																		
870	Opns S&E	DP	2,018	1,054	39	896	13	69	2	4	1	6	4	8	0	0	12	0
871	Load dispatch	E1	1,650	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
874	Mains/Services	MS	4,617	2,191	81	1,879	30	126	3	9	2	11	8	18	0	0	24	0
875	Meas. Sta. Gen'l	D1	2,102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
876	Meas. Sta. Ind.	C1I	47	47	0	0	0	0	8	20	0	0	0	0	0	0	19	0
877	Meas. Sta. CityGate	D1	550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
878	Meter/regulator	MR	18,417	18,417	649	15,074	181	1,758	34	58	34	198	62	109	0	1	258	2
879	Cust. Install.	C2P	5,642	5,642	201	4,663	58	568	9	14	11	64	19	35	0	0	0	0
879PLP	Cust. Install. PL	C1R	3,746	3,746	155	3,591	0	0	0	0	0	0	0	0	0	0	0	0
880	Other	DP	12,935	6,755	247	5,741	86	440	11	26	7	42	24	51	0	1	79	1
881	Rents	DP	7	4	0	3	0	0	0	0	0	0	0	0	0	0	0	0
885	Maint. S&E	DP	300	157	6	133	2	10	0	1	0	1	1	1	0	0	2	0
887	Maint. Mains	M2	25,719	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
889	Maint. Meas. Sta. Gen'l	D1	1,184	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
890	Maint. Meas. Sta. Ind.	C1I	6	6	0	0	0	0	1	3	0	0	0	0	0	0	2	0
891	Maint. Meas. Sta. CityGate	D1	487	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
892	Maint. Services	C3	1,800	1,800	66	1,544	24	104	3	7	2	9	6	14	0	0	20	0
893	Maint. Meters/Regs.	MR	3,810	3,810	134	3,118	37	364	7	12	7	41	13	23	0	0	53	0
Subtotal - Distribution Expenses			85,037	43,629	1,577	36,642	433	3,438	79	154	64	372	136	260	1	2	470	3
Customer Accounts																		
901	Supervision	C8	1,109	782	28	657	17	72	1	2	0	1	2	1	0	0	1	0
902	Meter Reading	C1	785	785	30	708	7	32	0	1	0	1	3	1	0	0	1	0
903	Records&Collections	C8	26,657	18,796	678	15,798	405	1,730	15	39	10	18	59	29	0	0	15	0
904	Uncollectible	C4	16,495	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
904CRP	A&G Exps Transferred - Sales	USC	10,461	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Customer Accts.			55,507	20,363	737	17,163	430	1,833	16	42	10	20	64	32	0	0	16	0
Customer Svc. & Info.																		
908	Customer Assistance	C9	1,617	1,617	57	1,321	7	30	33	85	0	1	3	1	0	0	78	1
908CAP	ELIRP	USC	3,859	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480CRP	CRP Shortfall	USC	36,351	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480SEN	Senior Discounts	USC	2,789	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Cust. Svc.			44,616	1,617	57	1,321	7	30	33	85	0	1	3	1	0	0	78	1

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct

$000

O&M Expenses		Alloc. Factor	Total	Customer													
				Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Administrative & General																		
Various	Labor Related	LL	162,345	72,564	2,624	61,008	815	5,739	144	302	95	529	222	369	1	3	708	5
924	Plant Related	DP	4,853	2,535	93	2,154	32	165	4	10	3	16	9	19	0	0	30	0
928	Regulatory Commission Exps	REVT	5,157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
929	Duplicate charges credit	D1S	(913)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
930	Gen'l Advert.	LL	6,020	2,691	97	2,262	30	213	5	11	4	20	8	14	0	0	26	0
931	Rents	LL	330	148	5	124	2	12	0	1	0	1	0	1	0	0	1	0
Sub-Total A&G			177,792	77,936	2,820	65,548	879	6,128	154	324	101	565	240	403	1	3	765	5
TOTAL O&M			379,801	143,545	5,190	120,677	1,748	11,430	282	604	176	958	442	695	2	6	1,329	9
TOTAL DEPRECIATION			47,180	25,368	926	21,515	319	1,710	43	99	28	161	87	184	1	2	291	2
TAXES OTHER THAN INCOME		LL	8,437	3,771	136	3,171	42	298	7	16	5	27	12	19	0	0	37	0
TOTAL RETURN @ 7.604%		RB	125,013	55,046	2,005	46,591	679	3,789	93	212	63	366	190	398	2	5	650	5
TOTAL REVENUE REQUIREMENT			560,431	227,731	8,257	191,951	2,789	17,227	425	931	271	1,513	731	1,297	4	13	2,307	16

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS Direct Testimony

$000

A&E	Alloc. Factor	Total	Demand/Commodity														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Exogenous Factors																	
Mains Classification Plastic		100	50														
Percent	M1	100.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sendout		76,787	76,787	429	35,198	1,491	9,222	279	556	191	832	171	511	6	17	14,471	13,413
Throughput - Total		74,780	74,780	419	34,001	1,461	9,003	273	542	187	814	166	498	6	17	14,217	13,177
Firm Excl GTS		61,604	61,604	419	34,001	1,461	9,003	273	542	187	814	166	498	6	17	14,217	0
Firm Excl IS IT GTS		47,370	47,370	419	34,001	1,461	9,003	273	542	187	814	166	498	6			
Interruptilbe		27,410	27,410												17	14,217	13,177
Percent	E1	100.00%	100.00%	0.56%	45.84%	1.94%	12.01%	0.36%	0.72%	0.25%	1.08%	0.22%	0.67%	0.01%	0.02%	18 85%	17.47%
Per-Customer			149	22	75	307	444	1,544	1,188	623	1,433	89	546	1,527	4,179	33,689	4,392,280
Percent	E1F	100 00%	100.00%	0.68%	55.19%	2.37%	14.61%	0.44%	0 88%	0.30%	1.32%	0.27%	0.81%	0.01%	0.03%	23.08%	0.00%
Percent	E1X	100.00%	100.00%	0.89%	71.78%	3.08%	19.00%	0.58%	1.14%	0 39%	1.72%	0.35%	1.05%	0.01%	0.00%	0.00%	0.00%
Sales - Total		42,527	42,527	419	34,001	961	5,956	101	277	128	455	166	43	2	17		
Sales Firm		42,510	42,510	419	34,001	961	5,956	101	277	128	455	166	43	2			
Sales Interruptible		17	17												17	0	0
	E2	100 00%	100.00%	0.99%	79.95%	2.26%	14.01%	0.24%	0.65%	0.30%	1.07%	0.39%	0.10%	0.00%	0.04%	0.00%	0.00%
Sales Firm	E2F	100.00%	100.00%	0.99%	79.98%	2.26%	14.01%	0.24%	0.65%	0.30%	1.07%	0.39%	0.10%	0.00%	0.00%	0.00%	0.00%
Sales Interruptible	E2I	100.00%	100.00%	0.00%	0.00%	0.00%	0 00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
Winter Throughput		22,470	22,470	183	18,317	374	2,948	49	153	68	264	90	19	0	4	0	0
Percent	E3	100.00%	100.00%	0.82%	81.52%	1.66%	13.12%	0.22%	0.68%	0.30%	1.17%	0.40%	0.08%	0.00%	0.02%	0.00%	0.00%
Design Day Demand		791,042	791,042	4,510	491,656	14,439	114,016	2,667	6,846	2,203	12,837	2,389	7,072	17	47	96,242	36,101
Percent	D1	100.00%	100.00%	0.57%	62.15%	1.83%	14.41%	0.34%	0.87%	0.28%	1.62%	0.30%	0.89%	0.00%	0.01%	12.17%	4.56%
Load Factor		0.03%	25.90%	25 48%	18.95%	27.71%	21.63%	28.08%	21.69%	23.23%	17.37%	19.07%	19.29%	98.45%	97.43%	40 47%	100.00%
Excess Demand		586,164	586,164	3,361	398,501	10,438	89,351	1,918	5,361	1,691	10,607	1,933	5,708	0	1	57,292	0
Percent	X1	100.00%	100.00%	0.57%	67.98%	1.78%	15.24%	0.33%	0.91%	0.29%	1.81%	0.33%	0.97%	0.00%	0.00%	9.77%	0 00%
Design Day Supply		658,635	658,635	4,510	491,656	14,439	114,016	2,667	6,846	2,203	12,837	2,389	7,072				
Percent	D1S	100.00%	100.00%	0.68%	74.65%	2.19%	17.31%	0.40%	1.04%	0.33%	1.95%	0.36%	1.07%	0.00%	0.00%	0.00%	0.00%
Design Day - Storage/Prod'n		724,847	724,847	4,510	491,656	14,439	114,016	2,667	6,846	2,203	12,837	2,389	7,072	17	24	48,121	18,050
Percent	D2	100.00%	100.00%	0.62%	67.83%	1.99%	15.73%	0.37%	0.94%	0.30%	1.77%	0.33%	0.98%	0.00%	0.00%	6.64%	2.49%
Number of Customers		502,354	0														
Percent	C1	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Small Customers		474,464	0														
Percent	C1S	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0 00%	0.00%

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS Direct Testimony

$000

A&E	Alloc. Factor	Total	Demand/Commodity													
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Residential Customers		472,601	0														
Percent	C1R	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Customers C&I		25,678	0														
Percent	C1C	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Customers Ind		1,058	0														
Percent	C1I	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Meters Plant		142,849	0														
Meters per Customer																	
Percent	C2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Implied Weighting Factor																	
Premises		140,856	0														
Percent	C2P	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Services Plant		954,012	0														
Services per Customer																	
Percent	C3	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Implied Weighting Factor																	
Writeoffs		42,390	42,390	738	40,185	209	1,196	8	53								
Percent	C4	100.00%	100.00%	1.74%	94.80%	0.49%	2.82%	0.02%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Meter Reads		784,998	0														
Percent	C7	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Implied Weighting Factor																	
Customer Service 903		24,774	7,306	106	7,196	1	3	0	0	0	0	0	0	0	0	0	0
Percent	C8	100.00%	29.49%	0.43%	29.04%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Customer Accts 908		5,476,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	C9	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Current Distribution Revenue		400,218	400,218	6,084	317,004	9,202	54,766	1,614	3,272	835	3,493	1,271	2,664	13	0	0	0
Percent	REVD	100.00%	100.000%	1.56%	79.78%	2.23%	13.25%	0.39%	0.79%	0.20%	0.83%	0.32%	0.65%	0.00%	0.00%	0.00%	0.00%
Current Revenue		466,095	466,095	[illegible]	355,539	10,857	64,969	1,924	3,886	1,047	4,415	1,459	3,228	20	0	10,940	1,250
Percent	REVT	100.00%	100.000%	1.56%	79.78%	2.23%	13.25%	0.39%	0.79%	0.20%	0.83%	0.32%	0.65%	0.00%	0.00%	0.00%	0.00%
Forfeited Discounts (over 60 AR)		377,622	377,622	6,978	370,099	81	462	0	2								
Percent	RFD	100.00%	100.00%	1.85%	98.01%	0.02%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS Direct Testimony

$000

A&E	Alloc. Factor	Total	Demand/Commodity														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
GTS - Demand		1	1														1
Percent	GTS	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
None		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	NO	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Endogenous Factors																	
Mains Plant: PGW		100	50	0	31	1	7	0	0	0	1	0	0	0	0	6	2
50/50 A&E		100.00	100.00	0.63	62	2	15	0	1	0	2	0	1	0	0	16	0
Percent	M2	100.00%	100.00%	0.63%	61.59%	2.08%	14.93%	0.39%	0.90%	0.30%	1.57%	0.30%	0.89%	0.00%	0.01%	16.43%	0.00%
Total Plant		2,178,632	1,169,469	7,376	733,588	23,730	173,479	4,370	10,389	3,424	18,397	3,535	10,307	51	167	164,210	16,445
Percent	TP	100.00%	53.68%	0.34%	33.67%	1.09%	7.96%	0.20%	0.48%	0.16%	0.84%	0.16%	0.47%	0.00%	0.01%	7.54%	0.75%
Distribution Plant		1,689,748	807,262	5,004	492,591	16,550	119,273	3,073	7,168	2,363	12,528	2,398	7,125	39	108	130,523	8,519
Percent	DP	100.00%	47.77%	0.30%	29.15%	0.98%	7.06%	0.18%	0.42%	0.14%	0.74%	0.14%	0.42%	0.00%	0.01%	7.72%	0.50%
Distribution Plant Demand		800,474	800,474	4,962	488,449	16,411	118,270	3,047	7,107	2,343	12,423	2,378	7,065	39	107	129,425	8,448
Percent	DPD	100.00%	100.00%	0.62%	61.02%	2.05%	14.78%	0.38%	0.89%	0.29%	1.55%	0.30%	0.88%	0.00%	0.01%	16.17%	1.06%
Distribution Plant Customer		882,486															
Percent	DPC	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Distribution Labor		63,909	32,714	203	19,889	671	4,821	125	290	96	505	97	288	2	4	5,315	409
Percent	DL	100.00%	51.19%	0.32%	31.12%	1.05%	7.54%	0.19%	0.45%	0.15%	0.79%	0.15%	0.45%	0.00%	0.01%	8.32%	0.64%
Labor		84,217	46,574	325	30,199	917	6,504	161	381	130	663	137	350	2	15	5,957	835
Percent	LL	100.00%	55.30%	0.39%	35.86%	1.09%	7.72%	0.19%	0.45%	0.15%	0.79%	0.16%	0.42%	0.00%	0.02%	7.07%	0.99%
Mains & Services		1,487,143	781,333	4,853	476,552	16,061	115,511	2,983	6,942	2,289	12,112	2,320	6,894	39	106	127,097	7,574
Percent	MS	100.00%	52.54%	0.33%	32.04%	1.08%	7.77%	0.20%	0.47%	0.15%	0.81%	0.16%	0.46%	0.00%	0.01%	8.55%	0.51%
Meters/Regulators - Cust		176,676	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	MR	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Implied Weighting Factor																	
Total Plant		2,178,632	1,169,469	7,376	733,588	23,730	173,479	4,370	10,389	3,424	18,397	3,535	10,307	51	167	164,210	16,445
Percent	TP	100.00%	53.68%	0.34%	33.67%	1.09%	7.96%	0.20%	0.48%	0.16%	0.84%	0.16%	0.47%	0.00%	0.01%	7.54%	0.75%
Rate Base		1,203,572	673,608	4,412	433,088	14,342	103,019	2,619	6,138	2,066	10,675	2,123	5,826	35	88	86,045	3,131
Percent	RB	100.00%	55.97%	0.37%	35.98%	1.19%	8.56%	0.22%	0.51%	0.17%	0.89%	0.18%	0.48%	0.00%	0.01%	7.15%	0.26%
O&M Excluding Gas		379,801	236,256	2,158	178,119	3,246	22,958	566	1,347	444	2,291	470	1,244	7	53	20,265	3,088
Percent	OM	100.00%	62.21%	0.57%	46.90%	0.85%	6.04%	0.15%	0.35%	0.12%	0.60%	0.12%	0.33%	0.00%	0.01%	5.34%	0.81%

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS Direct Testimony

$000

A&E	Alloc. Factor	Total	Demand/Commodity														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Total Expenses		435,418	262,734	2,330	194,935	3,782	26,846	663	1,579	521	2,699	550	1,470	8	58	23,941	3,352
Percent	TOTX	100.00%	60.34%	0.54%	44.77%	0.87%	6.17%	0.15%	0.36%	0.12%	0.62%	0.13%	0.34%	0.00%	0.01%	5.50%	0.77%
Universal Service		35,627	35,627	429	35,198												0
Percent	USC	100.00%	100.00%	1.21%	98.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
O&M/Taxes for WC		388,238	240,922	2,190	181,145	3,338	23,610	582	1,385	458	2,357	484	1,279	7	54	20,862	3,171
B&V WC Allocator	WC	100.00%	62.06%	0.56%	46.66%	0.86%	6.08%	0.15%	0.36%	0.12%	0.61%	0.12%	0.33%	0.00%	0.01%	5.37%	0.82%

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS

$000

A&E	Alloc. Factor	Total	Total C	Customer												
				Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Exogenous Factors																	
Mains Classification Plastic		100	50														
Percent	M1	100.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sendout		76,787	0														
Throughput - Total		74,780	0														
Firm Excl GTS		61,604	0														
Firm Excl IS IT GTS		47,370	0														
Interruptilbe		27,410	0														
Percent	E1	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Per-Customer																	
Percent	E1F	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent	E1X	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sales - Total		42,527	0														
Sales Firm		42,510	0														
Sales Interruptible		17	0														
	E2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sales Firm	E2F	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sales Interruptible	E2I	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Winter Throughput		22,470	0														
Percent	E3	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Design Day Demand		791,042	0														
Percent	D1	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Load Factor		0.03%															
Excess Demand		586,164	0														
Percent	X1	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Design Day Supply		658,635	0														
Percent	D1S	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Design Day - Storage/Prod'n		724,847	0														
Percent	D2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Number of Customers		502,354	502,354	19,496	453,105	4,762	20,283	177	456	300	568	1,863	911	4	4	422	3
Percent	C1	100.00%	100.00%	3.88%	90.20%	0.95%	4.04%	0.04%	0.09%	0.06%	0.11%	0.37%	0.18%	0.00%	0.00%	0.08%	0.00%
Small Customers		474,464	474,464	19,496	453,105							1,863					
Percent	C1S	100.00%	100.00%	4.11%	95.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.39%	0.00%	0.00%	0.00%	0.00%	0.00%

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS

$000

A&E	Alloc. Factor	Total	Total C	Customer												
				Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Residential Customers		472,601	472,601	[illegible]	453,105												
Percent	C1R	100.00%	100.00%	4.13%	95.87%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Customers C&I		25,678	25,678			4,762	20,283	177	456								
Percent	C1C	100.00%	100.00%	0.00%	0.00%	18.55%	78.99%	0.69%	1.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Customers Ind		1,058	1,058					177	456							422	3
Percent	C1I	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	16.73%	43.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	39.89%	0.28%
Meters Plant		142,849	142,849	5,009	116,409	1,459	14,168	232	354	274	1,595	479	879	2	7	1,970	14
Meters per Customer				215	1,300	2,089	2,743	2,743	2,743	2,743	2,743	2,743	2,743	2,743	2,743	2,743	1,300
Percent	C2	100.00%	100.00%	3.51%	81.49%	1.02%	9.92%	0.16%	0.25%	0.19%	1.12%	0.34%	0.62%	0.00%	0.00%	1.38%	0.01%
Implied Weighting Factor			1.11	1.00	1.00	1.19	2.72	5.09	3.02	3.55	10.93	1.00	3.75	2.06	6.49	18.17	18.17
Premises		140,856	140,856	5,009	116,409	1,459	14,168	232	354	274	1,595	479	879				
Percent	C2P	100.00%	100.00%	3.56%	82.64%	1.04%	10.06%	0.16%	0.25%	0.19%	1.13%	0.34%	0.62%	0.00%	0.00%	0.00%	0.00%
Services Plant		954,012	954,012	35,204	818,164	12,898	54,937	1,489	3,837	813	4,779	3,364	7,665	34	101	10,652	76
Services per Customer				1,806	1,806	2,709	2,709	8,414	8,414	2,709	8,414	1,806	8,414	8,414	25,242	25,242	25,242
Percent	C3	100.00%	100.00%	3.69%	85.76%	1.35%	5.76%	0.16%	0.40%	0.09%	0.50%	0.35%	0.80%	0.00%	0.01%	1.12%	0.01%
Implied Weighting Factor			1.05	1.00	1.00	1.50	1.50	4.66	4.66	1.50	4.66	1.00	4.66	4.66	13.98	13.98	13.98
Writeoffs		42,390															
Percent	C4	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Meter Reads		784,998	784,998	22,043	666,113	11,857	63,947	1,345	2,962	1,069	3,710	2,794	2,553	18	12	6,529	46
Percent	C7	100.00%	100.00%	2.81%	84.86%	1.51%	8.15%	0.17%	0.38%	0.14%	0.47%	0.36%	0.33%	0.00%	0.00%	0.83%	0.01%
Implied Weighting Factor			1.38	1.00	1.30	2.20	2.79	6.72	5.75	3.15	5.78	1.33	2.48	3.98	2.65	13.68	13.68
Customer Service 903		24,774	17,468	630	14,682	377	1,607	14	36	9	17	54	27	0	0	14	0
Percent	C8	100.00%	70.51%	2.54%	59.26%	1.52%	6.49%	0.06%	0.15%	0.04%	0.07%	0.22%	0.11%	0.00%	0.00%	0.05%	0.00%
Customer Accts 908		5,476,000	5,476,000	192,420	4,472,024	24,097	102,636	111,479	287,200	1,518	2,874	9,427	4,610	20	20	265,786	1,889
Percent	C9	100.00%	100.00%	3.51%	81.67%	0.44%	1.87%	2.04%	5.24%	0.03%	0.05%	0.17%	0.08%	0.00%	0.00%	4.85%	0.03%
Current Distribution Revenue		400,218															
Percent	REVD	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Current Revenue		466,095															
Percent	REVT	100.00%															
Forfeited Discounts (over 60 AR)		377,622															
Percent	RFD	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS

$000

A&E	Alloc. Factor	Total	Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Customer Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
GTS - Demand		1	0														
Percent	GTS	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
None		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	NO	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Endogenous Factors																	
Mains Plant: PGW		100	50	2	45	0	2	0	0	0	0	0	0	0	0	0	0
50/50 A&E		100.00															
Percent	M2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Plant		2,178,632	1,009,163	36,848	856,417	12,701	67,525	1,682	3,923	1,092	6,357	3,471	7,361	29	88	11,587	82
Percent	TP	100.00%	46.32%	1.69%	39.31%	0.58%	3.10%	0.08%	0.18%	0.05%	0.29%	0.16%	0.34%	0.00%	0.00%	0.53%	0.00%
Distribution Plant		1,689,748	882,486	32,267	[illegible]	11,278	57,507	1,430	3,395	927	5,434	3,083	6,717	27	83	10,351	74
Percent	DP	100.00%	52.23%	[illegible]	44.38%	0.67%	3.40%	0.08%	0.20%	0.05%	0.32%	0.18%	0.40%	0.00%	0.00%	0.61%	0.00%
Distribution Plant Demand		800,474	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	DPD	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Distribution Plant Customer		882,486	882,486	32,267	749,913	11,278	57,507	1,430	3,395	927	5,434	3,083	6,717	27	83	10,351	74
Percent	DPC	100.00%	100.00%	3.66%	84.98%	1.28%	6.52%	0.16%	0.38%	0.11%	0.62%	0.35%	0.76%	0.00%	0.01%	1.17%	0.01%
Distribution Labor		63,909	31,195	1,128	26,219	303	2,467	54	103	46	268	96	182	0	1	323	2
Percent	DL	100.00%	48.81%	1.77%	41.03%	0.47%	3.86%	0.08%	0.16%	0.07%	0.42%	0.15%	0.28%	0.00%	0.00%	0.51%	0.00%
Labor		84,217	37,642	1,361	31,648	423	2,977	75	157	49	274	115	191	1	1	367	3
Percent	LL	100.00%	44.70%	1.62%	37.58%	0.50%	3.53%	0.09%	0.19%	0.06%	0.33%	0.14%	0.23%	0.00%	0.00%	0.44%	0.00%
Mains & Services		1,487,143	705,810	26,045	605,305	9,542	40,644	1,102	2,839	601	3,536	2,489	5,671	25	75	7,881	56
Percent	MS	100.00%	47.46%	1.75%	40.70%	0.64%	2.73%	0.07%	0.19%	0.04%	0.24%	0.17%	0.38%	0.00%	0.01%	0.53%	0.00%
Meters/Regulators - Cust		176,676	176,676	6,222	144,608	1,736	16,863	328	556	326	1,899	595	1,046	3	8	2,470	18
Percent	MR	100.00%	100.00%	3.52%	81.85%	0.98%	9.54%	0.19%	0.31%	0.18%	1.07%	0.34%	0.59%	0.00%	0.00%	1.40%	0.01%
Implied Weighting Factor			1.10	1.00	1.00	1.14	2.60	5.81	3.82	3.40	10.47	1.00	3.60	1.97	6.22	18.34	18.34
Total Plant		2,178,632	1,009,163	36,848	856,417	12,701	67,525	1,682	3,923	1,092	6,357	3,471	7,361	29	88	11,587	82
Percent	TP	100.00%	46.32%	1.69%	39.31%	0.58%	3.10%	0.08%	0.18%	0.05%	0.29%	0.16%	0.34%	0.00%	0.00%	0.53%	0.00%
Rate Base		1,203,572	529,964	19,300	448,558	6,537	36,474	896	2,044	605	3,528	1,827	3,836	15	45	6,256	44
Percent	RB	100.00%	44.03%	1.60%	37.27%	0.54%	3.03%	0.07%	0.17%	0.05%	0.29%	0.15%	0.32%	0.00%	0.00%	0.52%	0.00%
O&M Excluding Gas		379,801	143,545	5,190	120,674	1,748	11,430	282	604	176	958	442	695	2	6	1,329	9
Percent	OM	100.00%	37.79%	1.37%	31.77%	0.46%	3.01%	0.07%	0.16%	0.05%	0.25%	0.12%	0.18%	0.00%	0.00%	0.35%	0.00%

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS

$000

A&E	Alloc. Factor	Total	Customer													
			Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Total Expenses		435,418	172,684	6,252	145,360	2,110	13,438	332	719	208	1,146	541	898	3	8	1,657	12
Percent	TOTX	100.00%	39.66%	1.44%	33.38%	0.48%	3.09%	0.08%	0.17%	0.05%	0.26%	0.12%	0.21%	0.00%	0.00%	0.38%	0.00%
Universal Service		35,627	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	USC	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
O&M/Taxes for WC		388,238	147,316	5,326	123,844	1,791	11,728	289	620	181	985	454	714	2	6	1,366	10
B&V WC Allocator	WC	100.00%	37.94%	1.37%	31.90%	0.46%	3.02%	0.07%	0.16%	0.05%	0.25%	0.12%	0.18%	0.00%	0.00%	0.35%	0.00%

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

Gross Plant Allocation		Alloc. Factor	Plant	Demand/Commodity														
				Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Gas Plant In Service																		
401	Franchises & Consents	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
402	Other Intangible Plant	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Plant		D2	60,359	60,359	376	40,941	1,202	9,494	222	570	183	1,069	199	589	1	2	4,007	1,503
Storage Plant		D2	145,112	145,112	903	98,428	2,891	22,826	534	1,371	441	2,570	478	1,416	3	5	9,634	3,614
Transmission Plant		NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																		
374	Land and Land Rights	DPD	101	101	1	62	2	15	0	1	0	2	0	1	0	0	16	1
375	Structures and Improvements	DPD	2,707	2,707	17	1,652	55	400	10	24	8	42	8	24	0	0	438	29
376	Mains	M2	773,759	773,759	4,853	476,552	16,061	115,511	2,983	6,942	2,289	12,112	2,320	6,894	39	106	127,097	0
376	Mains GTS	GTS	7,574	7,574	0	0	0	0	0	0	0	0	0	0	0	0	0	7,574
377	Compressor Equipment	D1	1,255	1,255	7	780	23	181	4	11	3	20	4	11	0	0	153	57
378	Meas&Reg. Sta. Equip. - Gen'l	D1	17,886	17,886	102	11,117	326	2,578	60	155	50	290	54	160	0	1	2,176	816
380	Services	C3	705,810	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
381	Meters	C2	75,453	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
382	Meter Installations	C2	94,565	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
383	Regulators	C1S	2,202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
384	Regulator Installations	C1S	4,142	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
385	Meas&Reg. Sta. Equip. - Ind.	C1I	314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
387	Other Equipment	DPD	3,980	3,980	25	2,429	82	588	15	35	12	62	12	35	0	1	644	42
Subtotal - Distribution Plant			1,689,748	807,262	5,004	492,591	16,550	119,273	3,073	7,168	2,363	12,528	2,398	7,125	39	108	130,523	8,519
General Plant																		
389	Land and Land Rights	LL	3,713	2,053	14	1,331	40	287	7	17	6	29	6	15	0	1	263	37
390	Structures and Improvements	LL	82,900	45,846	320	29,727	903	6,402	158	375	128	652	135	344	2	15	5,864	822
391	Office Furniture and Equipment	LL	108,966	60,261	421	39,074	1,187	8,415	208	493	168	857	177	453	3	20	7,707	1,080
392	Transportation Equipment	LL	40,027	22,136	154	14,353	436	3,091	76	181	62	315	65	166	1	7	2,831	397
393	Stores Equipment	LL	755	418	3	271	8	58	1	3	1	6	1	3	0	0	53	7
394	Tools shop & garage eqmt.	LL	10,723	5,930	41	3,845	117	828	20	48	17	84	17	45	0	2	758	106
396	Power operated eqmt	LL	1,235	683	5	443	13	95	2	6	2	10	2	5	0	0	87	12
397	Communications eqmt	LL	20,815	11,511	80	7,464	227	1,607	40	94	32	164	34	86	1	4	1,472	206
398	Misc. equipment	LL	14,279	7,897	55	5,120	156	1,103	27	65	22	112	23	59	0	3	1,010	142
Subtotal - General Plant			283,413	156,736	1,094	101,628	3,087	21,886	540	1,281	437	2,230	460	1,177	7	52	20,046	2,809
Total Plant			2,178,632	1,169,469	7,376	733,588	23,730	173,479	4,370	10,389	3,424	18,397	3,535	10,307	51	167	164,210	16,445

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS D

$000

Gross Plant Allocation		Alloc. Factor	Plant	Customer													
				Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Gas Plant In Service																		
401	Franchises & Consents	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
402	Other Intangible Plant	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Plant		D2	60,359	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Plant		D2	145,112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Plant		NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																		
374	Land and Land Rights	DPD	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
375	Structures and Improvements	DPD	2,707	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
376	Mains	M2	773,759	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
376	Mains GTS	GTS	7,574	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
377	Compressor Equipment	D1	1,255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
378	Meas&Reg. Sta. Equip. - Gen'l	D1	17,886	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
380	Services	C3	705,810	705,810	26,045	605,305	9,542	40,644	1,102	2,839	601	3,536	2,489	5,671	25	75	7,881	56
381	Meters	C2	75,453	75,453	2,646	61,487	770	7,484	122	187	145	843	253	464	1	4	1,041	7
382	Meter Installations	C2	94,565	94,565	3,316	77,062	966	9,379	153	234	181	1,056	317	582	1	4	1,304	9
383	Regulators	C1S	2,202	2,202	90	2,103	0	0	0	0	0	0	9	0	0	0	0	0
384	Regulator Installations	C1S	4,142	4,142	170	3,956	0	0	0	0	0	0	16	0	0	0	0	0
385	Meas&Reg. Sta. Equip. - Ind.	C1I	314	314	0	0	0	0	53	135	0	0	0	0	0	0	125	1
387	Other Equipment	DPD	3,980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Distribution Plant			1,689,748	882,486	32,267	749,913	11,278	57,507	1,430	3,395	927	5,434	3,083	6,717	27	83	10,351	74
General Plant																		
389	Land and Land Rights	LL	3,713	1,660	60	1,395	19	131	3	7	2	12	5	8	0	0	16	0
390	Structures and Improvements	LL	82,900	37,054	1,340	31,153	416	2,930	74	154	48	270	113	188	1	1	361	3
391	Office Furniture and Equipment	LL	108,966	48,705	1,761	40,949	547	3,852	97	203	64	355	149	248	1	2	475	3
392	Transportation Equipment	LL	40,027	17,891	647	15,042	201	1,415	36	75	23	130	55	91	0	1	174	1
393	Stores Equipment	LL	755	337	12	284	4	27	1	1	0	2	1	2	0	0	3	0
394	Tools shop & garage eqmt.	LL	10,723	4,793	173	4,030	54	379	10	20	6	35	15	24	0	0	47	0
396	Power operated eqmt	LL	1,235	552	20	464	6	44	1	2	1	4	2	3	0	0	5	0
397	Communications eqmt	LL	20,815	9,304	336	7,822	104	736	18	39	12	68	28	47	0	0	91	1
398	Misc. equipment	LL	14,279	6,382	231	5,366	72	505	13	27	8	47	20	32	0	0	62	0
Subtotal - General Plant			283,413	126,677	4,581	106,505	1,422	10,018	252	528	165	923	388	644	2	5	1,235	9
Total Plant			2,178,632	1,009,163	36,848	856,417	12,701	67,525	1,682	3,923	1,092	6,357	3,471	7,361	29	88	11,587	82

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

Labor Allocation: Placeholder		Alloc. Factor	Est. Labor Percent	Total	Demand/Commodity													
					Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
701-743	Manufactured Gas Exps.	E1	60%	1,781	1,781	10	816	35	214	6	13	4	19	4	12	0	0	336	311
804	City Gate Purchases	E2I	60%	8	8	0	0	0	0	0	0	0	0	0	0	0	8	0	0
812	LNG for utility opns.	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813	Other gas supply	E2	60%	5,304	5,304	52	4,241	120	743	13	35	16	57	21	5	0	2	0	0
Production Expenses		Q		7,093	7,093	62	5,057	154	957	19	47	20	76	25	17	0	11	336	311
Storage Expenses		D2	40%	4,606	4,606	29	3,124	92	724	17	43	14	82	15	45	0	0	306	115
Transmission Expenses		NO	25%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Expenses																			
870	Opns S&E	DP	90%	1,816	868	5	529	18	128	3	8	3	13	3	8	0	0	140	9
871	Load dispatch	E1	90%	1,485	1,485	8	681	29	178	5	11	4	16	3	10	0	0	280	259
874	Mains/Services	MS	50%	2,309	1,213	8	740	25	178	5	11	4	19	4	11	0	0	197	12
875	Meas. Sta. Gen'l	D1	55%	1,156	1,156	7	719	21	167	4	10	3	19	3	10	0	0	141	53
876	Meas. Sta. Ind	C1I	55%	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
877	Meas. Sta. CityGate	D1	50%	275	275	2	171	5	40	1	2	1	4	1	2	0	0	33	13
878	Meter/regulator	MR	75%	13,813	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
879	Cust. Install.	C2P	80%	4,514	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
879PLP	Cust. Install. PL	C1R	80%	2,997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
880	Other	DP	65%	8,408	4,017	25	2,451	82	593	15	36	12	62	12	35	0	1	649	42
881	Rents	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
885	Maint. S&E	DP	85%	255	122	1	74	2	18	0	1	0	2	0	1	0	0	20	1
887	Maint Mains	M2	90%	23,147	23,147	145	14,256	480	3,456	89	208	88	362	69	206	1	3	3,802	0
889	Maint. Meas. Sta. Gen'l	D1	20%	237	237	1	147	4	34	1	2	1	4	1	2	0	0	29	11
890	Maint. Meas Sta. Ind.	C1I	25%	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
891	Maint. Meas Sta. CityGate	D1	40%	195	195	1	121	4	28	1	2	1	3	1	2	0	0	24	9
892	Maint. Services	C3	55%	990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
893	Maint. Meters/Regs.	MR	60%	2,786	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Distribution Expenses				63,909	32,714	203	19,889	671	4,821	125	290	96	505	97	288	2	4	5,315	409
Customer Accounts																			
901	Supervision	C8	60%	665	196	3	193	0	0	0	0	0	0	0	0	0	0	0	0
902	Meter Reading	C1	60%	471	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
903	Records&Collections	C8	25%	6,664	1,965	29	1,936	0	1	0	0	0	0	0	0	0	0	0	0
904	Uncollectible	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
904CRP	A&G Exps Transferred - Sales	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Customer Accts.				7,801	2,162	31	2,129	0	1	0	0	0	0	0	0	0	0	0	0
Customer Svc. & Info.																			
908	Customer Assistance	C9	50%	809	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
908CAP	ELIRP	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480CRP	CRP Shortfall	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480SEN	Senior Discounts	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Cust. Svc.				809	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative & General																			
Various	Labor Related	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
924	Plant Related	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
928	Regulatory Commission Exps	ND	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
929	Duplicate charges credit	ND	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
930	Gen'l Advert.	ND	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
931	Rents	NO	0%	0															
Sub-Total A&G				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Labor (LL)				84,217	48,574	325	30,199	917	6,504	161	381	130	663	137	350	2	15	5,957	835
Distribution Labor (DL)				63,909	32,714	203	19,889	671	4,821	125	290	96	505	97	288	2	4	5,315	409

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit REc-3 -- RDK CCOSS Direct Testimony

$000

Labor Allocation: Placeholder		Alloc. Factor	Est. Labor Percent	Total	Customer													
					Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	/T	GTS
701-743	Manufactured Gas Exps	E1	60%	1,781	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
804	City Gate Purchases	E2I	60%	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
812	LNG for utility opns.	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813	Other gas supply	E2	60%	5,304	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Expenses		0		7,093	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Expenses		D2	40%	4,606	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Expenses		NO	25%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Expenses																			
870	Opns S&E	DP	90%	1,816	949	35	806	12	62	2	4	1	6	3	7	0	0	11	0
871	Load dispatch	E1	90%	1,485	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
874	Mains/Services	MS	50%	2,309	1,096	40	940	15	63	2	4	1	5	4	9	0	0	12	0
875	Meas. Sta. Gen'l	O1	55%	1,156	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
876	Meas Sta. Ind.	C1I	55%	26	26	0	0	0	0	4	11	0	0	0	0	0	0	10	0
877	Meas. Sta. CityGate	D1	50%	275	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
878	Meter/regulator	MR	75%	13,813	13,813	486	11,306	136	1,318	26	43	25	148	46	82	0	1	193	1
879	Cust. Install.	C2P	80%	4,514	4,514	161	3,730	47	454	7	11	9	51	15	28	0	0	0	0
879PLP	Cust. Install. PL	C1R	80%	2,997	2,997	124	2,873	0	0	0	0	0	0	0	0	0	0	0	0
880	Other	DP	65%	8,408	4,391	161	3,731	56	286	7	17	5	27	15	33	0	0	52	0
881	Rents	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
885	Maint. S&F	DP	85%	255	133	5	113	2	9	0	1	0	1	0	1	0	0	2	0
887	Maint. Mains	M2	90%	23,147	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
889	Maint. Meas Sta. Gen'l	D1	20%	237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
890	Maint. Meas Sta. Ind	C1I	25%	2	2	0	0	0	0	0	1	0	0	0	0	0	0	1	0
891	Maint. Meas. Sta CityGate	D1	40%	195	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
892	Maint. Services	C3	55%	990	990	37	849	13	57	2	4	1	5	3	8	0	0	11	0
893	Maint. Meters/Regs.	MR	60%	2,286	2,286	81	1,871	22	218	4	7	4	25	8	14	0	0	32	0
Subtotal - Distribution Expenses				63,909	31,195	1,128	26,219	303	2,467	54	103	46	268	96	182	0	1	313	2
Customer Accounts																			
901	Supervision	C8	60%	665	469	17	394	10	43	0	1	0	0	1	1	0	0	0	0
902	Meter Reading	C1	60%	471	471	18	425	4	19	0	0	0	1	2	1	0	0	0	0
903	Records&Collections	C8	25%	6,664	4,699	170	3,949	101	432	4	10	2	5	15	7	0	0	4	0
904	Uncollectible	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
904CRP	A&G Exps Transferred - Sales	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Customer Accts.				7,801	5,639	205	4,769	116	495	4	11	3	6	18	9	0	0	4	0
Customer Svc. & Info.																			
908	Customer Assistance	C9	50%	809	809	28	660	4	15	16	42	0	0	1	1	0	0	39	0
908CAP	ELIRP	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480CRP	CAP Shortfall	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480SEN	Senior Discounts	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Cust. Svc.				809	809	28	660	4	15	16	42	0	0	1	1	0	0	39	0
Administrative & General																			
Various	Labor Related	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
924	Plant Related	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
928	Regulatory Commission Exps	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
929	Duplicate charges credit	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
930	Gen'l Advert.	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
931	Rents	NO	0%	0															
Sub-Total A&G				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Labor (LL)				84,217	37,642	1,361	31,648	423	2,977	75	157	49	274	115	191	1	1	357	3
Distribution Labor (DL)				63,909	31,195	1,128	26,219	303	2,467	54	103	46	268	96	182	0	1	313	2

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

Meter Cost Allocator Workpaper	Total	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Number of Customers	502,354	19,496	453,105	4,762	20,283	177	456	300	568	1,863	911	4	4	422	3
Demand Allocator Summary															
Design Day Demand	791,042	4,510	491,656	14,439	114,016	2,667	6,846	2,203	12,837	2,389	7,072	17	47	96,242	36,101
Demand Per Customer	1.57	0.23	1.09	3.03	5.62	15.07	15.01	7.34	22.60	1.28	7.76	4.25	11.75	228.06	12,033.64
Est'd Hourly Max Demand/Cust	98.42	14.46	67.82	189.51	351.33	941.74	938.32	458.96	1,412.52	80.15	485.18	265.63	734.28	14,253.85	752,102.68
Indexed to Residential Avg.	1.50	0.22	1.03	2.89	5.35	14.35	14.30	6.99	21.53	1.22	7.39	4.05	11.19	217.23	11,462.11
Combined Demand Index		1.00		4.89		14.31		16.50		1.22	7.39	4.05	11.19	217.23	11,462.11
Derivation of PGW Services Alloc															
Service Unit Cost	1,899	1,806	1,806	2,709	2,709	8,414	8,414	2,709	8,414	1,806	8,414	8,414	25,242	25,242	25,242
PGW Services Cost	954,012	35,204	818,164	12,898	54,937	1,489	3,837	813	4,779	3,364	7,665	34	101	10,652	76
Percent	100.00%	3.69%	85.76%	1.35%	5.76%	0.16%	0.40%	0.09%	0.50%	0.35%	0.80%	0.00%	0.01%	1.12%	0.01%
Indexed To Residential Average	1.05	1.00	1.00	1.50	1.50	4.66	4.66	1.50	4.66	1.00	4.66	4.66	13.98	13.98	13.98
Combined PGW Services Index		1.00		1.50		4.66		3.57		1.00	4.66	4.66	13.98	13.98	13.98
Alternative Meter Allocator															
Services per Customer*		0.450	0.450	0.511	0.511	0.491	0.491	0.327	0.327	0.259	0.259	1.000	0.511	0.511	0.511
Service Unit Cost	0														
RDK Services Cost	0														
Percent															
Indexed To Residential Average															
Combined PGW Services Index		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!		0.00	0.00	0.00	0.00	0.00	0.00

*Estimated from OCA-VII-14

Service Line Size per OSBA-I-21

	Average FY 2011-2016			FY 2016		
	Number	Cost	Unit Cost	Number	Cost	Unit Cost
1.25" and smaller- New	1,129	4,074,000	$3,609	1,975	4,935,096	$2,499
1.25" and smaller- Replace	7,832	19,274,000	$2,461	8,374	15,120,782	$1,806
1.25" and smaller- Total	8,961	23,348,000	$2,606	10,349	20,055,878	$1,938
2" and larger- New	142	2,083,000	$14,669	199	2,415,358	$12,137
2" and larger- Replace	137	1,098,000	$8,015	90	757,265	$8,414
2" and larger- Total	279	3,181,000	$11,401	289	3,172,623	$10,978

Comparison to Other NGDCs (RDK Workpapers)

UGI Gas 2017			UGI PNG			Columbia			PGW Proposed		
	Svcs Index	Peak Index		Svcs Index	Peak Index		Svcs Index	Peak Index		Svcs Index	Peak Index
R	1.00	1.00	R	1.00	1.00	RS/RDS	1.00	1.00	Residential	1.00	1.00
N	1.28	5.63	N	1.34	3.91	SGS1	1.02	2.34	Commercial	1.50	4.89
DS	5.38	58.13	DS	2.85	63.35	SGS2	1.10	15.97	Industrial	4.66	14.31
LFD	5.38	112.79	LFD	4.39	157.08	SDS/LGSS	1.65	104.07	Municipal	3.57	16.50
XD	10.99	3,678.17	XD	8.46	25,369.23	LDS/LGSS	3.18	662.45			

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

Meter Cost Allocator Workpaper	Total	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Number of Customers	502,354	19,496	453,105	4,762	20,283	177	456	300	568	1,863	911	4	4	422	3
Demand Allocator Summary															
Design Day Demand	791,042	4,510	491,656	14,439	114,016	2,667	6,846	2,203	12,837	2,389	7,072	17	47	96,242	36,101
Demand Per Customer	1.57	0.23	1.09	3.03	5.62	15.07	15.01	7.34	22.60	1.28	7.76	4.25	11.75	228.06	12,033.64
Est'd Hourly Max Demand/Cust	98.42	14.46	67.82	189.51	351.33	941.74	938.32	458.96	1,412.52	80.15	485.18	265.63	734.38	14,253.85	752,102.68
Indexed to Residential Avg.	1.50	0.22	1.03	2.89	5.35	14.35	14.30	6.99	21.53	1.22	7.39	4.05	11.19	217.23	11,462.11
Combined Demand Index		1.00		4.89		14.31		16.50		1.22	7.39	4.05	11.19	217.23	11,462.11
Derivation of PGW Meters Alloc															
Meter Unit Cost	314	257	257	1,214	1,214	1,821	1,821	1,214	1,821	257	1,214	1,214	1,668	4,669	4,669
PGW Meters Cost	157,959	5,009	116,409	5,782	24,627	322	830	364	1,034	479	1,106	5	7	1,970	14
Percent	100.00%	3.17%	73.70%	3.66%	15.59%	0.20%	0.53%	0.23%	0.65%	0.30%	0.70%	0.00%	0.00%	1.25%	0.01%
Indexed To Residential Average	1.22	1.00	1.00	4.73	4.73	7.09	7.09	4.73	7.09	1.00	4.73	4.73	6.49	18.17	18.17
Combined PGW Meter Index		1.00		4.73		7.09		6.27		1.00	4.73	4.73	6.49	18.17	18.17
Alternative Meter Allocator															
Meter Unit Cost	286	257	257	306	699	1,872	1,866	913	2,808	257	965	528	1,668	4,669	4,669
RDK Meters Cost Undaj.	143,446	5,009	116,409	1,459	14,168	331	851	274	1,595	479	879	2	7	1,970	14
Adjust for Ind. M&R	(597)					(100)	(497)								
RDK Meters Cost Adj.	142,849	5,009	116,409	1,459	14,168	232	354	274	1,595	479	879	2	7	1,970	14
Percent	100.00%	3.51%	81.49%	1.02%	9.92%	0.16%	0.25%	0.19%	1.12%	0.34%	0.62%	0.00%	0.00%	1.38%	0.01%
Indexed To Residential Average	1.11	1.00	1.00	1.19	2.72	7.29	7.26	3.55	10.93	1.00	3.75	2.06	6.49	18.17	18.17
Combined RDK Meter Index Unadj		1.00		2.43		7.27		8.38		1.00	3.75	2.06	6.49	18.17	18.17

Costs by Meter Size per OSBA-I-22

CuFt/Hour	Unit Cost	Number	Wtd Cost	Wtd Cap		Cost/Cap	
250	$253	26,372				1.01	
425	$360	324	256.9	254.5		0.85	
630	$699	169				1.11	Note: No clear economies of scale up to 2000 cfh
800	$1,214	16	1,214.2	800		1.52	
1,500	$1,511	143				1.01	
2,000	$1,624	35				0.81	
3,000	$1,641	29	1,667.7	3,201.8	280	0.55	
5,000	$1,926	29				0.39	
7,000	$1,941	26				0.28	
11,000	$2,234	18				0.20	
16,000	$2,670	21				0.17	
4" Turbo GTS	$4,996	6	4,669.0	7,148.9			
6" Turbo GTS	$6,134	16					
8" Turbo GTS	$8,814	4					

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS Direct Testimony

$000

Account 903	Alloc. Factor	Total	Demand														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Account Management	C1R	1,509	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acct. Management Bill Prep	C1	4,270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Account Mgmt Mail Rcts	C1	1,409	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Resource Center	C1C	1,276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Collection Costs	RFD	2,537	2,537	47	2,486	1	3	0	0	0	0	0	0	0	0	0	0
CRP	USC	4,457	4,457	54	4,403	0	0	0	0	0	0	0	0	0	0	0	0
District Office Labor	C1	1,767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Indirect Field Expense	C1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Customer Service Telephone	C1	5,649	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Collections	RFD	312	312	6	306	0	0	0	0	0	0	0	0	0	0	0	0
Meter Investigations	C7	161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Regulatory Compliance	C1	1,418	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		24,774	7,306	106	7,196	1	3	0	0	0	0	0	0	0	0	0	0

Account 908	Alloc. Factor	Total	Demand														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Marketing - Industrial Major	C1I	574,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Industrial Comm SC	C1I	87,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Services	C1	1,510,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Market Research	C1	19,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Res Sales	C1R	1,236,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Strat Initiatives	C1	382,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Strat Planning	C1	624,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Tech Support	C1	7,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VP Reg Compliance LIHEAP	C1R	1,037,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		*5,476,000*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS Direct T

$000

Account 903	Alloc. Factor	Total	Customer													
			Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	FT	GTS
Account Management	C1R	1,509	1,509	62	1,447	0	0	0	0	0	0	0	0	0	0	0	0
Acct. Management Bill Prep	C1	4,270	4,270	166	3,851	40	172	2	4	3	5	16	8	0	0	4	0
Account Mgmt Mail Acts	C1	1,409	1,409	55	1,271	13	57	0	1	1	2	5	3	0	0	1	0
Commercial Resource Center	C1C	1,276	1,276	0	0	237	1,008	9	23	0	0	0	0	0	0	0	0
Collection Costs	RFD	2,537	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRP	USC	4,457	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
District Office Labor	C1	1,767	1,767	69	1,594	17	71	1	2	1	2	7	3	0	0	1	0
Indirect Field Expense	C1	9	9	0	8	0	0	0	0	0	0	0	0	0	0	0	0
Customer Service Telephone	C1	5,649	5,649	219	5,095	54	228	2	5	3	6	21	10	0	0	5	0
Collections	RFD	312	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meter Investigations	C7	161	161	5	137	2	13	0	1	0	1	1	1	0	0	1	0
Regulatory Compliance	C1	1,418	1,418	55	1,279	13	57	0	1	1	2	5	3	0	0	1	0
Total		24,774	17,468	630	14,682	377	1,607	14	36	9	17	54	27	0	0	14	0

Account 908	Alloc. Factor	Total	Customer													
			Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	FT	GTS
Marketing - Industrial Major	C1I	574,000	574,000	0	0	0	0	96,028	247,395	0	0	0	0	0	0	228,949	1,628
Marketing Industrial Comm SC	C1I	87,000	87,000	0	0	0	0	14,555	37,497	0	0	0	0	0	0	34,701	247
Marketing Services	C1	1,510,000	1,510,000	58,602	1,361,965	14,314	60,968	532	1,371	902	1,707	5,600	2,738	12	12	1,268	9
Market Research	C1	19,000	19,000	737	17,137	180	767	7	17	11	21	70	34	0	0	16	0
Marketing Res Sales	C1R	1,236,000	1,236,000	50,988	1,185,012	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Strat Initiatives	C1	382,000	382,000	14,825	344,550	3,621	15,424	135	347	228	432	1,417	693	3	3	321	2
Marketing Strat Planning	C1	624,000	624,000	24,217	562,825	5,915	25,195	220	566	373	706	2,314	1,132	5	5	524	4
Marketing Tech Support	C1	7,000	7,000	272	6,314	66	283	2	6	4	8	26	13	0	0	6	0
VP Reg Compliance LIHEAP	C1R	1,037,000	1,037,000	42,779	994,221	0	0	0	0	0	0	0	0	0	0	0	0
Total		5,476,000	5,476,000	192,420	4,472,024	24,097	102,636	111,479	287,200	1,518	2,874	9,427	4,610	20	20	265,786	1,889

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation DSIC Increase: NO

	Billing	*Current Rates*		*Proposed Rates*		*Proposed Change*	
	Determinants	**Rate**	**Revenue**	**Rate**	**Revenue**	**Revenue**	**Percent**
Residential NH							
Sales Customers	*233,946*	*$12.00*	*2,807.4*	*$18.00*	*4,211.0*	*1,403.7*	*50.0%*
Transport Customers	0	$12.00	0.0	$18.00	0.0	0.0	#DIV/0!
Total Customers	233,946	$12.00	2,807.4	$18.00	4,211.0	1,403.7	50.0%
Sales Deliveries	419,497	$6.0067	2,519.8	$6.7275	2,822.2	302.4	12.0%
Transport Deliveries	0	$6.0067	0.0	$6.7275	0.0	0.0	#DIV/0!
Total Deliveries	419,497	$6.0067	2,519.8	$6.7275	2,822.2	302.4	12.0%
MFC	419,497	$0.1946	81.6	$0.2165	90.8	9.2	11.3%
GPC	419,497	$0.0400	16.8	$0.0228	9.6	(7.2)	-43.0%
GCR	419,497	$4.1879	1,756.8	$4.1879	1,756.8	0.0	0.0%
USC*	419,497	$1.1335	475.5	$1.1335	475.5	0.0	0.0%
OPEB	419,497	$0.3386	142.0	$0.3386	142.0	0.0	0.0%
ECRS	419,497	$0.0315	13.2	$0.0315	13.2	0.0	0.0%
DSIC**		7.50%	446.8	5.83%	446.8	0.0	0.0%
Sub-Total			2,932.8		2,934.8	2.0	0.1%
Total Revenues	419,497	$19.6902	8,260.0	$23.7618	9,968.0	1,708.0	20.7%
Base Rate Revenues	419,497	$12.6989	5,327.1	$16.7658	7,033.2	1,706.0	32.0%
Total Revenues Excl. GCR	419,497	$15.5023	6,503.2	$19.5739	8,211.2	1,708.0	26.3%
PGW CCOSS	419,497		6,559.4				
Residential Heat							
Sales Customers	5,437,258	$12.00	65,247.1	$18.00	97,870.6	32,623.5	50.0%
Transport Customers	0	$12.00	0.0	$18.00	0.0	0.0	#DIV/0!
Total Customers	5,437,258	$12.00	65,247.1	$18.00	97,870.6	32,623.5	50.0%
Sales Deliveries	34,001,408	$6.0067	204,236.3	$6.7275	228,744.5	24,508.2	12.0%
Transport Deliveries	0	$6.0067	0.0	$6.7275	0.0	0.0	#DIV/0!
Total Deliveries	34,001,408	$6.0067	204,236.3	$6.7275	228,744.5	24,508.2	12.0%
MFC	34,001,408	$0.1946	6,616.7	$0.2165	7,361.3	744.6	11.3%
GPC	34,001,408	$0.0400	1,360.1	$0.0228	775.2	(584.8)	-43.0%
GCR	34,001,408	$4.1879	142,394.5	$4.1879	142,394.5	0.0	0.0%
USC*	34,001,408	$1.1335	38,540.6	$1.1335	38,540.6	0.0	0.0%
OPEB	*34,001,408*	*$0.3386*	*11,512.9*	*$0.3386*	*11,512.9*	*0.0*	*0.0%*
ECRS	34,001,408	$0.0315	1,071.0	$0.0315	1,071.0	0.0	0.0%
DSIC**		7.50%	24,045.6	6.37%	24,045.6	0.0	0.0%
Sub-Total			225,541.3		225,701.1	*159.8*	*0.1%*
Total Revenues	34,001,408	$14.5589	495,024.7	$16.2439	552,316.3	57,291.6	11.6%
Base Rate Revenues	*34,001,408*	*$7.9257*	*269,483.4*	*$9.6059*	*326,615.1*	*57,131.8*	*21.2%*
Total Revenues Excl. GCR	34,001,408	$10.3710	352,630.2	$12.0560	409,921.8	57,291.6	16.2%
PGW CCOSS	34,001,408		355,539.4				

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation DSIC Increase: NO

	Billng	Current Rates		Proposed Rates		Proposed Change	
	Determinants	*Rate*	*Revenue*	*Rate*	*Revenue*	*Revenue*	*Percent*
Commercial NH							
Sales Customers	47,778	$18.00	860.0	$27.00	1,290.0	430.0	50.0%
Transport Customers	9,354	$18.00	168.4	$27.00	252.6	84.2	50.0%
Total Customers	57,132	$18.00	1,028.4	$27.00	1,542.6	514.2	50.0%
Sales Deliveries	956,279	$4.5984	4,397.4	$4.8108	4,600.5	203.1	4.6%
Transport Deliveries	499,290	$4.5984	2,295.9	$4.8108	2,402.0	106.0	4.6%
Total Deliveries	1,455,568	$4.5984	6,693.3	$4.8108	7,002.4	309.2	4.6%
MFC	956,279	$0.0116	11.1	$0.0359	34.3	23.2	209.5%
GPC	956,279	$0.0400	38.3	$0.0228	21.8	(16.4)	-43.0%
GCR	956,279	$4.1879	4,004.8	$4.1879	4,004.8	0.0	0.0%
USC*	1,455,568	$1.1335	1,649.9	$1.1335	1,649.9	0.0	0.0%
OPEB	1,455,568	$0.3386	492.9	$0.3386	492.9	0.0	0.0%
ECRS	1,455,568	$0.0724	105.4	$0.0724	105.4	0.0	0.0%
DSIC**		7.50%	747.7	6.93%	747.7	0.0	0.0%
Sub-Total			7,050.0		7,056.8	6.8	0.1%
Total Revenues	1,455,568	$10.1484	14,771.7	$10.7187	15,601.8	830.1	5.6%
Base Rate Revenues	1,455,568	$5.3049	7,721.7	$5.8706	8,545.0	823.4	10.7%
Total Revenues Excl. GCR	1,455,568	$7.3970	10,766.9	$7.9673	11,597.0	830.1	7.7%
PGW CCOSS	1,460,532		10,857.3				
Commercial Heat							
Sales Customers	208,702	$18.00	3,756.6	$27.00	5,635.0	1,878.3	50.0%
Transport Customers	34,698	$18.00	624.6	$27.00	936.8	312.3	50.0%
Total Customers	243,400	$18.00	4,381.2	$27.00	6,571.8	2,190.6	50.0%
Sales Deliveries	5,956,419	$4.5984	27,390.0	$4.8108	28,655.1	1,265.1	4.6%
Transport Deliveries	3,046,232	$4.5984	14,007.8	$4.8108	14,654.8	647.0	4.6%
Total Deliveries	9,002,651	$4.5984	41,397.8	$4.8108	43,310.0	1,912.2	4.6%
MFC	5,956,419	$0.0116	69.1	$0.0359	213.8	144.7	209.5%
GPC	5,956,419	$0.0400	238.3	$0.0228	135.8	(102.5)	-43.0%
GCR	5,956,419	$4.1879	24,944.9	$4.1879	24,944.9	0.0	0.0%
USC*	9,002,651	$1.1335	10,204.5	$1.1335	10,204.5	0.0	0.0%
OPEB	9,002,651	$0.3386	3,048.3	$0.3386	3,048.3	0.0	0.0%
ECRS	9,002,651	$0.0724	651.8	$0.0724	651.8	0.0	0.0%
DSIC**		7.50%	4,476.2687	7.02%	4,476.3	0.0	0.0%
Sub-Total			43,633.1		43,675.4	42.3	0.1%
Total Revenues	9,002,651	$9.9318	89,412.1	$10.3922	93,557.1	4,145.1	4.6%
Base Rate Revenues	9,002,651	$5.0851	45,779.0	$5.5408	49,881.8	4,102.8	9.0%
Total Revenues Excl. GCR	9,002,651	$7.1609	64,467.2	$7.6213	68,612.3	4,145.1	6.4%
PGW CCOSS	9,002,651	6.6917	64,969.1	6.9112		3.3%	0

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS Direct Testimony

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
Industrial NH							
Sales Customers	1,632	$50.00	81.6	$75.00	122.4	40.8	50.0%
Transport Customers	492	$50.00	24.6	$75.00	36.9	12.3	50.0%
Total Customers	2,124	$50.00	106.2	$75.00	159.3	53.1	50.0%
Sales Deliveries	100,773	$4.5332	456.8	$3.8170	384.7	(72.2)	-15.8%
Transport Deliveries	172,597	$4.5332	782.4	$3.8170	658.8	(123.6)	-15.8%
Total Deliveries	273,370	$4.5332	1,239.2	$3.8170	1,043.5	(195.8)	-15.8%
MFC	100,773	$0.0125	1.3	$0.0222	2.2	1.0	77.6%
GPC	100,773	$0.0400	4.0	$0.0228	2.3	(1.7)	-43.0%
GCR	100,773	$4.1879	422.0	$4.1879	422.0	0.0	0.0%
USC*	273,370	$1.1335	309.9	$1.1335	309.9	0.0	0.0%
OPEB	273,370	$0.3386	92.6	$0.3386	92.6	0.0	0.0%
ECRS	273,370	$0.0841	23.0	$0.0841	23.0	0.0	0.0%
DSIC**		7.50%	132.8	8.16%	132.8	0.0	0.0%
Sub-Total			985.6		984.8	(0.8)	-0.1%
Total Revenues	273,370	$8.5269	2,331.0	$8.0022	2,187.6	(143.4)	-6.2%
Base Rate Revenues	273,370	$4.9217	1,345.4	$4.3997	1,202.8	(142.7)	-10.6%
Total Revenues Excl. GCR	273,370	$6.9831	1,909.0	$6.4584	1,765.5	(143.4)	-7.5%
PGW CCOSS	273,370		1,923.8				
Industrial Heat							
Sales Customers	4,656	$50.00	232.8	$75.00	349.2	116.4	50.0%
Transport Customers	816	$50.00	40.8	$75.00	61.2	20.4	50.0%
Total Customers	5,472	$50.00	273.6	$75.00	410.4	136.8	50.0%
Sales Deliveries	276,702	$4.5332	1,254.3	$3.8170	1,056.2	(198.2)	-15.8%
Transport Deliveries	265,170	$4.5332	1,202.1	$3.8170	1,012.2	(189.9)	-15.8%
Total Deliveries	541,872	$4.5332	2,456.4	$3.8170	2,068.3	(388.1)	-15.8%
MFC	276,702	$0.0125	3.5	$0.0222	6.1	2.7	77.6%
GPC	276,702	$0.0400	11.1	$0.0228	6.3	(4.8)	-43.0%
GCR	276,702	$4.1879	1,158.8	$4.1879	1,158.8	0.0	0.0%
USC*	541,872	$1.1335	614.2	$1.1335	614.2	0.0	0.0%
OPEB	541,872	$0.3386	183.5	$0.3386	183.5	0.0	0.0%
ECRS	541,872	$0.0841	45.6	$0.0841	45.6	0.0	0.0%
DSIC**		7.50%	268.0	8.07%	268.0	0.0	0.0%
Sub-Total			2,284.6		2,282.5	(2.1)	-0.1%
Total Revenues	541,872	$9.2542	5,014.6	$8.7866	4,761.2	(253.4)	-5.1%
Base Rate Revenues	541,872	$5.0381	2,730.0	$4.5744	2,478.7	(251.3)	-9.2%
Total Revenues Excl. GCR	541,872	$7.1157	3,855.8	$6.6481	3,602.4	(253.4)	-6.6%
PGW CCOSS	541,872		3,886.1				

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 – RDK CCOSS Direct Testimony

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
Municipal NH							
Sales Customers	1,224	$18.00	22.0	$27.00	33.0	11.0	50.0%
Transport Customers	2,352	$18.00	42.3	$27.00	63.5	21.2	50.0%
Total Customers	3,576	$18.00	64.4	$27.00	96.6	32.2	50.0%
Sales Deliveries	126,280	$3.3661	425.1	$3.8365	484.5	59.4	14.0%
Transport Deliveries	58,837	$3.3661	198.1	$3.8365	225.7	27.7	14.0%
Total Deliveries	185,117	$3.3661	623.1	$3.8365	710.2	87.1	14.0%
MFC	126,280	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	126,280	$0.0400	5.1	$0.0228	2.9	(2.2)	-43.0%
GCR	126,280	$4.1879	528.8	$4.1879	528.8	0.0	0.0%
USC*	185,117	$1.1335	209.8	$1.1335	209.8	0.0	0.0%
OPEB	185,117	$0.3386	62.7	$0.3386	62.7	0.0	0.0%
ECRS	185,117	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
DSIC**		7.50%	72.0	6.67%	72.0	0.0	0.0%
Sub-Total			878.4		876.2	(2.2)	-0.2%
Total Revenues	185,117	$8.4590	1,565.9	$9.0915	1,683.0	117.1	7.5%
Base Rate Revenues	185,117	$3.7138	687.5	$4.3581	806.8	119.3	17.3%
Total Revenues Excl. GCR	185,117	$5.6021	1,037.1	$6.2347	1,154.1	117.1	11.3%
PGW CCOSS	186,821		1,923.8				
Municipal Heat							
Sales Customers	4,548	$18.00	81.9	$27.00	122.8	40.9	50.0%
Transport Customers	2,268	$18.00	40.8	$27.00	61.2	20.4	50.0%
Total Customers	6,816	$18.00	122.7	$27.00	184.0	61.3	50.0%
Sales Deliveries	454,537	$3.3661	1,530.0	$3.8365	1,743.8	213.8	14.0%
Transport Deliveries	359,365	$3.3661	1,209.7	$3.8365	1,378.7	169.0	14.0%
Total Deliveries	813,902	$3.3661	2,739.7	$3.8365	3,122.5	382.9	14.0%
MFC	454,537	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	454,537	$0.0400	18.2	$0.0228	10.4	(7.8)	-43.0%
GCR	454,537	$4.1879	1,903.6	$4.1879	1,903.6	0.0	0.0%
USC*	813,902	$1.1335	922.6	$1.1335	922.6	0.0	0.0%
OPEB	813,902	$0.3386	275.6	$0.3386	275.6	0.0	0.0%
ECRS	813,902	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
DSIC**		7.50%	304.5	6.76%	304.5	0.0	0.0%
Sub-Total			3,424.4		3,416.6	(7.8)	-0.2%
Total Revenues	813,902	$7.7243	6,286.8	$8.2604	6,723.2	436.4	6.9%
Base Rate Revenues	813,902	$3.5168	2,862.4	$4.0626	3,306.6	444.2	15.5%
Total Revenues Excl. GCR	813,902	$5.3854	4,383.2	$5.9216	4,819.6	436.4	10.0%
PGW CCOSS	813,902		4,415.4				

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
PHA GS							
Sales Customers	22,356	$12.00	268.3	$18.00	402.4	134.1	50.0%
Transport Customers	0	$12.00	0.0	$18.00	0.0	0.0	#DIV/0!
Total Customers	22,356	$12.00	268.3	$18.00	402.4	134.1	50.0%
Sales Deliveries	166,265	$4.9441	822.0	$6.5603	1,090.8	268.7	32.7%
Transport Deliveries	0	$4.9441	0.0	$6.5603	0.0	0.0	#DIV/0!
Total Deliveries	166,265	$4.9441	822.0	$6.5603	1,090.8	268.7	32.7%
MFC	166,265	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	166,265	$0.0400	6.7	$0.0228	3.8	(2.9)	-43.0%
GCR	166,265	$4.1879	696.3	$4.1879	696.3	0.0	0.0%
USC*	166,265	$1.1335	188.5	$1.1335	188.5	0.0	0.0%
OPEB	166,265	$0.3386	56.3	$0.3386	56.3	0.0	0.0%
ECRS	166,265	$0.0315	5.2	$0.0315	5.2	0.0	0.0%
DSIC**		7.50%	100.5	5.77%	100.5	0.0	0.0%
Sub-Total			1,053.5		1,050.6	(2.9)	-0.3%
Total Revenues	166,265	$12.8937	2,143.8	$15.2995	2,543.8	400.0	18.7%
Base Rate Revenues	166,265	$6.5576	1,090.3	$8.9806	1,493.2	402.9	36.9%
Total Revenues Excl. GCR	166,265	$8.7058	1,447.5	$11.1116	1,847.5	400.0	27.6%
PGW CCOSS	166,265		1,459.4				
PHA Rate 8 (Proposed based on municipal rate)							
Sales Customers	1,769	$18.00	31.8	$27.00	47.8	15.9	50.0%
Transport Customers	9,168	$18.00	165.0	$27.00	247.5	82.5	50.0%
Total Customers	10,937	$18.00	196.9	$27.00	295.3	98.4	50.0%
Sales Deliveries	43,384	$4.1101	178.3	$3.83[illegible]5	166.4	(11.9)	-6.7%
Transport Deliveries	454,449	$4.1101	1,867.8	$3.836[illegible]	1,743.5	(124.3)	-6.7%
Total Deliveries	497,833	$4.1101	2,046.1	$3.8365	1,909.9	(136.2)	-6.7%
MFC	43,384	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	43,384	$0.0400	1.7	$0.0228	1.0	(0.7)	-43.0%
GCR	43,384	$4.1879	181.7	$4.1879	181.7	0.0	0.0%
USC*	497,833	$1.1335	564.3	$1.1335	564.3	0.0	0.0%
OPEB	497,833	$0.3386	168.6	$0.3386	168.6	0.0	0.0%
ECRS	497,833	$0.0315	15.7	$0.0315	15.7	0.0	0.0%
DSIC**		7.50%	224.4	7.60%	224.4	0.0	0.0%
Sub-Total			1,156.3		1,155.6	(0.7)	-0.1%
Total Revenues	497,833	$6.8283	3,399.3	$6.7509	3,360.8	(38.5)	-1.1%
Base Rate Revenues	497,833	$4.5055	2,243.0	$4.4297	2,205.2	(37.8)	-1.7%
Total Revenues Excl. GCR	497,833	$6.4633	3,217.7	$6.3859	3,179.1	(38.5)	-1.2%
PGW CCOSS	497,833		3,228.2				

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-3 -- RDK CCOSS Direct Testimony

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
NGV							
Sales Customers	36	$35.00	1.3	$35.00	1.3	0.0	0.0%
Transport Customers	12	$35.00	0.4	$35.00	0.4	0.0	0.0%
Total Customers	48	$35.00	1.7	$35.00	1.7	0.0	0.0%
Sales Deliveries	1,766	$1.2833	2.3	$1.3005	2.3	0.0	1.3%
Transport Deliveries	4,343	$1.2833	5.6	$1.3005	5.6	0.1	1.3%
Total Deliveries	6,109	$1.2833	7.8	$1.3005	7.9	0.1	1.3%
MFC	1,766	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	1,766	$0.0400	0.1	$0.0228	0.0	(0.0)	-43.0%
GCR	1,766	$4.1879	7.4	$4.1879	7.4	0.0	0.0%
USC*	6,109	$1.1335	6.9	$1.1335	6.9	0.0	0.0%
OPEB	6,109	$0.3386	2.1	$0.3386	2.1	0.0	0.0%
ECRS	6,109	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
DSIC**		7.50%	1.4	7.46%	1.4	0.0	0.0%
Sub-Total			17.8		17.8	(0.0)	-0.2%
Total Revenues	6,109	$4.4798	27.4	$4.4920	27.4	0.1	0.3%
Base Rate Revenues	6,109	$1.5583	9.5	$1.5755	9.6	0.1	1.1%
Total Revenues Excl. GCR	6,109	$3.2692	20.0	$3.2815	20.0	0.1	0.4%
PGW CCOSS	6,109		19.9				
GTS/IT							
ITA Customer	1,260	$125.00	157.5	$125.00	157.5	0.0	0.0%
ITB Customer	1,284	$225.00	288.9	$225.00	288.9	0.0	0.0%
ITC Customer	1,164	$225.00	261.9	$225.00	261.9	0.0	0.0%
ITD Customer	936	$225.00	210.6	$225.00	210.6	0.0	0.0%
ITE Customer	300	$350.00	105.0	$350.00	105.0	0.0	0.0%
GTS Customer Charge	36	$0.00	0.0	$0.00	0.0	0.0	#DIV/0!
Customers Total	415		1,023.9		1,023.9	0.0	0.0%
ITA Throughput	426,654	$1.88000	802.1	$2.9863	1,274.1	472.0	58.8%
ITB Throughput	888,733	$0.91000	808.7	$1.4454	1,284.6	475.8	58.8%
ITC Throughput	1,626,025	$0.71000	1,154.5	$1.1247	1,828.8	674.3	58.4%
ITD Throughput	3,294,748	$0.63000	2,075.7	$1.0076	3,319.7	1,244.0	59.9%
ITE Throughput	7,980,513	$0.61000	4,868.1	$0.9645	7,697.6	2,829.5	58.1%
GTS Throughput Charge	13,176,839	$0.09480	1,249.1	$0.0948	1,249.1	0.0	0.0%
Throughputs Total	27,393,512		10,958.3		16,653.9	5,695.6	52.0%
Supplier			12.6		12.6	0.0	0.0%
Total Revenues	27,393,512	$0.4379	11,994.8	$0.6458	17,690.4	5,695.6	47.5%
Base Rate Revenues	27,393,512	$0.4379	11,994.8	$0.6458	17,690.4	5,695.6	47.5%
Total Revenues Excl. GCR	27,393,512	$0.4379	11,994.8		17,690.4	5,695.6	47.5%
PGW CCOSS			12,190.0				

EXHIBIT IEc-2

REFERENCED INTERROGATORY RESPONSES

I&E-RS-1-D

OCA-VII-7

OCA-VII-14

OSBA-I-6

OSBA-I-10

OSBA-I-11

OSBA-I-17

OSBA-I-19

OSBA-I-21

OSBA-I-22

OSBA-I-23

OSBA-I-25

OSBA-I-26

OSBA-I-28

OSBA-I-30

OSBA-I-31

PICGUG-I-5

PICGUG-III-1

Note: Due to both the volume and the electronic nature of the many attachments to the referenced interrogatories in OSBA Statement No. 1, copies of the attachments are not attached to this testimony. I am advised by counsel that OSBA will undertake the necessary steps to have these attachments entered into the record in this proceeding during the hearings in this matter.

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Bureau of Investigation & Enforcement ("I&E") in
Docket No. R-2017-2586783

Request: I&E-RS-1-D

Reference City Volume III – Class Cost of Service Study. Please provide the following in MS Excel or similar formats with all the formulae live:

A. Exhibit PQH-1 – Summary of Allocation Results;

B. Exhibit PQH-2 – Summary of Allocation Results by Functional Classification;

C. Exhibit PQH-3 – Allocation Results;

D. Exhibit PQH-3A – Allocation Results – Supply-Demand Classification;

E. Exhibit PQH-3B – Allocation Results – Supply-Commodity Classification;

F. Exhibit PQH-3C – Allocation Results – Storage-Demand Classification;

G. Exhibit PQH-3D – Allocation Results – Distribution-Demand Classification;

H. Exhibit PQH-3E – Allocation Results – Distribution-Commodity Classification;

I. Exhibit PQH-3F – Allocation Results – Distribution-Customer Classification;

J. Exhibit PQH-3G – Allocation Results – Onsite-Customer Classification;

K. Exhibit PQH-3H – Allocation Results – USEC-Customer Classification;

L. Exhibit PQH-4 – Classification Results;

M. Exhibit PQH-5 – Functionalization Results;

N. Exhibit PQH-6 – Summary of Factors Used;

O. Exhibit PQH-7A – Functionalization Factor Values;

P. Exhibit PQH-7B – Classification Factor Values;

Q. Exhibit PQH-7C – Allocation Factor Values;

R. Exhibit PQH-8A – Number of Customers by Rate Class and Month;

S. Exhibit PQH-8B – Development of Customer-Related Allocators;

T. Exhibit PQH-8C – Sendout by Rate Class and Month, mcf;

U. Exhibit PQH-8D – Sendout by Rate Class and Month, mcf;

V. Exhibit PQH-8E – Sales-Related Allocators, mcf;

W. Exhibit PQH-8F – Winter Sales Allocators, mcf;

X. Exhibit PQH-8G – Design Day Sales, mcf;

Y. Exhibit PQH-8H – Design Day Usage of Mains Allocator, mcf;

Z. Exhibit PQH-8I – Write-Offs Allocator;

AA. Exhibit PQH-8J – Account Aging Allocator;

BB. Exhibit PQH-8K – Service Costs Allocator;

CC. Exhibit PQH-8L – Meter Installation Costs Allocator;

DD. Exhibit PQH-8M – Meter Reading Costs Allocator;

EE. Exhibit PQH-8N – Account 903 Allocator;

FF. Exhibit PQH-8O – Account 908 Allocator;

GG. Exhibit PQH-9 – Proposed Delivery Charges;

HH. Exhibit PQH-9A – Proposed Delivery Charges for Interruptible Transportation;

II. Exhibit PQH-10 – Computation of the Gas Procurement Charge; and

JJ. Exhibit PQH-11 – Computation of the Merchant Function Charge.

Response:
I provide answers to the above requests below, including Excel spreadsheets with live formulae. In a number of cases, however, the exhibits are part of a proprietary model. While live Excel spreadsheets are not provided for these cases, I note that the printouts of the exhibits include all information needed to validate computations. If there are different scenarios/inputs that I&E would like to be run through the model, please provide that information and I will provide the results.

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Bureau of Investigation & Enforcement ("I&E") in
Docket No. R-2017-2586783

Items A through Q (Exhibit PQH-1 through Exhibit PQH-7C)
These items are part of a proprietary model. The printouts of the exhibits include all information needed to validate computations.

Items R through FF (Exhibit PQH-8A through Exhibit PQH-8O)
Excel spreadsheets with live formulae are provided in I&E-RS-1-D Attach A.

Item GG (Exhibit PQH-9)
This item is part of a proprietary model. The printout of the exhibit includes all information needed to validate computations.

Item HH (Exhibit PQH-9A)
An Excel spreadsheet with live formulae is provided in I&E-RS-1-D Attach A.

Items II and JJ (Exhibit PQH-10 and Exhibit PQH-11)
Excel spreadsheets with live formulae are provided in I&E-RS-1-D Attach A.

Response provided by: Philip Q Hanser, Principal of The Brattle Group

Dated: March 21, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Consumer Advocate, Set VII in
Docket No. R-2017-2586783

Request: OCA-VII-7 Refer to response to I&E-RS-21-D. Please revise the study provided to also allocate:

a. Plant Accounts 374, 375, 377, and 378 using the Peak & Average method;

b. Account 387 using the balances in Accounts 374-385; and

c. The depreciation reserve for Account 108.58 consistent with the changes in subparts
(a) and (b) above.

Response:

Attached I provide exhibits showing the CCOSS results for the requested revised classification of accounts 374-378, 387, and 108.58. After seeking clarification from OCA, I interpret the request to be that I use the Peak & Average method that was used for allocation of mains, Account 376, in the referenced I&E response. The Peak & Average method, as defined by OCA in this context, refers to allocating accounts 374-378 50% based on peak demands and 50% based on average daily demand.

I do note that a classification of accounts 374-378 as 50% demand and 50% commodity is not appropriate. Such a classification implies that the costs in these accounts vary with the amount natural gas sold to, or transported for, customers. The appropriate classification method and the corresponding results are provided in the Cost of Service Study submitted with my direct testimony.

Response provided by: Philip Q Hanser, Principal of The Brattle Group

Dated: April 17, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Consumer Advocate, Set I in
Docket No. R-2017-2586783

Request: OCA-VII-14 Refer to the response to OCA-1-20:

a. Please provide the requested information by rate class as reflected in the Company's cost of service study; and

b. Does this response indicate that for rate class GS, there are, on average, 3 customers served from a service that serves multiple customers? If no, why not.

Response:

a. The following is current information by rate class.

Rate Class	Distinct Count of Services	Distinct Count of Premises
GS Commercial	6,331	12,384
GS Industrial	109	222
GS Residential	52,807	117,395
GS Public Housing	11	14
Municipal	120	367
PHA	90	348
IT	182	356
	59,650	131,086

b. Yes based on the data originally provided in response to OCA-I-20 but OCA-I-20 has been corrected with the correct data reflecting 2.

Response Provided by: Daniel Furtek, Director, Resource Management, PGW

Dated: April 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-6 Reference Exhibit JFG-2, pages 1, 3, and 4:

A. Please define the components of line 19 on page 3, 1998 ordinance bonds debt service.

B. Please explain the reason for the substantial increase in ordinance bonds debt service in FY 2018.

C. Please reconcile the increase in ordinance bonds debt service in FY 2018 with the long-term debt balances on page 4 and the interest costs on page 1.

Response:

A. Please refer to the response to question OSBA-I-6-B.

B. On August 1, 2017, PGW plans to issue a new Revenue Bond, Fifteenth Series (1998 General Ordinance) in the amount of $270.0 million to support capital expenditures and reduce $71.0 million of outstanding Tax-Exempt Commercial Paper. Additionally, in FY 2016, PGW defeased $16.0 million of long-term debt, payable in FY 2017, as a result of this defeasance PGWs' 2017 payment obligation decreased by $16.0 million.

	Estimated Budget 2016-17	Budget 2017-18
INTEREST		
4th Series - Refunding (May 2007)	$600,000	$600,000
7th Series - New Money (May 2007)	230,750	115,375
7th Series - Refunding (May 2007)	521,375	364,625
8th Series A Fixed - Refund 6th Series Bond Issue - (Aug 2009)	411,600	0
8th Series B Variable - Refund 6th Series Bond Issue - (Aug 2009)	1,005,711	1,005,711
8th Series C Variable - Refund 6th Series Bond Issue - (Aug 2009)	1,000,383	1,000,383
8th Series D Variable - Refund 6th Series Bond Issue - (Aug 2009)	1,500,850	1,500,850
8th Series E Variable - Refund 6th Series Bond Issue - (Aug 2009)	1,005,711	1,005,711
9th Series - New Bond Issue - (August 2010)	3,376,350	3,376,350
10th Series - Refunding - (Sept 2011)	1,608,294	1,372,494
13th Series - Refunding - (August 2015)	11,920,050	11,197,050
14th Series - Refunding - (August 2016)	8,896,995	14,847,325
1998 Ordinance New Bond - $270MM Issued March 1, 2017	0	13,500,000
Total Interest	**$32,078,067**	**$49,885,872**

	Estimated Budget 2016-17	Budget 2017-18
PRINCIPAL		
7th Series - New Money (May 2007)	$0	$4,615,000
7th Series - Refunding (May 2007)	0	4,110,000
8th Series A Fixed - Refund 6th Series Bond Issue - (Aug 2009)	7,840,000	0
9th Series - New Bond Issue - (August 2010)	0	3,445,000
10th Series - Refunding - (Sept 2011)	5,895,000	5,385,000
13th Series - Refunding - (August 2015)	18,075,000	17,270,000
14th Series - Refunding - (August 2016)	2,980,000	12,945,000
1998 Ordinance New Bond - $270MM Issued March 1, 2017	0	4,063,887
Total Principal	**$34,790,000**	**$51,833,887**
Total Revenue Bond Payments	**$66,868,067**	**$101,719,759**

C. The 1998 Ordinance Bonds Debt service in the amount of $101,720 million, for FY 2018, consists of interest payments in the amount of $49,886 million and principal payments in the amount of $51,834 million. Whereas, the interest costs of $49,160 million on page 1 reflect the accrued bond interest which is comprised of the following:

Bond Series	**Accrued Amount**
(Dollars in Thousands)	
5th Series	$ 600
7th Series New	19
7th Series Refunding	277
8th Series B thru E	4,514
9th Series	3,365
10th Series	1,328
13th Series	11,139
14th Series	14,521
1998 Ordinance New	13,398
Total Interest Accrued	**$49,160**

Moreover, the long-term debt balances, on page 4, of $1,073 million and $1,021 million reflects the total 1998 Ordinance Bonds outstanding principal amount.

Response Provided by: Joseph Golden, Executive Vice President and Acting Chief Financial Officer PGW

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the *Interrogatories of the Office of Small Business Advocate* ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-10 *Reference PGW Statement No. 3, page 8, capitalization ratios:*

A. Please discuss the implications of the adoption of GASB 68, GASB 71, and GASB 75 and the associated loss of more than $500 million of PGW City Equity on the Company's capitalization ratio, its debt ratings and its ability to obtain debt financing.

Response:
The adoption of these accounting rules (GASB 68, 71, and 75) will ultimately reflect the full pension and other post-employment benefit (OPEB) liabilities of PGW on the balance sheet after 2018. As noted, these accounting rules will result in a reduction of approximately $500 million of PGW equity. However, rating agencies and investors have recognized this PGW liability for several years prior to the adoption of the GASB accounting relating to pension and OPEB liabilities and the impact on its equity position. As such, these liabilities and ongoing annual funding requirements have been fully factored in to PGW's bond ratings to date. It is important to note that PGW's ratings of Baa1/A/BBB+ did not change upon the formal introduction of the initial GASB rules and the reflection of the pension liability on the PGW balance sheet, given the already known impact of formally adopting the GASB rules in the financial statements. Rating agencies have long calculated financial metrics (such as debt to capitalization) in alternative methods, allowing for comparative analysis with other utilities.

While the rating agencies and investors have considered these pension and OPEB obligations – whether as a soft liability or a hard obligation recorded on the balance sheet – the ongoing pension and OPEB funding through PGW's annual contributions continues to be important to PGW's financial standing with rating agencies and investors. Rating agencies continue to place emphasis on controlling the pension and OPEB liability, and it reinforces the importance of PGW's rate request, ensuring PGW's ability to make annually required contributions. To the extent that PGW does not obtain the rate request it is seeking, it puts pressure on its ability to fund these obligations. In certain municipal rating criteria (although not specifically adopted for municipal utilities), rating agencies even consider the annualized contributions necessary to reduce pension and OPEB liabilities to be the equivalent of debt service on bonds, further emphasizing the importance of maintaining financial margins for ongoing funding of PGW's pension and OPEB payments.

Similar to the rating agency's consideration of pension and OPEB liability over time, PGW's capital market access has not fundamentally changed upon the formal adoption of GASB rules. PGW's current bond ratings and the strong investor reception to its August 2016 bond transaction reflects the favorable market reception when appropriate rate support is provided to PGW. PGW's ongoing funding of its pension and OPEB liabilities – including the formal approval of rate case allowing funding of its annual OPEB obligation in 2009 – has specifically received favorable reviews from investors. It is important for ongoing capital market access and the maintenance of its bonds ratings to have the necessary and appropriate rate support to continue its annual funding of these liabilities. Bond ratings and capital markets access can deteriorate quickly, if appropriate and reasonable rate support is not maintained.

Response Provided by: Daniel J. Hartman, Managing Director, Public Financial Management, Inc.

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-11 Reference PGW Statement No. 4, pages 21-22:

A. To the extent available, please provide the comparison shown in FCG Figure-9 on the basis of non-gas operating expense per customer.

Response:

A. I did not calculate non-gas operating expenses on a per customer basis. As I discussed on PGW Statement 4, page 21, lines 14-20, operating expenses are influenced by multiple factors including the age of infrastructure and customer mix but not in a way that is likely to be directly proportional to the number of customers.

Response Provided by: Frank Graves, Principal, The Brattle Group

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-17 Reference Exhibit PQH-7B:

A. Please provide the rationale and all supporting workpapers (in "live" MS Excel electronic format as appropriate) for the 50 percent demand, 50 percent customer classification factor applied to mains costs.

B. Please provide the rationale from the Company and the Brattle Group as to why they recommend that the Commission depart from its decision at R-00061931 in this respect. (Please see PA PUC v. Philadelphia Gas Works, R-00061931, Recommended Decision, July 24, 2007, page 63, and PA PUC v. Philadelphia Gas Works, R-00061931, Order Entered September 28, 2007, page 80.)

C. To the extent available, in MS Excel electronic format, please provide an annual database of PGW mains investment, showing mains investment and footage, by pipe material (cast iron, steel, PE, etc.), and by mains diameter.

Response:

A. Underlying the classification of costs into customer and demand components is the notion that there is a minimally-sized system that can be built to meet the minimum needs of a customer in a particular rate class. The amount classified to customer is the portion of costs that would be incurred in order to serve that customer at that minimal level and any costs above that are considered to be driven by the need to modify the connection or equipment in response to demand that exceeds the customer's minimum requirements. As discussed in page 9 of my testimony, mains serve a dual purpose: (i) to connect customers and enable the customer to receive a minimal level of service, and (ii) to provide adequate capacity for the maximum demand level by the customer. It is appropriate to classify main-related costs to both customer and demand, given the dual purpose they serve. Classifying a portion of the cost of mains to demand allows for the use of a peak demand method in the allocation step. Peak demand methods view cost responsibility as based on the sizing of plant to reliably meet customer's needs. Since the utility is essentially the sole supplier of distribution services, it must size its plant to be capable of meeting all of its customers' demands at all times.

B. *Response pending.*

C. See OSBA-I-17(C) Attachment A.

Response Provided by: Philip Q Hanser, Principal of The Brattle Group
Daniel Furtek, Director, Resource Management, PGW

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-19 Reference Exhibit PQH-8G and PQH-8H

A. In "live" MS Excel electronic format, please provide workpapers used to derive design day sales for each rate class shown. To the extent that these values rely on other materials previously submitted to the Commission, please include those in your response.

B. Please provide contract demand and annual throughput for each GTS and each IT customer.

C. Please provide the maximum daily delivery to each interruptible, GTS and IT customer in each of the past three years.

Response:

A. Design day sales for each rate class is not available. See OSBA-I-19(A) Attachment A for the design day calculation.

B. *Response Pending*

C. *Response Pending*

Response Provided by: Kenneth S. Dybalski, Vice President - Energy Planning & Technical Compliance, PGW
Florian Teme, Vice President – Marketing and Sales, PGW

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-21 Reference Exhibit PQH-8K:

A. In MS Excel electronic format, please provide the data base of service line replacements used to develop this allocator, including (to the extent available) for each replacement, line diameter, line length, operating pressure, annual customer load, customer class, and replacement cost.

B. Please provide the basis for the 1.5 and 3.0 factors applied to certain unit cost allocators.

C. Please provide the maximum hourly (or daily) demand for a commercial and industrial customer that can be served with a 1.25-inch diameter service line.

D. Please identify the number of current firm commercial customers whose maximum demand exceeds that reported in your response to part (c) above.

E. Please identify the number of current firm industrial customers whose maximum is below that reported in your response to part (c) above.

Response:

A. See OSBA-I-21(A) Attachment A which provides the line diameter, customer class and replacement cost for each service line replacement available.

B. PGW classifies service lines into two large groups based on service line diameter: 1.25" and smaller, and 2" and larger. The service lines within each of these groups are not entirely homogeneous in their cost characteristics, and limited data is available related to the exact costs of the services that are installed in each individual customer premise. I use these factors to capture the differences in the cost of service lines for different customer classes. These factors are consistent with those used in the 2009 PGW CCOSS.

C. The maximum service capacity demand that can be served with a 1.25 inch diameter service line is as follows: MAOP 14" water column (Low Pressure) is 852 CFH, MAOP – 5 PSIG (Intermediate Pressure) is 5,572 CFH, and MAOP – 35 PSIG (High Pressure) is 10,297 CFH.

D. The number of current firm commercial customers whose maximum demand exceeds that reported in part (c) above is zero.

E. All of the current firm industrial customers maximum hourly (or daily) demand is at or below that reported in part (c) above.

Response Provided by: Daniel Furtek, Director, Resource Management, PGW
Philip Q Hanser, Principal of The Brattle Group

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-22 *Reference Exhibit PQH-8L:*

A. In MS Excel electronic format, please provide the data base of meter costs by type used to develop this allocator, including (to the extent available) for each meter installation, the meter type, the customer class served, the operating pressure, class, and replacement cost.

B. Please provide the basis for the 1.5 factor applied to certain unit cost allocators.

C. Please provide the maximum hourly (or daily) demand for a residential customer that can be served with a meter in the "Meter Type 1" group.

D. Please identify the number of firm commercial customers whose maximum demand exceeds that reported in your response to part (c) above.

E. Is it Company policy to install a larger meter for commercial customers than residential customers regardless of customer demand? If so, please explain the rationale for the policy. If not, please explain why the meters cost allocator should not recognize that smaller meters may be installed for commercial customers.

Response:

A. See OSBA-I-22(A) Attach A which provides the meter costs by type, customer class served and replacement cost for each meter installation.

B. *Response pending.*

C. L250 meter size services a residential customer and can provide a maximum demand of 250 CFH, L425 meter services a residential customer and can provide a maximum demand of 425 CFH, and a L630 diaphragm meter can service a residential customer with a maximum demand of 630 CFH.

D. The number of firm commercial customers whose demand exceeds that reported in response to part (c) above is zero.

E. The company policy is to install the meter which fits the maximum customer demand.

Response Provided by: Daniel Furtek, Director, Resource Management, PGW
Philip Q Hanser, Principal of The Brattle Group

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-23 Reference Exhibit PQH-8M:

A. Please define "scrap/special distributed by tariff class," and explain how the total value in that column was derived.

B. Please explain why AMR costs are allocated based on customer count.

Response:

A. FERC Account 902 captures the costs that PGW incurs to perform meter reading activities. PGW records these costs in two sub-accounts, namely Meter Reading Scrap/Special, and Meter Reading AMR Program. The Meter Reading Scrap/Special sub-account is comprised primarily of costs related to technology and information systems that support meter reading data collection. The column labeled Scrap/Special Distributed by Tariff Revenue column is derived by allocating the total dollar amount in the Meter Reading Scrap/Special sub-account by the relative shares of tariff revenue collected from each Rate Class.

B. The Meter Reading AMR Program sub-account captures equipment and labor costs associated with collecting AMR data, which is accomplished by a number of vehicles that transit the city and perform meter readings without the need to enter customer premises. Meters for all Rate Classes are read in this way and thus it is appropriate to allocate the costs in this account by the relative number of customers in each class

Response Provided by: Philip Q Hanser, Principal of The Brattle Group

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-25 Reference Exhibit PQH-10:

A. Please provide supporting detail and calculations for the natural gas supply, acquisition and management, and benefits costs shown in this schedule.

B. Please provide supporting detail and calculations for the storage gas working capital plus cash working capital shown in this schedule.

Response:

A. See OSBA-I-25(A) Attachment A. Please note that the correct total is $324,602. The amount shown in Exhibit PQH-10, $503,587, is incorrect.

B. See OSBA-I-25(B) Attachment A

Response Provided by: Joseph Golden, Executive Vice President and Acting Chief Financial Officer, PGW
Philip Q Hanser, Principal of The Brattle Group

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in Docket No. R-2017-2586783

Request: OSBA-I-26 Reference Exhibit PQH-11:

A. Please explain why CRP uncollectibles costs are partially included in the MFC.

B. Please explain whether a comparable CRP uncollectibles percentage amount is included in the purchase-of-receivables discount.

C. Please explain why CRP uncollectibles are allocated in proportion to non-CRP uncollectibles for the purpose of deriving the MSC.

D. Please explain how and where other CRP uncollectibles are functionalized, classified and allocated in the CCOSS.

Response:

A. CRP uncollectibles should not have been included in the computation of the MFC.

B. *Response Pending*

C. Please see response to Part A above

D. CRP uncollectibles are captured under Account 904CRP and consistent with how these costs are recovered, they were functionalized to USEC, classified to customer, and allocated among the Rate Classes based on based on the relative share of firm sales. For additional detail, please refer to Exhibit PQH-6 page 4, line 140, and Exhibit PQH-3H page 4, line 140.

Response Provided by: Philip Q Hanser, Principal, The Brattle Group
Denise Adamucci, Vice President, Regulatory Compliance & Customer Programs, PGW

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-28 Reference Exhibits JFG-1 and JFG-2 (income statements), proof of revenue at 53.52(b)(3) and 53.52(b)(4):

A. For the fully forecast test year ending August 31, 2018, please provide an electronic version of the proof of revenues at both current and proposed rates in "live" MS Excel format with formulae intact, that:

(i) Reconciles to the operating revenues in Exhibits JFG-1 and JFG-2;

(ii) Includes rates, billing determinants and revenues for the GCR, USEC, OPEB, ECR, USEC, R&CE, and any other charges that produce revenues for PGW necessary to reconcile to the income statement.

B. To the extent available, please provide a version of your response to part (a) for each forecast year from FY 2019 to 2022. If a proof of revenues is not available, please provide supporting calculations for the revenue forecast in Exhibit JFG-2 in MS Excel electronic format.

Response:

A(i) See OSBA-I-4 Attachments A and B for excel versions of Exhibits JFG-1 and JFG-2 for the FY 2009 and FY 2022 accounting periods.

A(ii) See OSBA-I-28(A)(ii) Attachment A.

B. See OSBA-I-28(B) Attachments A – D. Note the USC, OPEB, ECR, R&CE are included in the distribution charge.

Response Provided by: Daniel E. Leonard, Jr. Director, Budgeting and Cash Management, PGW
Kenneth S. Dybalski, Vice President - Energy Planning & Technical Compliance, PGW

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-30 Reference Exhibit KSD-1, page 3:

A. In MS Excel electronic format, please provide the actual and normalized usage levels, heating degree days, and number of customers supporting this exhibit.

B. In MS Excel electronic format, please provide a version of your response to part (a) split between CRP and non-CRP residential customers.

Response: A. & B. See OSBA-I-30 Attachments A-O.

Response Provided by: Kenneth S. Dybalski, Vice President - Energy Planning & Technical Compliance, PGW

Dated: March 28, 2017

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-31 *Reference PGW Statement No. 7, pages 27 to 37, IT Rates:*

A. Please explain why the Company does not allocate costs separately to Rate GTS and Rate IT customers in the cost allocation study.

B. Please explain how design day demand for Rate IT customers is reflected in the cost allocation study with respect to mains cost allocation. If design day demand for Rate IT customers is not included in the cost allocation study, please provide the Company's estimate of test year design day demand for Rate IT customers, as well as the maximum actual daily demand from Rate IT customers served by PGW over the past three years.

C. Please specify the "equivalent firm transportation rate" that would serve as the upper bound of the rate range for Rate IT customers.

D. Please estimate PGW's investment requirement to provide service to Rate IT customers if they were to convert to firm service, with supporting calculations. In effect, what is PGW's avoided cost associated with the interruptibility of Rate IT customers.

E. Regarding the discussion at the top of page 30 regarding the need to interrupt Rate IT customers, are rate IT customers obligated to deliver their daily requirements on peak days to the city gate? If so, please explain why Rate IT customers may be constrained by LNG capacity.

F. Also regarding the discussion at the top of page 30 regarding the need to interrupt Rate IT customers on peak days, please specify the costs that are avoided by the interruption. Specifically, are PGW's avoided costs related to the interruptibility of Rate IT customers a result of a need to increase deliverability capacity to the city gate, or are the avoided costs related to a need to expand or modify the distribution system?

Response:

A. I have treated Rate GTS and Rate IT as a single class at the direction of the Company. The Company provided this direction because, at the time of filing, there were only three GTS customers (which are large volume legacy transportation customers). Additionally, as of the date of this response, only

two GTS customer remain because one ceased operations in April 2017.

B. Design day demand for Rate IT does not enter into my computations. PGW does not include any demand from interruptible customers when calculating its design day demand and, therefore, does not estimate design day demand for interruptible customers.

C. The current delivery charge for firm transportation customers per MCF is as follows:

Commercial GS	$4.5984
Industrial GS	$4.5332
Phila. Housing Authority	$4.1101
Municipal (MS)	$3.3661

D. If Rate IT customers converted to firm service, there would be an increase need of system supply. This increase in volume would be met with a combination pipeline firm transportation, expansion of city gate capacity, expansion of PGW distribution system infrastructure and/or additional LNG capability. The exact mix would need additional studies to finalize.

E. Rate IT suppliers operate within PGW's Tariff Rate DB. There is a Daily Imbalance Surcharge and Monthly Imbalance Reconciliation. When PGW firm service customer send out demand exceeds PGW pipeline and off-site storage deliverability, requiring LNG to supplement firm send out, a Rate IT supplier that under delivers during these periods (meaning delivers less than their customers' actual demand), LNG would be required to meet this demand.

F. The costs are those identified in Part D.

Response Provided by: Kenneth S. Dybalski, Vice President - Energy Planning & Technical Compliance, PGW
Philip Q Hanser, Principal of The Brattle Group
Douglas A. Moser, Executive Vice President, Acting Chief Financial Officer, PGW

Dated: April 20, 2017

RESPONSE OF PHILADELPHIA GAS WORKS ("PGW") TO THE INTERROGATORIES OF PHILADELPHIA INDUSTRIAL AND COMMERCIAL GAS USERS GROUP ("PICGUG"), SET I
DOCKET NO. R-2017-2586783

Request: PICGUG-I-5: Please confirm the number of customers currently served under Rate GTS Firm, as well as the volume of natural gas transported by each identified customer.

Response: PGW has 2 GTS customers at the same service address which are provided transportation service pursuant to a special contract. There was a third GTS customer which ceased operations during April 2017. The total GTS volumes for all three customers which are included in the FPFTY = 13,176,839 Mcf. These volumes should be adjusted downward in order to account for the GTS customer which ceased operations. The adjusted volumes for the 2 remaining GTS customers are 12,057,211 Mcf.

Response Provided by: Douglas A. Moser, Executive Vice President, Acting Chief Operating Officer, PGW

Dated: April 28, 2017

RESPONSE OF PHILADELPHIA GAS WORKS ("PGW") TO THE INTERROGATORIES OF PHILADELPHIA INDUSTRIAL AND COMMERCIAL GAS USERS GROUP ("PICGUG"), SET III
DOCKET NO. R-2017-2586783

Request: PICGUG-III-1: Please refer to Exhibit PQH-8H, which shows the Design Day Usage of Mains Allocator, mcf. Please provide the following:

a. Explain how the GTS/IT usage of 101,381 was developed and determined. Provide all supporting work papers and documentation.

b. Does the 101,381 usage include both GTS and IT customers? Please provide the separate portions of this number for GTS and IT customers.

Response:

a. Domestic and per degree day heating usage factors are developed for each customer based on their historical usage. These factors are used to forecast load. PICGUG-III-1(a) Attachment A is the documentation for the calculated usage of 101,381 MCF.

b. Yes, it includes both GTS and IT customer usage.

Response Provided by: Kenneth S. Dybalski, Vice President - Energy Planning & Technical Compliance, PGW

Dated: May 10, 2017

VERIFICATION

I, Joseph F. Golden, Jr., hereby state that I am the Executive Vice President & Acting Chief Financial Officer for Philadelphia Gas Works ("PGW"), I am authorized to make this verification on its behalf, and that the facts set forth in the attached discovery responses which I am sponsoring are true and correct to the best of my knowledge, information and belief. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

3/28/17
Dated

Joseph F. Golden, Jr.
Executive Vice President &
Acting Chief Financial Officer
Philadelphia Gas Works

VERIFICATION

I, Daniel J. Hartman, hereby state that I am a Managing Director, PFM Financial Advisors LLC and have been retained by Philadelphia Gas Works ("PGW") for purposes of this proceeding. I hereby verify that the facts set forth in the attached discovery responses which I am sponsoring are true and correct to the best of my knowledge, information and belief. I understand that the statements herein are made subject to the penalties of 18 Pa.C .S. § 4904 (relating to unsworn falsification to authorities).

3/22/17
Dated

Daniel J. Hartman
Managing Director, PFM Financial Advisors LLC

VERIFICATION

I, Douglas A. Moser, hereby state that I am the Executive Vice President and Acting Chief Operating Officer for Philadelphia Gas Works ("PGW"), I am authorized to make this verification on its behalf, and that the facts set forth in the attached discovery responses which I am sponsoring are true and correct to the best of my knowledge, information and belief. I understand that the statements herein are made subject to the penalties of 18 Pa.C .S. § 4904 (relating to unsworn falsification to authorities).

3/28/17
Dated

Douglas A. Moser
Executive Vice President, Acting Chief Financial Officer
Philadelphia Gas Works

VERIFICATION

I, Philip Q. Hanser, hereby state that I am Principal of The Brattle Group and have been retained by Philadelphia Gas Works ("PGW") for purposes of this proceeding. I hereby verify that the facts set forth in the attached discovery responses which I am sponsoring are true and correct to the best of my knowledge, information and belief. I understand that the statements herein are made subject to the penalties of 18 Pa.C .S. § 4904 (relating to unsworn falsification to authorities).

3/28/17
Dated

Philip Q. Hanser, Principal
The Brattle Group

VERIFICATION

I, Kenneth S. Dybalski, hereby state that I am the Vice President - Energy Planning & Technical Compliance for Philadelphia Gas Works ("PGW"), I am authorized to make this verification on its behalf, and that the facts set forth in the attached discovery responses which I am sponsoring are true and correct to the best of my knowledge, information and belief. I understand that the statements herein are made subject to the penalties of 18 Pa.C .S. § 4904 (relating to unsworn falsification to authorities).

3/28/17
Dated

Kenneth S. Dybalski
Vice President - Energy Planning & Technical Compliance
Philadelphia Gas Works

VERIFICATION

I, Denise Adamucci, hereby state that I am Vice President Regulatory Compliance and Customer Programs for Philadelphia Gas Works ("PGW"), I am authorized to make this verification on its behalf, and that the facts set forth in the attached discovery responses which I am sponsoring are true and correct to the best of my knowledge, information and belief. I understand that the statements herein are made subject to the penalties of 18 Pa.C .S. § 4904 (*relating to unsworn falsification to authorities*).

3/28/17
Dated

Denise Adamucci, Vice President
Regulatory Compliance & Customer Programs
Philadelphia Gas Works

VERIFICATION

I, Daniel E. Leonard, Jr. hereby state that I am Director, Budget & Cash Management and Finance for Philadelphia Gas Works ("PGW"), I am authorized to make this verification on its behalf, and that the facts set forth in the attached discovery responses which I am sponsoring are true and correct to the best of my knowledge, information and belief. I understand that the statements herein are made subject to the penalties of 18 Pa.C .S. § 4904 (relating to unsworn falsification to authorities).

3/28/17
Dated

Daniel E. Leonard, Jr.
Director, Budget & Cash Management | Finance
Philadelphia Gas Works

VERIFICATION

I, Daniel Furtek, hereby state that I am Director, Resource Management, Field Operations Department for Philadelphia Gas Works ("PGW"). I hereby verify that the facts set forth in the attached discovery responses which I am sponsoring are true and correct to the best of my knowledge, information and belief. I understand that the statements herein are made subject to the penalties of 18 Pa.C .S. § 4904 (relating to unsworn falsification to authorities).

3/28/17
Dated

Daniel Furtek, Director – Resource Management, Field Operations Department
Philadelphia Gas Works

OSBA Statement No. 1R

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	Docket No. R-2017-2586783
PHILADELPHIA GAS WORKS	:	

Rebuttal Testimony and Exhibit of

ROBERT D. KNECHT

On Behalf of the

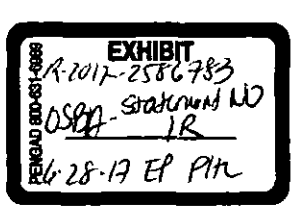
Pennsylvania Office of Small Business Advocate

Topics:

Cost Allocation
Revenue Allocation
Rate Design

Date Served: June 9, 2017

Date Submitted for the Record: _____



REBUTTAL TESTIMONY OF ROBERT D. KNECHT

1. Witness Identification and Summary of Conclusions

Q. Mr. Knecht, please state your name and briefly describe your qualifications.

A. My name is Robert D. Knecht. I submitted direct testimony and associated exhibits earlier in this proceeding, and my qualifications were detailed therein.

Q. What issues do you address in this testimony?

A. This rebuttal testimony responds to the cost allocation and revenue allocation testimony submitted by Bureau of Investigation and Enforcement ("I&E") witness Mr. Kokou Apetoh, Pennsylvania Office of Consumer Advocate ("OCA") witness Mr. Jerome D. Mierzwa, and Philadelphia Industrial and Commercial Gas Users Group ("PICGUG") witness Mr. Richard A. Baudino. This testimony also briefly responds to the testimony of Retail Energy Supply Associations ("RESA") witness Mr. Anthony Cusati, III, with respect to the Administrative Discount in the Company's purchase of receivables ("PoR") program.

Sections 2 and 3 address the issues of cost allocation and revenue allocation respectively. Section 4 addresses the PoR issue.

2. Cost Allocation

Q. What are the positions of the various experts with respect to the classification and allocation of mains costs in this proceeding?

A. The Company supports a 50/50 customer-demand ("CD") method, in which 50 percent of mains costs are allocated based on number of customers and 50 percent are allocated based on design day demand.[1] To my knowledge, the 50 percent factor is based on Company expert Mr. Philip Q. Hanser's judgment and experience. In implementing the CD method, Mr. Hanser includes design day demands and number of customers for Rate

[1] In cost allocation jargon, this means 50% of the costs are *classified* as "customer-related," and 50% are classified as peak demand-related.

IT customers, as well as for one GTS customer that uses the integrated distribution grid.[2] He excludes those factors for the two large GTS customers for whom mains costs are directly assigned.

Mr. Baudino agrees that it is reasonable to include both peak demand and customer components for allocating mains costs, and he does not propose any alternative to the Company's methodology.

Messrs. Apetoh and Mierzwa support a 50/50 peak-and-average ("P&A") method, in which 50 percent of mains costs are allocated based on average day demand and 50 percent are allocated based on design day demand.[3]

In my direct testimony, I rely on the method approved by the Commission at R-00061931, namely a 50/50 average-and excess ("A&E") method, although I expressed concerns about that method overstating costs to larger customers. In the A&E method, 50 percent of mains costs are allocated based on average day demand and 50 percent are allocated based on *excess* demand, where excess demand represents the difference between peak demand and average demand.

Q. Mr. Apetoh cites to the Commission's decision at Docket R-00061931 in support of his proposal to use the P&A method. Is that reasonable?

A. Only in part. The referenced decision explicitly rejected the use of a customer component for classifying mains costs, such as the method advanced by Mr. Hanser in this proceeding. However, that decision explicitly adopted the position advocated by the expert for the Commission's Office of Trial Staff in that proceeding, which recommended the use of a 50/50 weighted A&E method.[4]

---

[2] This customer has reportedly recently ceased taking service. PICGUG-V-1.

[3] Arithmetically, allocating costs based on average day demand is equal to allocating costs based on annual throughput. For that reason, costs which are allocated on the basis of average day demand are often referred to as "commodity-related."

[4] The 50/50 weighting on the A&E method is somewhat non-traditional, in that the A&E approach often uses system load factor as the weighting for the average day component of costs. See, for example, Gas Rate Fundamentals, Fourth Edition, American Gas Association, 1987, pages 144-145.

Q. Please explain the difference between the P&A and the A&E methods.

A. As I indicated, both methods allocate a portion of the costs based on average day demands. However, the P&A method allocates the balance of costs based on *peak* demands and the A&E allocates the balance of costs based on *excess* demands. Arithmetically, peak demand and excess demand can be very different. A 100 percent load factor customer (who uses exactly the same amount of gas on every day) has a significant peak demand, but has excess demand of zero.

Consider the illustrative example shown in Table IEc-R1 below. It consists of two classes, a temperature sensitive "R" class and an industrial process load "I" class. Rate R has average day demand of 1,000 mcf, with a design peak day of 4,000 mcf (a load factor of 25%). Rate I also has average day demand of 1,000 mcf, but has a design peak day of 1,000 mcf (a load factor of 100%).

Table IEc-R1
Illustrative Example of P&A and A&E Allocators

	Rate R	Rate I	Total
Average Day Demand	1,000	1,000	2,000
Average Day Percent	50%	50%	100%
Peak Day Demand	4,000	1,000	5,000
Peak Day Percent	80%	20%	100%
Excess Day Demand	3,000	0	3,000
Excess Day Percent	100%	0%	100%
50/50 P&A Allocator	65%	35%	100%
50/50 A&E Allocator	75%	25%	100%

Note first that the methods produce substantially different results, with the P&A approach allocating significantly lower costs to the weather-sensitive Rate R class than the A&E approach. Second, as shown, both the A&E and the P&A allocators produce allocation results that lie somewhere between the average day allocator and the peak day allocator.

However, the A&E produces results that are much closer to the use of a pure peak day allocator than does the P&A method.

In my view, neither of these methods reasonably reflects the economies of scale of serving larger customers. That these methods consistently fail to produce sensible results for the largest customers in Pennsylvania is evidenced by the widespread use of adjustments and special treatment for large customers. These tactics can take the form of the adoption of direct assignment methods for assigning mains costs to the largest customers (e.g., UGI Gas, UGI PNG, National Fuel Gas Distribution), or utility efforts to segregate distribution mains into small-diameter and large-diameter mains systems (e.g., Columbia Gas, Peoples TWP). Where those methods are not used, it is increasingly common practice in Pennsylvania to set rates for large industrial customers based on negotiations, rather than allocated cost. In my view, this departure from reliance on allocated cost for ratemaking is, at least in part, due to poor cost allocation rather than resulting solely from competitive conditions.

In effect, the largest customers have generally developed a workaround to a flawed allocation method that does not recognize scale economies for serving larger customers. Medium-sized customers, who perhaps should also benefit from some recognition of the economies of scale, are not so fortunate.

Unfortunately, in its decisions in fully litigated matters involving mains classification, the Commission has not been as precise as it might have been in specifying whether the A&E or P&A method should be used. While the Commission approved the use of the A&E method at Docket Nos. R-00061931 and R-00061398, the Commission also generally indicated that it supported the use of average demand in the allocation of costs. Also, as Mr. Mierzwa points out, the Commission apparently approved the P&A method in a much earlier case involving National Fuel Gas in 1994.[5] This lack of clarity has led to some significant debate regarding the interpretation of the decisions in those cases.[6]

[5] OCA Statement No. 3, page 20.

[6] See, for example, Docket No. R-2015-2518438 (UGI Gas), OCA Statement No. 3R, Glenn A. Watkins on behalf of Pennsylvania Office of Consumer Advocate, pages 1 to 6.

I therefore recommend that, if this matter is fully litigated, the Commission be extremely clear as to which method it approves, in the interests of regulatory efficiency. Because the A&E method is more tilted toward design day demand, which of course determines the minimum size of any particular piece of pipe, I conclude that the A&E method is somewhat more consistent with cost causation than is the P&A.

Q. Do the various experts offer cost causation arguments supporting their respective positions for mains cost classification and allocation?

A. Yes. These arguments are generally reasonable, and they address various aspects of cost causation that should, in theory, be recognized in an allocation method for gas mains costs. However, the arguments of each of the witnesses are also incomplete, and produce strong recommendations regarding which method is exactly right. In fact, no method is exactly right, and it is impossible to say which of these traditional methods is the best of a bad lot, given the information available in this proceeding.

As I indicated in my direct testimony, it is important to recognize two aspects of mains cost causation. First, there is the sizing of any particular piece of pipe, and how the economies of scale should be reflected in the allocation of the costs for that single piece of pipe. Second, there is recognizing that different customers require different mains footage to serve, and assessing how economies of scale and scope should be recognized.

Q. Let's start with the first item, allocation of a single piece of pipe. What are the cost causation issues?

A. The pipe itself must be sized to meet the peak demand of all the customers downstream from that pipe. Peak demand is therefore a cost causation factor.

However, for sizing the pipe, there are significant economies of scale, for a couple of reasons. First, the peak day carrying capacity of the pipe increases with (at least) the square of the pipe diameter. Second, the cost of the pipe often increases less than proportionally with the diameter, given the fixed costs of installation. Thus, the cost increase associated with an incremental unit if demand for a particular length of pipe is generally far less than the average cost of the pipe. Mr. Mierzwa demonstrates this basic fact at pages 16-19 of his testimony.

Unfortunately, these economies of scale lead to very different interpretations among the experts as to which classes should benefit from said economies. Mr. Mierzwa argues that, because the incremental costs related to demand are relatively low, the remaining costs should be allocated based on annual throughput. In effect, Mr. Mierzwa concludes that lower load factor customers should, relative to their demands, benefit more from the economies of scale than customers with higher load factors. As smaller customers tend to be more weather-sensitive and have lower load factors than larger customers, Mr. Mierzwa's logic generally leads to providing the benefit of scale economies disproportionately to smaller customers.

In contrast, the proponents of the CD method often argue that the economies of scale should disproportionately benefit larger customers, because the customers are, well, larger, and therefore contribute more to the economies of scale. These experts therefore conclude that fixed costs that do not increase with the pipe's size should be allocated based on customer count, to effectively assign the economies to larger customers. (The "minimum system" and "zero-intercept" methods for classifying mains costs rely, at least in part, on this logic.) While this argument may appear on the surface to have logical merit, it does not really hold up very well when applied to a single piece of pipe. In the case of a piece of pipe that serves one large industrial customer representing 80 percent of the downstream load and 100 residential customers representing 20 percent of the downstream load, it might be argued that the large customer should be given a significant share of the benefit of the scale economies that it brings, by applying the CD method to the cost of that piece of pipe. The CD method would reduce the relative cost for the larger customer below 80 percent and increase it above 20 percent for the smaller customers. But suppose instead there's a similar piece of pipe that serves one large customer representing 20 percent of the load, and 400 residential customers representing 80 percent of the load. Under those circumstances, and following the same logic, a credible case can be made that the residential *class* should be given a disproportionate share of the benefit of the economies of scale that it brings to the party. That would then require some method such as the P&A that assigns a disproportionate share of costs to the large industrial customer, which contributes less to the economies of scale in this example.

Obviously, both methods cannot be used for all mains. For a single piece of pipe, the most logical method is to allocate costs based on peak demand use to customers downstream of that piece of pipe. In effect, each use of demand on the pipe contributes equally to the economies of scale, regardless of whether that demand comes from a small customer or a large customer. Moreover, costs are only assigned to customers who use the pipe. If the pipe is in a residential neighborhood, assign all the costs to the Residential class. If the pipe serves only an industrial customer, assign the costs to that customer. If it's both, split the costs based on the downstream peak demands of the customers, because that is what that piece of pipe must be sized to meet.

Thus, for allocating the costs of a single piece of pipe, neither average day demand nor number of customers is a useful concept. The pipe must be sized to meet downstream peak demand.

Q. What of cost causation items related to footage of mains?

A. Mains footage is determined based on how the distribution grid must be developed and expanded to interconnect all the customers. The parties generally accept that customers must be interconnected, but have differing views on how that affects cost causation.

Mr. Apetoh (page 16) acknowledges that cost causation should reflect the requirement to interconnect customers, but does not take on the issue as to whether mains footage is more related to demand, throughput or number of customers.

Mr. Baudino (page 6) recognizes the need to interconnect customers, and recommends the use of the CD method, without really explaining why or how the Company's method reflects the actual footage necessary to serve different types of customers.

Mr. Mierzwa (page 8) makes the sensible observation that it is not reasonable to conclude that mains footage is solely related to number of customers, since it is likely that larger customers will require more footage of mains to interconnect than will smaller customers. However, Mr. Mierzwa does not seriously address the converse issue, which is that there are likely to be economies of scale in mains footage for serving larger customers. That is, it generally does not require 100 times as much mains footage to serve a medium commercial customer than to serve 100 residential customers with an equivalent overall

peak load.[7] Similarly, it is not clear that it takes five times the mains footage to serve the average commercial customer than it takes to serve five average residential customers with an equivalent load, particularly when commercial customers tend to be geographically concentrated in business areas.

The short answer, however, is that determining cost causation for footage is heavily dependent on the location and size of the customer base, as well as the layout of the existing gas distribution infrastructure. Experts in rate proceedings can all hypothesize about the economies of scale and the concentration of business customers and the need to extend mains to serve large industrial customers, but in the absence of a detailed modelling of the system, this amounts to little more than speculation.

Q. In light of this discussion, what is your view regarding mains cost causation?

A. The fundamental problem in cost allocation for gas distribution systems is that no method can be shown to be the best, and the CD and P&A methods generally produce enormously divergent results. And thus the debate grinds on endlessly.

My view is that the only resolution to this endless debate is to move toward a direct assignment method for all customer classes, based on detailed system modeling concepts. Under such an approach, a cost is estimated for each length of main (based on material, diameter, pressure and length) and the cost for that length of main is assigned only to customers downstream of that main, in proportion to design day demands on that length of main. While such a method would have been unduly complicated and impossibly time-consuming 20 years ago, gas distribution system modeling is, I believe, improving to the extent that such an approach may be feasible. Of course, such a method would still need to sort out some specifics, notably the treatment of excess capacity for each piece of main (particularly for under-used assets) and issues related to replacement versus book costs. Nevertheless, such a method should be much more defensible than the CD, the P&A, the A&E and the like.

[7] At page 7, Mr. Mierzwa offers an example wherein the length of main required to serve a small factory is exactly the same as the length of main required to serve 10 smaller customers with equivalent overall load. Of course, similar hypothetical examples could be posited where the small factory requires substantially less footage than 10 smaller customers. The only way to determine which example is more representative for the entire distribution system is to explicitly model the systems.

Until such time as such a method becomes feasible (and a utility is willing to undertake the work necessary to implement it), I simply rely on Commission precedent, on the grounds that no method is demonstrably better than any other.

Q. Turning back to the current world where gas utilities do not know which pipes serve which customers, do the cost allocation models relied upon by Mr. Mierzwa and Mr. Apetoh represent a reasonable interpretation of the P&A method?

A. No, they do not. Because the Company is unwilling to provide a working version of its model in this proceeding, Company witness Mr. Hanser offered to run simulations based on intervenor requests. Both OCA and I&E requested 50/50 P&A simulations, but they appear to have left the details of implementing that method to Mr. Hanser.[8]

In implementing the P&A, Mr. Hanser makes an error with respect to the treatment of interruptible service loads (including both Rate IT and Rate IS, although the impact for Rate IS is small) loads. In his preferred CD class cost of service study ("CCOSS"), Mr. Hanser sensibly treats Rate IT customers as firm (as they do not appear to ever be interrupted for distribution reasons), and therefore assigns mains costs to those customers (within the combined IT/GTS class) based half on customer count and half on peak demand. However, when it comes to preparing a P&A CCOSS, Mr. Hanser assumes that there is no average day demand from those customers, but assumes that a peak demand remains.[9] Conceptually, it makes no sense at all to treat Rate IT customers as if they have a peak demand which must be met, but then assume there is no throughput.

[8] The I&E request is at I&E-RS-21-D. The OCA request is at OCA-VII-7, which requested a modified version of the response to the I&E request. However, Mr. Mierzwa's Exhibit JDM-1 appears to rely on the response to I&E-RS-21-D. This issue was further complicated by the Company's recent filing of a revised response to OCA-VII-7 on 5 June 2017.

[9] This can be seen in the attachment to I&E-RS-21-D as follows. At page 27 of 96 of the file, the allocation of distribution demand costs are shown, including mains costs. This shows total system mains costs of $386.88 million, of which $51.60 million are assigned to the GTS/IT class. This indicates that significant demand-related mains costs are allocated to the Rate IT class. At page 33 of 96 of the file, the allocation of distribution commodity costs are shown, including mains costs. (As noted above, "commodity-related" is another term for the costs which are allocated on the basis of average demand.) Again, total commodity related mains costs are $386.88 million, reflecting the 50/50 split in the P&A between demand and commodity. However, this page shows zero commodity-related mains costs being allocated to Rate IS and Rate IT.

Mr. Hanser may have recognized this error, in that the Company recently filed a revised P&A CCOSS in response to OCA-VII-7, on June 5, 2017.[10] This CCOSS includes both peak demand and average-demand costs for the GTS/IT class. However, this CCOSS appears to also be flawed, albeit in the opposite direction. In this new version of the P&A CCOSS, Mr. Hanser concludes that, for mains cost allocation, some 36.3 percent of the commodity-related costs should be allocated to the GTS/IT combined rate class.[11] In so doing, however, Mr. Hanser appears to have incorrectly included the throughput requirements of the two large GTS customers who are served from the directly assigned mains. In effect, these GTS customers are being directly assigned costs for all mains from which they take service, *plus* a share of the mains average demand costs. Therefore, in this version, the costs assigned to the combined GTS/IT class are overstated, rather than understated. Thus, this version of the CCOSS is similarly inappropriate for use in revenue allocation in this proceeding.

In effect, the costs assigned to the Rate IT class in the P&A studies relied upon by Mr. Mierzwa and Mr. Apetoh are substantially understated, and thus those model runs do not represent a sensible basis for revenue allocation, even if the Commission determines that the P&A method is more appropriate than the A&E method it approved for PGW in 2007.

Q. Moving on from the issue of mains classification, Mr. Baudino argues that it is inappropriate for the Company to combine the GTS and the IT classes for cost allocation purposes. Do you agree?

A. Yes. For that reason, I made an effort to segregate the two classes in the CCOSS filed as Exhibit IEc-3 to my direct testimony. However, the results of my analysis do not confirm Mr. Baudino's hypothesis about the implications of the Company's method. Mr. Baudino understandably expresses the concern that GTS customers represent a significant portion of the combined GTS/IT throughput (on the order of 48 percent), but they provide only small share of the current revenues (on the order of 10 percent). He therefore

[10] To my knowledge, Mr. Hanser has not updated his response to I&E-RS-21-D.

[11] See page 33 of 96 of the pdf Attachment B to OCA-VII-7, labeled Exhibit PQH-3E, page 1 of 6.

concludes that it is the GTS customers that cause the class rate of return for the combined class to fall far below system average.

What Mr. Baudino's analysis does not reflect is that the mains costs assigned to the GTS/IT class for the vast majority of the GTS load are directly assigned based on the actual assets used to serve those customers.[12] As the GTS customers are located in close proximity to pipeline gate stations, the plant costs incurred to serve those customers are minimal, and are, in fact, already fully depreciated. Thus, while the per-mcf revenues for the GTS customers are lower than those for IT customers, so too are the costs to provide service.

As shown in Exhibit IEc-3, my analysis indicates that both the IT and the GTS classes produce revenues that fall well short of allocated costs, based on the Commission's 50/50 A&E methodology for mains cost allocation.

Q. Mr. Baudino also argues that IT customers incur costs to maintain alternative fuel capability, and that this capability should be reflected in the CCOSS. Please comment.

A. I agree that Rate IT does currently require each customer to demonstrate to PGW's satisfaction that "it can manage it business without the use of Gas during periods of curtailment or interruption," and that PGW has interpreted that to require alternative fuel capability.[13] I also agree that, in certain circumstances, an interruptible customer can provide significant value to a gas distribution utility, by allowing the utility to avoid *distribution system* costs that it would otherwise incur if the customer could not be interrupted. However, that value is substantially dependent on the physical location of the interruptible customer, and the specific distribution assets that are used to provide service to the customer.[14] For that reason, I argue in my direct testimony that the value

[12] More precisely, it appears the Company directly assigns mains costs for the two large GTS accounts, and includes peak demands for the third GTS customer in the allocation factor for mains costs. As that third customer has subsequently ceased operations, all GTS customers are now served through directly assigned mains. See PICGUG-V-1 and PICGUG-V-2.

[13] PGW Gas Service Tariff page 111; PGW Statement No. 7 at 26.

[14] In its response to OSBA-I-31, the Company confirms this view, in that it indicates that there a variety of potential indications related to customers switching from interruptible to firm service, all of which would require more detailed study.

associated with the customer interruptibility should be recognized on a customer-by-customer basis in the rate negotiation process, rather than by trying to develop a one-size-fits-all cost allocation method that somehow reflects each individual customer's value for interruptibility. I therefore recommended that Rate IT be recast as a large customer transportation service (which I called "LT"), with negotiated rates that reflect the value of interruptibility that each customer provides.

Nevertheless, Mr. Baudino raises a reasonable issue regarding the mandatory requirement for alternative fuel capability. It makes no sense to require a large customer to maintain alternative fuel capability, if the ability to interrupt that customer provides no benefit to the system.

Thus, if my recommendation to move to a Rate LT is adopted, there would be no need for mandatory alternative fuel capability to take service in the class. For those customers that provide a significant *distribution system* cost benefit from being interruptible, the Company may determine that alternative fuel capability is necessary. However, if it does so, the Company would similarly need to recognize the costs imposed on the customer by that requirement in arriving at a negotiated rate for distribution service.

Q. Do you have any other observations regarding Mr. Baudino's testimony with respect to cost allocation issues?

A. I do. Mr. Baudino strongly supports the use of cost-based tariff rates for Rate IT customers, and he correctly indicates that the Commission required the Company to adopt cost-based rates. However, under the Company's cost allocation methodology, the costs for Universal Service Programs are allocated among the rate classes on the basis of annual volume. Interruptible service customers have traditionally been exempted from a share of those costs, because the rates were generally being set based on the cost of alternative fuels. Under those conditions, allocating Universal Service costs would have no impact on rates, since the rates were market-based. Thus, under that ratemaking regime, these customers were exempted from that cost responsibility.

However, as Mr. Baudino correctly observes, the cost of alternative fuels are currently far above the delivered cost of gas. Mr. Baudino also correctly observes that the

Commission has mandated cost-based rather than market-based rates for Rate IT service. Moreover, the decline in natural gas market prices has served to reduce the cost of Universal Service programs, because the percentage of income revenues represents a larger share of the cost to serve CRP customers.

In my direct testimony, I proposed that no universal service costs be allocated to non-residential customers, on the basis of Commission policy elsewhere and cost causation. However, if my proposal to shift cost responsibility for the universal service programs to the residential class is rejected, there is no longer any reason why Rate IT customers should not be assigned a proportionate share of these costs in the CCOSS. Thus, if the Commission rejects my proposal, I believe that for fairness and consistency reasons, the USEC should apply to all rate classes that are subject to cost-based rates, including Rate IT.

Of course, I retain my view that universal service costs should be assigned to the residential class, and not to *any* of the non-residential rate classes.

3. Revenue Allocation

Q. What cost allocation analyses do the various analysts rely upon in developing their revenue allocation recommendations?

A. Mr. Baudino generally relies upon the Company's CCOSS, subject to his concerns about the joint treatment of GTS and IT customers. Mr. Mierzwa and Mr. Apetoh rely on the CCOSS version prepared by Mr. Hanser in response to I&E-RS-I-21-D. I rely on the CCOSS in Exhibit IEc-3.

Q. Other than your model in Exhibit IEc-3, do the other CCOSS models provide reasonable cost bases for revenue allocation in this proceeding?

A. No. As detailed above, the Company's CCOSS relied upon by Mr. Baudino is not consistent with Commission precedent, and, as Mr. Baudino recognizes, fails to reasonably segregate Rate GTS and Rate IT customers. The CCOSS relied upon by Messrs. Apetoh and Mierzwa is also inconsistent with Commission precedent, and fails to reasonably implement the P&A cost allocation methodology upon which it is purportedly based.

Moreover, in my direct testimony, I identified an assortment of errors and inconsistencies in the Company's CCOSS, both major and minor. These problems continue to apply to all of the CCOSSs relied upon by the parties to this proceeding. The elephant in the room, of course, is the allocation of universal service costs. As all of the CCOSSs relied upon by the other parties incorrectly allocated universal service costs to firm service rate classes, and allocate no universal service costs to the Rate IT class, none of these studies is consistent with cost causation or with Commission policy as it applies to Pennsylvania utilities other than PGW.

As such, I conclude that none of these CCOSSs serve as a reasonable basis for revenue allocation.

Q. Putting aside the issue of cost allocation, what are the various parties' positions with respect to the assignment of the rate increase to the Rate IT class and the potential for rate shock?

A. The Company appears to propose an increase of $5.5 million, which it asserts represents a 50.3 percent increase.[15] The Company would be free to further increase those rates subject to negotiations and a cap equal to firm service rates, at the later of the expiry of Rate IT customers' current contracts or three years from the adoption of the rates proposed in this proceeding.[16]

Mr. Baudino proposes to limit that to the system average rate increase, which he calculates at 14.2 percent, producing a $1.5 million increase.

Mr. Apetoh proposes an increase of $2.57 million, or about 23.5 percent. Mr. Apetoh bases his recommendation of the P&A CCOSS upon which he relies, rather than any explicit consideration of rate gradualism.[17]

---

[15] I was unable to reconcile Mr. Hanser's proof of revenue calculations at Exhibit PQH-9A. My calculation of the impact of the proposed rates was a $5.7 million increase, or about 53 percent.

[16] PGW Statement No. 7 at 28.

[17] For the purpose of calculating the percentage increase from the recommendations of Messrs. Apetoh and Mierzwa, I assume that the increase that they propose for the combined GTS/IT class would all be borne by Rate IT, as is the Company's proposal.

Based on gradualism considerations, Mr. Mierzwa proposes a $3.45 million increase for Rate IT, which would be about 32 percent.

In my direct testimony, I accepted the Company's proposal, although I acknowledged that it would violate the normal rules of thumb for rate gradualism.

Q. Does the testimony of the various witnesses affect your position regarding revenue allocation to this class?

A. I retain my concern that the Company's proposal would violate the normal rules for rate gradualism, and I retain my concern that some Rate IT customers have been able to receive virtually firm service at rates far below the cost for firm service, as well as avoiding a variety of other PGW charges. However, in my direct testimony, I left open the possibility that the Company could limit increases to certain customers in the case of hardship. In that light, I think it reasonable to limit increases for long-term Rate IT customers. Thus, for those current Rate IT customers who were taking IT service at the time of the Company's last base rates case, I agree that the normal principles of rate gradualism should apply. Thus, I recommend that the rate increase imposed on these long-term continuing customers be limited to no more than twice the system average.

At this time, I do not have the information needed to estimate the revenue impact of this modification. However, I suggest that the shortfall created by this adjustment be spread among all the firm service classes, in proportion to current rate revenues. This would generally serve to maintain the progress toward cost-based rates built into my original proposal.

4. Rate Design: Purchase of Receivables Administrative Discount

Q. Please summarize the issue in this proceeding regarding the Administrative Discount to the Company's PoR program.

A. In purchasing receivables from competitive natural gas suppliers ("NGSs") for customers with annual throughput below 5,000 mcf, the Company applies a discount factor consisting of a class-specific provision for uncollectibles costs and an additional "Administrative Discount" of 2.00 percent. Mr. Cusati opines that no other natural gas distribution company ("NGDC") includes such an administrative discount in the PoR program, and that the costs of the PoR program are all fixed. He recommends that this discount be eliminated.

Q. Please provide the background for the Company's PoR program.

A. The Company's PoR program was established as a result of the settlement ("NGS Settlement") of a stakeholder collaborative process at Docket Nos. R-2008-2073938 and R-2009-2139884, convened to address issues of the potential for an alternative default service supplier and a PoR. The NGS Settlement was submitted on August 30, 2013, recommended for approval in a Recommended Decision on December 19, 2013, and adopted by the Commission by order entered February 20, 2014. I participated on behalf of OSBA in that stakeholder collaborative process. Parties to the NGS Settlement included PGW, OCA, OSBA, Interstate Gas Supply, Inc., Dominion Retail, Inc. and Hess Corporation. Based on my recollection, the NGS Settlement was the result of an extensive and detailed negotiation process, and was based on specific circumstances facing PGW.

The NGS Settlement established the 2.00 percent Administrative Discount as a means by which NGSs would contribute a portion of the incremental costs of adopting a PoR program. Specifically, the Administrative Discount was designed to recover:

- $500,000 of the estimated $1,000,000 in incremental consumer education expenses;
- $165,800 of the estimated $1,658,000 in consolidated billing expense;
- $35,000 of the estimated $108,000 in EDI system upgrade costs; and

- $65,000 for EDI transactions fees.

The NGS Settlement stipulated that the Administrative Discount would remain in effect until the amounts were recovered (with no interest charges).

Q. What is the OSBA's legal position with respect to the NGS Settlement and the Administrative Discount?

A. I am advised by counsel that the OSBA acknowledges that the NGS Settlement contained the following disclaimer language:

> *This Settlement is presented without prejudice to any position which any of the Joint Petitioners may have advanced and without prejudice to the position any of the Joint Petitioners may advance in the future on the merits of the issues in future proceedings, except to the extent necessary to effectuate the terms and conditions of this Settlement.*

Nevertheless, I am further advised by counsel that the OSBA believes the NGS Settlement was the result of a determined effort among the parties undertaken at a not insignificant cost, and that the terms of the NGS Settlement were reflective of the specific circumstances facing PGW and the parties to the agreement. Thus, the OSBA will respectfully submit in its briefs in this matter that the terms of the NGS Settlement should remain in place, as Mr. Cusati has not explained why they are no longer relevant. Of course, it remains the obligation of PGW to demonstrate that the revenues it has earned from the Administrative Discount have not yet exceeded the costs contemplated in the NGS Settlement, pursuant to the terms of that agreement.

Based on my experience, if the results of such stakeholder collaborative processes are to be contested and possibly overturned by Commission decision, I conclude that the incentive for parties to participate reasonably in such processes will be severely weakened.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

EXHIBIT IEc-R1

REFERENCED INTERROGATORY RESPONSES

NOT PREVIOUSLY IDENTIFIED

I&E-RS-I-21-D

OSBA-I-31

OCA-VII-7 Attachment B

PICGUG-V-1

PICGUG-V-2

Note: Due to both the volume and the electronic nature of the responses and many attachments to the referenced interrogatories, copies of the responses are not attached to this testimony. I am advised by counsel that OSBA will undertake the necessary steps to have these responses entered into the record in this proceeding during the hearings in this matter.

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Bureau of Investigation & Enforcement ("I&E") in
Docket No. R-2017-2586783

Request: I&E-RS-21-D Please provide a Cost of Service Study in MS Excel or similar formats with all the formulae live, which allocates 50% of Mains to the Demand Allocator and the remaining 50% to the Commodity Allocator.

Response: See I&E RS-21-D showing the CCOSS results for the requested revised classification of mains. The Cost of Service Model is a proprietary model. While live Excel spreadsheets are not provided, I provide detailed printouts of the exhibits that include all information needed to validate computations.

I do note that a classification of mains as 50% demand and 50% commodity is not appropriate. Such a classification implies that these costs vary with the amount natural gas sold to, or transported for, customers. The appropriate method classifies mains as demand and customer, and the results of this approach are provided in the Cost of Service Study submitted with my direct testimony.

Response
Provided by: *Philip Q Hanser, Principal, The Brattle Group*

Dated:

Response of Philadelphia Gas Works ("PGW")
to the Interrogatories of the Office of Small Business Advocate ("OSBA"), Set I in
Docket No. R-2017-2586783

Request: OSBA-I-31 Reference PGW Statement No. 7, pages 27 to 37, IT Rates:

A. Please explain why the Company does not allocate costs separately to Rate GTS and Rate IT customers in the cost allocation study.

B. Please explain how design day demand for Rate IT customers is reflected in the cost allocation study with respect to mains cost allocation. If design day demand for Rate IT customers is not included in the cost allocation study, please provide the Company's estimate of test year design day demand for Rate IT customers, as well as the maximum actual daily demand from Rate IT customers served by PGW over the past three years.

C. Please specify the "equivalent firm transportation rate" that would serve as the upper bound of the rate range for Rate IT customers.

D. Please estimate PGW's investment requirement to provide service to Rate IT customers if they were to convert to firm service, with supporting calculations. In effect, what is PGW's avoided cost associated with the interruptibility of Rate IT customers.

E. Regarding the discussion at the top of page 30 regarding the need to interrupt Rate IT customers, are rate IT customers obligated to deliver their daily requirements on peak days to the city gate? If so, please explain why Rate IT customers may be constrained by LNG capacity.

F. Also regarding the discussion at the top of page 30 regarding the need to interrupt Rate IT customers on peak days, please specify the costs that are avoided by the interruption. Specifically, are PGW's avoided costs related to the interruptibility of Rate IT customers a result of a need to increase deliverability capacity to the city gate, or are the avoided costs related to a need to expand or modify the distribution system?

Response:

A. I have treated Rate GTS and Rate IT as a single class at the direction of the Company. The Company provided this direction because, at the time of filing, there were only three GTS customers (which are large volume legacy transportation customers). Additionally, as of the date of this response, only

two GTS customer remain because one ceased operations in April 2017.

B. Design day demand for Rate IT does not enter into my computations. PGW does not include any demand from interruptible customers when calculating its design day demand and, therefore, does not estimate design day demand for interruptible customers.

C. The current delivery charge for firm transportation customers per MCF is as follows:

Commercial GS	$4.5984
Industrial GS	$4.5332
Phila. Housing Authority	$4.1101
Municipal (MS)	$3.3661

D. If Rate IT customers converted to firm service, there would be an increase need of system supply. This increase in volume would be met with a combination pipeline firm transportation, expansion of city gate capacity, expansion of PGW distribution system infrastructure and/or additional LNG capability. The exact mix would need additional studies to finalize.

E. Rate IT suppliers operate within PGW's Tariff Rate DB. There is a Daily Imbalance Surcharge and Monthly Imbalance Reconciliation. When PGW firm service customer send out demand exceeds PGW pipeline and off-site storage deliverability, requiring LNG to supplement firm send out, a Rate IT supplier that under delivers during these periods (meaning delivers less than their customers' actual demand), LNG would be required to meet this demand.

F. The costs are those identified in Part D.

Response Provided by: Kenneth S. Dybalski, Vice President - Energy Planning & Technical Compliance, PGW
Philip Q Hanser, Principal of The Brattle Group
Douglas A. Moser, Executive Vice President, Acting Chief Financial Officer, PGW

Dated: April 20, 2017

RESPONSE OF PHILADELPHIA GAS WORKS ("PGW") TO THE INTERROGATORIES OF PHILADELPHIA INDUSTRIAL AND COMMERCIAL GAS USERS GROUP ("PICGUG"), SET V
DOCKET NO. R-2017-2586783

Request: PICGUG-V-1: Please refer to PGW's response to PICGUG Set III-1(a), Attachment A. Please explain why only 1 GTS customer is included, since there were 3 GTS customers at the time the Company developed its class cost of service study.

Response: The 1 GTS customer included in the response to PICGUG III-1(a) is the GTS customer that ceased operations in April 2017. For the purposes of this response, I will refer to that customer as Customer A. The 2 other GTS customers are Customer B and C. Customer A was included in the response to PICGUG III-1(a) because it is provided service via PGW's interconnected distribution system. Customers B and C were not included in the response to PICGUG III-1(a) because they are served on a separate individual gas main that is not part of PGW's distribution system.

Response Provided by: Kenneth S. Dybalski, Vice President - Energy Planning & Technical Compliance, PGW

Dated: June 1, 2017

RESPONSE OF PHILADELPHIA GAS WORKS ("PGW") TO THE INTERROGATORIES OF PHILADELPHIA INDUSTRIAL AND COMMERCIAL GAS USERS GROUP ("PICGUG"), SET V
DOCKET NO. R-2017-2586783

Request: PICGUG-V-2: Please provide the Mcf sales associated with total GTS revenues of $1,249,147 included in PGW's class cost of service study.

Response: Please see the response to PICGUG-V-1. The total Mcf related to GTS revenues of $1,249,147 = 13,176,839. Please note that, as explained in response to PICGUG-V-1, Customer A is no longer being served by PGW because it has ceased operations. The following are the sales volumes and revenue associated with Customers A, B and C included in the CCOSS:

	Mcf	Revenues
Customer A	1,119,628	$ 179,341
Customers B and C	12,057,211	$ 1,069,806
TOTAL	13,176,839	$ 1,249,147

Response Provided by: Kenneth S. Dybalski, Vice President - Energy Planning & Technical Compliance, PGW

Dated: June 1, 2017

OSBA Statement No. 1-SR

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	**Docket No. R-2017-2586783**
PHILADELPHIA GAS WORKS	:	

Surrebuttal Testimony and Exhibits of

ROBERT D. KNECHT

On Behalf of the

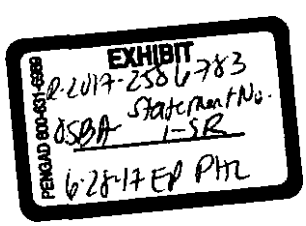
Pennsylvania Office of Small Business Advocate

Topics:

Cost Allocation
Revenue Allocation
Rate Design

Date Served: June 22, 2017

Date Submitted for the Record: _____



SURREBUTTAL TESTIMONY OF ROBERT D. KNECHT

1. Introduction

Q. Mr. Knecht, please state your name and briefly describe your qualifications.

A. My name is Robert D. Knecht. I submitted direct testimony, rebuttal testimony and associated exhibits earlier in this proceeding, and my qualifications were detailed therein.

Q. What issues do you address in this testimony?

A. This surrebuttal testimony addresses issues of cost allocation, revenue allocation and rate design.[1] It responds to aspects of the rebuttal testimony of:

- Philadelphia Gas Works ("PGW" or "the Company") witness Mr. Philip Q. Hanser;
- PGW witness Mr. Kenneth S. Dybalski;
- PGW witness Mr. Douglas A. Moser;
- Pennsylvania Office of Consumer Advocate ("OCA") witness Mr. Jerome D. Mierzwa;
- OCA witness Mr. Roger D. Colton;
- Tenant Union Representative Network and Action Alliance of Senior Citizens of Greater Philadelphia ("TURN") witness Mr. Harry S. Geller;
- Philadelphia Industrial and Commercial Gas Users Group ("PICGUG") witness Mr. Richard A. Baudino.

I also update my cost allocation and revenue allocation recommendations based on information that became available after the preparation of my direct testimony, and in response to the testimony of other parties. Finally, I clarify my recommendations with

[1] This testimony does not address revenue requirement issues. Mr. Golden's rebuttal refers to my direct testimony regarding one potential regulatory strategy for PGW, which I denoted "starve the beast." I accept Mr. Golden's description of that term as irreverent.

respect to my proposal for modifying the Rate IT class to a Rate "LT" class, in response to Mr. Baudino's rebuttal testimony.

2. Cost Allocation

Q. What cost allocation issues do you address in this surrebuttal testimony?

A. I address the following issues relating the class cost of service studies ("CCOSSs") used in this proceeding:

- Allocation of universal service costs;
- Allocation of mains costs;
- Allocation of meters costs;
- Allocation of services costs;
- Allocation of costs to Rate IT and Rate GTS customers.

In my direct testimony, I identified a set of other errors and inconsistencies in the Company's CCOSS. At page 13 of his rebuttal testimony, Company witness Mr. Hanser expresses disagreement with these findings, but he offers no rationale for his disagreement. He further indicates that he reserves "the right to do so at a later time if one or more of them were to become important in this proceeding." I am advised by counsel that rebuttal must be presented in rebuttal testimony, and that OSBA will object to any effort to submit rebuttal at a later date. With the exception of one item raised by Mr. Mierzwa which I address below, no other party raises objections to these findings.

2.1 Universal Service Costs

Q. In general, what are the arguments raised in opposition to your proposal to allocate all costs associated with the Company's Universal Service and Energy Conservation ("USEC") Surcharge to the residential class?

A. The responses generally fall into four categories:

1. The USEC Surcharge includes costs for customers other than residential customers;

2. The Commission has rejected this proposal in the past;

3. Public policy and regulatory policy considerations support allocation of universal service costs to rate classes other than the residential class;

4. PGW is different from all other Pennsylvania utilities.

Also, at page 15 of his rebuttal testimony, Mr. Baudino agrees with my recommendation that universal service costs be recovered fully from the Residential class, on the grounds that universal service costs are incurred only for residential customers.

Q. Please address the first general argument.

A. OCA witness Mr. Colton argues that some programs and costs in the USEC are related to residential master-metered multi-family customers who take service under non-residential tariffs.

In this respect, I believe that Mr. Colton is correct. Including these costs in the USEC Surcharge was addressed at Docket No. P-2014-2459362. In that proceeding, Mr. Colton opposed including those costs in the USEC Surcharge and argued that they should be recovered from the class which benefits from those costs. I submitted rebuttal testimony in support of this cost allocation position.[2] I retain that view. Those costs should be allocated to the class which benefits from the program. I have made an estimate of the impact of that modification in the update to my CSAS attached as Exhibit IEc-S1.[3] In the overall context of PGW's universal service costs, this cost item is quite small.

Q. What is your general response to the second argument, namely that the Commission has rejected this proposal in the past?

A. The following witnesses make this argument:

- Mr. Colton at page 7.

[2] See OSBA Statement No. 2, Docket No. P-2014-2459362, submitted July 21. 2015.

[3] Based on my workpapers from the Company's last EE&C proceeding, the estimated costs for the low-income multi-family programs averaged about $250,000 per year over the five year period in the forecast. I therefore excluded those from the other universal service costs, and assigned them to the GS Commercial class.

- Mr. Dybalski at page 3.

Based on my review of this testimony, these witnesses do not address *why* the Commission rejected the proposal to recover universal service costs from the residential class in the past, and they ignore my direct testimony on this subject. Based on the decisions that I reviewed, I note first that the Commission never explicitly adopted the policy of allocating universal service costs to (some) non-residential customers – it continued the Company's policy adopted prior to Commission regulation of PGW. Second, in reviewing my proposal in 2007 to apply normal Commission policy in this respect to PGW, the Commission did not reject my proposal based on cost causation or economic policy – in fact, the Commission recognized that my proposal to recover the costs from the residential class was consistent with its policy. It rejected this proposal based on the rate shock implications of shifting the costs to the Residential class. In the Company's 2007 base rates case, when this issue was last reviewed by the Commission, the Commission stated that its decision was based on principles of rate gradualism and avoiding rate shock, and not based on policy or cost causation. The decisions by the ALJs and the Commission in that proceeding are quoted extensively at pages 34 to 35 of my direct testimony.

As I read this decision, the Commission recognized that PGW's policy in this respect was inconsistent with cost causation, but determined that the *Lloyd* decision (which established cost as the polestar criterion for setting rates) permitted consideration of rate gradualism and avoidance of rate shock, and that was the basis for continuation of the policy at that time.

Moreover, the Commission's most recent decision on this subject came at a time when the USEC Surcharge was on the order of $2.30 per mcf and wellhead natural gas prices were approximately $6.80 per million BTU.[4] The Company forecasts the test year USEC Surcharge to be $1.13 per mcf, and the wellhead price of gas is currently $3.12 per million BTU. My proposal would result in an increase in the Residential USEC

[4] The USEC Surcharge value is shown in my direct testimony at Exhibit IEc-7 in Docket No. R-00061931. The wellhead price of gas in mid-2007 is based on Henry Hub reported values from DOE/EIA for June/July. https://www.eia.gov/dnav/ng/hist/rngwhhdm.htm

Surcharge to approximately $1.56 per mcf, well below the amount residential customers were paying in 2007. In addition, the natural gas costs faced by residential customers are currently far lower than they were when the Commission reached its conclusion regarding rate shock.

Finally, I note that in my revenue allocation proposal, I assign the same increase to the Residential rate class as proposed by the Company, *inclusive* of the effect of shifting USEC responsibility to the Residential class. As shown in Exhibits IEc-S2, the Company's proposed average revenue from residential customers, excluding GCR costs at the Company's USEC Surcharge rate of $1.13 per mcf, is $418.3 million. Under my proposed Residential USEC Surcharge rate of $1.56 per mcf, the total Residential revenues excluding GCR costs is that same $418.3 million. In effect, the Company assigns an increase of $59 million to the Residential class with no change to the USEC mechanism, and I assign an increase of $59 million to the Residential class inclusive of the change in the USEC mechanism.

Thus, my proposal results in no more rate shock than that proposed by the Company itself, and it implies a rate increase for the Residential class that is only moderately above system average.

While legitimate arguments can be raised for allocating universal service costs to non-residential rate classes, the rate shock argument simply does not apply to this proceeding.

Q. In this respect, Company witness Mr. Dybalski cites to Commission Orders at Docket Nos. R-00005654, M-00021612, and R-00061931. Please comment on the relevance of these decisions.

A. In the 2005 to 2006 timeframe, the Commission undertook a review of the appropriate recovery mechanisms for universal service costs, and concluded that universal service costs should be recovered with reconcilable charges to residential customers.[5] PGW participated actively in that proceeding, but the Commission did not include any particular language citing PGW as an exception, other than to observe that PGW's policy

[5] Final Investigatory Order, Pennsylvania Public Utility Commission, Docket No. M-00051923, Order Entered December 18, 2006, pages 31-31.

was adopted prior to Commission jurisdiction. Thus, I am advised by counsel that the early decisions cited by Mr. Dybalski are of little relevance.

Nevertheless, I reviewed the orders on the Commission's website related to Docket No. R-00005654, since Mr. Dybalski failed to identify a specific decision.[6] I was unable to identify any explicit consideration of the issue of universal service cost recovery in those decisions.

I also reviewed the Commission's Order Entered March 31, 2003 at Docket No. M-00021612 (as Mr. Dybalski failed to identify a specific order upon which he relied). The Commission's decision stated:

> *These costs have traditionally been included in PGW's GCR and that such a cost allocation would involve massive cost shifting between classes prohibited by Sections 2211 (e) and (h) of the Act. This is a restructuring proceeding and not a base rate case. Therefore, the record does not contain a cost study that would support a shift in rate design.*

Thus, in this proceeding, the Commission merely declined to change the (then) existing methodology because the Restructuring Act mandated that there be no cost shifting. This is hardly a clear endorsement of PGW's approach.

Finally, Mr. Dybalski's reference to Docket No. R-00061931 is fully addressed in my direct testimony at pages 35 to 36 and discussed again above. The Commission's decision in that matter is based on the potential for rate shock, and not based on any policy or cost causation rationale.

Q. Mr. Dybalski claims that your proposal would result in rate shock, and shift "an additional $11.6 million to the residential class." Is that accurate?

A. No, it is not. My allocation of the Company's proposed rate increase to the Residential class, *inclusive* of the effects of the change in the USC, is identical to that of the Company. To demonstrate specifically how this could be implemented, I include a proof of revenue with my proposed revenue allocation in Exhibit IEc-S2. As shown, my proposal would involve a significant reduction in the Residential delivery charge relative

[6] At that docket, I reviewed orders entered November 22, 2000, December 20, 2000, and February 22, 2001.

to the Company's proposal, offset by higher USC charges. Similarly, for the non-residential classes, the USC would be set to zero, but these classes would face higher delivery charges.[7]

Q. Mr. Dybalski suggests that your approach may imply that the non-residential class responsibility for universal service costs would be "more or less permanently embedded in PGW's base rates." Is that accurate?

A. No. My overall revenue allocation proposal in this proceeding is based on my CCOSS as shown in Exhibit IEc-3 (and updated in Exhibit IEc-S1), as well as the other usual regulatory considerations for revenue allocation. In my CCOSS, no universal service costs are assigned to the non-residential classes. The revenue allocated to each class, inclusive of the USEC Surcharge to residential customers, reflects the costs allocated to the class, as well as the other criteria detailed in my direct testimony. Similarly, in future base rates proceedings, no universal service costs would be assigned to non-residential classes (consistent with the practice of the rest of the Pennsylvania utilities), and the revenue requirement would be allocated based on CCOSS results and the other factors. Unusual as it may seem, I propose only that PGW be treated like all other utilities in Pennsylvania for cost allocation and revenue allocation purposes.

What Mr. Dybalski does not appear to recognize is that the Company's CCOSS assigns significantly higher distribution system costs to residential customers than does the Commission-approved method upon which I rely. By using the Commission's methodology for mains cost allocation, my CCOSS reduces the distribution base rates revenue requirement for the Residential class relative to PGW's proposal, thus leaving "headroom" for that class to absorb the higher universal service costs. In my revenue allocation for the residential class in this proceeding, these effects balance out.

Moreover, on a going forward basis, my analysis shows that revenues from the Residential class at proposed rates in this proceeding are only about 1 percent below its allocated costs, even with the full assignment of all USEC costs. In contrast, the GTS and IT classes substantially under-recover allocated costs, and the other non-residential

[7] This rate design treatment is described for the GS Commercial class at page xxx of my direct testimony.

classes provide the cross-subsidy to make up the shortfall from the larger customers. Thus, on a going-forward basis, I would generally expect revenue allocation to move in the direction of reducing the subsidies that currently flow from the smaller non-residential customers to the larger non-residential customers.

Q. Can you respond to the third argument, namely that there are public policy and regulatory policy reasons why universal service costs should be allocated to non-residential rate classes?

A. The arguments offered in this respect include:

- At page 2 of his rebuttal, Mr. Geller cites to employee productivity, reduced turnover, economic development and other social and economic benefits associated with universal service programs, none of which are quantified.

- At pages 3-4 of his rebuttal, Mr. Dybalski argues that "customers in all classes benefit by programs that support and enable a community in which low-income customers are able to maintain utility service at an affordable cost" and that the residents "contribute to the well-being and economic vibrancy of Philadelphia's business community."[8] Mr. Dybalski quantifies none of these benefits.

- At pages 14 to 21, Mr. Colton advances the argument that aid to low-income customers represents a public good, and that the cost should therefore be shared among all firm service ratepayers (excluding, of course, the favored large industrial customers).

While these arguments may represent legitimate public policy considerations, they apply to all Pennsylvania utilities. Issues of this nature were raised by the parties when the Commission formulated its policy regarding the recovery of universal service costs, and yet the Commission determined that other considerations outweighed those effects. For example, Mr. Colton's arguments regarding the benefits to small businesses associated

[8] Mr. Dybalski presumably meant that non-residential customers who take firm gas delivery service benefit, since the Company declines to assign any of these costs to either Rate IT or Rate GTS customers, and it obviously cannot collect the costs of these programs from non-residential customers who do not use gas.

with universal service programs were explicitly cited by the Commission in Docket No. M-00051923, and rejected.[9]

If the Commission accepts these arguments as a rationale for retaining the existing policy at PGW, it would be a rejection of a long-standing policy of the Commission.

Q. Is there a philosophical difference of opinion regarding the treatment of the costs associated with universal service?

A. In my non-legal view, there is. In mandating that utilities offer universal service programs, the legislature essentially ceded some public policy responsibilities to the Commission. From the perspective of the advocates for continuation of the status quo, the legislature ceded "tax and spend" responsibility to the Commission in order to effect income redistribution. In effect, these advocates argue that customers who are not eligible for the universal service programs should be taxed to pay for the benefits of the program. This view of the universal service programs then justifies taxing one set of customers to achieve the public policy benefit of assisting low-income residents.

An alternative view of the universal service programs is that they are social insurance programs, such that they provide a protection to customers who may fall upon hard times. From this perspective, the utility imposes a USEC insurance premium on all customers, with the guarantee that, if they suffer a reversal of fortune, they will be eligible for utility service at discounted rates. From this perspective, the only customers who should pay the premiums are the customers who are insured. As only residential customers are eligible for the insurance benefits, only residential customers should be required to pay the premiums.

Q. Can you respond briefly to the "all customers benefit from subsidies to low-income customers" argument, from a regulatory standpoint?

A. There is validity to the general proposition that providing assistance to low-income customers has a social benefit, as this is an essential aspect of a variety of government policies. However, using this type of argument in a utility regulatory setting represents a slippery slope in the context of ratemaking, because it departs from the basic principles of

[9] Final Investigatory Order, Docket No. M-00051923, Order Entered December 18, 2006, pages 26 to 32.

cost causation. Yes, the business community may benefit from having customers with more money in their pockets, and thus perhaps it may "feel right" that businesses should subsidize low-income residential customers. However, residential customers may benefit from the employment opportunities, goods and services provided by local businesses, and thus it may also "feel right" that residential customers should subsidize at least some types of business customers. As it is generally impossible to quantify any of these alleged cross-benefits, and thus it is impossible to say whether one benefit outweighs the other, regulatory policy is much better grounded and defensible if it simply assigns costs to the customers that cause them, and to the customers that can directly benefit from those costs. Thus, for example, EE&C program costs in Pennsylvania are assigned to the rate classes that benefit from them, even though the costs cannot be directly assigned to and recovered from the specific customers who benefit. Similarly, universal service costs are assigned to the class which can benefit from those programs.

Q. What of the last issue, namely that PGW is different? Is this a credible reason for retaining the existing policy?

A. To my mind, this is the only potentially credible line of argument in support of the existing policy, since rate shock is no longer the issue. It would, of course, represent a significant departure from the rationale provided by Commission decisions of the past. Thus, the specific argument in this area should be carefully considered. From my review, the arguments are as follows:

- Mr. Colton cites to certain "public perquisites" that the shareholder grants to PGW, including tax exemption, as a quid pro quo for recovery of universal service from some (but not all) non-residential ratepayers;

- Both Mr. Colton and Mr. Geller argue that PGW is unique in that it is a city-owned natural gas utility.

- Mr. Geller also argues that PGW has the largest percentage of confirmed low-income customers "by far . . . of any public utility in Pennsylvania."

Q. Can you respond to Mr. Colton's argument that the City of Philadelphia provides significant benefits to utility ratepayers including non-residential customers in exchange for this sharing of universal service costs?

A. I agree that, in theory, city ownership of PGW could result in substantial savings to ratepayers, notably the availability of low-cost and taxpayer subsidized debt, the ability to rely on debt as a large share of the capital structure, the potential avoidance of municipal taxes, and presumably the other perquisites to which Mr. Colton refers. Unfortunately, these substantial advantages do not translate into lower rates for ratepayers, nor have they resulted in a financially healthy utility that will benefit future ratepayers. In fact, despite enormous advantages in financing costs, PGW's rates for small businesses are the highest in the Commonwealth among the major natural gas distribution companies ("NGDCs"), as shown in Table IEc-S1 below, even without the USEC Surcharge.

Table IEc-S1
Average Natural Gas Distribution Charges – Small General Service

NGDC	$/mcf
National Fuel: SC&PA >250	3.2126
Peoples: Commercial SGS	3.2767
UGI PNG: Rate N	3.5917
Peoples Equitable: General Service Small	3.7135
UGI Gas: Rate N	4.3607
Columbia: SGSS/SCD	4.4323
UGI CPG: Rate N	4.6470
PECO: Rate GC	4.6543
PGW Current Excl. USEC: Commercial	6.2441
PGW Current Incl. USEC: Commercial	6.8594
PGW Proposed Excl. USEC: Commercial	7.3776
PGW Proposed Incl. USEC: Commercial	7.9929

Notes:
Average rates are derived based on 25 mcf per month, inclusive of customer charges, delivery charges, EE&C charges, DSIC charges, other distribution charges and credits, and universal service charges (which apply to PGW only). Gas supply and load balancing charges are excluded. Tariffs read from NGDC websites on June 20, 2017.

Moreover, despite the large base rate increases approved under Commission regulation in 2001, 2007, 2008 and 2010, and years of substantial positive net income, the Company's balance sheet remains substantially over-leveraged, weighed down by sins of the past. Thus, whatever advantages that city ownership has bestowed on PGW ratepayers appear to be outweighed by other negative effects. Moreover, to the extent that the Company has made substantial gains over the past decade, a reasonable argument can be made that these gains result more from Commission stewardship than from city ownership.

In my view, it would be difficult to explain to a small business that PGW's rates are among the highest in Pennsylvania, but because of all of the advantages of city ownership of PGW, the customer must also pay a tax above and beyond those high rates that is not faced by other Pennsylvania small businesses.

Q. Can you respond to the issue that PGW is the only major city-owned natural gas utility in Pennsylvania?

A. While the statement is certainly true, the advocates offer no reason why this distinction should affect Commission policy with respect to the recovery of universal service costs. City ownership has significant implications for rate regulation of PGW due to the Company's inability to raise equity capital (except from the ratepayers), and the significant advantages that the utility has in raising debt capital. However, the economic principles and policy considerations regarding universal service are the same for PGW as for other Pennsylvania utilities. Moreover, if the Commission were to always treat PGW as if it is, as the lawyers say, *sui generis*, there would have been little reason to grant significant regulatory authority over PGW to the Commission. An advantage of Commission regulation of PGW is that the Commission can apply the same basic regulatory principles to PGW as it does to the rest of the utilities in the Commonwealth, except where the ownership structure of PGW makes that impossible.

Q. What of the issue that PGW has an extraordinarily high level of low-income customers?

A. I certainly agree that the share of low-income customers in PGW's service territory is relatively high, compared to that of other gas utilities in Pennsylvania. However, the difference with other utilities does not appear to be as extreme as the advocates claim.

For example, Commission statistics confirm that PGW has the highest percentage of confirmed low-income customers of all the electric and gas utilities in Pennsylvania.[10] However, when estimated low-income customers are considered, PGW continues to show the highest percentage at 38.0 percent, but is only slightly above Penelec at 37.5 percent, and moderately above UGI PNG at 31.9 percent.[11] If PGW is deemed to be so extraordinary as to warrant special treatment, it would be difficult to explain why similar waivers to established Commission policy are not appropriate for other utilities.

I also acknowledge that PGW's universal service program is very costly, relative to those of other Pennsylvania utilities. However, at least some of that excessive cost is due to the Company's inability or unwillingness to confront the basic problem that its low income customers in the Customer Responsibility Program ("CRP") consume far more gas on average than residential customers who are not in the program.[12] As a result, PGW's universal service spending is much higher than that of any other Pennsylvania gas utility when measured per confirmed low income customer, and substantially exceeds that of all Pennsylvania electric and gas utilities when measured as a percent of estimated low-income customers.[13] Thus, PGW is not extraordinarily different only as a result of its customer base, but also as a result of its own policies.[14]

Finally, it must be recognized that there will always be the utility with the highest percentage of low-income customers. If PGW is exempted from standard Commission policy because it has the highest percentage of low-income customers, the argument can

---

[10] "2015 Report on Universal Service Programs & Collections Performance of the Pennsylvania Electric Distribution Companies & Natural Gas Distribution Companies," Pennsylvania Public Utility Commission Bureau of Consumer Services, Undated.
http://www.puc.state.pa.us/General/publications_reports/pdf/EDC_NGDC_UniServ_Rpt2015.pdf

[11] See summary statistics shown in Exhibit IEc-S3.

[12] See, for example, Docket No. P-2014-2459362, OSBA Statement No.3 , served August 5, 2015, pages 3-4. On average, CRP customers consumed more than 60 percent more gas per residence than non-CRP residential customers at that time, a gap that was widening for at least 10 years.

[13] See Exhibit IEc-S3.

[14] It is, of course, possible that the relatively high cost of PGW's policies per estimated low-income resident is, in part, also due to the fact that PGW can offload the costs of the programs on non-residential customers, whereas other Pennsylvania utilities cannot.

easily be made that the utility with the next highest share of low-income customers should similarly be exempted.

Q. Finally, of the witnesses advocating that universal service costs should be assigned to non-residential classes, does anyone recommend that universal service costs be included in the cost basis for the Rate IT "cost-based" rates?

A. No. In effect, the parties who support assigning universal service costs to small and medium-sized businesses decline to extend the same treatment to larger businesses and organizations. This is particularly surprising for Rate IT customers, as the Commission explicitly stated that the rates should be cost-based and that IT customers represent more throughput than the Commercial, Industrial, Municipal and Public Housing rate classes *combined.* As I indicated in my rebuttal testimony regarding the allocation of mains costs, large industrial customers are generally able to find a way to avoid the excessive mains costs which are assigned to small non-residential customers. Large customers have obviously also found a way to avoid paying the universal service costs that the advocates feel should be borne by smaller non-residential customers.

2.2 Mains Cost Allocation

Q. At page 3 of his rebuttal, Mr. Mierzwa states that you recommend that distribution mains be allocated solely on a design peak day basis. Is that accurate?

A. No, it is not. In my direct testimony, I relied on Commission precedent to use the 50/50 average-and-excess ("A&E") methodology, since that method was approved in the Company's 2007 base rates case, and it was the method used the Company in its filing in the 2009 base rates case.

Under certain specific circumstances, namely the use of load-factor weighting and no diversity in peak demand, the A&E method will produce results that match a peak demand allocator. Those conditions do not apply to the Commission's 50/50 A&E method. Thus, the Commission's A&E method produces an allocation factor that is a mixture of an average demand measure and a peak demand measure, albeit one that is weighted more toward peak demand than Mr. Mierzwa prefers. I calculate that the Commission's A&E allocator in this proceeding is approximately equal to an allocator based 64.4 percent on peak demand and 35.6 percent on average demand.

As such, Mr. Mierzwa's statement that the mains cost allocation method used in my direct testimony does not reflect average demands is arithmetically incorrect.

Q. Mr. Mierzwa also indicates that he disagrees with your proposal to allocate O&M costs in accounts 877 and 891 on the basis of peak demands, because such O&M costs should be allocated in the same manner as the associated plant accounts and that the related plant accounts (377 and 378) should be allocated using the P&A allocator. Can you respond?

A. I agree that the same allocator should be used for the plant and associated O&M accounts, and I do so, in that I use a peak demand allocation factor for both. I apply the peak demand allocator as that is the method used by PGW in its submission in its last base rates case, which was consistent with Commission precedent from the 2007 proceeding.

Moreover, Mr. Mierzwa does not follow his own recommendation. In the Company-run CCOSS upon which he relies (namely that provided in the supplemental response to OCA-VII-7), the values in plant accounts 377 and 378, and the O&M costs in account 877, are all allocated entirely based on peak demand. Account 891 O&M costs are allocated entirely based on average demand (also called commodity).[15] In short, the CCOSS upon which Mr. Mierzwa relies is not consistent with his recommendation that O&M costs be allocated in the same manner as the related plant accounts, and it is also not consistent with his recommendation that all of those accounts be allocated using the P&A allocator.

[15] See the following pages in the CSAS attached in the supplemental response to OCA-VII-7: Exhibit PQH-3D, page 1 of 6 (peak demand allocation of accounts 377 and 378), Exhibit PQH-3D page 4 of 6 (peak demand allocation of account 877), and Exhibit PQH-3E page 4 of 6 (commodity allocation of account 891).

2.3 Meters Cost Allocation

Q. In his rebuttal testimony at pages 15 to 16, Mr. Moser addresses your proposed alternative to the Company's meters cost allocation. What is his critique of your approach?

A. He argues that my approach is not supported by any data.

Q. Is the Company's approach supported by any more data than your approach?

A. No. The Company assumes that all GS Commercial customers have the same replacement meter, and it estimates the replacement cost at 4.7 times the cost of a Residential meter. This figure is apparently based on 18 replacement meters all with 800 cubic feet per hour ("cf/h") capacity, in a customer base of some 25,000 customers. The Company's method fails to reflect the wide diversity of customers and customer sizes within the GS Commercial class. In short, the Company's method has no credible supporting data.

In his rebuttal, Mr. Moser does not deny that there are many GS-Commercial customers who could be served with Residential size meters. He does not deny that the Company's method implies that there are no economies of scale in meters costs, nor does he deny that the absence of these economies would be unusual for utility equipment. He also does not deny that some GS Commercial customers could be served with the smaller meters, of 250, 425, and 630 cf/h capacity, upon which I rely in my analysis. He offers no data in support of the Company's assertion that all GS Commercial customers require a meter with 800 cf/h capacity.

Moreover, my approach does rely on the Company's data, in that I use the Company's replacement cost for each meter size. My approach differs in that I recognize the fact that the Company's use of 800 cf/h meters cannot sensibly be applied to the entire GS Commercial class. The Company estimates that 100 percent of the GS Commercial class would use an 800 cf/h meter. This estimate is based on zero data regarding the mix of meter sizes required. I estimate that the GS Commercial class would use a mix of various meters, relying on the Company's data for cost. This estimate is similarly based on zero data regarding the mix of meter sizes required, but at least relies on common sense. I acknowledge that my approach does not rely on actual meter data, but I did so because

the Company has failed to develop any. However, my approach does not produce the results with the logical and economic flaws inherent in the Company's method.

Thus, Mr. Moser's argument that my approach has no data support is unfortunately more a critique of the Company's method than it is to mine. I retain the view that my method is imperfect at best, but superior to the Company's method.

Mr. Moser does indicate that the Company is willing to study this issue in more detail in a future base rates proceeding. I certainly welcome a commitment for a more diligent effort in the next base rates case. However, I am advised by counsel that OSBA reserves the right to claim that the Company has not met its legal obligation to make a reasonable effort at developing a cost allocation study in this proceeding.

2.4 Services Cost Allocation

Q. *In your direct testimony, you expressed a concern that the Company's method for allocating services costs had no quantitative support, it failed to reflect customers per service line differences among rate classes, and it produced results that were inconsistent with the normal patterns that would be expected. How does the Company respond?*

A. Mr. Moser indicates that he believes the weighting factors used by the Company are reasonable. He offers no additional supporting data, nor does he address the customers per service line issue, nor does he provide any reason for the anomalies that I cited in my direct testimony.

Thus, I have no choice but to continue to rely on the Company's filed method, as there are no other options. This is disheartening, as services represent more than $700 million in gross plant costs in the Company's rate base, only moderately less than the value for mains plant. The allocation of mains costs garnered very substantial debate in this proceeding, and yet a cost item nearly as large goes largely undebated and is allocated based on little more than personal judgment.

Whether the Company's method is consistent with the requirement that the Company submit a reasonable cost allocation study in this proceeding is a matter I leave to the attorneys.

2.5 Cost Allocation for Rate IT Class

Q. What are the differences among the parties with respect to the allocation of costs to the Rate IT class?

A. The differences fall in two basic areas, namely the treatment of production and storage costs, and the treatment of distribution mains costs. Both of these general cost categories have both plant-related costs (return, depreciation) and O&M costs. Also, in the arithmetic of cost allocation models, the treatment of these cost items also affects the allocation of various administrative and general costs.

With respect to the issue of production and storage costs, the Company assigns zero costs to Rate IT customers, despite the fact that the Company has used these facilities to prevent interruptions to Rate IT customers when those customers' suppliers failed to deliver sufficient supplies to the city gate.[16] Since both Mr. Mierzwa and Mr. Apetoh rely on simulations of the CCOSS prepared by the Company, they also implicitly assume that the Rate IT class in no way contributes to the cost of these facilities. In his rebuttal testimony, Mr. Baudino explicitly agrees with the Company that zero production and storage costs should be allocated to the Rate IT class, on the grounds that these customers are interruptible, even if they are rarely if ever interrupted. In my direct testimony, I assign a partial share of production and storage costs to the Rate IT class, as the Company indicates that it uses these facilities to avoid interrupting Rate IT customers.

With respect to the allocation of mains costs, the Company treats Rate IT customers as firm distribution service customers, and allocates mains costs to those customers based half on peak demand and half on customer count. Because Rate IT customers are relatively large, these customers are assigned little in the way of customer-related mains costs.

In his direct testimony, Mr. Baudino expresses approval for the use of the 50/50 demand/customer method for allocating costs, and does not express any disagreement with the manner in which mains costs are assigned to Rate IT customers within the combined IT/GTS class. In his rebuttal testimony, Mr. Baudino asserts that the cost

[16] See PICGUG-II-6. In that response, PGW indicates that the Company utilized its LNG facilities to make up for a shortfall in deliveries from Rate IT suppliers.

allocation of mains to the Rate IT customers should reflect the fact that they are theoretically interruptible for distribution reasons, but he makes no recommendation with respect to how such an allocation should be applied. Similarly, Mr. Baudino did not develop his own CCOSS, nor did he request any particular simulations of the Company's model from Mr. Hanser.

Mr. Apetoh relies on the Company's simulation of the CCOSS in response to I&E-RS-21-D, which purportedly was a peak-and-average ("P&A") method. However, as I explained in my rebuttal testimony, that simulation applied a very unusual P&A method in that it ignored the average demands of Rate IT customers in the mains allocation factor. As such, that simulation is not consistent with the normal interpretation of the P&A method. In effect, that simulation treats Rate IT customers as if they have firm demand but zero throughput.

In his direct testimony, Mr. Mierzwa appeared to similarly rely on the CCOSS simulation used by Mr. Apetoh. However, in his rebuttal testimony, Mr. Mierzwa appears to have recognized that the earlier simulation was erroneous, and updated his recommendation to rely on a revised CCOSS simulation provided in supplemental response to OCA-VII-7 (Attachment B). That simulation treats Rate IT customers as firm distribution service customers, and allocates costs half on the basis of peak demand and half on the basis of throughput.[17]

Finally, in my direct testimony, I also allocate mains costs to Rate IT customers as firm distribution service customers, using the Commission-approved 50/50 average-and-excess ("A&E") methodology.

Thus, all of the cost allocation simulations submitted in this proceeding treat Rate IT customers as if they are firm for distribution service. The disagreement among the

[17] In my rebuttal testimony, I indicated that this simulation suffered from a different problem, namely that the application of the P&A method to the Rate GTS class included all of Rate GTS throughput, despite the fact that Rate GTS load is primarily served through directly assigned mains. It appears that the Company subsequently corrected that error in an IR response (OCA-XVII-2 Attachment A) on June 19, 2017. As shown on Exhibit PQH-3E page 1 of 6 of the respective CSASs, the Company reduced the "commodity" portion of Rate IT/GTS from $140.5 to $94.6 million. As this simulation was submitted only a few days prior to the due date for this testimony, my review of this latest version is only preliminary.

advocates for the filed CCOSSs is the traditional mains cost allocation problem, namely whether to use a customer-demand ("CD") method, a P&A method or an A&E method. As the positions of the parties on this issue are fully presented, I will not pursue it further here. However, the important issue to recognize is that, whichever cost allocation method is selected for mains cost allocation in general, that method should also apply to the Rate IT customers.

Q. At page 16 of his direct testimony, Mr. Baudino presents Rebuttal Table 4 that shows that your CCOSS would require an increase of $24.1 million in order to bring Rate IT rates into line with allocated costs, while the other parties support CCOSS simulation that imply much smaller increases on the order of $2.5 to $2.6 million. Can you comment on those results?

A. I have two observations.[18] First, based on Mr. Mierzwa's rebuttal testimony, the correct value for OCA in Mr. Baudino's table is now $24.3 million, not the $2.5 million shown in his table. This large change occurs due to Mr. Baudino's adoption of the updated response to OCA-VII-7 in his rebuttal testimony.[19] Second, Mr. Baudino's table does not reflect the Company's proposal to apply value-of-service pricing to Rate IT. Under the value of service pricing, rates for IT customers could rise as high as those for the comparable firm service customer, generally the rates paid by GS Industrial customers. These rates are far higher than the cost-based rates that would arise from my proposal. For example, the Company proposes that average firm industrial rates be set at over $6.50 per mcf, compared to my allocated cost value for Rate IT of $2.33 per mcf.

To show the impact of the various proposals, Table IEc-S2 below compares allocated costs and average rates for the GS Industrial and Rate IT classes, under various proposals. Because my CCOSS is the only one which segregates costs for Rate IT and Rate GTS, I simulated it under the Company's customer-demand method, the OCA's P&A method, and the Commission's A&E method.

---

[18] It should also be noted that the values presented by Mr. Baudino for PGW, OCA and I&E represent values for the combined IT/GTS class, whereas the value for OSBA represents my calculation for only the Rate IT class. As noted above, my CSAS is the only one which segregates the two classes for cost allocation purposes.

[19] In my updated CCOSS in Exhibit IEc-S1, the shortfall from the Rate IT class is modestly reduced to $21.1 million.

Table IEc-S2 Allocated Costs and Average Rates for Industrial Customers ($/mcf)		
	GS Industrial	Rate IT
CD Unit Cost	$4.73	$1.23
PGW Proposed Rates	$6.56	$1.16
P&A Unit Cost	$5.81	$2.43
OCA Proposed Rates	$8.16	$1.00
RDK A&E Unit Cost	$5.79	$2.27
RDK Proposed Rates	$7.60	$1.01
Notes: The CD and P&A cost values are based on the RDK CCOSS, modified to apply the mains allocation methods as advocated by PGW and OCA respectively. Proposed rate revenues exclude GCR, GPC and MFC costs.		

As shown, even without the allocation of USEC costs to the Industrial rate class, the costs allocated to that class far exceed that allocated to Rate IT under any cost scenario. Moreover, as the Industrial class is burdened with much higher distribution rates than the proposed Rate IT rates, plus the OPEB charge, plus the USEC charge (under the OCA and PGW proposals), the revenues paid by firm industrial customers vastly exceed the costs allocated to Rate IT under my cost allocation proposal. Thus, regardless of which cost allocation method is chosen, the Company's proposal to apply value-of-service pricing to Rate IT could potentially have a much larger impact on Rate IT customers than any of the cost-based alternatives.

3. Update to Direct Testimony

Q. What changes did you make to your CCOSS?

A. My updated CCOSS includes the following adjustments:

- Accumulated depreciation costs are disaggregated pursuant to the Company's response to OSBA-II-2, which results in a more accurate and consistent assignment of these rate base offsets than that used by the Company;

- The labor allocation factors are updated to reflect the detailed labor costs provided in OSBA-II-1, which I could only estimate in my direct testimony as they were not included in the Company's filed CCOSS printout;

- For the reasons discussed above, I shifted $250,000 out of the universal service costs assigned to the Residential class and moved it to GS Commercial, to reflect costs that benefit Commercial ratepayers (or their tenants). This adjustment is based on the Company's forecast LIME program expenses from Docket No. P-2014-2459362.

- I modified the design day demand allocator for Rate GTS to include only the demands for the GTS customer integrated into the distribution grid. This change does not affect the mains allocator, but reduces the compressor and system measuring equipment costs assigned to the class, better recognizing the equipment used to serve those customers.

- For maintenance of mains costs (account 887), I modified the allocation factor to properly include the directly assigned mains costs for Rate GTS.

- I modified the allocator for manufactured gas expense from a pure throughput allocator to one based on current base rate revenues. This updated approach continues to recognize that all classes should continue to contribute to these legacy costs, but the volumetric allocator used in my direct testimony assigned a disproportionate share of costs to large users.

The impacts of these changes are relatively modest except for the Rate IT and Rate GTS classes, generally because the Company did not provide any updates or useful information with respect to my concerns about meters and services allocation, nor did it address the other issues that I raised. A comparison of my updated class revenue requirements with those in my direct testimony are shown in Table IEc-S3 below.

Table IEc-S3 Comparison of Fully Allocated Costs $mm			
	Updated Exhibit IEc-S1	Original Exhibit IEc-3	Percent
Residential	$449.42	$442.91	1.5%
Commercial	$ 61.24	$ 62.83	-2.5%
Industrial	$ 4.72	$ 4.51	4.8%
Municipal	$ 5.97	$ 6.33	-5.6%
PHA GS	$ 1.48	$ 1.50	-1.6%
PHA Rate 8	$ 3.28	$ 3.37	-2.8%
IT	$ 32.29	$ 38.19	-8.2%
GS	$ 1.97	$ 3.69	-46.7%
Total	**$560.43**	**$560.43**	**0.0%**
Note: NGV and Interruptible Sales classes are not reported, but are included in the totals.			

Q. What changes did you make to your revenue allocation?

A. First, I added a full proof of revenues at the Company's proposed rate increase, in Exhibit IEc-S2. In so doing, I updated the Company's calculation of the GPC and the MFC charges to be consistent with the values derived in the Company's revised versions of PQH-10 and PQH-11. In general, this proof of revenues relies on the Company's proposals for customer charge levels. (These customer charges are used for presentation purposes, and cannot be construed as approval of those charges on my part.) I also retained the Company's assumption to exclude the effect of base rate increases on DSIC revenues.

Second, in both my direct and rebuttal testimony, I acknowledged that the Company's proposed rate increase for the Rate IT class exceeded normal gradualism restrictions. In my rebuttal, I suggested that long-standing Rate IT customers should face an increase no more than twice system average. As I am unable to identify such customers, I have

restricted the increase for all Rate IT customers to twice system average, thereby reducing the increase from $5.6 million to $3.2 million.[20]

Third, I updated the calculations described in my direct testimony to reflect the changes to the Rate IT increase. The primary effect was to shift the reduced revenues from the Rate IT class to the other non-residential rate classes. In re-running the calculations, I modified the upper-bound increase for non-residential to be no more than 2.0 times the system average, to apply the same guideline for rate gradualism to all non-residential rate classes.

Fourth, I modified the revenue allocation to use the same tariff rates for the Municipal and the PHA Rate 8 classes, consistent with the Company's rate design philosophy.

My updated revenue allocation is shown in Table IEc-S4 below, compared to that proposed by the Company and that from my direct testimony. As shown, the reduction in revenues assigned to the Rate IT class is absorbed by the other non-residential classes except GTS.

[20] In my direct testimony, I indicated that the Company's figures for Rate IT revenues at Exhibit PQH-xxx were not consistent with tariff charges and had arithmetic inconsistencies. I therefore calculated that the Company's proposed increase would have a modestly higher revenue impact than that reported by PGW. The Company neither addressed that issue nor updated its values in its rebuttal testimony. My proof of revenue calculations are shown in Exhibit IEc-S2.

Table IEc-S4 Revenue Allocation Comparison *$mm*			
	PGW Filed	**RDK Direct**	**RDK Surrebuttal**
Residential	$59.00	$59.00	$59.00
Commercial	$ 4.98	$ 2.37	$ 3.76
Industrial	$ 0.40	$ 0.17	$ 0.29
Municipal/PHA Rate 8	$ 0.51	$ 1.61	$ 2.45
PHA GS	$ 0.40	$ 0.27	$ 0.37
IT	$ 5.70	$ 5.70	$ 3.24
GS	$ 0.00	$ 0.00	$ 0.00
Total	**$70.19**	**$69.11**	**$69.11**

Notes:

1. NGV and Interruptible Sales classes are not reported, and have zero proposed increase..
2. PGW values are based on proof of revenues from PGW, summarized in Exhibit IEc-3 and IEc-S2.
3. I set the proposed increase equal to the shortfall reported in the Company's CCOSS, namely $69.11 million.

Q. At page 15, Mr. Baudino comments on your revenue allocation which does not assign an increase to the Rate GTS class, despite a significant cost under-recovery in your cost allocation study. Have you modified your proposal to reflect that concern?

A. No. However, I agree with Mr. Baudino that allocated costs justify a rate increase for the GTS class, and that PGW should attempt to increase the rates to those customers to better align them with costs. Moreover, I agree with Mr. Baudino that costs should be separately allocated to the Rate IT and Rate GTS customers, and I did so in my direct testimony and Exhibit IEc-S1. Nevertheless, it is my understanding that the rates paid by the two remaining GTS customers are currently subject to bilateral contract agreements with PGW (see, e.g., PGW Statement No. 5-R at 10), and that the Company cannot increase those rates in the test year. Were PGW an investor-owned utility, a reasonable claim could be made that the shareholder should absorb the costs of setting rates for these

GTS customers below allocated cost without good reason. However, as a revenue shortfall at PGW is simply passed on to future ratepayers and not absorbed by PGW's shareholder, I see no purpose to pretending that PGW can raise the rates to these customers in the test year.

Of course, if my understanding is incorrect and PGW can increase the costs for these customers, I would certainly recommend that they do so, and an increase comparable to that applied to Rate IT customers would be reasonable. From a practical standpoint, however, even a 30 percent rate increase (twice system average) would produce less than $0.4 million, or about 0.5 percent of the Company's required increase. As such, this change would not have a material impact on the revenues assigned to other rate classes.

Q. At the end of the day, what does your revenue allocation produce in terms of the ratio of class revenues to allocated costs, using your CCOSS methodology (with the Commission-approved A&E approach for mains)?

A. In general, the Rate IT and Rate GTS classes both substantially under-recover allocated costs, by a little over $20 million. At the $59 million increase for the Residential class, rates are about $3 million below allocated cost. This $24 million shortfall is primarily borne by the GS Commercial class in dollar terms ($20 million), but the Commercial, Industrial, Municipal and PHA classes all exhibit revenue cost ratios in the 121% to 133% percent range, and therefore they all contribute substantially to the large shortfall associated with the Rate IT and Rate GTS customers.

4. <u>Rate "LT" Issues</u>

Q. In your direct testimony, you recommended that the Rate IT class be modified to be a Rate LT large transportation class, with maximum rates set based on firm service costs and negotiated rate discounts to reflect interruptibility and competitive market conditions. Mr. Baudino indicates that you did not propose tariff language to that effect, and that you are therefore proposing to require the customers in this class to remain interruptible but pay firm service rates. Is that an accurate representation of your proposal?

A. No it is not. I did not propose specific tariff language, because tariff language can be better developed in the compliance stage of this proceeding. I did explicitly propose that

the maximum rates for this class be based on firm service costs, and I certainly intended that any customer paying maximum rates would obtain firm distribution service. As I indicated in my rebuttal testimony, I would also eliminate any implicit requirement for alternative fuel capability, if there is no value to the distribution system associated with that interruptibility. Moreover, to the extent that there is value to the distribution system associated with interruptibility of the customer, the tariff language should recognize that rate discounts should be negotiated that reflect that value.

Q. Mr. Baudino questions whether the Company would have any incentive to negotiate rates that reflect the value of the interruptibility of a particular customer. Can you respond?

A. Under my proposal, the Company has a very real incentive to negotiate a discount for interruptibility (at least to the extent that PGW has any incentive for efficiency). If the Company does not do so, the customer can simply switch to firm service and pay the tariff maximum rate. The Company would then be required to make the investments necessary to provide firm service to that customer. Since negotiating a discount would be simpler and less costly, I conclude that the Company has a significant interest in negotiating reasonably.

Q. Does this conclude your surrebuttal testimony?

A. Yes, it does.

EXHIBIT IEc-S1

UPDATED RDK CCOSS

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CCOSS Surrebuttal Testimony

$000

Summary of COSS	Total	Residential	Commercial	Industrial	Municipal	PHA GS	PHA Rate B	NGV	Int. Sales	IT	GTS
Revenues											
Current Distribution Revenue	400,218	323,088	63,968	4,886	4,328	1,271	2,664	13	0	0	0
Proposed Rate Increase											
Interruptible Gas Revenue	17	0	0	0	0	0	0	0	17	0	0
USEC Revenue	53,687	39,010.9	11,858	924	1,134	188	564	7	0	0	0
Forfeited Discounts	7,853	7,842	11	0	0	0	0	0	0	0	0
Misc. Service Revenue	1,206	937	196	15	14	4	8	0	0	28	3
GTS/IT Revenue	12,190	0	0	0	0	0	0	0	0	10,940	1,250
Other Gas Revenue	4,634	3,752	754	41	64	18	5	0	0	0	0
Revenue Adjustments	217	176	35	2	3	1	0	0	0	0	0
Total Gas Revenues	**480,022**	**374,805**	**76,823**	**5,868**	**5,543**	**1,482**	**3,242**	**20**	**17**	**10,968**	**1,253**
Turn-ons and dig ups [sic]	1,883	1,771	94	2	3	7	3	0	0	2	0
Customer Installations	6,382	6,382	0	0	0	0	0	0	0	0	0
Rental Income	166	124	22	2	2	1	1	0	0	13	0
Interest/Dividend	2,010	1,502	272	20	28	7	16	0	0	163	2
Misc. Non-Oper. Income	855	644	167	12	20	3	9	0	0	0	0
Total Revenues	**491,318**	**385,229**	**77,378**	**5,905**	**5,596**	**1,499**	**3,272**	**20**	**17**	**11,147**	**1,255**
Revenue per GJ	**6.42**	**26.96**	**14.84**	**14.35**	**11.20**	**15.43**	**9.81**	**3.30**	**1.02**	**0.77**	**0.10**
Operating Expenses											
Production	5,335	4,210	866	58	67	18	23	0	15	70	8
Storage	11,514	8,053	2,085	154	244	39	115	0	0	781	42
Transmission	0	0	0	0	0	0	0	0	0	0	0
Mains/Services	32,136	20,911	5,023	380	542	98	280	2	4	4,623	273
Measuring/Regulation	35,991	30,407	3,696	221	440	108	207	0	1	879	32
Other Distribution O&M	16,910	12,328	2,079	154	214	53	136	1	2	1,584	359
Customer Accounts	55,507	52,219	3,064	82	31	64	32	0	0	16	0
Customer Service	44,616	44,376	37	118	1	3	1	0	0	78	1
Admin & General	177,792	140,131	20,886	1,792	1,994	511	1,050	4	10	10,377	1,037
Total Operating Expense	**379,801**	**312,636**	**37,737**	**2,958**	**3,534**	**893**	**1,844**	**8**	**33**	**18,408**	**1,751**
Depreciation	**47,180**	**36,718**	**5,624**	**425**	**579**	**152**	**371**	**2**	**5**	**3,237**	**67**
Taxes Other Than Income	**8,437**	**6,659**	**982**	**85**	**95**	**24**	**49**	**0**	**0**	**493**	**50**
Return on Rate Base	**125,013**	**93,409**	**16,894**	**1,255**	**1,765**	**407**	**1,014**	**5**	**13**	**10,151**	**99**
Total Cost of Service	**560,431**	**449,421**	**61,237**	**4,723**	**5,973**	**1,477**	**3,278**	**15**	**51**	**32,289**	**1,967**
Cost per mcf	$7.49	$13.06	$5.85	$5.79	$5.97	$8.88	$6.58	$2.40	$3.07	$2.27	$0.15
Rate Base	**1,188,371**	**887,940**	**160,596**	**11,934**	**16,782**	**3,873**	**9,642**	**5^**	**122**	**96,494**	**938**
Revenue-Cost Ratio	**86%**	**83%**	**125%**	**124%**	**93%**	**100%**	**99%**	**137%**	**33%**	**34%**	**64%**
SHORTFALL	(69,113)	(64,192)	**16,141**	**1,181**	(377)	**23**	(6)	**6**	(34)	(21,142)	(712)

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CCOSS Surrebuttal Testimony

$000

Summary of COSS	Alloc. Factor	Total	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Revenues																
Current Distribution Revenue		400,218	6,084	317,004	9,202	54,766	1,614	3,272	835	3,493	1,271	2,664	13	0	0	0
Proposed Rate Increase																
Interruptible Gas Revenue	E2I	17	0	0	0	0	0	0	0	0	0	0	0	17	0	0
Current USEC Revenue	E1X	53,687	475.4	38,535	1,655	10,203	310	614	212	922	188	564	7	0	0	0
Forfeited Discounts	RFD	7,853	145	7,697	2	10	0	0	0	0	0	0	0	0	0	0
Misc. Service Revenue	REVT	1,206	17	920	28	168	5	10	3	11	4	8	0	0	28	3
GTS/IT Revenue		12,190													10,940	1,250
Other Gas Revenue	E2F	4,634	46	3,706	105	649	11	30	14	50	18	5	0	0	0	0
Revenue Adjustments	E2F	217	2	174	5	30	1	1	1	2	1	0	0	0	0	0
Total Gas Revenues		**480,022**	**6,769**	**368,036**	**10,997**	**65,827**	**1,940**	**3,928**	**1,064**	**4,479**	**1,482**	**3,242**	**20**	**17**	**10,968**	**1,253**
Turn-ons and dlg ups [slc]	C1	1,883	73	1,698	18	76	1	2	1	2	7	3	0	0	2	0
Customer Installations	C1R	6,382	263	6,119	0	0	0	0	0	0	0	0	0	0	0	0
Rental Income	RB	166	3	121	3	19	0	1	0	2	1	1	0	0	13	0
Interest/Dividend	RB	2,010	38	1,464	36	236	6	14	5	24	7	16	0	0	163	2
Misc. Non-Oper. Income	D1S	855	6	638	19	148	3	9	3	17	3	9	0	0	0	0
Total Revenues		**491,318**	**7,153**	**378,076**	**11,071**	**66,306**	**1,951**	**3,954**	**1,073**	**4,523**	**1,499**	**3,272**	**20**	**17**	**11,147**	**1,255**
Revenue per GJ		**6.42**	**16.14**	**10.82**	**7.53**	**7.31**	**7.10**	**7.25**	**5.70**	**5.50**	**8.91**	**6.51**	**3.30**	**1.02**	**0.77**	**0.10**
Operating Expenses																
Production		5,335	65	4,145	122	743	18	40	14	53	18	23	0	15	70	8
Storage		11,514	73	7,980	234	1,851	43	111	36	208	39	115	0	0	781	42
Transmission		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mains/Services		32,136	322	20,589	633	4,391	114	266	86	456	98	280	2	4	4,623	273
Measuring/Regulation		35,991	1,164	29,243	359	3,337	75	146	64	376	108	207	0	1	879	32
Other Distribution O&M		16,910	346	11,982	283	1,796	47	107	34	180	53	136	1	2	1,584	359
Customer Accounts		55,507	1,267	50,953	546	2,518	19	62	10	20	64	32	0	0	16	0
Customer Service		44,616	575	43,801	7	30	33	85	0	1	3	1	0	0	78	1
Admin & General		177,792	4,112	136,019	2,679	18,207	541	1,251	316	1,678	511	1,050	4	10	10,377	1,037
Total Operating Expense		**379,801**	**7,924**	**304,712**	**4,864**	**32,872**	**889**	**2,068**	**561**	**2,973**	**893**	**1,844**	**8**	**33**	**18,408**	**1,751**
Depreciation		**47,180**	**1,094**	**35,625**	**756**	**4,868**	**126**	**299**	**89**	**490**	**152**	**371**	**2**	**5**	**3,237**	**67**
Taxes Other Than Income		**8,437**	**197**	**6,462**	**125**	**857**	**26**	**59**	**15**	**80**	**24**	**49**	**0**	**0**	**493**	**50**
Return on Rate Base		**125,013**	**2,367**	**91,042**	**2,216**	**14,678**	**376**	**880**	**280**	**1,485**	**407**	**1,014**	**5**	**13**	**10,151**	**99**
Total Cost of Service		**560,431**	**11,581**	**437,840**	**7,961**	**53,276**	**1,417**	**3,306**	**945**	**5,028**	**1,477**	**3,278**	**15**	**51**	**32,289**	**1,967**
Cost per mcf		**$7.49**	**$27.61**	**$12.88**	**$5.45**	**$8.92**	**$5.18**	**$6.10**	**$5.08**	**$6.18**	**$8.88**	**$6.58**	**$2.40**	**$3.07**	**$2.27**	**$0.15**
Rate Base		**1,188,371**	**22,499**	**865,441**	**21,064**	**139,533**	**3,573**	**8,361**	**2,661**	**14,121**	**3,873**	**9,642**	**50**	**122**	**96,494**	**938**
Revenue-Cost Ratio		**86%**	**58%**	**84%**	**138%**	**124%**	**137%**	**119%**	**113%**	**89%**	**100%**	**99%**	**137%**	**33%**	**34%**	**64%**
SHORTFALL		(69,113)	(4,829)	(59,764)	3,111	13,030	$34	647	128	(505)	23	(6)	6	(34)	(21,142)	(712)

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 – RDK CCOSS Surrebuttal Testimony

$000

Rate Base		Alloc. Factor	Gross	Acc. Dep'n	Net Book	Total D	Demand/Commodity: Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Gas Plant in Service																				
	Franchises & Consents	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
301-3	Other Intangible Plant	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
304-347 Production Plant		D2	60,359	(34,623)	25,736	25,736	164	17,837	524	4,137	97	248	80	466	87	257	1	1	1,746	93
350-364 Storage Plant		D2	145,112	(95,160)	49,952	49,952	318	34,621	1,017	8,029	188	482	155	904	168	498	1	2	3,389	181
Transmission Plant		NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																				
374	Land and Land Rights	DPD	101	0	101	101	1	62	2	15	0	1	0	2	0	1	0	0	16	1
375	Structures and Improvements	DPD	2,707	(2,222)	485	485	3	296	10	72	2	4	1	8	1	4	0	0	78	5
376	Mains	M2	773,759	(282,895)	490,864	490,864	3,078	302,319	10,189	73,279	1,892	4,404	1,452	7,684	1,472	4,373	24	67	80,629	0
376	Mains GTS	GTS	7,574	(7,574)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
377	Compressor Equipment	D1	1,255	(1,181)	74	74	0	48	1	11	0	1	0	1	0	1	0	0	9	1
378	Meas&Reg. Sta. Equip. - Gen'l	D1	17,886	(11,909)	5,977	5,977	35	3,866	114	897	21	54	17	101	19	56	0	0	757	40
380	Services	C3	705,810	(355,556)	350,254	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
381	Meters	C2	75,453	(39,464)	35,989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
382	Meter Installations	C2	94,565	(38,636)	55,929	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
383	Regulators	C1S	2,202	(1,269)	933	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
384	Regulator Installations	C1S	4,142	(3,825)	317	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
385	Meas&Reg. Sta. Equip. - Ind.	C1I	314	(222)	92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
387	Other Equipment	DPD	3,980	(2,031)	1,949	1,949	12	1,191	40	288	7	17	6	30	6	17	0	0	315	19
Subtotal - Distribution Plant			1,689,748	(746,784)	942,964	499,450	3,130	307,782	10,356	74,562	1,923	4,481	1,477	7,826	1,499	4,452	25	68	81,805	65
General Plant																				
389	Land and Land Rights	LL	3,713	0	3,713	1,654	13	1,121	29	212	5	13	4	22	4	13	0	0	195	22
390	Structures and Improvements	LL	82,900	(32,587)	50,313	22,417	171	15,192	395	2,878	73	173	56	302	59	172	1	2	2,646	296
391	Office Furniture and Equipment	LL	108,966	(56,991)	51,975	23,158	177	15,694	408	2,973	75	179	58	312	61	178	1	2	2,733	306
392	Transportation Equipment	LL	40,027	(28,396)	11,631	5,182	40	3,512	91	665	17	40	13	70	14	40	0	0	612	69
393	Stores Equipment	LL	755	(588)	167	74	1	50	1	10	0	1	0	1	0	1	0	0	9	1
394	Tools shop & garage eqmt.	LL	10,723	(6,935)	3,788	1,688	13	1,144	30	217	6	13	4	23	4	13	0	0	199	22
396	Power operated eqmt	LL	1,235	(657)	578	257	2	174	5	33	1	2	1	3	1	2	0	0	30	3
397	Communications eqmt	LL	20,815	(15,368)	5,447	2,427	19	1,645	43	312	8	19	6	33	6	19	0	0	286	32
398	Misc. equipment	LL	14,279	(4,733)	9,546	4,253	32	2,882	75	546	14	33	11	57	11	33	0	0	502	56
Subtotal - General Plant			283,413	(146,255)	137,158	61,111	466	41,415	1,077	7,847	199	471	153	824	160	469	2	6	7,213	808
Total Plant			2,178,632	(1,022,821)	1,155,811	636,249	4,078	401,655	12,974	94,574	2,407	5,682	1,866	10,020	1,913	5,676	29	76	94,152	1,148
Other Rate Base Items																				
131	Accts Rcbl Gas	E1X	70,158		70,158	70,158	621	50,358	2,163	13,333	405	803	277	1,205	246	737	9	0	0	0
131	Materials & Supps.	OM	9,768		9,768	5,610	54	4,351	72	512	13	30	10	51	10	29	0	1	433	45
131	Prepaid accts	OM	5,342		5,342	3,068	29	2,379	39	280	7	16	5	28	6	16	0	0	237	24
131	Gas/LNG in storage	E3	38,344		38,344	38,344	313	31,258	638	5,030	84	261	117	451	153	32	1	7	0	0
131	Accts Pble Gas	E1X	(17,110)		(17,110)	(17,110)	(107)	(8,692)	(373)	(2,401)	(70)	(139)	(48)	(208)	(43)	(127)	(2)	0	0	0
131	Accts Pble Other - Labor	LL	(22,271)		(22,271)	(9,923)	(76)	(6,725)	(175)	(1,274)	(32)	(77)	(25)	(134)	(26)	(76)	(0)	(1)	(1,171)	(132)
131	Accts Pble Other O&M	OM	(22,271)		(22,271)	(12,791)	(121)	(9,920)	(164)	(1,169)	(29)	(69)	(23)	(116)	(23)	(66)	(0)	(2)	(987)	(102)
131	Customer deposits	REVD	(2,935)		(2,935)	(2,935)	(45)	(2,325)	(67)	(402)	(12)	(24)	(8)	(36)	(9)	(20)	(0)	0	0	0
131	Accrued interest	RB	(15,702)		(15,702)	(8,921)	(59)	(5,738)	(189)	(1,361)	(35)	(81)	(27)	(141)	(28)	(78)	(0)	(1)	(1,161)	(111)
131	Acc'd taxes/wages	OM	(16,263)		(16,263)	(9,530)	(90)	(7,244)	(119)	(853)	(21)	(50)	(16)	(85)	(17)	(48)	(0)	(1)	(721)	(75)
Sub-Total Other Rate Base			32,560	0	32,560	61,160	518	47,693	1,824	11,797	309	671	264	1,025	270	399	7	3	(4,771)	(750)
TOTAL RATE BASE			2,211,192	(1,022,821)	1,188,371	697,409	4,596	449,348	14,798	106,371	2,716	6,353	2,130	11,044	2,183	6,075	36	79	90,782	898

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 – RDK CCOSS Surrebuttal Testimony

$000

Rate Base		Alloc. Factor	Gross	Acc. Dep'n	Net Book	Customer													
						Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Gas Plant in Service																				
	Franchises & Consents	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
301-3	Other Intangible Plant	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
304-347 Production Plant		D2	60,359	(34,623)	25,736	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
360-364 Storage Plant		D2	145,112	(95,160)	49,952	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Plant		NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																				
374	Land and Land Rights	DPD	101	0	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
375	Structures and Improvements	DPD	2,707	(2,222)	485	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
376	Mains	M2	773,759	(287,895)	490,864	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
376	Mains GTS	GTS	7,574	(7,574)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
377	Compressor Equipment	D1	1,255	(1,181)	74	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
378	Meas&Reg. Sta. Equip. - Gen'l	D1	17,886	(11,909)	5,977	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
380	Services	C3	705,810	(355,556)	350,254	350,254	12,925	300,379	4,735	20,169	547	1,409	798	1,755	1,235	2,814	12	37	3,911	28
381	Meters	C2	75,453	(39,464)	35,989	35,989	1,262	29,328	368	3,569	58	89	69	402	121	221	1	2	496	4
382	Meter Installations	C2	94,565	(38,636)	55,929	55,929	1,961	45,577	571	5,547	91	138	107	625	187	344	1	3	771	5
383	Regulators	C1S	2,202	(1,269)	933	933	38	891	0	0	0	0	0	0	4	0	0	0	0	0
384	Regulator Installations	C1S	4,142	(3,825)	317	317	13	303	0	0	0	0	0	0	1	0	0	0	0	0
385	Meas&Reg. Sta. Equip. - Ind.	C1I	314	(222)	92	92	0	0	0	0	15	39	0	0	0	0	0	0	37	0
387	Other Equipment	DPD	3,980	(2,031)	1,949	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Distribution Plant			1,689,748	(746,784)	942,964	443,514	16,199	376,478	5,674	29,286	711	1,676	474	2,781	1,548	3,380	14	41	5,215	37
General Plant																				
389	Land and Land Rights	LL	3,713	0	3,713	2,059	74	1,722	26	165	6	13	2	13	6	9	0	0	22	0
390	Structures and Improvements	LL	82,900	(32,587)	50,313	27,896	1,004	23,341	350	2,233	79	181	33	173	85	121	0	1	292	2
391	Office Furniture and Equipment	LL	108,966	(56,991)	51,975	28,818	1,037	24,112	362	2,307	82	187	34	179	88	125	0	1	302	2
392	Transportation Equipment	LL	40,027	(28,396)	11,631	6,449	232	5,396	81	516	18	42	8	40	20	28	0	0	68	0
393	Stores Equipment	LL	755	(588)	167	93	3	77	1	7	0	1	0	1	0	0	0	0	1	0
394	Tools shop & garage eqmt.	LL	10,723	(6,935)	3,788	2,100	76	1,757	26	168	6	14	2	13	6	9	0	0	22	0
396	Power operated eqmt	LL	1,235	(657)	578	320	12	268	4	26	1	2	0	2	1	1	0	0	3	0
397	Communications eqmt	LL	20,815	(15,368)	5,447	3,020	109	2,527	38	242	9	20	4	19	9	13	0	0	32	0
398	Misc. equipment	LL	14,279	(4,733)	9,546	5,293	190	4,428	66	424	15	34	6	33	16	23	0	0	55	0
Subtotal - General Plant			283,413	(146,255)	137,158	76,047	2,736	63,629	955	6,088	216	494	89	473	232	331	1	2	797	6
Total Plant			2,178,632	(1,022,821)	1,155,811	519,561	18,935	440,107	6,629	35,374	927	2,170	564	3,254	1,780	3,711	15	44	6,012	43
Other Rate Base Items																				
131	Accts Rcbl Gas	E1X	70,158		70,158	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	Materials & Supps.	OM	9,768		9,768	4,158	150	3,486	53	333	10	23	5	25	13	18	0	0	40	0
131	Prepaid accts	OM	5,342		5,342	2,274	82	1,906	29	182	6	13	3	14	7	10	0	0	22	0
131	Gas/LNG in storage	E3	38,344		38,344	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	Accts Pble Gas	E1X	(12,110)		(12,110)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	Accts Pble Other - Labor	LL	(22,271)		(22,271)	(12,348)	(444)	(10,432)	(155)	(988)	(35)	(80)	(14)	(77)	(38)	(54)	(0)	(0)	(179)	(1)
131	Accts Pble Other O&M	OM	(22,271)		(22,271)	(9,480)	(342)	(7,938)	(122)	(760)	(23)	(54)	(11)	(58)	(29)	(42)	(0)	(0)	(92)	(1)
131	Customer deposits	REVD	(2,935)		(2,935)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	Accrued Interest	RB	(15,202)		(15,202)	(6,281)	(229)	(5,323)	(80)	(524)	(13)	(26)	(7)	(39)	(22)	(46)	(0)	(1)	(73)	(1)
131	Acc'd taxes/wages	OM	(16,263)		(16,263)	(6,923)	(250)	(5,804)	(89)	(555)	(17)	(38)	(8)	(42)	(21)	(31)	(0)	(0)	(67)	(0)
Sub-Total Other Rate Base			32,560	0	32,560	(28,600)	(1,033)	(24,013)	(363)	(2,312)	(70)	(161)	(33)	(177)	(90)	(114)	(0)	(1)	(299)	(2)
TOTAL RATE BASE			2,211,192	(1,022,821)	1,188,371	490,961	17,902	416,093	6,265	33,162	856	2,008	531	3,076	1,690	3,567	14	42	5,712	41

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CCOSS Surrebuttal Testimony

$000

Depreciation/Taxes	Alloc. Factor	Total	Demand/Commodity														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Gas Plant In Service																	
Franchises & Consents	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Intangible Plant	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Plant	D2	1,178	1,178	7	816	24	189	4	11	4	21	4	12	0	0	80	4
Storage Plant	D2	2,167	2,167	14	1,502	44	348	8	21	7	39	7	22	0	0	147	8
Transmission Plant	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																	
Land and Land Rights	DPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Structures and Improvements	DPD	75	75	0	46	2	11	0	1	0	1	0	1	0	0	12	1
Mains	M2	13,598	13,598	85	8,375	282	2,030	52	122	40	213	41	121	1	2	2,234	0
Mains GTS	GTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Compressor Equipment	D1	2	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Meas&Reg. Sta. Equip. - Gen'l	D1	319	319	2	207	6	48	1	3	1	5	1	3	0	0	40	2
Services	C3	17,582	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meters	C2	1,946	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meter Installations	C2	2,333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Regulators	C1S	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Regulator Installations	C1S	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meas&Reg. Sta. Equip. - Ind.	C1I	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Equipment	DPD	123	123	1	75	3	18	0	1	0	2	0	1	0	0	20	1
Subtotal - Distribution Plant		36,087	14,118	88	8,704	292	2,108	54	127	42	221	42	126	1	2	2,306	4
General Plant																	
Land and Land Rights	LL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Structures and Improvements	LL	1,613	719	5	487	13	92	2	6	2	10	2	6	0	0	85	10
Office Furniture and Equipment	LL	3,248	1,447	11	981	26	186	5	11	4	20	4	11	0	0	171	19
Transportation Equipment	LL	2,037	908	7	615	16	117	3	7	2	12	2	7	0	0	107	12
Stores Equipment	LL	17	8	0	5	0	1	0	0	0	0	0	0	0	0	1	0
Tools shop & garage eqmt.	LL	361	161	1	109	3	21	1	1	0	2	0	1	0	0	19	2
Power operated eqmt	LL	59	26	0	18	0	3	0	0	0	0	0	0	0	0	3	0
Communications eqmt	LL	745	332	3	225	6	43	1	3	1	4	1	3	0	0	39	4
Misc. equipment	LL	382	170	1	115	3	22	1	1	0	2	0	1	0	0	20	2
Subtotal - General Plant		8,463	3,771	29	2,555	66	484	12	29	9	51	10	29	0	0	445	50
TOTAL HTY DEPRECIATION		47,894	21,233	138	13,577	427	3,129	79	188	62	333	64	188	1	2	2,978	66
TOTAL FPFTY DEPRECIATION		47,180	20,916	136	13,375	421	3,083	78	185	61	328	63	185	1	2	2,934	65

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CCOSS Surre

$000

Depreciation/Taxes	Alloc. Factor	Total	Customer													
			Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Gas Plant in Service																	
Franchises & Consents	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Intangible Plant	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Plant	D2	1,178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Plant	D2	2,167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Plant	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																	
Land and Land Rights	DPD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Structures and Improvements	DPD	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mains	M2	13,598	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mains GTS	GTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Compressor Equipment	D1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meas&Reg. Sta. Equip. - Gen'l	D1	319	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Services	C3	17,582	17,582	649	15,079	238	1,012	27	71	15	88	62	141	1	2	196	1
Meters	C2	1,946	1,946	68	1,586	20	193	3	5	4	22	7	12	0	0	27	0
Meter Installations	C2	2,333	2,333	82	1,901	24	231	4	6	4	26	8	14	0	0	32	0
Regulators	C1S	38	38	2	36	0	0	0	0	0	0	0	0	0	0	0	0
Regulator Installations	C1S	62	62	3	59	0	0	0	0	0	0	0	0	0	0	0	0
Meas&Reg. Sta. Equip. - Ind.	C1I	8	8	0	0	0	0	1	4	0	0	0	0	0	0	3	0
Other Equipment	DPD	123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Distribution Plant		36,087	21,969	803	18,661	281	1,437	36	85	23	136	77	168	1	2	259	2
General Plant																	
Land and Land Rights	LL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Structures and Improvements	LL	1,613	895	32	749	11	72	3	6	1	6	3	4	0	0	9	0
Office Furniture and Equipment	LL	3,248	1,801	65	1,507	23	144	5	12	2	11	5	8	0	0	19	0
Transportation Equipment	LL	2,037	1,130	41	945	14	90	3	7	1	7	3	5	0	0	12	0
Stores Equipment	LL	17	10	0	8	0	1	0	0	0	0	0	0	0	0	0	0
Tools shop & garage eqmt.	LL	361	200	7	167	3	16	1	1	0	1	1	1	0	0	2	0
Power operated eqmt	LL	59	33	1	27	0	3	0	0	0	0	0	0	0	0	0	0
Communications eqmt	LL	745	413	15	345	5	33	1	3	0	3	1	2	0	0	4	0
Misc. equipment	LL	382	212	8	177	3	17	1	1	0	1	1	1	0	0	2	0
Subtotal - General Plant		8,463	4,692	169	3,926	59	376	13	30	6	29	14	20	0	0	49	0
TOTAL NTY DEPRECIATION		47,894	26,661	972	22,587	340	1,812	49	115	29	165	91	188	1	2	308	2
TOTAL FPFTY DEPRECIATION		47,180	26,264	957	22,250	335	1,785	48	114	28	163	90	185	1	2	303	2

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CCOSS Surrebuttal Testimony

$000

	O&M Expenses	Alloc. Factor	Total	Demand/Commodity													
				Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
701-743	Manufactured Gas Exps.	REVT	2,968	2,968	42	2,264	69	414	12	25	7	28	9	21	0	0	70	8
804	City Gate Purchases	EZI	14	14	0	0	0	0	0	0	0	0	0	0	0	14	0	0
812	LNG for utility opns.	E2	(6,487)	(6,487)	(64)	(5,187)	(147)	(909)	(15)	(42)	(20)	(69)	(25)	(7)	(0)	(13)	0	0
813	Other gas supply	E2	8,840	8,840	87	7,068	200	1,238	21	58	27	94	35	9	0	3	0	0
Production Expenses			5,335	5,335	65	4,145	122	743	18	40	14	53	18	23	0	15	70	8
Storage Expenses		D2	11,514	11,514	73	7,980	234	1,851	43	111	36	208	39	115	0	0	781	42
Transmission Expenses		NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Expenses																		
870	Opns S&E	DP	2,018	964	6	589	20	143	4	9	3	15	3	9	0	0	156	9
871	Load dispatch	E1	1,650	1,650	9	756	32	198	6	12	4	18	4	11	0	0	311	288
874	Mains/Services	MS	4,617	2,426	15	1,480	50	359	9	22	7	38	7	21	0	0	395	24
875	Meas. Sta. Gen'l	D1	2,102	2,102	12	1,360	40	315	7	19	6	36	7	20	0	0	266	14
876	Meas. Sta. Ind.	C1I	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
877	Meas. Sta. CityGate	D1	550	550	3	356	10	83	2	5	2	9	2	5	0	0	70	4
878	Meter/regulator	MR	18,417	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
879	Cust. Install.	C2P	5,642	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
879PLP	Cust. Install. PL	C1R	3,746	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
880	Other	DP	12,935	6,180	38	3,775	127	914	24	55	18	96	18	55	0	1	1,000	59
881	Rents	DP	7	3	0	2	0	0	0	0	0	0	0	0	0	0	1	0
885	Maint. S&E	DP	300	143	1	88	3	21	1	1	0	2	0	1	0	0	23	1
887	Maint. Mains	M3	25,719	25,719	160	15,687	529	3,802	98	228	75	399	76	227	1	3	4,184	249
889	Maint. Meas. Sta. Gen'l	D1	1,184	1,184	7	766	22	178	4	11	3	20	4	11	0	0	150	8
890	Maint. Meas. Sta. Ind.	C1I	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
891	Maint. Meas. Sta. CityGate	D1	487	487	3	315	9	73	2	4	1	8	2	5	0	0	62	3
892	Maint. Services	C3	1,800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
893	Maint. Meters/Regs.	MR	3,810	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Distribution Expenses			85,037	41,408	255	25,172	842	6,086	156	366	120	640	123	364	2	5	6,616	660
Customer Accounts																		
901	Supervision	C8	1,109	327	5	322	0	0	0	0	0	0	0	0	0	0	0	0
902	Meter Reading	C1	785	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
903	Records&Collections	C8	26,657	7,861	114	7,742	1	4	0	0	0	0	0	0	0	0	0	0
904	Uncollectible	C4	16,495	16,495	287	15,637	81	465	3	21	0	0	0	0	0	0	0	0
904 LIME	Low-Income Multifamily	LIME	250	250	0	0	35	215	0	0	0	0	0	0	0	0	0	0
904CRP	A&G Exps Transferred - Sales	USC	10,211	10,211	123	10,088	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Customer Accts.			55,507	35,144	530	33,790	117	684	3	21	0	0	0	0	0	0	0	0
Customer Svc. & Info.																		
908	Customer Assistance	C9	1,617	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
908CAP	ELIRP	USC	3,859	3,859	47	3,812	0	0	0	0	0	0	0	0	0	0	0	0
480CRP	CRP Shortfall	USC	36,351	36,351	438	35,913	0	0	0	0	0	0	0	0	0	0	0	0
480SEN	Senior Discounts	USC	2,789	2,789	34	2,755	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Cust. Svc.			44,616	42,999	518	42,481	0	0	0	0	0	0	0	0	0	0	0	0

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 – RDK CCOSS Surrebuttal Testimony

$000

O&M Expenses		Alloc. Factor	Total	Demand/Commodity													
				Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Administrative & General																		
Various	Labor Related	LL	162,345	72,333	552	49,020	1,275	9,287	236	558	181	976	189	555	3	7	8,537	957
924	Plant Related	DP	4,853	2,318	14	1,416	48	343	9	21	7	36	7	20	0	0	375	22
928	Regulatory Commission Exps	REVT	5,157	5,157	73	3,934	120	719	21	43	12	49	16	36	0	0	121	14
929	Duplicate charges credit	D1S	(913)	(913)	(6)	(682)	(20)	(159)	(4)	(9)	(3)	(18)	(3)	(10)	0	0	0	0
930	Gen'l Advert.	LL	6,020	2,682	20	1,818	47	344	9	21	7	36	7	21	0	0	317	35
931	Rents	LL	330	147	1	100	3	19	0	1	0	2	0	1	0	0	17	2
Sub-Total A&G			177,792	81,725	654	55,606	1,473	10,554	271	634	204	1,081	216	623	3	7	9,367	1,030
TOTAL O&M			379,801	218,125	2,095	169,173	2,788	19,918	492	1,171	374	1,983	396	1,125	6	28	16,834	1,740
TOTAL DEPRECIATION			47,180	20,916	136	13,375	421	3,083	78	185	61	328	63	185	1	2	2,934	65
TAXES OTHER THAN INCOME		LL	8,437	3,759	29	2,548	66	483	12	29	9	51	10	29	0	0	444	50
TOTAL RETURN @ 7.604%		RB	125,013	73,365	484	47,270	1,557	11,190	286	668	224	1,162	230	639	4	8	9,550	94
TOTAL REVENUE REQUIREMENT			560,431	316,165	2,744	232,365	4,832	34,674	868	2,054	668	3,524	698	1,978	10	39	29,762	1,949

Customer Cost per Month

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 – RDK CCOSS Surre

$000

	O&M Expenses	Alloc. Factor	Total	Customer													
				Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
701-743	Manufactured Gas Exps.	REVT	2,968	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
804	City Gate Purchases	E2I	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
812	LNG for utility opns.	E2	(6,487)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813	Other gas supply	E2	8,840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Expenses			5,335	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Expenses		D2	11,514	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Expenses		NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Expenses																		
870	Opns S&E	DP	2,018	1,054	39	896	13	69	2	4	1	6	4	8	0	0	12	0
871	Load dispatch	E1	1,650	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
874	Mains/Services	MS	4,617	2,191	81	1,879	30	126	3	9	2	11	8	18	0	0	24	0
875	Meas. Sta. Gen'l	D1	2,102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
876	Meas. Sta. Ind.	C1I	47	47	0	0	0	0	8	20	0	0	0	0	0	0	19	0
877	Meas. Sta. CityGate	D1	550	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
878	Meter/regulator	MR	18,417	18,417	649	15,074	181	1,758	34	58	34	198	62	109	0	1	258	2
879	Cust. Install.	C2P	5,642	5,642	201	4,663	58	568	9	14	11	64	19	35	0	0	0	0
879PL[2]	Cust. Install. PL	C1R	3,746	3,746	155	3,591	0	0	0	0	0	0	0	0	0	0	0	0
880	Other	DP	12,935	6,755	247	5,741	86	440	11	26	7	42	24	51	0	1	79	1
881	Rents	DP	7	4	0	3	0	0	0	0	0	0	0	0	0	0	0	0
885	Maint. S&E	DP	300	157	6	133	2	10	0	1	0	1	1	1	0	0	2	0
887	Maint. Mains	M3	25,719	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
889	Maint. Meas. Sta. Gen'l	D1	1,184	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
890	Maint. Meas. Sta. Ind.	C1I	6	6	0	0	0	0	1	3	0	0	0	0	0	0	2	0
891	Maint. Meas. Sta. CityGate	D1	487	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
892	Maint. Services	C3	1,800	1,800	66	1,544	24	104	3	7	2	9	6	14	0	0	20	0
893	Maint. Meters/Regs.	MR	3,810	3,810	134	3,118	37	364	7	12	7	41	13	23	0	0	53	0
Subtotal - Distribution Expenses			85,037	43,629	1,577	36,642	433	3,438	79	154	64	372	136	260	1	2	470	3
Customer Accounts																		
901	Supervision	C8	1,109	782	28	657	17	72	1	2	0	1	2	1	0	0	1	0
902	Meter Reading	C1	785	785	30	708	7	32	0	1	0	1	3	1	0	0	1	0
903	Records&Collections	C8	26,657	18,796	678	15,798	405	1,730	15	39	10	18	59	29	0	0	15	0
904	Uncollectible	C4	16,495	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
904 LIME	Low-Income Multifamily	LIME	250	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
904CRP	A&G Exps Transferred - Sales	USC	10,211	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Customer Accts.			55,507	20,363	737	17,163	430	1,833	16	42	10	20	64	32	0	0	16	0
Customer Svc. & Info.																		
908	Customer Assistance	C9	1,617	1,617	57	1,321	7	30	33	85	0	1	3	1	0	0	78	1
908CAP	ELIRP	USC	3,859	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480CRP	CRP Shortfall	USC	36,351	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480SEN	Senior Discounts	USC	2,789	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Cust. Svc.			44,616	1,617	57	1,321	7	30	33	85	0	1	3	1	0	0	78	1

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CCOSS Surre

$000

O&M Expenses		Alloc. Factor	Total	Customer													
				Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Administrative & General																		
Various	Labor Related	LL	162,345	90,012	3,239	75,313	1,130	7,205	255	585	106	559	275	392	1	3	943	7
924	Plant Related	DP	4,853	2,535	93	2,154	32	165	4	10	3	16	9	19	0	0	30	0
928	Regulatory Commission Exps	REVT	5,157	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
929	Duplicate charges credit	D15	(913)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
930	Gen'l Advert.	LL	6,020	3,338	120	2,793	42	267	9	22	4	21	10	15	0	0	35	0
931	Rents	LL	330	183	7	153	2	15	1	1	0	1	1	1	0	0	2	0
Sub-Total A&G			177,792	96,067	3,458	80,413	1,206	7,652	269	617	112	597	294	426	1	3	1,010	7
TOTAL O&M			379,801	161,676	5,828	135,539	2,076	12,954	397	897	187	990	497	719	2	5	1,574	11
TOTAL DEPRECIATION			47,180	26,264	957	22,250	335	1,785	48	114	28	163	90	185	1	2	303	2
TAXES OTHER THAN INCOME		LL	8,437	4,678	168	3,914	59	374	13	30	5	29	14	20	0	0	49	0
TOTAL RETURN @ 7.604%		RB	125,013	51,648	1,883	43,772	659	3,489	90	211	56	324	178	375	1	4	601	4
TOTAL REVENUE REQUIREMENT			560,431	244,266	8,837	205,474	3,129	18,602	549	1,253	277	1,505	778	1,300	4	12	2,527	18
Customer Cost per Month					37.77	37.79	54.76	76.43	258.36	228.92	76.84	220.79	34.82	118.87	89.29	255.64	499.02	499.02

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 – RDK CCOSS Surrebuttal Testimony

$000

A&E	Alloc. Factor	Total	Demand/Commodity													
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Exogenous Factors																	
Mains Classification Plastic		100	50														
Percent	M1	100.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sendout		76,787	76,787	429	35,198	1,491	9,222	279	556	191	832	171	511	6	17	14,471	13,413
Throughput - Total		74,780	74,780	419	34,001	1,461	9,003	273	542	187	814	166	498	6	17	14,217	13,177
Tput Excl GTS		61,604	61,604	419	34,001	1,461	9,003	273	542	187	814	166	498	6	17	14,217	0
Firm Excl IS IT GTS		47,370	47,370	419	34,001	1,461	9,003	273	542	187	814	166	498	6			
Interruptible		27,410	27,410												17	14,217	13,177
Percent	E1	100.00%	100.00%	0.56%	45.84%	1.94%	12.01%	0.36%	0.72%	0.25%	1.08%	0.22%	0.67%	0.01%	0.02%	18.85%	17.47%
Per-Customer			149	22	75	307	444	1,544	1,188	623	1,433	89	546	1,527	4,179	33,689	4,392,280
Percent	E1F	100.00%	100.00%	0.68%	55.19%	2.37%	14.61%	0.44%	0.88%	0.30%	1.32%	0.27%	0.81%	0.01%	0.03%	23.08%	0.00%
Percent	E1X	100.00%	100.00%	0.89%	71.78%	3.08%	19.00%	0.58%	1.14%	0.39%	1.72%	0.35%	1.05%	0.01%	0.00%	0.00%	0.00%
Sales - Total		42,527	42,527	419	34,001	961	5,956	101	277	128	455	166	43	2	17		
Sales Firm		42,510	42,510	419	34,001	961	5,956	101	277	128	455	166	43	2			
Sales Interruptible		17	17												17	0	0
	E2	100.00%	100.00%	0.99%	79.95%	2.26%	14.01%	0.24%	0.65%	0.30%	1.07%	0.39%	0.10%	0.00%	0.04%	0.00%	0.00%
Sales Firm	E2F	100.00%	100.00%	0.99%	79.98%	2.26%	14.01%	0.24%	0.65%	0.30%	1.07%	0.39%	0.10%	0.00%	0.00%	0.00%	0.00%
Sales Interruptible	E2I	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%
Winter Throughput		22,470	22,470	183	18,317	374	2,948	49	153	68	264	90	19	0	4	0	0
Percent	E3	100.00%	100.00%	0.82%	81.52%	1.66%	13.12%	0.22%	0.68%	0.30%	1.17%	0.40%	0.08%	0.00%	0.02%	0.00%	0.00%
Design Day Demand		760,080	760,080	4,510	491,656	14,439	114,016	2,667	6,846	2,203	12,837	2,389	7,072	17	47	96,242	5,139
Percent	D1	100.00%	100.00%	0.59%	64.68%	1.90%	15.00%	0.35%	0.90%	0.29%	1.69%	0.31%	0.93%	0.00%	0.01%	12.66%	0.68%
Design Day Demand XGTS		754,941	754,941	4,510	491,656	14,439	114,016	2,667	6,846	2,203	12,837	2,389	7,072	17	47	96,242	
Percent	D1X	100.00%	100.00%	0.60%	65.13%	1.91%	15.10%	0.35%	0.91%	0.29%	1.70%	0.32%	0.94%	0.00%	0.01%	12.75%	0.00%
Load Factor		0.03%	26.95%	25.48%	18.95%	27.71%	21.63%	28.08%	21.69%	23.23%	17.37%	19.07%	19.29%	98.45%	97.43%	40.47%	702.49%
Excess Demand		586,164	586,164	3,361	398,501	10,438	89,351	1,918	5,361	1,691	10,607	1,933	5,708	0	1	57,292	0
Percent	X1	100.00%	100.00%	0.57%	67.98%	1.78%	15.24%	0.33%	0.91%	0.29%	1.81%	0.33%	0.97%	0.00%	0.00%	9.77%	0.00%
Design Day Supply		658,635	658,635	4,510	491,656	14,439	114,016	2,667	6,846	2,203	12,837	2,389	7,072				
Percent	D1S	100.00%	100.00%	0.68%	74.65%	2.19%	17.31%	0.40%	1.04%	0.33%	1.95%	0.36%	1.07%	0.00%	0.00%	0.00%	0.00%
Design Day - Storage/Prod'n		709,366	709,366	4,510	491,656	14,439	114,016	2,667	6,846	2,203	12,837	2,389	7,072	17	24	48,121	2,570
Percent	D2	100.00%	100.00%	0.64%	69.31%	2.04%	16.07%	0.38%	0.97%	0.31%	1.81%	0.34%	1.00%	0.00%	0.00%	6.78%	0.36%
Number of Customers		502,354	0														
Percent	C1	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Small Customers		474,464	0														
Percent	C1S	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Residential Customers		472,601	0														
Percent	C1R	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Customers C&I		25,678	0														

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 – RDK CCOSS Surrebuttal Testimony

$000

A&E	Alloc. Factor	Total	Demand/Commodity														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Percent	C1C	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Customers ind		1,058	0														
Percent	C1I	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Meters Plant		142,849	0														
Meters per Customer																	
Percent	C2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Implied Weighting Factor																	
Premises		140,856	0														
Percent	C2P	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Services Plant		954,012	0														
Services per Customer																	
Percent	C3	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Implied Weighting Factor																	
Writeoffs		42,390	42,390	738	40,185	209	1,196	8	53								
Percent	C4	100.00%	100.00%	1.74%	94.80%	0.49%	2.82%	0.02%	0.13%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Meter Reads		784,998	0														
Percent	C7	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Implied Weighting Factor																	
Customer Service 903		24,774	7,306	106	7,196	1	3	0	0	0	0	0	0	0	0	0	0
Percent	C8	100.00%	29.49%	0.43%	29.04%	0.00%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Customer Accts 908		5,476,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	C9	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Current Distribution Revenue		400,218	400,218	6,084	317,004	9,202	54,766	1,614	3,272	835	3,493	1,271	2,684	13	0	0	0
Percent	REVD	100.00%	100.000%	1.52%	79.21%	2.30%	13.68%	0.40%	0.82%	0.21%	0.87%	0.32%	0.67%	0.00%	0.00%	0.00%	0.00%
Current Revenue		466,095	466,095	6,559	355,539	10,857	64,969	1,924	3,886	1,047	4,415	1,459	3,228	20	0	10,940	1,250
Percent	REVT	100.00%	100.000%	1.41%	76.28%	2.33%	13.94%	0.41%	0.83%	0.22%	0.95%	0.31%	0.69%	0.00%	0.00%	2.35%	0.27%
Forfeited Discounts (over 60 AR)		377,622	377,622	6,978	370,099	81	462	0	2								
Percent	RFD	100.00%	100.00%	1.85%	98.01%	0.02%	0.12%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GTS - Demand		1	1														1
Percent	GTS	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
None		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	NO	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Endogenous Factors																	
Mains Plant: PGW CD		100	50.00	0.30	32.56	0.96	7.55	0.18	0.45	0.15	0.85	0.16	0.47	0.00	0.00	6.37	0.00
50/50 A&E		100.00	100.00	0.63	61.59	2.08	14.93	0.39	0.90	0.30	1.57	0.30	0.89	0.00	0.01	16.43	0.00
50/50 P&A		100.00	100.00	0.64	60.16	2.14	14.86	0.40	0.89	0.30	1.51	0.29	0.87	0.01	0.02	17.91	0.00

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit rEc-S1 – RDK CCOSS Surrebuttal Testimony

$000

A&E	Alloc. Factor	Total	Demand/Commodity														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Percent	M2	100.00%	100.00%	0.63%	61.59%	2.08%	14.93%	0.39%	0.90%	0.30%	1.57%	0.30%	0.89%	0.00%	0.01%	16.43%	0.00%
Mains Plant		781,333	781,333	4,853	476,552	16,061	115,511	2,983	6,942	2,289	12,112	2,320	6,894	39	106	127,097	7,574
	M3	100.00%	100.00%	0.62%	60.99%	2.06%	14.78%	0.38%	0.89%	0.29%	1.55%	0.30%	0.88%	0.00%	0.01%	16.27%	0.97%
Total Plant		2,178,632	1,139,008	7,278	721,066	22,973	168,625	4,260	10,131	3,320	17,963	3,423	10,150	49	126	159,461	10,183
Percent	TP	100.00%	52.28%	0.33%	33.10%	1.05%	7.74%	0.20%	0.47%	0.15%	0.82%	0.16%	0.47%	0.00%	0.01%	7.32%	0.47%
Distribution Plant		1,689,748	807,262	5,008	493,080	16,564	119,387	3,076	7,174	2,365	12,541	2,401	7,132	39	108	130,619	7,769
Percent	DP	100.00%	47.77%	0.30%	29.18%	0.98%	7.07%	0.18%	0.42%	0.14%	0.74%	0.14%	0.42%	0.00%	0.01%	7.73%	0.46%
Distribution Plant Demand		800,474	800,474	4,966	488,934	16,425	118,383	3,050	7,114	2,345	12,436	2,380	7,072	39	107	129,520	7,703
Percent	DPD	100.00%	100.00%	0.62%	61.08%	2.05%	14.79%	0.38%	0.89%	0.29%	1.55%	0.30%	0.88%	0.00%	0.01%	16.18%	0.96%
Distribution Plant Customer		882,486															
Percent	DPC	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Distribution Labor		49,896	22,650	139	13,709	459	3,320	85	199	66	350	67	199	1	3	3,600	424
Percent	DL	100.00%	45.39%	0.28%	27.54%	0.92%	6.65%	0.17%	0.40%	0.13%	0.70%	0.13%	0.40%	0.00%	0.01%	7.21%	0.85%
Labor		75,636	33,700	257	22,838	594	4,327	110	260	85	455	88	259	1	3	3,977	446
Percent	LL	100.00%	44.56%	0.34%	30.19%	0.79%	5.72%	0.15%	0.34%	0.11%	0.60%	0.12%	0.34%	0.00%	0.00%	5.26%	0.59%
Mains & Services		1,487,143	781,333	4,853	476,552	16,061	115,511	2,983	6,942	2,289	12,112	2,320	6,894	39	106	127,097	7,574
Percent	MS	100.00%	52.54%	0.33%	32.04%	1.08%	7.77%	0.20%	0.47%	0.15%	0.81%	0.16%	0.46%	0.00%	0.01%	8.55%	0.51%
Meters/Regulators - Cust		176,676	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	MR	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Implied Weighting Factor																	
Total Plant		2,178,632	1,139,008	7,278	721,066	22,973	168,625	4,260	10,131	3,320	17,963	3,423	10,150	49	126	159,461	10,183
Percent	TP	100.00%	52.28%	0.33%	33.10%	1.05%	7.74%	0.20%	0.47%	0.15%	0.82%	0.16%	0.47%	0.00%	0.01%	7.32%	0.47%
Rate Base		1,203,573	706,331	4,655	455,096	14,988	107,731	2,751	6,434	2,157	11,186	2,211	6,153	36	80	91,943	909
Percent	RB	100.00%	58.69%	0.39%	37.81%	1.25%	8.95%	0.23%	0.53%	0.18%	0.93%	0.18%	0.51%	0.00%	0.01%	7.64%	0.08%
O&M Excluding Gas		379,801	218,125	2,095	169,173	2,788	19,918	492	1,171	374	1,983	396	1,125	6	28	16,834	1,740
Percent	OM	100.00%	57.43%	0.55%	44.54%	0.73%	5.24%	0.13%	0.31%	0.10%	0.52%	0.10%	0.30%	0.00%	0.01%	4.43%	0.46%
Total Expenses		435,418	242,800	2,261	185,095	3,275	23,484	582	1,385	444	2,362	469	1,339	7	31	20,212	1,855
Percent	TOTX	100.00%	55.76%	0.52%	42.51%	0.75%	5.39%	0.13%	0.32%	0.10%	0.54%	0.11%	0.31%	0.00%	0.01%	4.64%	0.43%
Universal Service		35,627	35,627	429	35,198												0
Percent	USC	100.00%	100.00%	1.21%	98.79%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
LIME		10,713	10,713			1,491	9,222										0
Percent	LIME	100.00%	100.00%	0.00%	0.00%	13.92%	86.08%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
O&M/Taxes for WC		388,238	221,884	2,124	171,721	2,855	20,401	504	1,200	383	2,034	406	1,154	6	28	17,278	1,790
B&V WC Allocator	WC	100.00%	57.15%	0.55%	44.23%	0.74%	5.25%	0.13%	0.31%	0.10%	0.52%	0.10%	0.30%	0.00%	0.01%	4.45%	0.46%

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 – RDK CCOSS

$000

A&E	Alloc. Factor	Total	Total C	Customer: Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Exogenous Factors																	
Mains Classification Plastic		100	50														
Percent	M1	100.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sendout		76,787	0														
Throughput - Total		74,780	0														
Tput Excl GTS		61,604	0														
Firm Excl IS IT GTS		47,370	0														
Interruptible		27,410	0														
Percent	E1	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Per-Customer																	
Percent	E1F	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Percent	E1X	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sales - Total		42,527	0														
Sales Firm		42,510	0														
Sales Interruptible		17	0														
	E2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sales Firm	E2F	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sales Interruptible	E2I	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Winter Throughput		22,470	0														
Percent	E3	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Design Day Demand		760,080	0														
Percent	D1	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Design Day Demand XGTS		754,941	0														
Percent	D1X	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Load Factor		0.03%															
Excess Demand		586,164	0														
Percent	X1	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Design Day Supply		658,035	0														
Percent	D1S	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Design Day - Storage/Prod'n		709,366	0														
Percent	D2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Number of Customers		502,354	502,354	19,496	453,105	4,762	20,283	177	456	300	568	1,863	911	4	4	422	3
Percent	C1	100.00%	100.00%	3.88%	90.20%	0.95%	4.04%	0.04%	0.09%	0.06%	0.11%	0.37%	0.18%	0.00%	0.00%	0.08%	0.00%
Small Customers		474,464	474,464	19,496	453,105							1,863					
Percent	C1S	100.00%	100.00%	4.11%	95.50%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.39%	0.00%	0.00%	0.00%	0.00%	0.00%
Residential Customers		472,601	472,601	19,496	453,105												
Percent	C1R	100.00%	100.00%	4.13%	95.87%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Customers C&I		25,678	25,678			4,762	20,283	177	456								

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CCOSS

$000

A&E	Alloc. Factor	Total	Total C	Customer: Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Percent	C1C	100.00%	100.00%	0.00%	0.00%	18.55%	78.99%	0.69%	1.78%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Customers Ind		1,058	1,058					177	456							422	3
Percent	C1I	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%	16.73%	43.10%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	39.89%	0.28%
Meters Plant		142,849	142,849	5,009	116,409	1,459	14,168	232	354	274	1,595	479	879	2	7	1,970	14
Meters per Customer				215	1,300	2,089	2,743	2,743	2,743	2,743	2,743	2,743	2,743	2,743	2,743	2,743	1,300
Percent	C2	100.00%	100.00%	3.51%	81.49%	1.02%	9.92%	0.16%	0.25%	0.19%	1.12%	0.34%	0.62%	0.00%	0.00%	1.38%	0.01%
Implied Weighting Factor			1.11	1.00	1.00	1.19	2.72	5.09	3.02	3.55	10 93	1.00	3.75	2.06	6.49	18.17	18.17
Premises		140,856	140,856	5,009	116,409	1,459	14,168	232	354	274	1,595	479	879				
Percent	C2P	100.00%	100.00%	3.56%	82.64%	1.04%	10.06%	0.16%	0.25%	0.19%	1.13%	0.34%	0 62%	0.00%	0.00%	0.00%	0.00%
Services Plant		954,012	954,012	35,204	818,164	12,898	54,937	1,489	3,837	813	4,779	3,364	7,665	34	101	10,652	76
Services per Customer				1,806	1,806	2,709	2,709	8,414	8,414	2,709	8,414	1,806	8,414	8,414	25,242	25,242	25,242
Percent	C3	100.00%	100.00%	3.69%	85.76%	1.35%	5.76%	0.16%	0.40%	0.09%	0.50%	0.35%	0.80%	0.00%	0.01%	1.12%	0.01%
Implied Weighting Factor			1.05	1.00	1.00	1.50	1.50	4.66	4.66	1.50	4 66	1.00	4.66	4.66	13.98	13.98	13.98
Writeoffs		42,390															
Percent	C4	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Meter Reads		784,998	784,998	22,043	666,113	11,857	63,947	1,345	2,962	1,069	3,710	2,794	2,553	18	12	6,529	46
Percent	C7	100.00%	100.00%	2.81%	84.86%	1.51%	8.15%	0.17%	0.38%	0.14%	0.47%	0.36%	0.33%	0.00%	0.00%	0.83%	0.01%
Implied Weighting Factor			1.38	1.00	1.30	2.20	2.79	6.72	5.75	3.15	5.78	1.33	2.48	3.98	2.65	13.68	13.68
Customer Service 903		24,774	17,468	630	14,682	377	1,607	14	36	9	17	54	27	0	0	14	0
Percent	C8	100.00%	70.51%	2.54%	59 26%	1.52%	6.49%	0.06%	0.15%	0.04%	0.07%	0.22%	0.11%	0.00%	0.00%	0.05%	0.00%
Customer Accts 908		5,476,000	5,476,000	192,420	4,472,024	24,097	102,636	111,479	287,200	1,518	2,874	9,427	4,610	20	20	265,786	1,889
Percent	C9	100.00%	100.00%	3.51%	81.67%	0.44%	1.87%	2.04%	5.24%	0 03%	0.05%	0.17%	0.08%	0.00%	0.00%	4.85%	0.03%
Current Distribution Revenue		400,218															
Percent	REVD	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Current Revenue		466,095															
Percent	REVT	100.00%	0.00%	0.00%	0.00%	0.00%	0 00%	0 00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0 00%	0.00%	0.00%
Forfeited Discounts (over 60 AR)		377,622															
Percent	RFD	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
GTS - Demand		1	0														
Percent	GTS	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
None		1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	NO	0.00%	0.00%	0.00%	0 00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Endogenous Factors																	
Mains Plant: PGW CO		100	50.00	1.94	45.10	0.47	2.02	0.02	0.05	0.03	0.06	0.19	0.09	0.00	0.00	0.04	0.00
50/50 A&E		100.00															
50/50 P&A		100.00															

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 – RDK CCOSS

$000

A&E	Alloc. Factor	Total	Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
							Customer										
Percent	M2	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Mains Plant		781,333	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	M3	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Total Plant		2,178,632	1,039,624	37,921	881,391	13,251	70,086	1,876	4,415	1,111	6,411	3,563	7,401	29	88	11,997	85
Percent	TP	100.00%	47.72%	1.74%	40.46%	0.61%	3.22%	0.09%	0.20%	0.05%	0.29%	0.16%	0.34%	0.00%	0.00%	0.55%	0.00%
Distribution Plant		1,689,748	882,486	32,267	749,913	11,278	57,507	1,430	3,395	927	5,434	3,083	6,717	27	83	10,351	74
Percent	DP	100.00%	52.23%	1.91%	44.38%	0.67%	3.40%	0.08%	0.20%	0.05%	0.32%	0.18%	0.40%	0.00%	0.00%	0.61%	0.00%
Distribution Plant Demand		800,474	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	DPD	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Distribution Plant Customer		882,486	882,486	32,267	749,913	11,278	57,507	1,430	3,395	927	5,434	3,083	6,717	27	83	10,351	74
Percent	DPC	100.00%	100.00%	3.66%	84.98%	1.28%	6.52%	0.16%	0.38%	0.11%	0.62%	0.35%	0.76%	0.00%	0.01%	1.17%	0.01%
Distribution Labor		49,896	27,246	981	22,791	270	2,262	45	81	42	248	86	162	0	1	275	2
Percent	DL	100.00%	54.61%	1.97%	45.68%	0.54%	4.53%	0.09%	0.16%	0.09%	0.50%	0.17%	0.32%	0.00%	0.00%	0.55%	0.00%
Labor		75,636	41,936	1,509	35,088	526	3,357	119	272	49	261	128	182	0	1	439	3
Percent	LL	100.00%	55.44%	1.99%	46.39%	0.70%	4.44%	0.16%	0.36%	0.07%	0.34%	0.17%	0.24%	0.00%	0.00%	0.58%	0.00%
Mains & Services		1,487,143	705,810	26,045	605,305	9,542	40,644	1,102	2,839	601	3,536	2,489	5,671	25	75	7,881	56
Percent	MS	100.00%	47.46%	1.75%	40.70%	0.64%	2.73%	0.07%	0.19%	0.04%	0.24%	0.17%	0.38%	0.00%	0.01%	0.53%	0.00%
Meters/Regulators - Cust		176,676	176,676	6,222	144,608	1,736	16,863	328	556	326	1,899	595	1,046	3	8	2,470	18
Percent	MR	100.00%	100.00%	3.52%	81.85%	0.98%	9.54%	0.19%	0.31%	0.18%	1.07%	0.34%	0.59%	0.00%	0.00%	1.40%	0.01%
Implied Weighting Factor			1.10	1.00	1.00	1.14	2.60	5.81	3.82	3.40	10.47	1.00	3.60	1.97	6.22	18.34	18.34
Total Plant		2,178,632	1,039,624	37,921	881,391	13,251	70,086	1,876	4,415	1,111	6,411	3,563	7,401	29	88	11,997	85
Percent	TP	100.00%	47.72%	1.74%	40.46%	0.61%	3.22%	0.09%	0.20%	0.05%	0.29%	0.16%	0.34%	0.00%	0.00%	0.55%	0.00%
Rate Base		1,203,573	497,242	18,131	421,416	6,346	33,586	867	2,034	538	3,116	1,712	3,613	14	43	5,785	41
Percent	RB	100.00%	41.31%	1.51%	35.01%	0.53%	2.79%	0.07%	0.17%	0.04%	0.26%	0.14%	0.30%	0.00%	0.00%	0.48%	0.00%
O&M Excluding Gas		379,801	161,676	5,828	135,539	2,076	12,954	397	897	187	990	497	719	2	5	1,574	11
Percent	OM	100.00%	42.57%	1.53%	35.69%	0.55%	3.41%	0.10%	0.24%	0.05%	0.26%	0.13%	0.19%	0.00%	0.00%	0.41%	0.00%
Total Expenses		435,418	192,618	6,954	161,703	2,470	15,114	459	1,041	221	1,181	601	924	3	8	1,926	14
Percent	TOTX	100.00%	44.24%	1.60%	37.14%	0.57%	3.47%	0.11%	0.24%	0.05%	0.27%	0.14%	0.21%	0.00%	0.00%	0.44%	0.00%
Universal Service		35,627	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	USC	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
LIME		10,713	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent	LIME	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
O&M/Taxes for WC		388,238	166,354	5,997	139,453	2,135	13,328	410	928	193	1,019	511	739	2	6	1,623	12
B&V WC Allocator	WC	100.00%	42.85%	1.54%	35.92%	0.55%	3.43%	0.11%	0.24%	0.05%	0.26%	0.13%	0.19%	0.00%	0.00%	0.42%	0.00%

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 – RDK CCOSS Surrebuttal Testimony

$000

Gross Plant Allocation	Alloc. Factor	Plant	Demand/Commodity														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	FT	GTS
Gas Plant In Service																	
401 Franchises & Consents	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
402 Other Intangible Plant	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Plant	D2	60,359	60,359	384	41,834	1,229	9,701	227	583	187	1,092	203	602	1	2	4,095	219
Storage Plant	D2	145,112	145,112	923	100,576	2,954	23,324	546	1,400	451	2,626	489	1,447	3	5	9,844	526
Transmission Plant	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																	
374 Land and Land Rights	DPD	101	101	1	62	2	15	0	1	0	2	0	1	0	0	16	1
375 Structures and Improvements	DPD	2,707	2,707	17	1,653	56	400	10	24	8	42	8	24	0	0	438	26
376 Mains	M2	773,759	773,759	4,853	476,552	16,061	115,511	2,983	6,942	2,289	12,112	2,320	6,894	39	106	127,097	0
376 Mains GTS	GTS	7,574	7,574	0	0	0	0	0	0	0	0	0	0	0	0	0	7,574
377 Compressor Equipment	D1	1,255	1,255	7	812	24	188	4	11	4	21	4	12	0	0	159	8
378 Meas&Reg. Sta. Equip. - Gen'l	D1	17,886	17,886	106	11,570	340	2,683	63	161	52	302	56	166	0	1	2,265	121
380 Services	C3	705,810	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
381 Meters	C2	75,453	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
382 Meter Installations	C2	94,565	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
383 Regulators	C1S	2,202	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
384 Regulator Installations	C1S	4,142	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
385 Meas&Reg. Sta. Equip. - Ind.	C1I	314	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
387 Other Equipment	DPD	3,980	3,980	25	2,431	82	589	15	35	12	62	12	35	0	1	644	38
Subtotal - Distribution Plant		1,689,748	807,262	5,008	493,080	16,564	119,387	3,076	7,174	2,365	12,541	2,401	7,132	39	108	130,619	7,769
General Plant																	
389 Land and Land Rights	LL	3,713	1,654	13	1,121	29	212	5	13	4	22	4	13	0	0	195	22
390 Structures and Improvements	LL	82,900	36,936	282	25,031	651	4,743	120	285	93	498	97	284	1	3	4,359	488
391 Office Furniture and Equipment	LL	108,966	48,550	371	32,902	856	6,234	158	374	122	655	127	373	2	4	5,730	642
392 Transportation Equipment	LL	40,027	17,834	136	12,086	314	2,290	58	137	45	241	47	137	1	2	2,105	236
393 Stores Equipment	LL	755	336	3	228	6	43	1	3	1	5	1	3	0	0	40	4
394 Tools shop & garage eqmt.	LL	10,723	4,778	36	3,238	84	613	16	37	12	64	13	37	0	0	564	63
396 Power operated eqmt	LL	1,235	550	4	373	10	71	2	4	1	7	1	4	0	0	65	7
397 Communications eqmt	LL	20,815	9,274	71	6,285	163	1,191	30	72	23	125	24	71	0	1	1,095	123
398 Misc. equipment	LL	14,279	6,362	49	4,312	112	817	21	49	16	86	17	49	0	1	751	84
Subtotal - General Plant		283,413	126,275	964	85,576	2,226	16,214	412	974	317	1,704	330	969	5	12	14,904	1,670
Total Plant		2,178,632	1,139,008	7,278	721,066	22,973	168,625	4,260	10,131	3,320	17,963	3,423	10,150	49	126	159,461	10,183

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CC

$000

Gross Plant Allocation	Alloc. Factor	Plant	Customer														
			Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA R8	NGV	Int. Sales	IT	GTS
Gas Plant In Service																	
401 Franchises & Consents	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
402 Other Intangible Plant	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Gas Plant		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Plant	D2	60,359	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Plant	D2	145,112	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Plant	NO	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Plant																	
374 Land and Land Rights	DPD	101	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
375 Structures and Improvements	DPD	2,707	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
376 Mains	M2	773,759	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
376 Mains GTS	GTS	7,574	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
377 Compressor Equipment	D1	1,255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
378 Meas&Reg. Sta. Equip. - Gen'l	D1	17,886	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
380 Services	C3	705,810	705,810	26,045	605,305	9,542	40,644	1,102	2,839	601	3,536	2,489	5,671	25	75	7,881	56
381 Meters	C2	75,453	75,453	2,646	61,487	770	7,484	122	187	145	843	253	464	1	4	1,041	7
382 Meter Installations	C2	94,565	94,565	3,316	77,062	966	9,379	153	234	181	1,056	317	582	1	4	1,304	9
383 Regulators	C1S	2,202	2,202	90	2,103	0	0	0	0	0	0	9	0	0	0	0	0
384 Regulator Installations	C1S	4,142	4,142	170	3,956	0	0	0	0	0	0	16	0	0	0	0	0
385 Meas&Reg. Sta. Equip. - Ind.	C1I	314	314	0	0	0	0	53	135	0	0	0	0	0	0	125	1
387 Other Equipment	DPD	3,980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Distribution Plant		1,689,748	882,486	32,267	749,913	11,278	57,507	1,430	3,395	927	5,434	3,083	6,717	27	83	10,351	74
General Plant																	
389 Land and Land Rights	LL	3,713	2,059	74	1,722	26	165	6	13	2	13	6	9	0	0	22	0
390 Structures and Improvements	LL	82,900	45,964	1,654	38,458	577	3,679	130	299	54	286	140	200	1	1	482	3
391 Office Furniture and Equipment	LL	108,966	60,416	2,174	50,550	758	4,836	171	392	71	375	184	263	1	2	633	4
392 Transportation Equipment	LL	40,027	22,193	799	18,569	279	1,777	63	144	26	138	68	97	0	1	232	2
393 Stores Equipment	LL	755	419	15	350	5	34	1	3	0	3	1	2	0	0	4	0
394 Tools shop & garage eqmt.	LL	10,723	5,945	214	4,975	75	476	17	39	7	37	18	26	0	0	62	0
396 Power operated eqmt	LL	1,235	685	25	573	9	55	2	4	1	4	2	3	0	0	7	0
397 Communications eqmt	LL	20,815	11,541	415	9,656	145	924	33	75	14	72	35	50	0	0	121	1
398 Misc. equipment	LL	14,279	7,917	285	6,624	99	634	22	51	9	49	24	34	0	0	83	1
Subtotal - General Plant		283,413	157,138	5,654	131,478	1,973	12,579	446	1,021	184	976	479	684	2	5	1,646	12
Total Plant		2,178,632	1,039,624	37,921	881,391	13,251	70,086	1,876	4,415	1,111	6,411	3,563	7,401	29	88	11,997	85

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 – RDK CCOSS Surrebuttal Testimony

$000

Labor Allocation: Placeholder		Alloc. Factor	Est. Labor Percent	Total	Demand/Commodity														
					Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
701-743	Manufactured Gas Exps.	REVT	44%	1,308	1,308	18	998	30	182	5	11	3	12	4	9	0	0	31	4
804	City Gate Purchases	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
812	LNG for utility opns.	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813	Other gas supply	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Expenses		D		1,308	1,308	18	998	30	182	5	11	3	12	4	9	0	0	31	4
Storage Expenses		D2	44%	5,119	5,119	33	3,548	104	823	19	49	16	93	17	51	0	0	347	19
Transmission Expenses		NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Expenses																			
870	Opns S&E	OP	94%	1,908	911	6	556	19	135	3	8	3	14	3	8	0	0	147	9
871	Load dispatch	E1	78%	1,295	1,295	7	594	25	156	5	9	3	14	3	9	0	0	244	226
874	Mains/Services	MS	74%	3,428	1,801	11	1,098	37	266	7	16	5	28	5	16	0	0	293	17
875	Meas. Sta. Gen'l	D1	84%	1,767	1,767	10	1,143	34	265	6	16	5	30	6	16	0	0	224	12
876	Meas. Sta. Ind.	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
877	Meas. Sta. CityGate	D1	90%	494	494	3	320	9	74	2	4	1	8	2	5	0	0	63	3
878	Meter/regulator	MR	70%	12,802	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
879	Cust. Install.	C2P	84%	4,721	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
879PLP	Cust. Install. PL	C1R	50%	1,870	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
880	Other	DP	21%	2,695	1,288	8	786	26	190	5	11	4	20	4	11	0	0	208	11
881	Rents	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
885	Maint. S&E	DP	66%	198	95	1	58	2	14	0	1	0	1	0	1	0	0	15	1
887	Maint. Mains	M3	55%	14,036	14,036	87	8,561	289	2,075	54	125	41	218	42	124	1	2	2,283	136
889	Maint. Meas. Sta. Gen'l	D1	57%	678	678	4	439	13	102	2	6	2	11	2	6	0	0	86	5
890	Maint. Meas. Sta. Ind.	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
891	Maint. Meas. Sta. CityGate	D1	59%	286	286	2	185	5	43	1	3	1	5	1	3	0	0	36	2
892	Maint. Services	C3	68%	1,230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
893	Maint. Meters/Regs.	MR	65%	2,490	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Distribution Expenses				49,896	22,650	139	13,739	459	3,320	85	199	66	350	67	199	1	3	3,600	424
Customer Accounts																			
901	Supervision	C8	96%	1,069	315	5	310	0	0	0	0	0	0	0	0	0	0	0	0
902	Meter Reading	C1	56%	438	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
903	Records&Collections	C8	55%	14,607	4,308	63	4,243	0	2	0	0	0	0	0	0	0	0	0	0
904	Uncollectible	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
904CRP	A&G Exps Transferred - Sales	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Customer Accts.				16,114	4,623	67	4,553	0	2	0	0	0	0	0	0	0	0	0	0
Customer Svc. & Info.																			
908	Customer Assistance	C9	198%	3,199	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
908CAP	ELIRP	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480CRP	CRP Shortfall	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480SEN	Senior Discounts	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Cust. Svc.				3,199	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative & General																			
Various	Labor Related	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
924	Plant Related	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
928	Regulatory Commission Exps	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
929	Duplicate charges credit	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
930	Gen'l Advert.	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
931	Rents	NO	0%	0															
Sub-Total A&G				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Labor (LL)				75,636	33,700	257	22,838	594	4,327	110	260	85	455	88	259	1	3	3,977	446
Distribution Labor (DL)				49,896	22,650	139	13,739	459	3,320	85	199	66	350	67	199	1	3	3,600	424

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CCOSS Surrebuttal Testimony

$000

Labor Allocation: Placeholder		Alloc. Factor	Est. Labor Percent	Total	Customer														
					Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	FT	GTS
701-743	Manufactured Gas Exps.	REVT	44%	1,308	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
804	City Gate Purchases	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
812	LNG for utility opns.	NO		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
813	Other gas supply	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Production Expenses		0		1,308	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Storage Expenses		D2	44%	5,119	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Expenses		NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Distribution Expenses																			
870	Opns S&E	DP	94%	1,906	995	36	846	13	65	2	4	1	6	3	8	0	0	12	0
871	Load dispatch	E1	78%	1,295	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
874	Mains/Services	MS	74%	3,428	1,627	60	1,395	22	94	3	7	1	8	6	13	0	0	18	0
875	Meas. Sta. Gen'l	D1	84%	1,767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
876	Meas. Sta. Ind.	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
877	Meas. Sta. CityGate	D1	90%	494	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
878	Meter/regulator	MR	70%	12,802	12,802	451	10,478	126	1,222	24	40	24	138	43	76	0	1	179	1
879	Cust. Install.	C2P	84%	4,721	4,721	168	3,902	49	475	8	12	9	53	16	29	0	0	0	0
879PLF	Cust. Install. PL	C1R	50%	1,870	1,870	77	1,793	0	0	0	0	0	0	0	0	0	0	0	0
880	Other	DP	21%	2,695	1,407	51	1,196	18	92	2	5	1	9	5	11	0	0	17	0
881	Rents	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
885	Maint. S&E	DP	66%	198	103	4	88	1	7	0	0	0	1	0	1	0	0	1	0
887	Maint. Mains	M3	55%	14,036	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
889	Maint. Meas. Sta. Gen'l	D1	57%	678	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
890	Maint. Meas. Sta. Ind.	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
891	Maint. Meas. Sta. CityGate	D1	59%	466	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
892	Maint. Services	C3	68%	1,230	1,230	45	1,055	17	71	2	5	1	6	4	10	0	0	14	0
893	Maint. Meters/Regs.	MR	65%	2,490	2,490	88	2,038	24	238	5	8	5	27	8	15	0	0	35	0
Subtotal - Distribution Expenses				49,896	27,246	981	22,791	270	2,262	45	81	42	248	86	162	0	1	275	2
Customer Accounts																			
901	Supervision	C8	96%	1,069	754	27	634	16	69	1	2	0	1	2	1	0	0	1	0
902	Meter Reading	C1	56%	438	438	17	395	4	18	0	0	0	0	2	1	0	0	0	0
903	Records&Collections	C8	55%	14,607	10,299	372	8,656	222	948	8	21	5	10	32	16	0	0	8	0
904	Uncollectible	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
904CR	A&G Exps Transferred - Sales	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal - Customer Accts.				16,114	11,491	416	9,685	243	1,035	9	23	6	11	36	18	0	0	9	0
Customer Svc. & Info.																			
908	Customer Assistance	C9	198%	3,199	3,199	112	2,612	14	60	65	168	1	2	6	3	0	0	155	1
908CAP	ELIRP	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480CRP	CRP Shortfall	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
480SEN	Senior Discounts	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-Total Cust. Svc.				3,199	3,199	112	2,612	14	60	65	168	1	2	6	3	0	0	155	1
Administrative & General																			
Various	Labor Related	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
924	Plant Related	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
928	Regulatory Commission Exps	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
929	Duplicate charges credit	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
930	Gen'l Advert.	NO	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
931	Rents	NO	0%	0															
Sub-Total A&G				0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Labor (LL)				75,636	41,936	1,509	35,088	526	3,357	119	272	49	261	128	182	0	1	439	3
Distribution Labor (DL)				49,896	27,246	981	22,791	270	2,262	45	81	42	248	86	162	0	1	275	2

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 – RDK CCOSS Surrebuttal Testimony

$000

Meter Cost Allocator Workpaper	Total	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Number of Customers	502,354	19,496	453,105	4,762	20,283	177	456	300	568	1,863	911	4	4	422	3
Demand Allocator Summary															
Design Day Demand	760,080	4,510	491,656	14,439	114,016	2,667	6,846	2,203	12,837	2,389	7,072	17	47	96,242	5,139
Demand Per Customer	1.51	0.23	1.09	3.03	5.62	15.07	15.01	7.34	22.60	1.28	7.76	4.25	11.75	228.06	1,713.00
Est'd Hourly Max Demand/Cust	94.56	14.46	67.82	189.51	351.33	941.74	938.32	458.96	1,412.52	80.15	485.18	265.63	734.38	14,253.85	107,062.50
Indexed to Residential Avg.	1.44	0.22	1.03	2.89	5.35	14.35	14.30	6.99	21.53	1.22	7.39	4.05	11.19	217.23	1,631.64
Combined Demand Index		1.00		4.89		14.31		16.50		1.22	7.39	4.05	11.19	217.23	1,631.64
Derivation of PGW Services Alloc															
Service Unit Cost	1,899	1,806	1,806	2,709	2,709	8,414	8,414	2,709	8,414	1,806	8,414	8,414	25,242	25,242	25,242
PGW Services Cost	954,012	35,204	818,164	12,898	54,937	1,489	3,837	813	4,779	3,364	7,665	34	101	10,652	76
Percent	100.00%	3.69%	85.76%	1.35%	5.76%	0.16%	0.40%	0.09%	0.50%	0.35%	0.80%	0.00%	0.01%	1.12%	0.01%
Indexed To Residential Average	1.05	1.00	1.00	1.50	1.50	4.66	4.66	1.50	4.66	1.00	4.66	4.66	13.98	13.98	13.98
Combined PGW Services Index		1.00		1.50		4.66		3.57		1.00	4.66	4.66	13.98	13.98	13.98
Alternative Meter Allocator															
Services per Customer*		0.450	0.450	0.511	0.511	0.491	0.491	0.327	0.327	0.259	0.259	1.000	0.511	0.511	0.511
Service Unit Cost	0														
RDK Services Cost	0														
Percent															
Indexed To Residential Average															
Combined PGW Services Index		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!		0.00	0.00	0.00	0.00	0.00	0.00

*Estimated from OCA-VII-14

Service Line Size per OSBA-I-21

	Average FY 2011-2016			FY 2016		
	Number	Cost	Unit Cost	Number	Cost	Unit Cost
1.25" and smaller- New	1,129	4,074,000	$3,609	1,975	4,935,096	$2,499
1.25" and smaller- Replace	7,832	19,274,000	$2,461	8,374	15,120,782	$1,806
1.25" and smaller- Total	8,961	23,348,000	$2,606	10,349	20,055,878	$1,938
2 " and larger- New	142	2,083,000	$14,669	199	2,415,358	$12,137
2 " and larger- Replace	137	1,098,000	$8,015	90	757,265	$8,414
2 " and larger- Total	279	3,181,000	$11,401	289	3,172,623	$10,978

Comparison to Other NGDCs (RDK Workpapers)

UGI Gas 2017			UGI PNG			Columbia			PGW Proposed		
	Svcs Index	Peak Index		Svcs Index	Peak Index		Svcs Index	Peak Index		Svcs Index	Peak Index
R	1.00	1.00	R	1.00	1.00	RS/RDS	1.00	1.00	Residential	1.00	1.00
N	1.28	5.63	N	1.34	3.91	SGS1	1.02	2.34	Commercial	1.50	4.89
DS	5.38	58.13	DS	2.85	63.35	SGS2	1.10	15.97	Industrial	4.66	14.31
LFD	5.38	112.79	LFD	4.39	157.08	SDS/LGSS	1.65	104.07	Municipal	3.57	16.50
XD	10.99	3,678.17	XD	8.46	25,369.23	LDS/LGSS	3.18	662.45			

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CCOSS Surrebuttal Testimony

$000

Meter Cost Allocator Workpaper	Total	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Number of Customers	502,354	19,496	453,105	4,762	20,283	177	456	300	568	1,863	911	4	4	422	3
Demand Allocator Summary															
Design Day Demand	760,080	4,510	491,656	14,439	114,016	2,667	6,846	2,203	12,837	2,389	7,072	17	47	96,242	5,139
Demand Per Customer	1.51	0.23	1.09	3.03	5.62	15.07	15.01	7.34	22.60	1.28	7.76	4.25	11.75	228.06	1,713.00
Est'd Hourly Max Demand/Cust	94.56	14.46	67.82	189.51	351.33	941.74	938.32	458.96	1,412.52	80.15	485.18	265.63	734.38	14,253.85	107,062.50
Indexed to Residential Avg.	1.44	0.22	1.03	2.89	5.35	14.35	14.30	6.99	21.53	1.22	7.39	4.05	11.19	217.23	1,631.64
Combined Demand Index		1.00		4.89		14.31		16.50		1.22	7.39	4.05	11.19	217.23	1,631.64
Derivation of PGW Meters Alloc															
Meter Unit Cost	314	257	257	1,214	1,214	1,821	1,821	1,214	1,821	257	1,214	1,214	1,668	4,669	4,669
PGW Meters Cost	157,959	5,009	116,409	5,782	24,627	322	830	364	1,034	479	1,106	5	7	1,970	14
Percent	100.00%	3.17%	73.70%	3.66%	15.59%	0.20%	0.53%	0.23%	0.65%	0.30%	0.70%	0.00%	0.00%	1.25%	0.01%
Indexed To Residential Average	1.22	1.00	1.00	4.73	4.73	7.09	7.09	4.73	7.09	1.00	4.73	4.73	6.49	18.17	18.17
Combined PGW Meter Index		1.00		4.73		7.09		6.27		1.00	4.73	4.73	6.49	18.17	18.17
Alternative Meter Allocator															
Meter Unit Cost	286	257	257	306	699	1,872	1,866	913	2,808	257	965	528	1,668	4,669	4,669
RDK Meters Cost Undaj.	143,446	5,009	116,409	1,459	14,168	331	851	274	1,595	479	879	2	7	1,970	14
Adjust for Ind. M&R	(597)					(100)	(497)								
RDK Meters Cost Adj.	142,849	5,009	116,409	1,459	14,168	232	354	274	1,595	479	879	2	7	1,970	14
Percent	100.00%	3.51%	81.49%	1.02%	9.92%	0.16%	0.25%	0.19%	1.12%	0.34%	0.62%	0.00%	0.00%	1.38%	0.01%
Indexed To Residential Average	1.11	1.00	1.00	1.19	2.72	7.29	7.26	3.55	10.93	1.00	3.75	2.06	6.49	18.17	18.17
Combined RDK Meter Index Unadj		1.00		2.43		7.27		8.38		1.00	3.75	2.06	6.49	18.17	18.17

Costs by Meter Size per OSBA I-22

CuFt/Hour	Unit Cost	Number	Wtd Cost	Wtd Cap		Cost/Cap	
250	$253	26,372				1.01	
425	$360	324	256.9	254.5		0.85	
630	$699	169				1.11	Note: No clear economies of scale up to 2000 cfh
800	$1,214	16	1,214.2	800		1.52	
1,500	$1,511	143				1.01	
2,000	$1,624	35				0.81	
3,000	$1,641	29	1,667.7	3,201.8	280	0.55	
5,000	$1,926	29				0.39	
7,000	$1,941	26				0.28	
11,000	$2,234	18				0.20	
16,000	$2,670	21				0.17	
4" Turbo GTS	$4,996	6	4,669.0	7,148.9			
6" Turbo GTS	$6,134	16					
8" Turbo GTS	$8,814	4					

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CCOSS Surrebuttal Testimony

$000

Account 903	Alloc. Factor	Total	Demand														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Account Management	C1R	1,509	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acct. Management Bill Prep	C1	4,270	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Account Mgmt Mail Rcts	C1	1,409	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Commercial Resource Center	C1C	1,276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Collection Costs	RFD	2,537	2,537	47	2,486	1	3	0	0	0	0	0	0	0	0	0	0
CRP	USC	4,457	4,457	54	4,403	0	0	0	0	0	0	0	0	0	0	0	0
District Office Labor	C1	1,767	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Indirect Field Expense	C1	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Customer Service Telephone	C1	5,649	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Collections	RFD	312	312	6	306	0	0	0	0	0	0	0	0	0	0	0	0
Meter Investigations	C7	161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Regulatory Compliance	C1	1,418	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		24,774	7,306	106	7,196	1	3	0	0	0	0	0	0	0	0	0	0

Account 908	Alloc. Factor	Total	Demand														
			Total D	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RB	NGV	Int. Sales	IT	GTS
Marketing - Industrial Major	C1I	574,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Industrial Comm SC	C1I	87,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Services	C1	1,510,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Market Research	C1	19,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Res Sales	C1R	1,236,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Strat Initiatives	C1	382,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Strat Planning	C1	624,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Tech Support	C1	7,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VP Reg Compliance LIHEAP	C1R	1,037,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total		5,476,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Philadelphia Gas Works

PGW FY 2018 Test Year Cost Allocation Study: Exhibit IEc-S1 -- RDK CCOSS

$000

Account 903	Alloc. Factor	Total	Customer														
			Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Account Management	C1R	1,509	1,509	62	1,447	0	0	0	0	0	0	0	0	0	0	0	0
Acct. Management Bill Prep	C1	4,270	4,270	166	3,851	40	172	2	4	3	5	16	8	0	0	4	0
Account Mgmt Mail Rcts	C1	1,409	1,409	55	1,271	13	57	0	1	1	2	5	3	0	0	1	0
Commercial Resource Center	C1C	1,276	1,276	0	0	237	1,008	9	23	0	0	0	0	0	0	0	0
Collection Costs	RFD	2,537	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CRP	USC	4,457	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
District Office Labor	C1	1,767	1,767	69	1,594	17	71	1	2	1	2	7	3	0	0	1	0
Indirect Field Expense	C1	9	9	0	8	0	0	0	0	0	0	0	0	0	0	0	0
Customer Service Telephone	C1	5,649	5,649	219	5,095	54	228	2	5	3	6	21	10	0	0	5	0
Collections	RFD	312	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meter Investigations	C7	161	161	5	137	2	13	0	1	0	1	1	1	0	0	1	0
Regulatory Compliance	C1	1,418	1,418	55	1,279	13	57	0	1	1	2	5	3	0	0	1	0
Total		24,774	17,468	630	14,682	377	1,607	14	36	9	17	54	27	0	0	14	0

Account 908	Alloc. Factor	Total	Customer														
			Total C	Res NH	Res Heat	Comm NH	Comm H	Ind NH	Ind Heat	Mun NH	Mun Heat	PHA GS	PHA RS	NGV	Int. Sales	IT	GTS
Marketing - Industrial Major	C1I	574,000	574,000	0	0	0	0	96,028	247,395	0	0	0	0	0	0	228,949	1,628
Marketing Industrial Comm SC	C1I	87,000	87,000	0	0	0	0	14,555	37,497	0	0	0	0	0	0	34,701	247
Marketing Services	C1	1,510,000	1,510,000	58,602	1,361,965	14,314	60,968	532	1,371	902	1,707	5,600	2,738	12	12	1,268	9
Market Research	C1	19,000	19,000	737	17,137	180	767	7	17	11	21	70	34	0	0	16	0
Marketing Res Sales	C1R	1,236,000	1,236,000	50,988	1,185,012	0	0	0	0	0	0	0	0	0	0	0	0
Marketing Strat Initiatives	C1	382,000	382,000	14,825	344,550	3,621	15,424	135	347	228	432	1,417	693	3	3	321	2
Marketing Strat Planning	C1	624,000	624,000	24,217	562,825	5,915	25,195	220	566	373	706	2,314	1,132	5	5	524	4
Marketing Tech Support	C1	7,000	7,000	272	6,314	66	283	2	6	4	8	26	13	0	0	6	0
VP Reg Compliance LIHEAP	C1R	1,037,000	1,037,000	42,779	994,221	0	0	0	0	0	0	0	0	0	0	0	0
Total		5,476,000	5,476,000	192,420	4,472,024	24,097	102,636	111,479	287,200	1,518	2,874	9,427	4,610	20	20	265,786	1,889

EXHIBIT IEc-S2

PROOF OF REVENUE ANALYSES

PGW FILED PROPOSAL (Pages 1-6)

RDK PROPOSED REVENUE ALLOCATION (Pages 7-12)

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation

DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
Residential NH							
Sales Customers	233,946	$12.00	2,807.4	$18.00	4,211.0	1,403.7	50.0%
Transport Customers	0	$12.00	0.0	$18.00	0.0	0.0	#DIV/0!
Total Customers	233,946	$12.00	2,807.4	$18.00	4,211.0	1,403.7	50.0%
Sales Deliveries	419,497	$6.0067	2,519.8	$6.7275	2,822.2	302.4	12.0%
Transport Deliveries	0	$6.0067	0.0	$6.7275	0.0	0.0	#DIV/0!
Total Deliveries	419,497	$6.0067	2,519.8	$6.7275	2,822.2	302.4	12.0%
MFC	419,497	$0.1946	81.6	$0.2165	90.8	9.2	11.3%
GPC	419,497	$0.0400	16.8	$0.0228	9.6	(7.2)	-43.0%
GCR	419,497	$4.1879	1,756.8	$4.1879	1,756.8	0.0	0.0%
USC*	419,497	$1.1335	475.5	$1.1335	475.5	0.0	0.0%
OPEB	419,497	$0.3386	142.0	$0.3386	142.0	0.0	0.0%
ECRS	419,497	$0.0315	13.2	$0.0315	13.2	0.0	0.0%
DSIC**		7.50%	446.8	5.83%	446.8	0.0	0.0%
Sub-Total			2,932.8		2,934.8	2.0	0.1%
Total Revenues	419,497	$19.6902	8,260.0	$23.7618	9,968.0	1,708.0	20.7%
Base Rate Revenues	419,497	$12.6989	5,327.1	$16.7658	7,033.2	1,706.0	32.0%
Total Revenues Excl. GCR	419,497	$15.5023	6,503.2	$19.5739	8,211.2	1,708.0	26.3%
PGW CCOSS	419,497		6,559.4				
Residential Heat							
Sales Customers	5,437,258	$12.00	65,247.1	$18.00	97,870.6	32,623.5	50.0%
Transport Customers	0	$12.00	0.0	$18.00	0.0	0.0	#DIV/0!
Total Customers	5,437,258	$12.00	65,247.1	$18.00	97,870.6	32,623.5	50.0%
Sales Deliveries	34,001,408	$6.0067	204,236.3	$6.7275	228,744.5	24,508.2	12.0%
Transport Deliveries	0	$6.0067	0.0	$6.7275	0.0	0.0	#DIV/0!
Total Deliveries	34,001,408	$6.0067	204,236.3	$6.7275	228,744.5	24,508.2	12.0%
MFC	34,001,408	$0.1946	6,616.7	$0.2165	7,361.3	744.6	11.3%
GPC	34,001,408	$0.0400	1,360.1	$0.0228	775.2	(584.8)	-43.0%
GCR	34,001,408	$4.1879	142,394.5	$4.1879	142,394.5	0.0	0.0%
USC*	34,001,408	$1.1335	38,540.6	$1.1335	38,540.6	0.0	0.0%
OPEB	34,001,408	$0.3386	11,512.9	$0.3386	11,512.9	0.0	0.0%
ECRS	34,001,408	$0.0315	1,071.0	$0.0315	1,071.0	0.0	0.0%
DSIC**		7.50%	24,045.6	6.37%	24,045.6	0.0	0.0%
Sub-Total			225,541.3		225,701.1	159.8	0.1%
Total Revenues	34,001,408	$14.5589	495,024.7	$16.2439	552,316.3	57,291.6	11.6%
Base Rate Revenues	34,001,408	$7.9257	269,483.4	$9.6059	326,615.1	57,131.8	21.2%
Total Revenues Excl. GCR	34,001,408	$10.3710	352,630.2	$12.0560	409,921.8	57,291.6	16.2%
PGW CCOSS	34,001,408		355,539.4				

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
Commercial NH							
Sales Customers	47,778	$18.00	860.0	$27.00	1,290.0	430.0	50.0%
Transport Customers	9,354	$18.00	168.4	$27.00	252.6	84.2	50.0%
Total Customers	57,132	$18.00	1,028.4	$27.00	1,542.6	514.2	50.0%
Sales Deliveries	956,279	$4.5984	4,397.4	$4.8108	4,600.5	203.1	4.6%
Transport Deliveries	499,290	$4.5984	2,295.9	$4.8108	2,402.0	106.0	4.6%
Total Deliveries	1,455,568	$4.5984	6,693.3	$4.8108	7,002.4	309.2	4.6%
MFC	956,279	$0.0116	11.1	$0.0359	34.3	23.2	209.5%
GPC	956,279	$0.0400	38.3	$0.0228	21.8	(16.4)	-43.0%
GCR	956,279	$4.1879	4,004.8	$4.1879	4,004.8	0.0	0.0%
USC*	1,455,568	$1.1335	1,649.9	$1.1335	1,649.9	0.0	0.0%
OPEB	*1,455,568*	*$0.3386*	*492.9*	*$0.3386*	*492.9*	*0.0*	*0.0%*
ECRS	1,455,568	$0.0724	105.4	$0.0724	105.4	0.0	0.0%
DSIC**		7.50%	747.7	6.93%	747.7	0.0	0.0%
Sub-Total			7,050.0		7,056.8	6.8	0.1%
Total Revenues	1,455,568	$10.1484	14,771.7	$10.7187	15,601.8	830.1	5.6%
Base Rate Revenues	1,455,568	$5.3049	7,721.7	$5.8706	8,545.0	823.4	10.7%
Total Revenues Excl. GCR	1,455,568	$7.3970	10,766.9	$7.9673	11,597.0	830.1	7.7%
PGW CCOSS	1,460,532		10,857.3				
Commercial Heat							
Sales Customers	208,702	$18.00	3,756.6	$27.00	5,635.0	1,878.3	50.0%
Transport Customers	34,698	$18.00	624.6	$27.00	936.8	312.3	50.0%
Total Customers	243,400	$18.00	4,381.2	$27.00	6,571.8	2,190.6	50.0%
Sales Deliveries	5,956,419	$4.5984	27,390.0	$4.8108	28,655.1	1,265.1	4.6%
Transport Deliveries	3,046,232	$4.5984	14,007.8	$4.8108	14,654.8	647.0	4.6%
Total Deliveries	9,002,651	$4.5984	41,397.8	$4.8108	43,310.0	1,912.2	4.6%
MFC	5,956,419	$0.0116	69.1	$0.0359	213.8	144.7	209.5%
GPC	5,956,419	$0.0400	238.3	$0.0228	135.8	(102.5)	-43.0%
GCR	5,956,419	$4.1879	24,944.9	$4.1879	24,944.9	0.0	0.0%
USC*	9,002,651	$1.1335	10,204.5	$1.1335	10,204.5	0.0	0.0%
OPEB	9,002,651	$0.3386	3,048.3	$0.3386	3,048.3	0.0	0.0%
ECRS	9,002,651	$0.0724	651.8	$0.0724	651.8	0.0	0.0%
DSIC**		7.50%	4,476.2687	7.02%	4,476.3	0.0	0.0%
Sub-Total			*43,633.1*		*43,675.4*	*42.3*	*0.1%*
Total Revenues	9,002,651	$9.9318	89,412.1	$10.3922	93,557.1	4,145.1	4.6%
Base Rate Revenues	9,002,651	$5.0851	45,779.0	$5.5408	49,881.8	4,102.8	9.0%
Total Revenues Excl. GCR	9,002,651	$7.1609	64,467.2	$7.6213	68,612.3	4,145.1	6.4%
PGW CCOSS	9,002,651	6.6917	64,969.1	6.9112		3.3%	0

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
Industrial NH							
Sales Customers	1,632	$50.00	81.6	$75.00	122.4	40.8	50.0%
Transport Customers	492	$50.00	24.6	$75.00	36.9	12.3	50.0%
Total Customers	2,124	$50.00	106.2	$75.00	159.3	53.1	50.0%
Sales Deliveries	100,773	$4.5332	456.8	$3.8170	384.7	(72.2)	-15.8%
Transport Deliveries	172,597	$4.5332	782.4	$3.8170	658.8	(123.6)	-15.8%
Total Deliveries	273,370	$4.5332	1,239.2	$3.8170	1,043.5	(195.8)	-15.8%
MFC	100,773	$0.0125	1.3	$0.0222	2.2	1.0	77.6%
GPC	100,773	$0.0400	4.0	$0.0228	2.3	(1.7)	-43.0%
GCR	100,773	$4.1879	422.0	$4.1879	422.0	0.0	0.0%
USC*	273,370	$1.1335	309.9	$1.1335	309.9	0.0	0.0%
OPEB	273,370	$0.3386	92.6	$0.3386	92.6	0.0	0.0%
ECRS	273,370	$0.0841	23.0	$0.0841	23.0	0.0	0.0%
DSIC**		7.50%	132.8	8.16%	132.8	0.0	0.0%
Sub-Total			985.6		984.8	(0.8)	-0.1%
Total Revenues	273,370	$8.5269	2,331.0	$8.0022	2,187.6	(143.4)	-6.2%
Base Rate Revenues	273,370	$4.9217	1,345.4	$4.3997	1,202.8	(142.7)	-10.6%
Total Revenues Excl. GCR	273,370	$6.9831	1,909.0	$6.4584	1,765.5	(143.4)	-7.5%
PGW CCOSS	273,370		1,923.8				
Industrial Heat							
Sales Customers	4,656	$50.00	232.8	$75.00	349.2	116.4	50.0%
Transport Customers	816	$50.00	40.8	$75.00	61.2	20.4	50.0%
Total Customers	5,472	$50.00	273.6	$75.00	410.4	136.8	50.0%
Sales Deliveries	276,702	$4.5332	1,254.3	$3.8170	1,056.2	(198.2)	-15.8%
Transport Deliveries	265,170	$4.5332	1,202.1	$3.8170	1,012.2	(189.9)	-15.8%
Total Deliveries	541,872	$4.5332	2,456.4	$3.8170	2,068.3	(388.1)	-15.8%
MFC	276,702	$0.0125	3.5	$0.0222	6.1	2.7	77.6%
GPC	276,702	$0.0400	11.1	$0.0228	6.3	(4.8)	-43.0%
GCR	276,702	$4.1879	1,158.8	$4.1879	1,158.8	0.0	0.0%
USC*	541,872	$1.1335	614.2	$1.1335	614.2	0.0	0.0%
OPEB	541,872	$0.3386	183.5	$0.3386	183.5	0.0	0.0%
ECRS	541,872	$0.0841	45.6	$0.0841	45.6	0.0	0.0%
DSIC**		7.50%	268.0	8.07%	268.0	0.0	0.0%
Sub-Total			2,284.6		2,282.5	(2.1)	-0.1%
Total Revenues	541,872	$9.2542	5,014.6	$8.7866	4,761.2	(253.4)	-5.1%
Base Rate Revenues	541,872	$5.0381	2,730.0	$4.5744	2,478.7	(251.3)	-9.2%
Total Revenues Excl. GCR	541,872	$7.1157	3,855.8	$6.6481	3,602.4	(253.4)	-6.6%
PGW CCOSS	541,872		3,886.1				

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation

DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
Municipal NH							
Sales Customers	1,224	$18.00	22.0	$27.00	33.0	11.0	50.0%
Transport Customers	2,352	$18.00	42.3	$27.00	63.5	21.2	50.0%
Total Customers	3,576	$18.00	64.4	$27.00	96.6	32.2	50.0%
Sales Deliveries	126,280	$3.3661	425.1	$3.8365	484.5	59.4	14.0%
Transport Deliveries	58,837	$3.3661	198.1	$3.8365	225.7	27.7	14.0%
Total Deliveries	185,117	$3.3661	623.1	$3.8365	710.2	87.1	14.0%
MFC	126,280	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	126,280	$0.0400	5.1	$0.0228	2.9	(2.2)	-43.0%
GCR	126,280	$4.1879	528.8	$4.1879	528.8	0.0	0.0%
USC*	185,117	$1.1335	209.8	$1.1335	209.8	0.0	0.0%
OPEB	185,117	$0.3386	62.7	$0.3386	62.7	0.0	0.0%
ECRS	185,117	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
DSIC**		7.50%	72.0	6.67%	72.0	0.0	0.0%
Sub-Total			878.4		876.2	(2.2)	-0.2%
Total Revenues	185,117	$8.4590	1,565.9	$9.0915	1,683.0	117.1	7.5%
Base Rate Revenues	185,117	$3.7138	687.5	$4.3581	806.8	119.3	17.3%
Total Revenues Excl. GCR	185,117	$5.6021	1,037.1	$6.2347	1,154.1	117.1	11.3%
PGW CCOSS	186,821		1,046.7				
Municipal Heat							
Sales Customers	4,548	$18.00	81.9	$27.00	122.8	40.9	50.0%
Transport Customers	2,268	$18.00	40.8	$27.00	61.2	20.4	50.0%
Total Customers	6,816	$18.00	122.7	$27.00	184.0	61.3	50.0%
Sales Deliveries	454,537	$3.3661	1,530.0	$3.8365	1,743.8	213.8	14.0%
Transport Deliveries	359,365	$3.3661	1,209.7	$3.8365	1,378.7	169.0	14.0%
Total Deliveries	813,902	$3.3661	2,739.7	$3.8365	3,122.5	382.9	14.0%
MFC	454,537	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	454,537	$0.0400	18.2	$0.0228	10.4	(7.8)	-43.0%
GCR	454,537	$4.1879	1,903.6	$4.1879	1,903.6	0.0	0.0%
USC*	813,902	$1.1335	922.6	$1.1335	922.6	0.0	0.0%
OPEB	813,902	$0.3386	275.6	$0.3386	275.6	0.0	0.0%
ECRS	813,902	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
DSIC**		7.50%	304.5	6.76%	304.5	0.0	0.0%
Sub-Total			3,424.4		3,416.6	(7.8)	-0.2%
Total Revenues	813,902	$7.7243	6,286.8	$8.2604	6,723.2	436.4	6.9%
Base Rate Revenues	813,902	$3.5168	2,862.4	$4.0626	3,306.6	444.2	15.5%
Total Revenues Excl. GCR	813,902	$5.3854	4,383.2	$5.9216	4,819.6	436.4	10.0%
PGW CCOSS	813,902		4,415.4				

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation DSIC Increase: NO

	Billing Determinants	Current Rates		Proposed Rates		Proposed Change	
		Rate	Revenue	Rate	Revenue	Revenue	Percent
PHA GS							
Sales Customers	22,356	$12.00	268.3	$18.00	402.4	134.1	50.0%
Transport Customers	0	$12.00	0.0	$18.00	0.0	0.0	#DIV/0!
Total Customers	22,356	$12.00	268.3	$18.00	402.4	134.1	50.0%
Sales Deliveries	166,265	$4.9441	822.0	$6.5603	1,090.8	268.7	32.7%
Transport Deliveries	0	$4.9441	0.0	$6.5603	0.0	0.0	#DIV/0!
Total Deliveries	166,265	$4.9441	822.0	$6.5603	1,090.8	268.7	32.7%
MFC	166,265	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	166,265	$0.0400	6.7	$0.0228	3.8	(2.9)	-43.0%
GCR	166,265	$4.1879	696.3	$4.1879	696.3	0.0	0.0%
USC*	166,265	$1.1335	188.5	$1.1335	188.5	0.0	0.0%
OPEB	166,265	$0.3386	56.3	$0.3386	56.3	0.0	0.0%
ECRS	166,265	$0.0315	5.2	$0.0315	5.2	0.0	0.0%
DSIC**		7.50%	100.5	5.77%	100.5	0.0	0.0%
Sub-Total			1,053.5		1,050.6	(2.9)	-0.3%
Total Revenues	166,265	$12.8937	2,143.8	$15.2995	2,543.8	400.0	18.7%
Base Rate Revenues	166,265	$6.5576	1,090.3	$8.9806	1,493.2	402.9	36.9%
Total Revenues Excl. GCR	166,265	$8.7058	1,447.5	$11.1116	1,847.5	400.0	27.6%
PGW CCOSS	166,265		1,459.4				
PHA Rate 8 (Proposed based on municipal rate)							
Sales Customers	1,769	$18.00	31.8	$27.00	47.8	15.9	50.0%
Transport Customers	9,168	$18.00	165.0	$27.00	247.5	82.5	50.0%
Total Customers	10,937	$18.00	196.9	$27.00	295.3	98.4	50.0%
Sales Deliveries	43,384	$4.1101	178.3	$3.8365	166.4	(11.9)	-6.7%
Transport Deliveries	454,449	$4.1101	1,867.8	$3.8365	1,743.5	(124.3)	-6.7%
Total Deliveries	497,833	$4.1101	2,046.1	$3.8365	1,909.9	(136.2)	-6.7%
MFC	43,384	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	43,384	$0.0400	1.7	$0.0228	1.0	(0.7)	-43.0%
GCR	43,384	$4.1879	181.7	$4.1879	181.7	0.0	0.0%
USC*	497,833	$1.1335	564.3	$1.1335	564.3	0.0	0.0%
OPEB	497,833	$0.3386	168.6	$0.3386	168.6	0.0	0.0%
ECRS	497,833	$0.0315	15.7	$0.0315	15.7	0.0	0.0%
DSIC**		7.50%	224.4	7.60%	224.4	0.0	0.0%
Sub-Total			1,156.3		1,155.6	(0.7)	-0.1%
Total Revenues	497,833	$6.8283	3,399.3	$6.7509	3,360.8	(38.5)	-1.1%
Base Rate Revenues	497,833	$4.5055	2,243.0	$4.4297	2,205.2	(37.8)	-1.7%
Total Revenues Excl. GCR	497,833	$6.4633	3,217.7	$6.3859	3,179.1	(38.5)	-1.2%
PGW CCOSS	497,833		3,228.2				

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: Estimate of PGW Revenue Allocation DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
NGV							
Sales Customers	36	$35.00	1.3	$35.00	1.3	0.0	0.0%
Transport Customers	12	$35.00	0.4	$35.00	0.4	0.0	0.0%
Total Customers	48	$35.00	1.7	$35.00	1.7	0.0	0.0%
Sales Deliveries	1,766	$1.2833	2.3	$1.3005	2.3	0.0	1.3%
Transport Deliveries	4,343	$1.2833	5.6	$1.3005	5.6	0.1	1.3%
Total Deliveries	6,109	$1.2833	7.8	$1.3005	7.9	0.1	1.3%
MFC	1,766	*$0.0000*	*0.0*	*$0.0000*	*0.0*	*0.0*	*#DIV/0!*
GPC	1,766	$0.0400	0.1	$0.0228	0.0	(0.0)	-43.0%
GCR	1,766	$4.1879	7.4	$4.1879	7.4	0.0	0.0%
USC*	6,109	$1.1335	6.9	$1.1335	6.9	0.0	0.0%
OPEB	6,109	$0.3386	2.1	$0.3386	2.1	0.0	0.0%
ECRS	6,109	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
DSIC**		7.50%	1.4	7.46%	1.4	0.0	0.0%
Sub-Total			17.8		17.8	(0.0)	-0.2%
Total Revenues	6,109	$4.4798	27.4	$4.4920	27.4	0.1	0.3%
Base Rate Revenues	6,109	$1.5583	9.5	$1.5755	9.6	0.1	1.1%
Total Revenues Excl. GCR	6,109	$3.2692	20.0	$3.2815	20.0	0.1	0.4%
PGW CCOSS	6,109		19.9				
GTS/IT							
ITA Customer	1,260	$125.00	157.5	$125.00	157.5	0.0	0.0%
ITB Customer	1,284	$225.00	288.9	$225.00	288.9	0.0	0.0%
ITC Customer	1,164	$225.00	261.9	$225.00	261.9	0.0	0.0%
ITD Customer	936	$225.00	210.6	$225.00	210.6	0.0	0.0%
ITE Customer	300	$350.00	105.0	$350.00	105.0	0.0	0.0%
GTS Customer Charge	36	$0.00	0.0	$0.00	0.0	0.0	#DIV/0!
Customers Total	415		1,023.9		1,023.9	0.0	0.0%
ITA Throughput	426,654	$1.88000	802.1	$2.9863	1,274.1	472.0	58.8%
ITB Throughput	888,733	$0.91000	808.7	$1.4454	1,284.6	475.8	58.8%
ITC Throughput	1,626,025	$0.71000	1,154.5	$1.1247	1,828.8	674.3	58.4%
ITD Throughput	3,294,748	$0.63000	2,075.7	$1.0076	3,319.7	1,244.0	59.9%
ITE Throughput	7,980,513	$0.61000	4,868.1	$0.9645	7,697.6	2,829.5	58.1%
GTS Throughput Charge	13,176,839	*$0.09480*	1,249.1	*$0.0948*	1,249.1	0.0	0.0%
Throughputs Total	27,393,512		10,958.3		16,653.9	5,695.6	52.0%
Supplier			12.6		12.6	0.0	0.0%
Rate IT Revenues	14,216,673	$0.7550	10,733.0	$1.1556	16,428.7	5,695.6	53.1%
Rate GTS Revenues	13,176,839	$0.0948	1,249.1	$0.0948	1,249.1	0.0	0.0%
Total Revenues Excl. GCR	27,393,512	$0.4374	11,982.2		17,677.8	5,695.6	47.5%
PGW CCOSS			12,190.0				

Source: OSBA-I-28(a), Exhibit PQH-9A.

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: RDK Surrebuttal Revenue Allocation with USEC Shift DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
Residential NH							
Sales Customers	233,946	$12.00	2,807.4	$18.00	4,211.0	1,403.7	50.0%
Transport Customers	0	$12.00	0.0	$18.00	0.0	0.0	#DIV/0!
Total Customers	233,946	$12.00	2,807.4	$18.00	4,211.0	1,403.7	50.0%
Sales Deliveries	419,497	$6.0067	2,519.8	$6.3645	2,669.9	150.1	6.0%
Transport Deliveries	0	$6.0067	0.0	$6.3645	0.0	0.0	#DIV/0!
Total Deliveries	419,497	$6.0067	2,519.8	$6.3645	2,669.9	150.1	6.0%
MFC	419,497	$0.1946	81.6	$0.1575	66.1	(15.6)	-19.1%
GPC	419,497	$0.0400	16.8	$0.0186	7.8	(9.0)	-53.5%
GCR	419,497	$4.1879	1,756.8	$4.1879	1,756.8	0.0	0.0%
USC*	419,497	$1.1335	475.5	$1.5597	654.3	178.8	37.6%
OPEB	419,497	$0.3386	142.0	$0.3386	142.0	0.0	0.0%
ECRS	419,497	$0.0315	13.2	$0.0315	13.2	0.0	0.0%
DSIC**		7.50%	446.8	5.81%	446.8	0.0	0.0%
Sub-Total			2,932.8		3,087.1	154.3	5.3%
Total Revenues	419,497	$19.6902	8,260.0	$23.7618	9,968.0	1,708.0	20.7%
Base Rate Revenues	419,497	$12.6989	5,327.1	$16.4028	6,880.9	1,553.8	29.2%
Total Revenues Excl. GCR	419,497	$15.5023	6,503.2	$19.5739	8,211.2	1,708.0	26.3%
PGW CCOSS	419,497		6,559.4				
Residential Heat							
Sales Customers	5,437,258	$12.00	65,247.1	$18.00	97,870.6	32,623.5	50.0%
Transport Customers	0	$12.00	0.0	$18.00	0.0	0.0	#DIV/0!
Total Customers	5,437,258	$12.00	65,247.1	$18.00	97,870.6	32,623.5	50.0%
Sales Deliveries	34,001,408	$6.0067	204,236.3	$6.3645	216,401.6	12,165.4	6.0%
Transport Deliveries	0	$6.0067	0.0	$6.3645	0.0	0.0	#DIV/0!
Total Deliveries	34,001,408	$6.0067	204,236.3	$6.3645	216,401.6	12,165.4	6.0%
MFC	34,001,408	$0.1946	6,616.7	$0.1575	5,355.2	(1,261.5)	-19.1%
GPC	34,001,408	$0.0400	1,360.1	$0.0186	632.4	(727.6)	-53.5%
GCR	34,001,408	$4.1879	142,394.5	$4.1879	142,394.5	0.0	0.0%
USC*	34,001,408	$1.1335	38,540.6	$1.5597	53,032.3	14,491.7	37.6%
OPEB	34,001,408	$0.3386	11,512.9	$0.3386	11,512.9	0.0	0.0%
ECRS	34,001,408	$0.0315	1,071.0	$0.0315	1,071.0	0.0	0.0%
DSIC**		7.50%	24,045.6	6.33%	24,045.6	0.0	0.0%
Sub-Total			225,541.3		238,044.0	12,502.7	5.5%
Total Revenues	34,001,408	$14.5589	495,024.7	$16.2439	552,316.3	57,291.6	11.6%
Base Rate Revenues	34,001,408	$7.9257	269,483.4	$9.2429	314,272.3	44,788.9	16.6%
Total Revenues Excl. GCR	34,001,408	$10.3710	352,630.2	$12.0560	409,921.8	57,291.6	16.2%
PGW CCOSS	34,001,408		355,539.4				

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: RDK Surrebuttal Revenue Allocation with USEC Shift DSIC Increase: NO

	Billng	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
Commercial NH							
Sales Customers	47,778	$18.00	860.0	$27.00	1,290.0	430.0	50.0%
Transport Customers	9,354	$18.00	168.4	$27.00	252.6	84.2	50.0%
Total Customers	57,132	$18.00	1,028.4	$27.00	1,542.6	514.2	50.0%
Sales Deliveries	956,279	$4.5984	4,397.4	$5.8377	5,582.5	1,185.1	27.0%
Transport Deliveries	499,290	$4.5984	2,295.9	$5.8377	2,914.7	618.8	27.0%
Total Deliveries	1,455,568	$4.5984	6,693.3	$5.8377	8,497.2	1,803.9	27.0%
MFC	956,279	$0.0116	11.1	$0.0261	25.0	13.9	125.0%
GPC	956,279	$0.0400	38.3	$0.0186	17.8	(20.5)	-53.5%
GCR	956,279	$4.1879	4,004.8	$4.1879	4,004.8	0.0	0.0%
USC*	1,455,568	$1.1335	1,649.9	$0.0000	0.0	(1,649.9)	-100.0%
OPEB	1,455,568	$0.3386	492.9	$0.3386	492.9	0.0	0.0%
ECRS	1,455,568	$0.0724	105.4	$0.0724	105.4	0.0	0.0%
DSIC**		7.50%	747.7	7.03%	747.7	0.0	0.0%
Sub-Total			7,050.0		5,393.5	(1,656.5)	-23.5%
Total Revenues	1,455,568	$10.1484	14,771.7	$10.6029	15,433.3	661.6	4.5%
Base Rate Revenues	1,455,568	$5.3049	7,721.7	$6.8975	10,039.8	2,318.1	30.0%
Total Revenues Excl. GCR	1,455,568	$7.3970	10,766.9	$7.8516	11,428.5	661.6	6.1%
PGW CCOSS	1,460,532		10,857.3				
Commercial Heat							
Sales Customers	208,702	$18.00	3,756.6	$27.00	5,635.0	1,878.3	50.0%
Transport Customers	34,698	$18.00	624.6	$27.00	936.8	312.3	50.0%
Total Customers	243,400	$18.00	4,381.2	$27.00	6,571.8	2,190.6	50.0%
Sales Deliveries	5,956,419	$4.5984	27,390.0	$5.8377	34,771.9	7,381.9	27.0%
Transport Deliveries	3,046,232	$4.5984	14,007.8	$5.8377	17,783.0	3,775.3	27.0%
Total Deliveries	9,002,651	$4.5984	41,397.8	$5.8377	52,554.9	11,157.2	27.0%
MFC	5,956,419	$0.0116	69.1	$0.0261	155.5	86.4	125.0%
GPC	5,956,419	$0.0400	238.3	$0.0186	110.8	(127.5)	-53.5%
GCR	5,956,419	$4.1879	24,944.9	$4.1879	24,944.9	0.0	0.0%
USC*	9,002,651	$1.1335	10,204.5	$0.0000	0.0	(10,204.5)	-100.0%
OPEB	9,002,651	$0.3386	3,048.3	$0.3386	3,048.3	0.0	0.0%
ECRS	9,002,651	$0.0724	651.8	$0.0724	651.8	0.0	0.0%
DSIC**		7.50%	4,476.2687	7.12%	4,476.3	0.0	0.0%
Sub-Total			43,633.1		33,387.5	(10,245.6)	-23.5%
Total Revenues	9,002,651	$9.9318	89,412.1	$10.2763	92,514.2	3,102.1	3.5%
Base Rate Revenues	9,002,651	$5.0851	45,779.0	$6.5677	59,126.7	13,347.8	29.2%
Total Revenues Excl. GCR	9,002,651	$7.1609	64,467.2	$7.5055	67,569.3	3,102.1	4.8%
PGW CCOSS	9,002,651	6.6917	64,969.1	6.7906		1.5%	0

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: RDK Surrebuttal Revenue Allocation with USEC Shift DSIC Increase: NO

	Billng	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
Industrial NH							
Sales Customers	1,632	$50.00	81.6	$75.00	122.4	40.8	50.0%
Transport Customers	492	$50.00	24.6	$75.00	36.9	12.3	50.0%
Total Customers	2,124	$50.00	106.2	$75.00	159.3	53.1	50.0%
Sales Deliveries	100,773	$4.5332	456.8	$5.7980	584.3	127.5	27.9%
Transport Deliveries	172,597	$4.5332	782.4	$5.7980	1,000.7	218.3	27.9%
Total Deliveries	273,370	$4.5332	1,239.2	$5.7980	1,585.0	345.8	27.9%
MFC	100,773	$0.0125	1.3	$0.0162	1.6	0.4	29.6%
GPC	100,773	$0.0400	4.0	$0.0186	1.9	(2.2)	-53.5%
GCR	100,773	$4.1879	422.0	$4.1879	422.0	0.0	0.0%
USC*	273,370	$1.1335	309.9	$0.0000	0.0	(309.9)	-100.0%
OPEB	273,370	$0.3386	92.6	$0.3386	92.6	0.0	0.0%
ECRS	273,370	$0.0841	23.0	$0.0841	23.0	0.0	0.0%
DSIC**		7.50%	132.8	7.14%	132.8	0.0	0.0%
Sub-Total			985.6		673.9	(311.6)	-31.6%
Total Revenues	273,370	$8.5269	2,331.0	$8.8459	2,418.2	87.2	3.7%
Base Rate Revenues	273,370	$4.9217	1,345.4	$6.3808	1,744.3	398.9	29.6%
Total Revenues Excl. GCR	273,370	$6.9831	1,909.0	$7.3021	1,996.2	87.2	4.6%
PGW CCOSS	273,370		1,923.8				
Industrial Heat							
Sales Customers	4,656	$50.00	232.8	$75.00	349.2	116.4	50.0%
Transport Customers	816	$50.00	40.8	$75.00	61.2	20.4	50.0%
Total Customers	5,472	$50.00	273.6	$75.00	410.4	136.8	50.0%
Sales Deliveries	276,702	$4.5332	1,254.3	$5.7980	1,604.3	350.0	27.9%
Transport Deliveries	265,170	$4.5332	1,202.1	$5.7980	1,537.5	335.4	27.9%
Total Deliveries	541,872	$4.5332	2,456.4	$5.7980	3,141.8	685.4	27.9%
MFC	276,702	$0.0125	3.5	$0.0162	4.5	1.0	29.6%
GPC	276,702	$0.0400	11.1	$0.0186	5.1	(5.9)	-53.5%
GCR	276,702	$4.1879	1,158.8	$4.1879	1,158.8	0.0	0.0%
USC*	541,872	$1.1335	614.2	$0.0000	0.0	(614.2)	-100.0%
OPEB	541,872	$0.3386	183.5	$0.3386	183.5	0.0	0.0%
ECRS	541,872	$0.0841	45.6	$0.0841	45.6	0.0	0.0%
DSIC**		7.50%	268.0	7.09%	268.0	0.0	0.0%
Sub-Total			2,284.6		1,665.5	(619.1)	-27.1%
Total Revenues	541,872	$9.2542	5,014.6	$9.6290	5,217.7	203.1	4.0%
Base Rate Revenues	541,872	$5.0381	2,730.0	$6.5554	3,552.2	822.2	30.1%
Total Revenues Excl. GCR	541,872	$7.1157	3,855.8	$7.4905	4,058.9	203.1	5.3%
PGW CCOSS	541,872		3,886.1				

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: RDK Surrebuttal Revenue Allocation with USEC Shift DSIC Increase: **NO**

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
Municipal NH							
Sales Customers	1,224	$18.00	22.0	$27.00	33.0	11.0	50.0%
Transport Customers	2,352	$18.00	42.3	$27.00	63.5	21.2	50.0%
Total Customers	3,576	$18.00	64.4	$27.00	96.6	32.2	50.0%
Sales Deliveries	126,280	$3.3661	425.1	$6.2615	790.7	365.6	86.0%
Transport Deliveries	58,837	$3.3661	198.1	$6.2615	368.4	170.4	86.0%
Total Deliveries	185,117	$3.3661	623.1	$6.2615	1,159.1	536.0	86.0%
MFC	126,280	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	126,280	$0.0400	5.1	$0.0186	2.3	(2.7)	-53.5%
GCR	126,280	$4.1879	528.8	$4.1879	528.8	0.0	0.0%
USC*	185,117	$1.1335	209.8	$0.0000	0.0	(209.8)	-100.0%
OPEB	185,117	$0.3386	62.7	$0.3386	62.7	0.0	0.0%
ECRS	185,117	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
DSIC**		7.50%	72.0	5.46%	72.0	0.0	0.0%
Sub-Total			878.4		665.9	(212.5)	-24.2%
Total Revenues	185,117	$8.4590	1,565.9	$10.3801	1,921.5	355.6	22.7%
Base Rate Revenues	185,117	$3.7138	687.5	$6.7831	1,255.7	568.2	82.6%
Total Revenues Excl. GCR	185,117	$5.6021	1,037.1	$7.5233	1,392.7	355.6	34.3%
PGW CCOSS	186,821		1,046.7				
Municipal Heat							
Sales Customers	4,548	$18.00	81.9	$27.00	122.8	40.9	50.0%
Transport Customers	2,268	$18.00	40.8	$27.00	61.2	20.4	50.0%
Total Customers	6,816	$18.00	122.7	$27.00	184.0	61.3	50.0%
Sales Deliveries	454,537	$3.3661	1,530.0	$6.2615	2,846.1	1,316.1	86.0%
Transport Deliveries	359,365	$3.3661	1,209.7	$6.2615	2,250.2	1,040.5	86.0%
Total Deliveries	813,902	$3.3661	2,739.7	$6.2615	5,096.2	2,356.6	86.0%
MFC	454,537	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	454,537	$0.0400	18.2	$0.0186	8.5	(9.7)	-53.5%
GCR	454,537	$4.1879	1,903.6	$4.1879	1,903.6	0.0	0.0%
USC*	813,902	$1.1335	922.6	$0.0000	0.0	(922.6)	-100.0%
OPEB	813,902	$0.3386	275.6	$0.3386	275.6	0.0	0.0%
ECRS	813,902	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
DSIC**		7.50%	304.5	5.48%	304.5	0.0	0.0%
Sub-Total			3,424.4		2,492.1	(932.3)	-27.2%
Total Revenues	813,902	$7.7243	6,286.8	$9.5496	7,772.4	1,485.6	23.6%
Base Rate Revenues	813,902	$3.5168	2,862.4	$6.4876	5,280.3	2,417.9	84.5%
Total Revenues Excl. GCR	813,902	$5.3854	4,383.2	$7.2107	5,868.8	1,485.6	33.9%
PGW CCOSS	813,902		4,415.4				

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: RDK Surrebuttal Revenue Allocation with USEC Shift DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
PHA GS							
Sales Customers	22,356	$12.00	268.3	$18.00	402.4	134.1	50.0%
Transport Customers	0	$12.00	0.0	$18.00	0.0	0.0	#DIV/0!
Total Customers	22,356	$12.00	268.3	$18.00	402.4	134.1	50.0%
Sales Deliveries	166,265	$4.9441	822.0	$7.5127	1,249.1	427.1	52.0%
Transport Deliveries	0	$4.9441	0.0	$7.5127	0.0	0.0	#DIV/0!
Total Deliveries	166,265	$4.9441	822.0	$7.5127	1,249.1	427.1	52.0%
MFC	166,265	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	166,265	$0.0400	6.7	$0.0186	3.1	(3.6)	-53.5%
GCR	166,265	$4.1879	696.3	$4.1879	696.3	0.0	0.0%
USC*	166,265	$1.1335	188.5	$0.0000	0.0	(188.5)	-100.0%
OPEB	166,265	$0.3386	56.3	$0.3386	56.3	0.0	0.0%
ECRS	166,265	$0.0315	5.2	$0.0315	5.2	0.0	0.0%
DSIC**		7.50%	100.5	5.87%	100.5	0.0	0.0%
Sub-Total			1,053.5		861.5	(192.0)	-18.2%
Total Revenues	166,265	$12.8937	2,143.8	$15.1142	2,513.0	369.2	17.2%
Base Rate Revenues	166,265	$6.5576	1,090.3	$9.9330	1,651.5	561.2	51.5%
Total Revenues Excl. GCR	166,265	$8.7058	1,447.5	$10.9263	1,816.7	369.2	25.5%
PGW CCOSS	166,265		1,459.4				
PHA Rate 8 (Proposed based on municipal rate)							
Sales Customers	1,769	$18.00	31.8	$27.00	47.8	15.9	50.0%
Transport Customers	9,168	$18.00	165.0	$27.00	247.5	82.5	50.0%
Total Customers	10,937	$18.00	196.9	$27.00	295.3	98.4	50.0%
Sales Deliveries	43,384	$4.1101	178.3	$6.2615	271.6	93.3	52.3%
Transport Deliveries	454,449	$4.1101	1,867.8	$6.2615	2,845.5	977.7	52.3%
Total Deliveries	497,833	$4.1101	2,046.1	$6.2615	3,117.2	1,071.0	52.3%
MFC	43,384	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	43,384	$0.0400	1.7	$0.0186	0.8	(0.9)	-53.5%
GCR	43,384	$4.1879	181.7	$4.1879	181.7	0.0	0.0%
USC*	497,833	$1.1335	564.3	$0.0000	0.0	(564.3)	-100.0%
OPEB	497,833	$0.3386	168.6	$0.3386	168.6	0.0	0.0%
ECRS	497,833	$0.0315	15.7	$0.0315	15.7	0.0	0.0%
DSIC**		7.50%	224.4	6.24%	224.4	0.0	0.0%
Sub-Total			1,156.3		591.1	(565.2)	-48.9%
Total Revenues	497,833	$6.8283	3,399.3	$8.0420	4,003.6	604.2	17.8%
Base Rate Revenues	497,833	$4.5055	2,243.0	$6.8547	3,412.5	1,169.5	52.1%
Total Revenues Excl. GCR	497,833	$6.4633	3,217.7	$7.6771	3,821.9	604.2	18.8%
PGW CCOSS	497,833		3,228.2				

Philadelphia Gas Works

Exhibit IEc-S2: Proof of Revenue Analysis

$000

Proof of Revenue by CCOSS Rate Class: RDK Surrebuttal Revenue Allocation with USEC Shift DSIC Increase: NO

	Billing	Current Rates		Proposed Rates		Proposed Change	
	Determinants	Rate	Revenue	Rate	Revenue	Revenue	Percent
NGV							
Sales Customers	36	$35.00	1.3	$35.00	1.3	0.0	0.0%
Transport Customers	12	$35.00	0.4	$35.00	0.4	0.0	0.0%
Total Customers	48	$35.00	1.7	$35.00	1.7	0.0	0.0%
Sales Deliveries	1,766	$1.2833	2.3	$2.4340	4.3	2.0	89.7%
Transport Deliveries	4,343	$1.2833	5.6	$2.4340	10.6	5.0	89.7%
Total Deliveries	6,109	$1.2833	7.8	$2.4340	14.9	7.0	89.7%
MFC	1,766	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
GPC	1,766	$0.0400	0.1	$0.0186	0.0	(0.0)	-53.5%
GCR	1,766	$4.1879	7.4	$4.1879	7.4	0.0	0.0%
USC*	6,109	$1.1335	6.9	$0.0000	0.0	(6.9)	-100.0%
OPEB	6,109	$0.3386	2.1	$0.3386	2.1	0.0	0.0%
ECRS	6,109	$0.0000	0.0	$0.0000	0.0	0.0	#DIV/0!
DSIC**		7.50%	1.4	7.46%	1.4	0.0	0.0%
Sub-Total			17.8		10.9	(7.0)	-39.0%
Total Revenues	6,109	$4.4798	27.4	$4.4908	27.4	0.1	0.2%
Base Rate Revenues	6,109	$1.5583	9.5	$2.7090	16.5	7.0	73.8%
Total Revenues Excl. GCR	6,109	$3.2692	20.0	$3.2803	20.0	0.1	0.3%
PGW CCOSS	6,109		19.9				
GTS/IT							
ITA Customer	1,260	$125.00	157.5	$125.00	157.5	0.0	0.0%
ITB Customer	1,284	$225.00	288.9	$225.00	288.9	0.0	0.0%
ITC Customer	1,164	$225.00	261.9	$225.00	261.9	0.0	0.0%
ITD Customer	936	$225.00	210.6	$225.00	210.6	0.0	0.0%
ITE Customer	300	$350.00	105.0	$350.00	105.0	0.0	0.0%
GTS Customer Charge	36	$0.00	0.0	$0.00	0.0	0.0	#DIV/0!
Customers Total	415		1,023.9		1,023.9	0.0	0.0%
ITA Throughput	426,654	$1.88000	802.1	$2.5082	1,070.1	268.0	33.4%
ITB Throughput	888,733	$0.91000	808.7	$1.2141	1,079.0	270.2	33.4%
ITC Throughput	1,626,025	$0.71000	1,154.5	$0.9472	1,540.2	385.8	33.4%
ITD Throughput	3,294,748	$0.63000	2,075.7	$0.8405	2,769.3	693.6	33.4%
ITE Throughput	7,980,513	$0.61000	4,868.1	$0.8138	6,494.8	1,626.7	33.4%
GTS Throughput Charge	13,176,839	$0.09480	1,249.1	$0.0948	1,249.1	0.0	0.0%
Throughputs Total	27,393,512		10,958.3		14,202.6	3,244.3	29.6%
Supplier			12.6		12.6	0.0	0.0%
Rate IT Revenues	14,216,673	$0.7550	10,733.0	$0.9832	13,977.3	3,244.3	30.2%
Rate GTS Revenues	13,176,839	$0.0948	1,249.1	$0.0948	1,249.1	0.0	0.0%
Total Revenues Excl. GCR	*27,393,512*	*$0.4374*	*11,982.2*		*15,226.5*	*3,244.3*	*27.1%*
PGW CCOSS			12,190.0				

EXHIBIT IEc-S3

SUMMARY OF STATISTICS ON LOW-INCOME CUSTOMERS AND UNIVERSAL SERVICE COSTS

Exhibit IEc-S3

Summary Statistics on Low Income Customers and Universal Service Costs

	Percent of Residential Customers										
	Confirmed Low-Income	Estimated Low-Income	Ratio CLI% to ELI%	Annual CAP $	Universal Service $	Confirmed Low Income Customers	Estimated Low-Income Customers	CAP$ to CLI Ratio	US$ to CLI Ratio	CAP$ to ELI Ratio	US$ to ELI Ratio
Duqesne	9.8%	25.9%	37.8%	18,984,666	21,364,333	51,374	136,152	370	416	139	157
Met-Ed	13.3%	24.9%	53.4%	15,113,962	19,266,696	65,425	122,592	231	294	123	157
PECO Electric	12.1%	26.5%	45.7%	96,675,303	103,732,193	174,618	381,417	554	594	253	272
Penelec	16.3%	37.5%	43.5%	18,127,221	22,695,875	81,896	188,209	221	277	96	121
Penn Power	13.2%	26.5%	49.8%	3,970,526	5,765,980	18,848	37,844	211	306	105	152
PPL	14.2%	26.6%	53.4%	83,614,471	92,986,720	173,806	325,879	481	535	257	285
West Penn	9.4%	27.1%	34.7%	16,540,073	20,989,720	58,606	168,625	282	358	98	124
Average Electric	12.6%	27.5%	45.8%	253,026,222	286,801,517	624,573	1,360,718	405	459	186	211
Columbia	17.8%	27.0%	65.9%	18,204,869	23,284,881	68,877	104,869	264	338	174	222
NFG	14.0%	29.6%	47.3%	1,489,477	2,495,982	27,932	59,002	53	89	25	42
Peoples	18.0%	27.5%	65.5%	12,607,004	13,959,572	59,708	91,092	211	234	138	153
Peoples-Equitable	18.0%	25.5%	70.6%	8,614,710	9,609,317	44,173	62,658	195	218	137	153
PECO Gas	6.9%	15.5%	44.5%	4,905,156	7,392,324	31,961	71,995	153	231	68	103
PGW	34.4%	38.0%	90.5%	56,502,542	65,081,578	161,961	178,899	349	402	316	364
UGI Gas	11.4%	25.0%	45.6%	4,145,889	4,875,929	38,489	84,809	108	127	49	57
UGI PNG	16.5%	31.9%	51.7%	3,747,453	4,603,845	24,956	48,409	150	184	77	95
Average Gas	17.7%	27.1%	65.3%	110,217,100	131,303,428	458,057	701,733	241	287	157	187

Source: 2015 Report on Universal Service Programs & Collections Performance of the Pennsylvania Electric Distribution Companies & Natural Gas Distribution Companies; Pennsylvania Public Utility Commission Bureau of Consumer Services, Undated. http://www.puc.state.pa.us/General/publications_reports/pdf/EDC_NGDC_UniServ_Rpt2015.pdf