BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission   :
                                          :   Docket No. R-2018-2647577
                    v.   :
                                          :
Columbia Gas of Pennsylvania, Inc.   :

PSU Statement No. 1-R

REBUTTAL TESTIMONY OF JAMES L. CRIST, P.E.
ON BEHALF OF
THE PENNSYLVANIA STATE UNIVERSITY

Dated: July 3, 2018

1   **Q.**   **PLEASE STATE YOUR NAME, AND ON WHOSE BEHALF YOU ARE**

2   **TESTIFYING.**

3   **A.**   I am James L. Crist, President of Lumen Group, Inc., presenting Rebuttal Testimony on

4   behalf of The Pennsylvania State University ("Penn State" or "PSU"). I previously

5   presented Direct Testimony in this case, designated PSU Statement No. 1.

6

7   **I.**   **ISSUES**

8   **Q.**   **WHAT ARE THE ISSUES YOU WILL DISCUSS IN THIS REBUTTAL**

9   **TESTIMONY?**

10   **A.**   Specifically, in my rebuttal testimony I will review several allocated cost of service studies

11   ("ACOS") recommendations made by OCA witness Mr. Mierzwa, I&E witness Mr. Cline,

12   and OSBA witness Mr. Knecht. Because their views all are favoring smaller customers

13   instead of the balanced approach taken by the Company, I will provide evidence that the

14   Customer-Demand Cost of Service Study performed by the Company is valid and should

15   be utilized to allocate any increase granted by the Commission.

16   I will also comment on Direct Energy's Mr. Magnani's concerns about the metering charge.

17   Finally, I will review several aspects of the NGS Parties' Ms. Greenwood's position

18   concerning flow orders and associated penalties.

19

20   **II.**   **ALLOCATED COST OF SERVICE STUDY**

21   **Q.**   **WHAT ACOS DID OCA WITNESS MR. MIERZWA RECOMMEND?**

22   **A.**   Mr. Mierzwa recommended the use of his own Peak & Average ACOS, rejecting the

23   Company's method of averaging the results of its Peak & Average ACOS with its

1   Customer-Demand ACOS. He rejects the appropriateness of using a customer-demand

2   ACOS for in his view, "CPA's Customer-Demand method should be given zero weight"

3   (OCA Statement No. 3, 17:2-3). Mr. Mierzwa believes that "Distribution mains are not

4   sized for the number of customers served from them, but for the loads place upon them."

5   (*id.*, 10:14-16). I will point out that the Company's Customer-Demand ACOS allocated

6   the cost of mains partly based on the number of customers served (the "customer" part of

7   "customer-demand") and also partly based on the loads placed on the mains (the "demand"

8   part of "customer-demand"), so at least Mr. Mierzwa recognizes that the demand is an

9   important determinant of allocation of mains cost.

10

11   Q.   **WHY SHOULD MAINS BE ALLOCATED BASED ON THE NUMBERS OF**

12   **CUSTOMERS?**

13   A.   Natural gas pipelines are installed to provide service to customers. And unless all the

14   customers are living in one massive apartment building the distribution pipelines need to

15   be extended across a company's distribution service territory. When more customers are

16   added, more pipelines must be extended. It is a clear causal relationship and that is why

17   the customer component of the Customer-Demand ACOS simply is needed and makes

18   sense. Mr. Mierzwa provided an example citing customers that do not need pipes extended

19   to them as much as industrial customers would need piping extended to them, but his

20   example initially illustrates the point that I am making which specifically pertains to the

21   service territory of Columbia Gas. Pennsylvania's two largest cities, Philadelphia and

22   Pittsburgh, are served by other local distribution utilities. The Columbia System serves the

23   suburbs of Pittsburgh along with numerous rural regions in Pennsylvania. Thus, the density

1   of customers served by Columbia is less dense than if it served the major urban cities in

2   the Commonwealth. This illustrates the reason that allocation of distribution mains cost is

3   done on a customer basis. Customers in the less dense areas require more feet of natural

4   gas distribution mains piping to reach them than customers situated in highly dense urban

5   areas. This refutes the example provided by Mr. Mierzwa.

6

7   Q.   WHY DOES MR. MIERZWA CLAIM THAT BONBRIGHT'S BOOK

8   RECOMMENDS THAT GAS MAINS NOT BE CLASSIFIED AS CUSTOMER

9   COSTS?

10   A.   On page 14 of his direct testimony Mr. Mierzwa adds emphasis to a citation from

11   Bonbright's, *Principles of Public Utility Rates* to support his claim. However, on page 13

12   of Mr. Mierzwa's testimony it is clear that Professor Bonbright was "utilizing an example

13   from the electric industry". (*id.*, 13:6) Mr. Mierzwa failed to explain why the Bonbright

14   example pertains to the gas mains of the Columbia system. The emphasis added says there

15   is a very weak correlation between the area (or the mileage) of a distribution system and

16   the number of customers served by this system. However, in the case of Columbia, the

17   capital costs of its distribution system are for extensions to add additional customers or the

18   accelerated pipe replacement program underway to replace older pipe with new plastic gas

19   piping. Both of these functions clearly are customer-driven and that supports allocating a

20   portion of the distribution system costs on a customer basis.

21

22   Q.   WHAT INDUSTRY REFERENCE STANDARD DO YOU RELY UPON?

3

1   A.   For this issue the Gas Distribution Rate Design Manual, prepared by the National

2   Association of Regulatory Utility Commissioners ("NARUC"), provides some clarity.

3   Consulting pages 22-23 states:

4   One argument for inclusion of distribution related items in the
5   customer cost classification is the "zero or minimum size main
6   theory." This theory assumes that there is a zero or minimum size
7   main necessary to connect the customer to the system and thus
8   affords the customer an opportunity to take service if he so desires.
9   Under the minimum size main theory, all distribution mains are
10   priced out at the historic unit cost of the smallest main installed in
11   the system and assigned as customer costs. The remaining book cost
12   of distribution mains is assigned to demand. The zero-inch main
13   method would allocate the cost of a theoretical main of zero-inch
14   diameter to the customer function, and allocate the remaining costs
15   associated with mains to demand.
16
17   Of the two choices, zero or minimum size, Mr. Balmert used the minimum size of two-

18   inch mains in the Company's Customer-Demand ACOS. I would agree with his analysis.

19   It is a valid study and should be used, and not ignored as Mr. Mierzwa wishes.

20

21   Q.   DOES MR. MIERZWA RECOMMEND THAT MAINS ALLOCATION BE BASED

22   ON AVERAGE DEMAND AND NOT PEAK DEMAND?

23   A.   Yes. A significant number of pages of Mr. Mierzwa's testimony, page 19 through page

24   24, consists of Mr. Mierzwa attempting to build a case that gas mains allocation should be

25   based on average demand and not peak demand. He points out that the cost of delivering

26   gas on just one day every 15 years, which is what Mr. Balmert used to determine peak

27   demand, would be prohibitively high. This is a nonsensical example because no customer

28   used gas on only one day during a 15-year period. The fact is that the distribution system

29   must be designed to deliver gas during a peak day. I am not disputing or endorsing the use

30   of Columbia's 15-year period to determine a system peak. Once the pipes are sized to carry

1   the peak day load then clearly enough gas will flow through those pipes the rest of the year

2   to meet the remaining needs of the customers, however this provides no justification for

3   leaping to the conclusion that the piping system was designed to meet an average demand.

4   Mr. Mierzwa is just plain wrong.

5   On page 18 and 19, Mr. Mierzwa gives his thoughts on the company's financial evaluation

6   process in place for main line extension. His observation that the Company's base rate

7   revenues are primarily collected on a volumetric basis is not a reason to believe that the

8   peak demands are not used as the engineering design basis for gas mains. Mr. Mierzwa

9   should be careful of his analysis for a logical conclusion of his observation is that the rate

10   structure of the Company should be designed to collect costs such as the distribution gas

11   mains from customers on a non-volumetric basis.

12   On page 21, Mr. Mierzwa opines that many costs associated with the distribution delivery

13   system do not depend on pipe sizes. While that is true the majority of the cost of the gas

14   mains clearly depends on the peak design. Mr. Mierzwa uses an example that discusses

15   the economies of scale of expanding the diameter of pipe as a bad example but his logic is

16   flawed in his example. Simply because there is an efficiency involved in the economy of

17   scale of larger sized pipes that produces a cost efficiency in the delivery capability does

18   not undermine the basic principle that the peak demand is the dominant factor in the

19   design of the distribution system.

20

21   Q.   **WHY SHOULD MAINS BE ALLOCATED BASED ON PEAK DEMAND AND**

22   **NOT AVERAGE DEMAND?**

23   A.   Again, consulting the NARUC Manual on pages 23 and 24 states:

1 Demand or capacity costs vary with the quantity or size of plant and
2 equipment. They are related to maximum system requirements
3 which the system is designed to serve during short intervals and do
4 not directly vary with the number of customers or their annual usage.
5 Included in these costs are: the capital costs associated with
6 production, transmission and storage plant and their related
7 expenses; the demand cost of gas; and most of the capital costs and
8 expenses associated with that part of distribution plant not allocated
9 to customer costs, such as the costs associated with distribution
10 mains in excess of the minimum size.

11

12 Average demand is based on annual usage and is clearly identified as not appropriate to

13 use as a basis for gas mains allocation.

14

15 Q. **WHAT RECENT BASE RATE CASE DECISION APPROVED PEAK DEMAND**

16   **FOR A GAS COMPANY'S MAINS ALLOCATION DETERMINANT?**

17 A. Recently the Maryland Public Service Commission recognized that distribution mains are

18   demand related and should be allocated to all customers based on each class' contribution

19   to peak demand. On June 13, 2016, the Order was issued in the Baltimore Gas & Electric

20   base rate case No. 9406. The Maryland Public Service Commission approved BGE's

21   ACOS method which bases the allocation on demand, using the non-coincident peak,

22   which is the customer's highest demand during the year. "Distribution mains and

23   associated O&M are classified as demand-related and allocated to all customer classes

24   based on each class' contribution to the winter period total non-coincident peak ("NCP")

25   demand (therms per hour)". (Direct Testimony of David E. Greenberg, 31:1-3) This

26   supports my point that in the Customer-Demand ACOS costs should be classified by peak

27   demand, not average demand.

28

1 Q. **IS THERE VALUE AT EXAMINING COMMISSION RULINGS OUTSIDE OF**

2   **PENNSYLVANIA?**

3 A. Mr. Mierzwa discusses the ruling of the Indiana Utility Regulatory Commission in the

4   Citizens Gas Light & Coke rate case. If we are to look outside of Pennsylvania at other

5   Commission rulings, then examining New York would show that in the National Fuel Gas

6   Distribution ("NFGD") system case 16-G-0257, NFGD allocated mains between Customer

7   and Demand using a regression analysis and the zero-intercept radius methodology stating,

8   "The first step in determining the allocation of Distribution Mains (Plant Account 376) is

9   the split between Customer and Demand. The Company performed a regression analysis,

10   which determined that 58.56% was customer related and 41.44% was demand related.

11   The regression analysis produced the zero intercept point, based on the relationship

12   between the radius of the pipe size squared and the average cost per foot." (Direct

13   Testimony of the Cost of Service and Rate Design Panel, 29:9-17) The zero intercept

14   method calculates what the capital cost of a distribution system having a zero-diameter

15   pipe would be through the use of statistical analysis. NFGD's customer-demand study was

16   recommended by the Administration Law Judge and adopted by the New York State Public

17   Service Commission.

18

19 Q. **DO OTHER GAS DISTRIBUTION COMPANIES USE A CUSTOMER-DEMAND**

20   **COST OF SERVICE MODEL?**

21 A. Yes. In New York, Orange & Rockland ("O&R") produced an Embedded Cost of Service

22   Study for its Gas Department in 2016 for its base rate filing Case 14-G-0494. In that study

23   O&R submitted Exhibit GRP-1, Schedule 1:

1   Line 7, Distribution Demand ("Demand Component")
2   The Distribution Demand ("Demand Component") consists of the balance of the
3   distribution mains system not allocated to the customer component, and represents
4   fixed costs related primarily to mains. It also includes distribution pressure
5   governors and regulating equipment, used in distributing gas from the sellers to the
6   firm classes of services. These costs are allocated to the firm
7   classes in proportion to their maximum one-hour non-coincident use on a zero
8   degree day.
9
10 Line 8, Distribution Customer ("Customer Component")
11 The Distribution Customer ("Customer Component") consists of the distribution
12 mains system that would be required to connect gas customers with a minimum
13 predominant size pipe, regardless of their demand for gas. It is apportioned to the
14 classes based on the number of services for each class.
15
16 The Customer-Demand method is a valid ACOS method and should not be dismissed as

17 Mr. Mierzwa has done.

18

19 Q.   DID THE BUREAU OF INVESTIGATION AND ENFORCEMENT ("I&E")

20   REVIEW THE COMPANY'S ACOS?

21 A.   Somewhat. I&E witness, Mr. Cline in his Statement No. 3, p. 47 though 54, reviewed some

22   of the past decisions of the Commission regarding various methods used in the ACOS. He

23   first provides a nice review explaining what an allocated cost of service study entails and

24   how it is used. Then he explains what the Company submitted in this proceeding along

25   with reviewing the differences between the Customer-Demand ACOS, and the Peak &

26   Average ACOS, and the average methodology undertaken by the Company, and their

27   impact on the relative rates of return. He provides a historical review of a few Commission

28   decisions that did not use the Customer-Demand ACOS methodology. He does agree with

29   the method Mr. Balmert described when conducting the Company's Peak and Average

30   ACOS and recommends that study as the one that should be used to allocate revenue

31   increases.

1   **Q.**   **DID MR. CLINE ACTUALLY CONDUCT HIS OWN ACOS?**

2   **A.**   No. He did not conduct any study himself or review any of the analytical formulae

3   contained in the Company's ACOS. He does endorse the manner which the Company

4   conducted its Peak and Average ACOS and recommends that as the study the Commission

5   accepts.

6

7   **Q.**   **DO YOU AGREE WITH MR. CLINE'S REASONING?**

8   **A.**   No, I do not agree with Mr. Cline for there are valid reasons that there are other ACOS

9   methodologies is that have a sound technical and economic basis to them. Examining such

10   alternatives by looking at other best practices and methods that have been found to be sound

11   is a way to improve. For that reason, I reject Mr. Cline's recommendation.

12

13   **Q.**   **IS THERE A STATUTE THAT PROHIBITS THE COMMISSION FROM**

14   **CONSIDERING NEW METHODS DIFFERENT FROM THE PEAK & AVERAGE**

15   **ACOS?**

16   **A.**   No. The Commission is free to improve on its past decisions based on new information

17   and considerations.

18

19   **Q.**   **DID YOU REVIEW THE TESTIMONY OF OSBA WITNESS MR. KNECHT?**

20   **A.**   Yes. Mr. Knecht states his agreement with the concept that mains costs are causally related

21   to the number of customers. He states that, "the common sense approach (to which I

22   generally subscribe) is that more footage of mains must be installed to interconnect many

23   small customers than to connect one large customer." OSBA Statement No. 1, 15:21-16:1.

1   I agree with Mr. Knecht on that point. Regarding the demand component of mains cost

2   Mr. Knecht argues that, "because mains diameters must be sized to meet peak demand, the

3   demand component of mains costs should be allocated only on peak demand." Id, 18:5-6.

4   I also agree with Mr. Knecht on that point. Mr. Knecht also desires that, "the Company

5   should consider segregating flex rate customer for cost allocation purposes, particularly in

6   the Large General Service (LDS/LGSS) class" which I recommended in my Direct

7   Testimony. So on three main points, we are in agreement. Mr. Knecht then produces his

8   own version of the Peak & Average ACOS and then produces his own revenue allocation.

9

10   Q.   DO YOU AGREE WITH MR. KNECHT'S REVENUE ALLOCATION?

11   A.   No. Mr. Knecht makes several adjustments to determine his allocation and one of those

12   adjustments is a change of the weighting of the two studies (Customer-Demand and Peak

13   & Average). Whereas the Company weighted the two studies equally to determine its

14   average ACOS, Mr. Knecht weights them 25/75, Customer-Demand/Peak & Average. The

15   point of the Company's using two studies is to determine boundaries or extremes, and then

16   average. Mr. Knecht determines boundaries but then skews the average by the use of

17   unequal weighting.

18

19   Q.   IF THE COMPANY'S AVERAGE ACOS METHOD IS NOT USED TO

20   DETERMINE REVENUE ALLOCATION WHICH ACOS METHOD WOULD

21   YOU RECOMMEND?

1 A.   I would prefer that the Company's approach to averaging the two ACOS studies be used.

2   If there is just one ACOS method to be used for revenue allocation then the Customer-

3   Demand method would be my recommendation.

4

5 **III.   FLOW ORDER ISSUES**

6 **Q.   DID YOU REVIEW NGS PARTIES WITNESS MS. GREENHOLT-TASTO'S**

7   **DIRECT TESTIMONY?**

8 A.   Yes. In NGS Parties Statement No. 1, Ms. Greenholt-Tasto expressed concern about the

9   Company's frequent use of flow orders and the significant penalty structure in the

10   Company's tariff associated with non-compliance with an issued flow order. I have the

11   same concerns. Ms. Greenholt-Tasto proposed a "fix" by issuing an MDQ for sales

12   customers similar to the method in place for transportation customers. I am in agreement

13   with her method but have an additional recommendation. The Columbia tariff should also

14   be modified to allow suppliers to remedy any non-compliance with an OMO within 24

15   hours following the conclusion of the gas day, when the Company finally provides

16   suppliers with the actual consumption information necessary to make an informed decision

17   regarding the necessary quantity of gas to provide. Additionally, the penalty amounts that

18   concern Ms. Greenholt-Tasto and me should be adjusted to still provide a penalty for non-

19   compliance but only if the Company received such a penalty from the upstream pipeline

20   company. I have proposed such adjustments in Exhibit PSU-R-1 which are in addition to

21   the recommended modifications I submitted in my Direct Testimony.

22

23 **Q.   WHAT IS THE SUMMARY OF YOUR TESTIMONY?**

EXHIBIT PSU-R-1

3.8 OPERATIONAL MATCHING ORDERS (OMOs)

3.8.1 An OMO is a demand for specific actions on the part of Shippers that are serving Customers with daily measuring devices. All Customers with daily measuring devices, except as specified in the Operational Matching Order section in Paragraph 3 of the RADs, are subject to the Company's issuance of OMOs.

3.8.2 Customers that presently have daily measurement through a charted meter, but not an electronic meter, shall have the option of choosing to be governed by Operational Flow Orders as specified in this Paragraph 3 of the RADS. Customers will be able to exercise this option no more than one time each calendar year by notifying the Company in writing prior to November 1st of each year. Once an election is made, the customer's option will remain in effect until changed.

3.8.3 An OMO will be issued, to the extent possible, with a minimum of eight (8) hours notice to the affected parties. Notice shall be made by the medium most reasonably expected to reach the Customer Proxy with as much notice as reasonably expected to reach the Customer Proxy in a timely manner, including but not limited to: e-mail, facsimile, or Nomination EBB. The notice will include the circumstance that warrant the issuance of the OMO and explain why the actions required are necessary. The notice will be provided via e-mail to the PA PUC.

3.8.4 The Company shall have the authority to direct Customer Proxies to adjust Customer's daily consumption or daily scheduled deliveries (Daily OMO Level) in order that daily scheduled deliveries match Customer's consumption. In order to comply with the OMO, the Shipper may use gas quantities which are: 1) scheduled and delivered on that day to the Company in the same Pipeline Scheduling Point in which the Shipper's customer(s')'s facilities are located; 2) contracted for under Rate SS – Standby Service if the order is pertaining to an under delivery situation; 3) available pursuant to the Rider EBS-Option 1; or 4) additional quantities that may be made available to the Shipper by the Company at its sole discretion including quantities delivered in accordance with the Limitation for Failure of Shipper to Provide Gas to the Company in Customer's Local Market Area section in Paragraph 2 of the RADS. 5) gas quantities which are scheduled and delivered by the end of the following gas day and transferred to the previous gas day's delivery.

3.8.5 When a difference exists between the Daily OMO Level and actual daily OMO compliance quantities delivered and the Company has been assessed a penalty for non-compliance, charges will be assessed for non-compliance.
3.8.5.1 The non-compliance charges will be assessed as follows:
3.8.5.1.1 When a customer meter uses Company-installed communication equipment for daily measurement:
(a) For days when daily usage is available on the Company's internet web site at least 2 hours after the close of the gas day, the rate will be equal to three (3)1.2 times the highest gas cost paid by the Company for gas delivered to the same market area of the midpoint prices reflected in Platts Gas Daily for the day of the OMO non-compliance
(b) For days when daily usage is not available on the Company's internet web site, and that daily usage is not available by the end of the OMO period, the rate will be equal to one and one-half (1½)1.1 times the highest gas cost paid by the Company for gas delivered to the same market area of the midpoint prices reflected in Platts Gas Daily for the day of the OMO non-compliance
.
3.8.5.1.2 When a customer meter uses customer-owned telephonic communication equipment for daily measurement the rate will be equal to 1.2 three (3) times the highest gas cost paid by the Company for gas delivered to the same market areaof the midpoint prices reflected in Platts Gas Daily for the day of the OMO non-compliance
3.8.5.6 In the event the Company issues an OMO for multiple days that include any portion of the last two weeks of the delivery month, the customer shall have the option to either deliver gas during the OMO of sufficient quantity to eliminate any

deficiency in the customer's monthly balance or to make up any deficiency in the following delivery month over a period of the same number of days that OMOs were in effect.