BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Petition of Philadelphia Gas Works for Approval of Demand-Side Management Plan for FY 2016-2020 and Philadelphia Gas Works Universal Service and Energy Conservation Plan for 2014-2016 S2 Pa. Code §62.4 - Request for Waivers	:	**Docket No. P-2014-2459362**

REBUTTAL TESTIMONY OF PAUL CHERNICK RESOURCE INSIGHT, INC.

ON BEHALF OF PHILADELPHIA GAS WORKS

Topics Addressed:

Conservation Adjustment Mechanism
Avoided Costs

July 21, 2015

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I. Introduction

Q: Are you the same Paul Chernick who filed direct testimony in this matter?

A: Yes.

Q: What is the subject matter of your rebuttal?

A: I respond to the testimony of four witnesses for other parties—Geoffrey Crandall and Roger Colton for the Office of Consumer Advocate, Robert Knecht for the Office of Small Business Advocate, and Rachel Maurer for the Bureau of Investigation & Enforcement—regarding PGW's proposed Conservation Adjustment Mechanism (CAM) and certain avoided-cost issues.

II. The Conservation Adjustment Mechanism

Q: What are the positions of the other-party witnesses with respect to the proposed CAM?

A: All of them oppose the CAM as proposed. Mr. Knecht says that he supports a CAM in principle, both he and Mr. Crandall indicate a preference for full decoupling, while Mr. Colton opposes the collection of the CAM from CRP customers and Ms. Maurer simply opposes the PGW proposal.

A. Crandall on the Conservation Adjustment Mechanism

Q: What are Mr. Crandall's criticisms of the CAM?

A: Mr. Crandall lists the following five complaints about the CAM at pages 4–5 of his testimony:

a) The CAM is not needed since other traditional regulatory options exist to align costs, sales and revenues.

b) The Company's arguments in support of CAM are inconsistent with the analysis presented by the Company.

c) The CAM is vulnerable to manipulation. [Restated at 9 as inaccuracies, errors, miscalculations, "or worse."]

d) The CAM is in effect a single-issue rate case, which isolates one factor affecting the Company's financial condition without consideration of the Company's financial condition as a whole.

e) Lost margins are not program costs and should not be recovered through the DSM Efficiency Cost Recovery Surcharge mechanism (ECRS).

Q: Is Mr. Crandall correct that "The CAM is not needed since other traditional regulatory options exist to align costs, sales and revenues"?

A: No. The only "traditional regulatory option" that he discusses is the opportunity for PGW to file rate cases frequently, perhaps annually, to reset its rates to reflect the reduction in sales resulting from the energy-efficiency programs. As discussed by PGW witness Denise Adamucci, that is an expensive and disruptive alternative to the CAM.

Moreover, changes in base rates can only operate prospectively; any margin losses experienced as a result of PGW's DSM that occur between base rate changes will be lost. Therefore, filing more frequent base rate change requests is only, at best, only a partial solution to lost margins.

Q: Is Mr. Crandall correct that PGW's "arguments in support of CAM are inconsistent with the [PGW's] analysis"?

A: No. While most of Mr. Crandall's errors are relatively subtle and some of his positions are matters of policy or personal preference, this point is simply wrong as a matter of fact. Mr. Crandall notes PGW's explanation that it has "few costs avoided or deferred by the DSM program to offset the lost margins from the sales reduction due to the DSM program" (Crandall at 7).[1] He then disputes that observation by some unfounded assertions regarding the relationship between the results of cost-benefit tests and PGW's lost margins.

> These effects would be accounted for in the avoided costs which is contained in the TRC test. If the TRC ratio is greater than 1.0, the ratepayer benefits (both participants and nonparticipating customers) and the Company benefits from the programs. If the Gas Program administrator cost test shows a benefit cost ratio above 1.0, the utility benefits from the DSM programs, i.e., that the utility cost avoidance due to the program is greater than the utility cost associated with the program.... (Crandall at 7–8)

> The proposed overall portfolio, from the gas utility perspective, would result in a present value benefit of $32.3 million at a present value cost of $19.1 million. PGW would receive a net benefit of $13.2 million without consideration of either CAM or performance incentives. Thus PGW, by its own calculations, would benefit $1.70 for every $1.00 it invested in its proposed DSM portfolio. (Crandall at 8)

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[1] Interestingly, Mr. Crandall refers to only two of the four factors that PGW puts forth to demonstrate the difference in situation between the electric utilities and gas utilities (particularly PGW). Mr. Crandall quotes the points that electric utilities generally have growth-related avoidable distribution investments and usage-related wear and tear costs, while PGW does not, but ignores the other two—that electric utilities are mostly experiencing load growth that offsets lost revenues and that electric utility plant depreciates faster than gas plant. (PGW Phase II Plan, Section 3.1.2.1). These omissions do not appear to be related to his errors regarding the nature of the benefit-cost tests.

Q: What is the problem with Mr. Crandall's conclusion?

A: There are at least three problems, which I list in ascending order of importance. First, Mr. Crandall is mistaken on the meaning of the DSM benefit-cost tests. His claim that "If the TRC ratio is greater than 1.0, the ratepayer benefits…*and* the Company benefits from the programs" is simply incorrect. If the TRC ratio is greater than 1.0, the *sum of* the effects on ratepayers and the utility is a net benefit; the TRC does not examine whether the ratepayers and the utility *both* benefit, as Mr. Crandall asserts. A positive TRC can be associated with substantially all of the benefits accruing to customers. Without the CAM, the ratepayers benefit from 100% of the TRC benefits and the lost margins, while paying for as 100% of the direct program costs, and PGW would get none of the benefits and bear the cost of lost margins.

Second, Mr. Crandall is mistaken on concept of present value. He assumes that the entire present-value benefit of a DSM program, which accrues over the life of the DSM measures, occurs entirely in the first couple of years after installation of the measures. Those early years are the period during which PGW would be suffering the effects of lost margins from pursuing the DSM portfolio that would most benefit its customers. In reality, those avoided-cost benefits occur over the life of the measure, which is typically on the order of decades, not a few years. Hence, he grossly overstates the avoided-cost benefits that are available to offset the lost margins from the installation of a measure to the effective date of the next rate case.

Third, Mr. Crandall appears to be under the misimpression that PGW pays the costs of the DSM program (compensated by keeping some offsetting

savings). On the contrary, those costs and benefits flow through the ECRS and the CGR to consumers.

Fourth, and most importantly, Mr. Crandall's argument assumes that PGW retains 100% of the avoided costs for the entire life of the measures, with none of the avoided costs flowing through to ratepayers. This is not the case. In reality, when a customer's usage declines, its bill falls by the sum of the gas cost rate, the delivery charge, and the sum of the surcharges. These three rate components have different effects on PGW's costs and margins, as follows:

- The Company loses the revenues from the reconciling surcharges in the short term, but, since the costs are reconciled, recovers them from consumers at a later date and is made whole.
- The Company loses the delivery charge, and in the absence of a CAM, is never made whole.
- The Company loses the gas-cost revenues, but also avoids a similar amount of gas costs that would otherwise have been paid to suppliers. The avoided gas costs may be higher or lower than the lost gas-cost revenues, but the gas-cost rate is also reconciling, so any difference flows back to customers in subsequent GCR updates.

Essentially all of the avoided costs from PGW's DSM programs would be gas costs. Most of those avoided-cost benefits would flow directly to the participating customer, and the remainder would be reconciled through the

GCR, generally benefiting all customers.[2] As a result, while customers benefit from DSM, PGW does not retain any avoided costs.[3]

In short, Mr. Crandall concludes that cash flows that exclusively benefit customers would somehow benefit PGW. He is misinformed and incorrect.

Q: If Mr. Crandall intended to propose that PGW be allowed to retain all avoided costs, as he assumes occurs, would that avoid the need for a CAM?

A: That might be the case, although the implementation of the regulatory structure that Mr. Crandall assumes would be much more complex than a simple CAM. Since actual gas costs would decline, the PUC would need to add the avoided costs to the actual costs before computing the next GCR proceeding. For residential customers, the current rates are $0.47059/ccf for the GCR and $0.60067/ccf for delivery. If PGW could somehow retain the GCR revenues from the sales reduction, about 80% of its lost delivery margin would be offset. While Mr. Crandall is incorrect the origin and magnitude of the lost margins, his approach (if feasible) would offset most of the lost margins.

Mr. Crandall has not explained how he would implement the system he apparently prefers, in which PGW keeps the avoided costs, and the matching of lost margins and cost recovery would not be as consistent as with the CAM. Mr. Crandall's approach is clearly inferior to the CAM, and in any case, has not been developed enough to be considered a viable alternative at this time.

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2 The Company also does not retain any of the other benefits enjoyed by participants and counted in the TRC.

3 Office of Consumer Advocate Witness Roger Colton identifies some potential administrative savings that might result from low-income programs for some utilities, but their magnitude and timing are unclear, especially since his arguments ignore the effect of the CRP.

Q: Is Mr. Crandall correct that the CAM is vulnerable to manipulation?

A: No. Mr. Crandall elaborates his opinion that the CAM is "vulnerable to inaccuracies" and "errors, miscalculations, and worse" He correctly describes the computation of the CAM rate as "multiplying the class's delivery charge by the projected Ccf savings for the class and dividing by the forecasted sales to the class" but then erroneously claims that

> The proposed CAM may create an incentive for the utility to over-estimate the amount of savings from its programs, and underestimate the sales volumes. The higher the savings estimate and the lower the sales forecast, the more money PGW would collect.... (Crandall at 9).

He is incorrect about both PGW's ability to overestimate savings and the effect of an underestimate of the sales volumes.

Q: Is PGW free to overestimate savings from the DSM programs?

A: No. Estimates of DSM savings would be based on the results of independent evaluations, as described in more detail in the rebuttal testimony of PGW Witness Theodore Love. The computations in the CAM filings would be subject to review and (if necessary) correction in the PUC's review of those filings.

Mr. Crandall complains (at 13) about "the constrained EMV budget" and expresses concerns about "how often the approved NTG ratio would be modified,...who would modify it or when the NTG modifications would be applied," but offers no suggestions about how to improve the estimates, which matter for program screening, as well as setting the CAM. Mr. Crandall does not provide any evidence that the evaluation process would be inadequate.

Q: Would PGW document the savings it estimates for the DSM programs, for the purposes of the CAM?

A: Yes. As I understand it, PGW would provide a filing with a detailed break-down of the estimated savings, including a list of the number of installations of each measure (with data on size and efficiency level, where relevant), the average annual savings per installation, and the fraction of annual savings that would have been realized (for measures installed during the year). The locations of the installations would be available (with appropriate confidentiality protections) for confirmation by the program evaluator or any auditor. The annual savings will be those in the TRM, as confirmed and updated by the impact evaluations; any judgments that PGW may make in applying those results would be documented and subject to review (and if necessary, correction) by stakeholders. If any disputed computations cannot be resolved in time for the timely implementation of the ECRS, the PUC's final determination can be reflected in the next year's ECRS, since that is a reconciling adjustment.

Q: Would an underestimate of the sales volumes result in PGW over-collecting the CAM?

A: No. The CAM collection would be reconciled to the lost margin that the PUC approves for PGW. If the forecast of class sales is less than actual sales, the next year's CAM collection would be higher than the approved amount, and the difference would be a credit in the subsequent CAM rate. Similarly, if forecast sales exceed actual sales, the CAM would under-collect, and the difference would be added to the next year's CAM. The sales forecast will not affect the total CAM revenues flowing to PGW.

Q: Is Mr. Crandall correct that the CAM is in effect a single-issue rate case?

A: No. The CAM would not be an hypothetical ad-hoc single-issue rate case, but a regular rate adjustment pursuant to a PUC-approved tariff, comparable to the surcharges and credits for Weather Adjustment, Universal Service, Restructuring and Consumer Education, Other Post-Retirement Benefits, Distribution System Improvements, and the Gas Cost Rate. If the CAM would be an illicit single-issue rate case, then all those adjustments must also be single-issue rate cases.

Q: Does Mr. Crandall suggest any particular issues that he believes should be bundled into the CAM?

A: Yes. He indicates that he would like the CAM to reflect the following factors that might increase PGW sales:

- the fuel-switching program,
- colder than normal winter weather,[4]
- an economic upturn,
- "higher-than-expected loads due to any other reason."[5]

Mr. Crandall also expresses his concern that the CAM would not match "costs that the Commission previously permitted the utility to collect, but did not guarantee," and that

> fixed costs for the existing infrastructure of the utility…may not be collected under certain circumstances, independent of the existence of DSM.… fixed costs for the existing infrastructure of the utility…may be collected, without CAM, even in the presence of aggressive DSM programs. (Crandall at 15, lines 18–19)

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4 Again, Mr. Crandall indicates his lack of familiarity with PGW's regulatory structure. Changes in sales due to weather is already reflected in the Weather Normalization Adjustment, so PGW gets no benefit from cold winters.

5 Mr. Crandall lists these four factors at 14–15. I edited his text slightly for clarity.

There is a name for an adjustment mechanism that reflects changes in load due to any reason and ensures that the utility winds up retaining only the revenue requirement approved by the PUC: full decoupling. While full decoupling is a simple and elegant solution, and would be acceptable to PGW, Mr. Crandall's client has consistently opposed such an approach. If OCA has changed its mind, and would prefer to work on developing the comprehensive sales adjustment that Mr. Crandall describes, PGW would be delighted to work on developing a decoupling mechanism as part of its next general rate case. In the meantime, the PUC should approve the proposed CAM as an interim measure, to allow PGW to ramp up its DSM efforts.

Q: Is Mr. Crandall correct that lost margins should not be recovered through the ECRS because they are not program costs?

A: No. The scope of costs collected through the ECRS is a matter for determination by the PUC. As I explain in my direct testimony (and as I believe is obvious), lost margins are costs to PGW resulting from the DSM programs. Mr. Crandall asserts that lost margins "are unrelated to the cost and operation of the DSM program" (Crandall at 15, lines 19–20), but immediately after admits that the DSM program causes the lost margins: "any efforts to reduce the wasteful use of natural gas may make it more difficult for the utility to fully recover its fixed costs" (Crandall at 15, lines 20–21).

Mr. Crandall might believe that there is a substantive difference between "program costs" and "costs resulting from the programs," but there is no difference in terms of the financial effects on PGW of not recovering a dollar of program incentives and not recovering dollar of lost margin resulting from those incentives.

Q: Does Mr. Crandall make any other incorrect assertions regarding the CAM?

A: Yes. He admits that the Phase II Proposed Plan would benefit customers, even with the CAM, citing Table 41 on page 62:

> the net financial benefits to customers from implementation of the proposed programs would be in excess of nine million dollars for the Base Plan Scenario and over thirteen million dollars for the Expanded Scenario. (Crandall at 16, lines 4–7)

So far, so good. Mr. Crandall then misinterprets the meaning of the values that he has just quoted:

> This, however, does not provide any justification for the CAM. In effect, it [the CAM] would reduce the benefits of participating and non-participating customers. (Crandall at 16, lines 7–8)

In fact, as the $9.4 million to $13.2 million values are *net* of both (1) a CAM entirely offsetting the participants' short-term delivery-charge savings (which are PGW's lost margins) and (2) the proposed performance incentive.

B. Knecht on the Conservation Adjustment Mechanism

Q: Does Mr. Knecht support the CAM in principle?

A: Yes. He says that he

> does not philosophically oppose revenue decoupling mechanisms. Such mechanisms can, if reasonably implemented, provide revenue stability for both ratepayers and utilities, and can also serve to better align the interests of ratepayers and utilities." (Knecht at 8–9)

Q: What issues does he express with respect to PGW's proposed CAM?

A: Mr. Knecht's critique of the CAM is a combination of arguments for full decoupling (similar to some of Mr. Crandall's positions) and concerns about the implementation of the CAM as if it were a full decoupling mechanism (which PGW has not proposed here).

He also notes that the Act 129 electric utilities are not allowed a CAM. (Knecht at 9–10) The PGW application explained why the CAM is more important to PGW than to the electric utilities (Section 3.1.2.1).

Q: Where does Mr. Knecht suggest that full decoupling would be preferable to the CAM?

A: Mr. Knecht states that the CAM "fails to reflect all of the other factors that go into determining base rates" (Knecht at 9). He elaborates on that point as follows:

> the CAM as proposed is not actually based on actual load reductions....Whether these reductions are offset by other increases in consumption [is] not reflected in the proposed mechanism....
>
> A revenue decoupling mechanism based on actual observed changes in consumption (resulting from all factors) would be much fairer and more transparent to ratepayers than the Company's proposal." (Knecht at 10)

As I noted above, if the OSBA would like to discuss development of the full decoupling mechanism, PGW would be happy to discuss developing such a mechanism for inclusion in its next rate case.

Q: Where does Mr. Knecht criticize the CAM as if it were a full decoupling proposal?

A: He observes, "To the extent that a rate decoupling mechanism is adopted, it would be better done in the context of a base rates proceeding" (Knecht at 9).

Q: Is Mr. Knecht correct on that point?

A: I agree with him, with respect to full decoupling. He and Mr. Crandall, representing the OSBA and OCA respectively, both propose that the CAM be transformed into full decoupling, which would most reasonably be implemented in a full PGW rate proceeding.

However, it is certainly not true that the simple CAM proposed by PGW can only be computed in a full rate case. The existing rates were set in a base rate case, and rates will be updated in future base rate cases. The CAM would simply compensate PGW for the loss of the delivery margins approved by the PUC.

Q: Does Mr. Knecht raise any other concerns in relation to the fact that "the CAM as proposed is not actually based on actual load reductions"?

A: Yes. He questions "Whether these reductions are real" and whether PGW has claimed "calculated load reductions, regardless of [the DSM program's] actual success." (Knecht at 10) These points should be addressed in the evaluations and in the PUC's review of PGW's savings estimates. Like Mr. Crandall, Mr. Knecht does not identify any errors in PGW's computations, or in the quality of the evaluations.[6] The OSBA would be able to review future CAM filings and dispute any errors that the OSBA detects.

Mr. Knecht also questions "Whether these reductions are...sustainable over the longer term." (Knecht at 10) That issue may be relevant to long-term planning and to the cost-benefit tests, but is not really relevant to the CAM. If Mr. Knecht is unsure "whether the *program* can be sustained over the longer term," that is irrelevant, since the CAM collects only for the measures implemented in the program year, not those that might be implemented in the future. If he means "whether the savings from the first year will continue over the longer term," that is also largely irrelevant, since the CAM only collects savings until the effective date of the next rate case. If PGW files rate cases every five years, and a measure installed right at the effective date of one rate case could be in place for five years before the next rate case; most measures would in place for shorter periods. While the future average life of measures may be difficult to pin down precisely, most measures will last beyond the next rate case. If OSBA is concerned about significant decay of

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6 Mr. Knecht also suggests (at 10) that a CAM would "create an incentive for the Company to skew its performance evaluation results," as if the Company would be evaluating itself. He does not identify any problem with the objectivity of the independent evaluations that third parties would continue to carry out.

savings in the first five years of some particular measures, it should seek to have that question addressed in the relevant evaluations.

C. Maurer on the Conservation Adjustment Mechanism

Q: What is the position of Ms. Maurer on the CAM?

A: Ms. Maurer indicates (at pages 4–5) that she would prefer that PGW file rate cases more frequently. However, she does not acknowledge that even annual rate cases would not capture the full effects of lost margins on PGW's finances (as I discussed in my rebuttal to Mr. Crandall, above), and she does not consider the costs of continual rate-case filings. The latter factor is addressed in the rebuttal of PGW witness Adamucci.

Q: Does Ms. Maurer fully understand the CAM proposal?

A: I believe she is confused about the purpose of the CAM. She describes the PGW proposal as follows:

> PGW has proposed to apply the revenue to increasing its energy efficiency program budgets. PGW is requesting to collect money from rate payers for one reason, decreasing revenue to cover its fixed costs, and then claiming that the money will be used for the completely different purpose of increasing energy efficiency program budgets. (Maurer at 5)

Ms. Maurer does not cite any statement by PGW that indicates that the CAM revenues would be used to increase energy-efficiency budgets, and I do not think any such statement exists. The CAM is required for the purpose she cited, to offset the decline in margin to pay PGW's fixed costs. The energy-efficiency budgets would be recovered through the non-CAM portion of the ECRS. The lack of the CAM would constrain PGW's ability to pursue DSM, by threatening PGW's financial stability, not due to PGW's inability to fund its energy-efficiency budget.

Since PGW is a municipal utility, no portion of the lost margin that would be recovered in the CAM would become an additional return or profit to shareholders. Instead, the CAM would avoid the loss of cash flow that pays for maintenance, improving service, responding to customer concerns and the like. Questions that may arise regarding the use of the funds for an IOU CAM simply do no apply to PGW.

D. Colton on the Conservation Adjustment Mechanism

Q: What are Mr. Colton's concerns with the CAM?

A: Mr. Colton recommends that DSM for CRP customers (which he describes as LIURP) not be subject to the CAM.

Q: What is his rationale for that position?

A: Mr. Colton makes a number of assertions regarding the applicability of CAM for the CRP DSM program. While his point is sometimes difficult to discern, especially regarding his misunderstandings of the nature of the CRP, I understand his objections to include the following arguments:

- Since some LIURP programs are required by law as a universal service program, PGW should not be eligible to recover lost margins caused by any of its DSM activities for the CRP customers (Colton at 20–21).[7]
- Energy-efficiency measures for CRP participants preserve load for PGW, which should be netted against the lost margin (Colton at 21).

[7] Mr. Colton notes that the PUC's Universal Service LIURP programming's "objective is also tied to improving the affordability of home energy service" (Colton at 20). While this statement is true for PUC LIURP objectives, it is not relevant to whether PGW should recover its costs. Furthermore, this point is even less relevant given the nature of PGW's LIURP as a percentage of income program, as described below.

- The CRP customers will default on a portion of their bills, so PGW would never have received some of the calculated lost margin (Colton at 24).

Q: Are these points valid?

A: No, certainly not to the extent that Mr. Colton thinks they are. First, the fact that some low-income energy-efficiency program is required has no bearing on whether PGW should be allowed to collect its allowed revenue requirement, or even whether that collection can be through an adjustment mechanism. Other programs that are legally required are funded through adjustment mechanisms, including the surcharges for Restructuring and Consumer Education, and Distribution System Improvements. Surcharge mechanisms are widely used to pay costs that the utility cannot control (including the gas-cost adjustment) or that the regulator wants the utility to incur.

Second, the operation of the CRP greatly reduces the effects that Mr. Colton imagines for conservation directed to customers on the CRP. Under the CRP, each customer's bill is capped at a level set by the household's income, regardless of usage. The remainder of the customer's consumption is billed to other (non-CRP) customers, through the Universal Service charge. Reducing the CRP customer's usage will not generally reduce the bill actually rendered to that customer, and hence will have no effect on the customer's ability to pay the bill or probability of avoiding a service shut-off or eviction.

Third, due to the operation of the CRP, the vast majority of the margin that PGW would lose due to the DSM program would have been collected through the Universal Service charge, from non-CRP customers, the vast majority of whom pay their bills. Hence, while Mr. Colton's assertions about

the share of lost margin likely to be lost through bad debt might be correct for other utilities, it is not applicable for PGW.

Q: Has Mr. Colton identified any reason to exclude from the computation of the CAM the lost margins from the CRP program?

A: No. While I share his concern about the effects of ratemaking on low-income customers, I do not see any harm to the CRP customers from allowing PGW to recover its lost margins on CRP sales. The other customers, who pay the portion of CRP participant costs that the CRP customers cannot, will still benefit from reduction of the GCR portion of the CRP usage.

III. Avoided-Cost Issues

Q: What avoided-cost issues do the other parties' witnesses address?

A: The only response to PGW's avoided costs is from Mr. Knecht. He raises concerns with the treatment of DRIPE and of CO_2 costs, although he agrees with much of the logic underlying the inclusion of both DRIPE and CO_2 costs.

A. Knecht on Demand-Response-Induced Price Effects

Q: What are Mr. Knecht's concerns about PGW's treatment of gas DRIPE?

A: Mr. Knecht expresses the following two concerns:

- "adopting a DRIPE adjustment in this proceeding will set a precedent for future EDC proceedings" (Knecht at 14, lines 19–20);
- "the economic impact calculation reflects only the price impact on ratepayers. What this ignores is the impact on gas producers" (Knecht at 14, lines 24–25).

Mr. Knecht agrees that

> conservation efforts serve to reduce market prices.... In...all markets, there is an upward sloping supply curve. In that environment, any downward shift in the demand curve will serve to move the supply-demand equilibrium to a lower price level. (Knecht at 14, lines 1–3)

Q: Is Mr. Knecht's concern about setting a precedent for future EDC proceedings a valid reason to ignore the price-reduction effects of gas conservation?

A: No. In particular, the estimation of electric energy DRIPE, electric capacity DRIPE, and the effect of electric conservation on gas prices would require another set of studies; the values adopted in this proceeding would not flow directly to the EDC avoided costs. If the PUC decides to consider estimates of DRIPE from electric conservation in some future proceeding, or in a stakeholder consultation, the PUC would be able to determine at that time whether the price effect of electricity conservation can be reasonably estimated and whether the likely effects are large enough to bother including in DSM screening.

Q: Is Mr. Knecht's concern about gas producers a valid reason to ignore the price-reduction effects of gas conservation?

A: No.

So far as I am aware, the PUC has always taken the position that its role is to get the best possible deal for ratepayers. Otherwise, the PUC would not have cared, for instance, what prices were proposed in the following matters:

- in contracts from Pennsylvania IPPs to electric utilities;
- for procurement of gas from Pennsylvania suppliers by PGW and other gas utilities;
- for purchasing pipe, cable and other utility supplies from Pennsylvania suppliers;
- for purchasing right-of-way from Pennsylvania landowners.

It is my understanding that the PUC has cared very much about those costs.

For example, avoided energy and capacity costs are typically estimated based on market clearing prices. No attempt is made to subtract from those prices the portion of the price that is a profit to generators. Perhaps more importantly, the incremental DSM costs that are currently used in Pennsylvania (and everywhere else) in efficiency-program screening are based on retail costs to consumers that includes profits to numerous parties all along the supply chain—to contractors or retailers, to distributors, to manufacturers and potentially others.

If Knecht's argument that profits should be considered transfer payments and not societal benefits were to hold, then for internal consistency the incremental cost assumed for efficiency measures should also be reduced by the amount of profit different parties earn along the supply chain. In addition, the third-party vendors who deliver the programs that promote those efficiency measures on behalf of the utilities are themselves earning profit on their services. The utilities and the PUC attempt to minimize the prices paid for those services, including minimizing the profit that the vendors can charge, using competitive procurement, benchmarking, and similar cost controls. If the PUC adopted Mr. Knecht's approach to defining the merits of DRIPE as a societal benefit, those profits would also need to be subtracted from program delivery costs.

To be clear, I do not argue that such adjustments be made. I am simply making the point that Knecht's suggestion that DRIPE is not a societal benefit is both fundamentally flawed and inconsistent with how other elements of efficiency cost-effectiveness screening is conducted.

Q: Are the Pennsylvania gas wells primarily owned by Pennsylvania individuals and companies?

A: No. According to the data on unconventional well permits maintained by the Pennsylvania Department of Environmental Protection, only about 24% of the 2014 unconventional gas production in the state was from wells operated by Pennsylvania companies.[8]

Table 1: Ownership of Pennsylvania Gas Wells

Operator Home State	Number of Operators	Gas Produced (mcf)	Percent Produced
TX	19	2,118,615,080	52.0%
PA	28	979,328,461	24.1%
OK	4	835,919,454	20.5%
CO	11	106,414,064	2.6%
WY, NE, WV, LA, OH	7	30,443,751	0.7%

Source: PA DEP Oil and Gas Reporting Website; web searches on operator names.

B. Knecht on Carbon Prices

Q: What is Mr. Knecht's position on the inclusion of carbon prices in PGW's avoided costs?

A: Mr. Knecht acknowledges the benefits of reflecting environmental costs in screening of DSM (Knecht at 16 and 17). Nonetheless, he expresses concern that including carbon prices in DSM screening would result in Pennsylvania ratepayers paying for benefits that they do not receive. It is difficult to summarize his position in a manner that does justice to his argument, so I will reproduce his discussion in its entirety:

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[8] "Oil and Gas Reporting Website," www.paoilandgasreporting.state.pa.us/publicreports/Modules/Welcome/Agreement.aspxConventional (7/14/2015) lists the operator of each well and the production from the well. I obtained information about the domicile of most of the owners from web searches on the operator names. (Conventional wells are owned by a large number of front companies and proved too difficult to identify for this analysis, However, they provide only about 3% of the gas produced in Pennsylvania.)

> Suppose…that, using the existing TRC Test, [a] program would require an investment with a present value of $10,000, and would yield an estimated present value in savings of $9,000 over the equipment life, in terms of reduced gas, losses and marginal transportation costs. Under the existing testing regime, the Company would probably not undertake this project, as it is not cost effective.
>
> However, suppose environmental externality benefits for this project related to carbon dioxide emissions amount to a present value of $2,500. Under PGW's proposal, this project would be undertaken. What this means is that the ratepayers are $1,000 worse off as a result of this project, except to the extent that they benefit from the reduction in CO_2 emissions. In effect, the policy imposes a hidden tax on carbon, in exchange for the climatic benefits. However, since the benefits of reduced carbon dioxide emissions are global, PGW ratepayers accrue only a minute fraction of the total benefit. Thus, the implication of PGW's proposal for this particular case is that it imposes an implicit tax of $1,000 on PGW ratepayers in exchange for a $2,500 carbon reduction benefit for the entire world. (Knecht at 17)

Q: Is this concern valid?

A: No, not for the carbon price that PGW has included in its screening, which is "a forecast of the level a carbon tax or a forecast of the value at which carbon allowances will trade," as Mr. Knecht says on page 16. The CO_2 value used in PGW's primary screening is not the benefit to the entire world, which would be the greater social costs of carbon shown in Tables B-4 and B-5 of the Phase II Plan. Instead, it is the internalized benefit to PGW's customers of not paying the forecast carbon tax or allowance price. That is a direct, internal benefit to PGW customers.

Q: Does this conclude your rebuttal testimony?

A: Yes.