BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission, *et. al.*	:	R-2016-2537349, *et al.*
v.	:	
Metropolitan Edison Company	:	
Pennsylvania Public Utility Commission, *et. al.*	:	R-2016-2537352, *et al.*
v.	:	
Pennsylvania Electric Company	:	
Pennsylvania Public Utility Commission, *et. al.*	:	R-2016-2537355, *et. al.*
v.	:	
Pennsylvania Power Company	:	
Pennsylvania Public Utility Commission, *et. al.*	:	R-2016-2537359, *et al.*
v.	:	
West Penn Power Company	:	

SURREBUTTAL TESTIMONY

OF

CLARENCE L. JOHNSON

ON BEHALF OF
OFFICE OF CONSUMER ADVOCATE

August 31, 2016

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Clarence L. Johnson. My business address is 3707 Robinson Ave, Austin, Texas 78722.

Q. ON WHOSE BEHALF ARE YOU PRESENTING TESTIMONY IN THIS PROCEEDING?

A. I am presenting testimony on behalf of the Pennsylvania Office of Consumer Advocate ("OCA").

Q. ARE YOU THE SAME CLARENCE JOHNSON WHO PREVIOUSLY FILED TESTIMONY IN THIS PROCEEDING?

A. Yes. I have previously filed direct and rebuttal testimony.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. Like my direct and rebuttal testimony, this testimony will address the rate cases of the First Energy electric distribution companies ("Company" or "Companies"): Met Ed (ME), Penelec (PN), Penn Power (PP), and West Penn Power (WP). I will rebut selected issues set out in rebuttal testimony filed by the following witnesses: Mr. Baudino, Mr. Knecht, Mr. Kalcic, Mr. Pollock, Mr. Dolezal, and Mr. Siedt. To the extent that other intervenor witnesses have taken positions in this case similar to these witnesses, my testimony should be considered rebuttal of their positions too. Absence of any discussion of particular issues presented by these or other witnesses should not be construed as agreement with their positions. For purposes of comparison, this rebuttal testimony may

refer to cost studies based on the revenue requirements requested by the Companies, but such reference does not indicate agreement with the requested revenue levels.

II. MIMINIMUM DISTRIBUTION SYSTEM

A. OVERVIEW

Q. YOUR PRIMARY RECOMMENDATION IS TO REJECT THE COMPANIES' USE OF A MINIMUM DISTRIBUTION SYSTEM TO CLASSIFY DISTRIBUTION INFRASTRUCTURE COSTS AS CUSTOMER-RELATED. DID ANY REBUTTAL WITNESSES DISAGREE WITH YOUR POSITION?

A. Yes. Mr. Dolezal, Mr. Pollock, Mr. Baudino, Mr. Knecht, and Mr. Kalcic all filed testimony disagreeing with my recommendation to reject the minimum distribution study (called a "minimum grid study" by the Companies) and classify basic jointly used distribution infrastructure on a demand basis. In addition, as I will discuss later, my direct testimony presented an alternative recommendation which revised the customer classification percentage based on modification of the Companies' minimum distribution studies. Only Mr. Knecht and Mr. Dolezal addressed this alternative.

Q. IS THERE A COMMON PROBLEM WITH THESE CRITICISMS?

A. Yes. The witnesses assume that any factor affecting the incurrence of distribution infrastructure which is not fully demand-related must be customer-related. My direct testimony acknowledges that many factors affect the incurrence of distribution costs which are not completely caused by demand. The lists of factors can be quite long: geographic circumstance, topology, soil conditions, location of roads and highways,

economies of scale, customer density, load forecasting uncertainty, safety standards, minimization of energy losses, corporate standards, etc. But it is incorrect to take the cost impacts of these factors and dump them in the bin of customer costs solely because they are not directly linked to demand. There is no attempt by the witnesses to demonstrate that the supposed non-demand costs actually vary in proportion to customer count.

Some of these factors, in my opinion, are closer to demand causation than customer causation. For example, economies of scale motivate a utility to install larger facilities, which facilitates serving future load growth and reduces energy losses. Future load growth is related to demand, and reduction of energy losses benefits customers in proportion to their demand and energy consumption. And some of the factors (such as geographic happenstance) are unrelated to any allocation basis. Although the rebuttal witnesses like to cite the NARUC Electric Utility Cost Allocation Manual, they do not recognize that the Manual defines customer costs as "costs that are directly related to the number of customers served."[1] Professor Bonbright observed that the cost analyst preparing a fully distributed cost of service study is "under impelling pressure to 'fudge' his cost apportionments by using the category of customer costs as a dumping ground for costs that he cannot plausibly impute to any of his other categories."[2] To the extent that a portion of distribution costs are not directly associated with an allocation basis, my proposal is to classify the costs as demand-related because the customer allocator is not an equitable methodology for apportioning unallocable costs, because of the degree that it

[1] NARUC Electric Utility Cost Allocation Manual at 20 (emphasis added).

[2] Bonbright, James, *Principles of Public Utility Rates*, at 349, Columbia University Press, 1961.

shifts costs to one class (residential). The Companies allocate the vast majority of jointly used distribution plant on a customer basis. As a result, the customer classification allocates to the smallest apartment dweller the same amount of cost for that portion of distribution facilities as a manufacturer or large commercial customer who uses vast quantities of power.

Q. COMPANIES' WITNESS DOLEZAL CONCEDES THAT THE MINIMUM GRID IS, IN PART, A FUNCTION OF GEOGRAPHIC SIZE, BUT THAT GEOGRAPHIC SIZE IS A FUNCTION OF THE NUMBER OF CUSTOMERS THAT HAVE TO BE CONNECTED TO THE SYSTEM. DO YOU AGREE WITH THIS ARGUMENT?

A. No. First, Mr. Dolezal has not established that geographic size is correlated with the number of customers. In fact, as a matter of common knowledge, a utility with a small geographic size may serve more customers than a utility with more square miles of size—depending on the densities of the load centers served by the utilities. Mr. Dolezal's argument is an example of the conceptual flaw identified in Dr. Bonbright's textbook, which is cited in my direct testimony.[3] The logic of the minimum distribution method, according to Dr. Bonbright, is the assumption that distribution lines vary with geographic size, which in turn provides an indirect association with the number of customers. But Dr. Bonbright points out that the reasoning is flawed because of "the very weak correlation between the area (or mileage) of a distribution system and the number of

[3] James Bonbright, *Principles of Public Utility Rates*, Columbia University Press (1961) at 347-349.

customers served by the system."[4] Second, Mr. Dolezal attributes causation to "geographic area," but this is an unallocable factor. Distribution utilities are awarded a monopoly to provide distribution service within a defined geographic area. The shape and size of the geographic area obviously influences the design of the system and the costs of installing facilities. These are circumstances inherent in the monopoly service area, and are not "caused" by customers. Third, Mr. Dolezal conflates the utility's "obligation to serve" with the number of customers. Mr. Dolezal states that the determining factor for the minimum grid is the "presence of customers who must be connected to the grid, not the demand on the system…" In my view, this is part of the "obligation to serve" which accompanies a monopoly franchise, not a customer cost; and such a franchise cost necessitates a broad allocation based on customers' use of the system. Moreover, customers who have no demand for electricity would have no need to be connected to the system. The presence of a customer creates a demand for electricity which must be carried by the distribution system. This in no way proves that minimum grid costs vary in direct relation to the number of customers.

Q. OSBA WITNESS KNECHT REFERS TO THE BONBRIGHT PASSAGE YOU DISCUSSED, ABOVE, AND ASSERTS THAT IT IS DEMONSTRABLY WRONG. DO YOU AGREE?

A. No. His contention is more of a diversion than a serious point. Mr. Knecht paraphrases Professor Bonbright's statement, asserting, "The professor argues that if a utility service stays fixed, there would be no increase in the minimum system when new customers are

[4] Ibidem.

attached." However, his paraphrase omits the word "necessarily," changing the context of the statement.[5] Moreover, the statement is correct from the standpoint of marginal costs, which Dr. Bonbright's book favors as theoretically correct. The NARUC Electric Utility Cost Allocation Manual includes essentially the same statement:

> Similarly, if the customer component of the marginal distribution cost is described as the cost of adding a customer, but no energy flows to the system, there is no reason to add to the distribution lines that serve customers collectively or to increase the optimal investment in the lines that are carrying combined loads of all customers. Therefore, the marginal customer cost of the jointly used distribution system is zero.[6]

Therefore, Mr. Knecht's commentary regarding Professor Bonbright's criticism of the minimum distribution system methodology should be rejected. Despite Mr. Knecht's objection, Bonbright's textbook is frequently cited by cost allocation and rate design experts and considered to be authoritative in the field of regulatory economics.

B. MR. POLLOCK'S ARGUMENT REGARDING 100% DEMAND CLASSIFICATION

Q. DOES MR. POLLOCK ATTEMPT TO REBUT YOUR RECOMMENDATION THAT DISTRIBUTION INFRASTRUCTURE SHOULD BE CLASSIFIED AS 100% DEMAND-RELATED?

A. Yes. Mr. Pollock presents two tables which purport to show the number of poles and transformers and feet of conductor per residential and GSL customer resulting from a

[5] The sentence quoted in my direct testimony: "Indeed, if the company's entire service area stays fixed, an increase in number of customers does not necessarily betoken any increase whatever in the costs of a minimum-sized distribution system."

[6] NARUC Electric Utility Cost Allocation Manual at 136.

100% demand classification. He claims that the differences per customer between the two classes are so large that the results "are highly improbable" and inconsistent "with the physical realities of the distribution system."

Q. DO MR. POLLOCK'S TABLES PROVIDE ANY MEANINGFUL INFORMATION TO SUPPORT HIS CONTENTION THAT THE RESULTS OF A 100% DEMAND CLASSIFICATION ARE UNREALISTIC?

A. No. The tables are not a realistic depiction of the allocation process associated with class cost of service studies. The CCOS study does not allocate the count of poles and transformers nor feet of conductors. The CCOS study classifies and allocates *costs*, expressed in dollars, of poles, transformers, and conductors. This is not comparable in any form or fashion to allocating particular numbers of poles and transformers or feet of conductors, as assumed in Mr. Pollock's tables. The distribution plant costs are composed of a variety of different sizes of distribution facilities with different costs per facility size. FirstEnergy's workpapers indicate that a 333 kVa transformer is 13 times more expensive than a 10 kVa transformer.[7] A 75 foot pole is 10 times more expensive than a 25 foot pole.[8] Large underground conductors are 2.5 times more expensive per foot than small underground conductors.[9] The cost of sizing facilities to meet different maximum demands is the basis for a demand classification. Mr. Pollock's tables ignore these cost differentials which vary with capacity. For that reason, Mr. Pollock's tables are inconsequential.

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[7] Companies' Response to OCA Interrogatory III-03, confidential Attachment H.

[8] Companies' Response to OCA Interrogatory III-03, confidential Attachment A.

[9] Companies' Response to OCA Interrogatory III-03, confidential Attachment G.

Q. CAN YOU PROVIDE AN EXAMPLE WHICH DEMONSTRATES THAT CONSIDERATION OF DISTRIBUTION CAPACITY COSTS WOULD LEAD TO A DIFFERENT CONCLUSION?

A. Yes. The illustration below, pertaining to transformer costs per customer, undermines Mr. Pollock's conclusion that a demand-based allocation of transformers leads to "improbable results." This example assumes that a GSL customer forecasted to consume 800 kW at the time of localized peak is served at a cost per kW based upon a 50 kVA transformer. A 10 or 15 kVa transformer is conservatively assumed to serve five residential customers.[10] The data is derived from FirstEnergy's workpapers for the minimum grid study.[11] The reported costs and number of transformers for 50 kVa, 10 kVa, and 15 kVa transformers are used to develop average transformer costs for the GSL and residential customers. The ratio of the GSL transformer cost per customer to the residential transformer cost per customer is compared to the ratio of GSL transformers per customer and residential transformers per customer shown in Mr. Pollock's tables.

[10] The Companies state that a transformer in a residential sub-division typically serves 6-8 customers and that transformers in more densely populated urban areas may serve 10-25 residential customers. Companies' Responses to OCA Interrogatory III-23.

[11] Companies' Responses to OCA Interrogatory III-03-Confidential Attachment H.

Illustration of Transformer Cost Per Customer		
50 kVa transformer		$ 2,865
Dollar per kW		$ 57.30
800 kW customer transformer cost		$ 45,840
10 - 15 kVa transformer		$ 781
Residential customers served		5
Cost per customer		$ 156
Ratio of Cost Per Customer: GSL to Residential		293
Comparison to Pollock Tables (100% Demand):		
Transformers Per Residential Customer		0.2
Transformers Per GSL Customer		50
Ratio of GSL to Residential Per Pollock		250

Q. PLEASE DISCUSS THE IMPLICATIONS OF THE TRANSFORMER COST ILLUSTRATION.

A. In this example, the transformer cost per customer for serving the five residential customers is $156 compared to $45,840 for the GSL customer, which equates to a GSL cost 293 times that of residential. Mr. Pollock claims that a 100% demand allocation results in 50 transformers per GSL customer and 0.2 transformers per residential customer, which he asserts to be "improbable." Yet the ratio of GSL transformer costs to residential transformer costs in the illustration is higher than the ratio between GSL transformers per customer and residential transformers per customer in Mr. Pollock's tables. Based on this example, the comparison in Mr. Pollock's table is not unrealistic, as

he claims, but rather understates the relationship between residential and GSL transformer costs. The illustration is a hypothetical, but it confirms that the results of such comparisons will depend on recognizing equipment cost differences.

Q. DOES MR. POLLOCK'S COMPARISON IGNORE THE EFFECT OF DIFFERENT CUSTOMER DENSITIES ON CLASSES' UTILIZATION OF FACILITIES PER CUSTOMER?

A. Yes. For example, an oil field pumping operation at the end of a rural distribution line will require more feet of conductor than residential customers in inner city apartments. However, Mr. Pollock perceives the impact of spatial density as an intra-class issue, and asserts that it is unnecessary to recognize spatial density in allocating costs among customer classes.[12] A comparison of conductor feet per customer or transformers per customer, by class, requires information regarding the effect of density on installation practices applicable to customer classes. As the NARUC Cost Allocation Manual states, the utility may choose to install transformers exclusively for a single commercial or industrial customer, but "in service areas with high customer density, such as housing tracts, a line transformer will be installed to serve many customers."[13]

[12] Pollock rebuttal testimony at 7.

[13] NARUC Electric Utility Cost Allocation Manual at 86.

C. NARUC COST ALLOCATION MANUAL (CAM)

Q. ALL OF THE REBUTTAL WITNESSES CITE THE NARUC ELECTRIC UTILITY COST ALLOCATION MANUAL ("NARUC CAM") AS SUPPORT FOR THE COMPANIES' MINIMUM DISTRIBUTION SYSTEM. PLEASE RESPOND TO THEIR RELIANCE ON THE MANUAL.

A. First, reliance upon the NARUC Manual should be placed in appropriate perspective. The NARUC Manual is useful as an informative guide, but it is not intended to be applied in an unquestioned manner. The preface to the NARUC Manual sets out its objectives, including:

> The writing style should be non-judgmental, not advocating any one particular method, but trying to include all currently used methods with pros and cons.

The NARUC Manual was prepared in 1991 and probably reflected prevailing distribution classification practices at that time. However, "currently used methods" may have changed since that time. Nine years later, NARUC commissioned a report on distribution pricing methods which concluded that the majority of state commissions used a distribution classification method consistent with my recommendation (100% demand for joint distribution facilities and 100% customer for meters and services):

> The most common method [for apportioning distribution facilities between demand and customer] used is the "basic customer method" which classifies all wires, transformers, and poles as demand-related, and meters, meter reading, and billing as customer-related." This general approach is used by more than 30 states.[14]

Unbundled electric utility rates became more prevalent during this period due to increased emphasis on competition, and this may have influenced some regulatory commissions to re-examine their distribution cost allocation methods. Based on my experience in Texas, electric utilities in that state began to replace minimum distribution systems with the basic customer method in that same time frame, coinciding with the initiation of competition.

Furthermore, the rebuttal witnesses generally ignore cautionary statements in the NARUC CAM regarding the application of minimum distribution system methods, such as:

> Cost analysts disagree on how much of the demand costs should be allocated to customers when the minimum-size distribution method is used to classify distribution plant. *When using this distribution method, the analyst must be aware that the minimum-size distribution equipment has a certain load-carrying capability, which can be viewed as a demand-related cost.*[15]

As discussed in my initial testimony, the minimum size components used in the Companies' minimum distribution system studies contain considerable load carrying capability and, therefore, result in the double recovery of demand costs under the label of customer costs. The NARUC CAM explicitly recognizes that the minimum distribution

[14] "Charges for Distribution Service: Issues in Rate Design," Regulatory Assistance Project, Dec. 2000, page 30, Weston, Harrington, Cowart, Moskovitz, and Shirley.

[15] NARUC CAM at 95 (emphasis added).

system method can result in double counting class demands, and suggests that the problem can be minimized through the careful selection of minimum size components or the use of the zero intercept methodology.[16] Mr. Baudino and Mr. Pollock state that my testimony is inconsistent with the NARUC Manual, yet neither witness considers whether the Companies' methodology is consistent with the NARUC Manual's cautionary advice to minimize double counting of demands.

Q. DOES FIRSTENERGY ADHERE TO THE NARUC CAM WITH RESPECT TO CLASSIFYING AND ALLOCATING SERVICES?

A. No. As discussed in my direct and rebuttal testimony, the NARUC CAM contemplates that the minimum distribution system should include services. If the Companies had applied the minimum grid concept to services, a portion of service lines would be classified as demand-related—rather than 100% customer-related as reflected in the CCOS studies.

Q. CONTRARY TO YOUR POSITION, MR. POLLOCK CLAIMS THAT THE NARUC CAM REQUIRES SERVICES TO BE CLASSIFIED AS 100% CUSTOMER-RELATED. IS HE CORRECT?

A. No. On three different pages, the NARUC CAM describes the application of the minimum distribution system to classify services between demand and customer.[17] The references include a detailed description for calculating the minimum component of services. Mr. Pollock cites a table on page 87 of the CAM to support his position. But he

[16] Ibidem.

[17] NARUC CAM at pages 89, 90, and 92.

omits the footnote to the title of this table, which states that a minimum distribution system or other appropriate study should be used to determine the relationship between demand and customer classifications. As indicated above, the NARUC CAM includes services in the minimum distribution system. The Companies' direct testimony acknowledges that the NARUC CAM provides for classification of services between customer and demand.[18] Mr. Dolezal's rebuttal testimony agrees that my testimony on this subject is "consistent with the NARUC Manual recommendation" and "theoretically valid."[19]

D. MINIMUM SIZE COMPONENTS IN THE MINIMUM GRID STUDY

Q. COMPANIES' WITNESS DOLEZAL CONTENDS THAT THE MINIMUM GRID STUDY SHOULD BE BASED ON CURRENTLY INSTALLED COMPONENT SIZES RATHER THAN THE "ABSOLUTE MINIMUM SIZE ON THE SYSTEM." PLEASE RESPOND TO HIS POSITION.

A. I disagree that his position is appropriate for implementing a minimum grid study. This approach results in the study incorporating demand costs into the minimum grid, thereby inflating the percentage of distribution infrastructure allocated on a customer basis. The NARUC Manual discusses the minimum grid study variant of minimum size studies. The description contains the following limitation on minimum size components:

[18] Dolezal St. 4 at 16.

[19] Dolezal St. 4-R at 14.

> When applying this approach, it is necessary to take care that the minimum size equipment being analyzed is, in fact, the minimum size equipment available, and not merely the minimum size stocked by or usually installed by the company. To the extent that the equipment being costed is larger than a true minimum, the minimum grid cost will include costs more properly allocated to demand.[20]

This statement contradicts Mr. Dolezal's contention regarding the appropriate selection of minimum size equipment in the minimum grid study.

Q. MR. DOLEZAL POINTS TO YOUR REFERENCE TO 25 FOOT POLE COSTS AND STATES THAT POLES OF THIS HEIGHT CANNOT MEET REQUIREMENTS FOR CERTAIN SITUATIONS. IS THIS PERSUASIVE?

A. No. My testimony used 25 foot poles as an illustration of components in the minimum grid study which are smaller and lower cost than the selected "minimum size" component. The fact is that a substantial number of 25 foot poles are in use on the Companies' systems. I am not convinced that these poles should be excluded as a minimum size component simply because they cannot be used for all customers in every situation. Furthermore, even accepting Mr. Dolezal's explanation that poles must be 26.5 feet if they cross railroads, this does not provide a rationale for using more costly 35 foot poles, rather than 30 foot poles, as the minimum size pole. The components in the minimum grid study which are smaller than the selected "minimum size," for the most part, are not minor or aberrant elements of the system. 25 kVa is the selected minimum size transformer. Yet the Companies installed almost three times as many transformers

[20] NARUC Electric Utility Cost Allocation Manual at 138.

which are smaller than 25 kVa. A 35 foot pole is the minimum size pole; but the number of poles smaller than that size is 55% greater than the number of installed 35 foot poles.

D. EXCLUSION OF DEMAND-RELATED DEVICES

Q. PLEASE SUMMARIZE YOUR RECOMMENDATION REGARDING CERTAIN DEMAND-RELATED DEVICES INCLUDED IN FERC ACCOUNTS 365, 367, AND 368.

A. These accounts principally encompass underground and overhead conductors and transformers. The Company's minimum grid study establishes customer/demand percentages based on minimum size conductors and transformers; these classification percentages are applied to the actual plant account balances. However, certain devices which are demand-related--capacitors, voltage regulators, faulted circuit indicators (FCI) and reactors—are recorded in accounts 365, 367, and 368. As a result, a very high percentage of these devices are classified as customer-related, even though they are principally demand-related. My recommendation set out a procedure for correcting this overstatement of customer costs by reducing the customer classifications for these accounts by 0.1% - 3.5%.[21] This adjustment to the customer classification is relatively small, but it demonstrates that the Companies' methodology results in inaccuracies because these miscellaneous devices were not removed from the accounting data prior to applying minimum distribution system customer percentages.

[21] Note that this is the change in customer classification percentage in the account after the cost of devices is removed.

Q. DID ANY REBUTTAL TESTIMONY ADDRESS YOUR ADJUSTMENT TO REMOVE DEMAND-RELATED DEVICES FROM THE CUSTOMER CLASSIFICATION?

A. Yes. Messrs. Dolezal, Pollock, and Knecht opposed my recommendation.

Q. WHAT WAS MR. DOLEZAL'S RESPONSE?

A. He disagrees with the adjustments to accounts 365 and 367, but states that "there may be some theoretical validity" to my adjustment to account 368. However, he asserts that only voltage regulators should be considered a purely demand-related cost. He states that FCI is installed in proportion to customers. Mr. Dolezal revises my proposed adjustment to reduce the account 368 customer percentage by 0.6% to 2.1%.[22] This compares to my adjustment which reduce the account 368 customer percentage by 2% - 3.5%.

Q. DO YOU AGREE WITH THE COMPANIES' CONTENTION THAT ONLY REGULATOR DEVICES ARE DEMAND-RELATED?

A. No. I contend that capacitors, reactors, and FCI should be considered demand-related. In developing a CCOS study, cost analysts frequently refer to demand classified costs as part of the utility's reliability function. The reliability objective—avoiding outages, blackouts, brownouts, and voltage outside of design criteria—is one of the chief functions of the utility. In order to provide reliable service, the utility must maintain sufficient capacity in its generation, transmission, and distribution systems to meet load. For the distribution system, the utility can achieve its reliability objective both through the sizing

[22] Companies' St. 4-R, Exhibit TJD-3.

of equipment and the deployment of devices which mitigate outages arising on the distribution system. If distribution outages occur, the EDC will be unable to meet instantaneous demand.

In response to interrogatories in the 2014 rate case, the Companies confirmed that the primary purpose of both FCI and reactors is to improve reliability on the distribution system.[23] The interrogatories requested engineering planning guidelines for deploying FCI, and the documents provided by the Companies did not mention that the devices should be deployed in proportion to customers, as asserted in Mr. Dolezal's testimony. Instead, the criteria addresses deployment to address past reliability issues and maximize outage reductions.[24] Given the reliability function of these devices, the equipment should be considered demand-related rather than customer-related. In addition, those distribution planning documents indicate that capacitors are deployed to release capacity, which means that additional load growth can be served without the construction of additional distribution capacity.[25] This is clearly a demand function. The same documents indicate that capacitors play a role in reducing energy losses. Costs for reducing energy losses are normally classified as energy or demand related.

[23] 2014 First Energy Base Rate Cases, ME, PN, PP, WPP-Response to OCA Interrogatory No. XXII-1 (c), (e).

[24] 2014 First Energy Base Rate Cases, ME, PN, PP, WPP-Response to OCA Interrogatory No. XXII-1, Attachments A, B, C.

[25] Ibidem, Attachment D.

Q. DO YOU AGREE WITH MR. POLLOCK'S POSITION THAT, BECAUSE CAPACITORS PROVIDE VOLTAGE SUPPORT AND ALL CUSTOMERS REQUIRE VOLTAGE SUPPORT, THESE DEVICES ARE CUSTOMER-RELATED?

A. No. As discussed above, capacitors are often used to expand the capacity of local facilities which is a demand-related function. Furthermore, as Mr. Pollock concedes, voltage support is a reliability function. As I have stated, reliability costs are normally classified as demand-related in the CCOS study. Voltage support is required throughout the electrical system. At the transmission level, generation provides voltage support through ancillary service tariffs. The market pays for these services through an energy rate, not a per customer rate.

Q. DO YOU CONTINUE TO RECOMMEND A REDUCTION IN THE CUSTOMER CLASSIFICATION OF FERC ACCOUNTS 365, 367, AND 368?

A. Yes. Capacitors, voltage regulators, reactors, and FCI should be considered demand-related, resulting in a reduction in the customer classification for these accounts. Moreover, the omission of this adjustment from the Companies' CCOS studies demonstrates that the customer classification procedure is inaccurate.

E. ALTERNATIVE CUSTOMER CLASSIFICATION PERCENTAGES FOR DISTRIBUTION PLANT

Q. DID YOU PRESENT AN ALTERNATIVE CCOS STUDY IN YOUR INITIAL TESTIMONY?

A. Yes. The alternative CCOS, summarized at OCA St. 3 Schedule CJ-3, reflects a modification to the Companies' minimum distribution system. While my principal recommendation applies a 100% demand classification to jointly used distribution infrastructure, the alternative CCOS applies a customer percentage classification which is significantly less than the Company's proposal. As discussed in my initial testimony, this alternative minimum distribution system is based on two modifications to the Companies' methodology: (1) the relatively small adjustment for demand-related devices discussed above in (D); and (2) the minimum sized components in the Companies' minimum grid study are reduced to reflect only the labor portion of the installation cost. This latter adjustment is intended to remove demand-related costs from the customer classification, thereby eliminating the double counting of demand costs. Because the load carrying capability is assumed to be associated with the material component of costs, basing the minimum system costs only on the labor portion of minimum equipment costs should partially correct one of the main criticisms of the methodology.

Q. DID THE OTHER PARTIES EVALUATE THIS ALTERNATIVE RECOMMENDATION?

A. Mr. Knecht concluded that my alternative CCOS study is irrelevant because my testimony did not include a proposed revenue allocation based on this alternative. Mr.

Knecht says that I did not state whether I agree with this methodology. This criticism is perplexing, since I presented and recommended the method as an alternative to my primary recommendation. Obviously, I believe that the alternative customer percentages are an improvement over the Companies' filed customer classification. Mr. Dolezal's rebuttal testimony states that this method is not consistent with the NARUC Manual.

Q. PLEASE RESPOND TO THE CRITICISM THAT YOUR ALTERNATIVE RECOMMENDATION IS IRRELEVANT.

A. Although I continue to believe that it is preferable to reject the minimum distribution system method in its entirety, the alternative method is a reasonable adjustment if the Commission is inclined to adopt the minimum distribution approach as it did in the PPL base rate case. Despite my preference for the basic customer classification method, the proposed alternative CCOS studies are significantly more reasonable than the CCOS studies based on the minimum grid studies presented by the Companies. The Pennsylvania Commission has previously adopted a minimum distribution system based only on the labor costs associated with minimum size components.[26]

Because my revenue distribution proposal represented gradual movement toward my CCOS study results, the class revenue distribution proposal set out in Schedule CJ-6 (corrected) is also consistent with my alternative CCOS study results. For each Company, the residential class remains above cost with the alternative customer classifications. For instance, the following table shows the relative rate of return (RROR) for the residential class, compared to the Companies' CCOS studies. A RROR above

[26] Duquesne Light Co. R-8435583, 59 Pa PUC 57 (1985) at 74-75.

100% indicates that the customer class is currently producing returns above the system average, thereby implying that the class should be assigned a below average percentage share of the revenue allocation. A RROR below average reflects the opposite, supporting an above average percentage share of the revenue allocation.

Residential RROR at Present Rates[27]

	RROR Per Company	RROR Per Alternative
ME	85%	132%
PN	69%	115%
PP	106%	166%
WPP	69%	105%

The alternate modified minimum grid CCOS studies produce results for the residential class which represent a clearly above-cost position (relative to other classes). As a result, the alternate CCOS study provides additional support for the direction of relative revenue change relationships shown in my revenue allocation proposal which is based on the OCA's preferred CCOS (100% demand).

Q. PLEASE RESPOND TO MR. DOLEZAL'S POSITION THAT THE NARUC CAM DOES NOT LIMIT THE MINIMUM DISTRIBUTION SYSTEM STUDY TO INSTALLED LABOR COSTS.

A. As stated above in Section C, the NARUC CAM should only be used as general guide and reference for cost study purposes. Moreover, as my testimony previously noted, the NARUC CAM cautions cost analysts to be aware of the potential for double counting

[27] This reflects the Companies' filed CCOS study results, and does not include the effect of any revisions set out in Mr. Dolezal's rebuttal testimony.

when preparing a minimum distribution system study. This adjustment is a reasonable means of addressing that admonition. In addition, exclusion of material costs from the minimum size facilities can be considered a "proxy" for the zero intercept methodology which is described in the NARUC CAM. The National Economic Research Associates, a utility consulting firm which was one of the original proponents of the minimum distribution system, developed the minimum size distribution methodology which includes only labor costs.[28]

Q. MR. KNECHT CLAIMS THAT YOUR ALTERNATIVE CUSTOMER CLASSIFICATION METHOD DOES NOT RECOGNIZE THAT LABOR COSTS ARE HIGHER FOR INSTALLING LARGER EQUIPMENT. DO YOU AGREE?

A. No. My methodology utilizes the Company's labor installation cost percentages applicable to each type of facility. Because it is a percentage, the labor costs increase as the overall cost of the facility increases. The Company, itself, utilizes these labor installation percentages to develop the costs for different types and sizes of facilities in its minimum grid study.

[28] Charges for Distribution Service: Issues in Rate Design," Regulatory Assistance Project, Dec. 2000, page 35 fn48, Weston, Harrington, Cowart, Moskovitz, and Shirley.

Q. MR. KNECHT CLAIMS THAT YOUR ALTERNATIVE CLASSIFICATION METHOD SHOULD BE REJECTED BECAUSE IT IS INCONSISTENT WITH THE MINIMUM DISTRIBUTION SYSTEM METHOD USED IN THE 2012 PPL DECISION. DO YOU AGREE?

A. No. PPL was unable to provide labor installation rates to the OCA witness in that case. The Commission, therefore, did not have information for CCOS results based on labor installation costs.

Q. SINCE YOU MENTIONED THE LIMITATIONS OF THE 2012 PPL DECISION, PLEASE RESPOND TO REBUTTAL WITNESSES WHO CITE THIS DECISION WITH RESPECT TO DISTRIBUTION CLASSIFICATION ISSUES.

A. Mr. Knecht and Mr. Pollock both reference the PPL decision as a basis for opposing my recommendations. I was not involved in the PPL rate case, but I am skeptical of their view that the decision in that case should govern different facts in the instant proceedings. A critical element of my recommendation is based on the specific deficiencies in the Companies' application of the minimum grid study. Mr. Pollock has not addressed most of those defects and Mr. Knecht agrees with some of my criticisms of the FirstEnergy minimum distribution methodology. Mr. Knecht opposes my alternative CCOS study even though his direct testimony found inconsistencies between the PPL customer classification method and the FirstEnergy minimum grid studies. In particular, he noted that the FirstEnergy minimum grid studies resulted in a higher proportion of

customer costs, compared to the PPL base rate case.[29] My rebuttal testimony confirmed that the Companies' customer percentages are significantly higher than those approved in the PPL case. Given these differences, in my view the PPL decision has limited precedential value to the facts of this case.

III. RESIDENTIAL CUSTOMER CHARGE

Q. MR. SIEDT PRESENTS A COMPARISON OF CAP CUSTOMER USAGE AND ASSERTS THAT LOW INCOME CUSTOMERS BENEFIT FROM RECOVERING COSTS THROUGH A CUSTOMER CHARGE INSTEAD OF USAGE CHARGES. DO YOU AGREE WITH HIS CONTENTION?

A. No. The information he presents is not convincing, and it misses a key point. Mr. Siedt's presents data which purports to show that CAP customers are above-average users of electricity in the ME, PN, and WP areas (but below average in the PP service area). However, CAP customers do not constitute the entire population of low income customers in the FirstEnergy service area. As discussed in OCA witness Colton's direct testimony, CAP customers are a relatively small percent of the total low income population in the FirstEnergy service areas. Furthermore, I am advised by Mr. Colton, who presents surrebuttal testimony on this subject, that the available evidence indicates that low income households tend to consume less electricity than higher income households.

[29] Knecht Direct Testimony at 12.

Q. YOU SAID THAT MR. SIEDT'S USAGE COMPARISON MISSES A KEY POINT. WHAT DO YOU MEAN BY THAT?

A. One of the benefits of maintaining lower customer charges is that it provides a tool for customers to control their electric bills. When more costs are recovered through a fixed monthly fee, the customer has less ability to manage and control the size of their electric bill. This is important for both high and low use customers. But it is particularly important for low income customers who manage a household budget based on a fixed income.

Q. DO YOU AGREE WITH MR. SIEDT'S CONTENTION THAT THE CUSTOMER CHARGE HAS NO EFFECT ON ENERGY EFFICIENCY BEHAVIOR?

A. No. Mr. Siedt presents calculations to show that the increase in the customer charge results in a small percentage change in the total bundled energy charge. While this may be true, his analysis does not directly address the effect on electric appliance purchase decisions. Mr. Siedt simply concludes that the impact on energy efficiency payback periods is minimal without evaluating any energy efficiency product comparisons. The appliance purchase decision must be analyzed from a marginal perspective. As shown in my initial testimony, holding residential revenue requirement constant, the difference that results from adopting Mr. Siedt's customer charge increase will materially reduce the net benefit, and increase the payback period, associated with the purchase of new high efficiency appliances. This conclusion is supported by the analysis presented in my direct testimony, which used energy efficiency spreadsheets produced for the U.S.

Department of Energy and Environmental Protection Agency.[30] My analysis is based on the bundled rates for the FirstEnergy utilities and reflects the effect of Mr. Siedt's customer charge increase.

Based on the four company average, Mr. Siedt's customer charge increase results in almost a one cent higher increase in the overall bundled residential energy rate. Although this appears to be a small percentage increase in the bundled energy charge (approximately 6%), the marginal impact on the appliance purchase decision is larger. The net present savings for purchasing an energy efficient air conditioner declines by 30%, relative to maintaining current customer charges, according to the analysis shown in my direct testimony.[31] This is due to the sensitivity of the purchase decision to increased energy rates and the recurring nature of the energy efficiency benefits over multiple years.

Mr. Siedt also responds that the Companies engage in mandated energy efficiency programs and make a significant portion of those benefits available to low income customers. However, the fact that a utility sponsors demand side savings programs should not preclude the utility from considering energy efficiency impacts in the rate design process. The two approaches to promoting energy efficiency should be complementary. Recognizing energy efficiency through the utility's rate design may increase the effectiveness of incentive programs and extend the benefits of the utility's energy efficiency budget.

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[30] http://energy.gov/eere/femp/energy-and-cost-savings-calculators-energy-efficient-products

[31] Johnson direct testimony at 42-43.

Q. PLEASE RESPOND TO MR. SIEDT'S POSITION THAT YOUR PROPOSED ANALYSIS OMITS MANY CUSTOMER-RELATED COSTS WHICH HE INCLUDED IN HIS ANALYSIS.

A. The objective of my analysis is to limit the customer charge to costs which vary directly with changes in the number of customers on the system A large part of the costs in Mr. Siedt's testimony are indirect costs which do not vary with the number of customers. A substantial portion of the costs are unallocable on any direct basis and are simply spread across CCOS classifications so that 100% of the revenue requirement is recovered. An example is administrative and general expense, which, by definition, is not attributable to any particular function of the EDC. The issue is not whether all customer-related costs in the CCOS study should be used to establish the residential customer charge. Mr. Siedt's customer charge analysis has already excluded customer-related minimum grid costs from his evaluation. Thus, he has already accepted the fact that classification of a cost as customer-related in the CCOS study does not deem the cost as recoverable through the customer charge. The remaining question is whether a substantial sum of customer classified expenses which have a weak or non-existent relationship to the number of customers should be recovered through the customer charge. As a matter of policy, my answer is "no."

Because Mr. Siedt does not exclude those expenses, a portion of executive overheads and parent corporation costs are recovered through his proposed customer charge. His recommended customer charge also recovers a large share of rate case

expenses and other regulatory expenditures, as well as general advertising expense. None of these costs vary with the addition of a customer to the system.

Q. DOES YOUR CUSTOMER CHARGE PROPOSAL RESULT IN INTRA-CLASS CROSS SUBSIDIES?

A. No. Direct costs included in the basic customer charge are analogous to incremental costs associated with maintaining customer access. So long as the customer charge recovers these direct costs and provides a revenue contribution to common costs such as A&G expense, the customer charge is compensatory. My recommended customer charges provide the following margins in excess of direct cost: ME 65%, PN 93%, PP 63%, and WP 4%. The ME, PN, and PP customer charges are sufficient to provide more than reasonable contribution to A&G common costs. The margin is lower for my recommended West Penn customer charge, but the existing West Penn fixed charge is only $5.81 and gradualism considerations require moderation of the increase to this charge.

IV. OTHER ISSUES

Q. MR. KALCIC POINTED OUT AN ERROR IN YOUR APPLICATION OF A 150% GRADUALISM CONSTRAINT TO YOUR MET-ED REVENUE DISTRIBUTION PROPOSAL. DO YOU AGREE THAT THIS IS AN ERROR?

A. Yes. A formula error in my spreadsheet caused this error. I have filed corrected testimony and schedules, as necessary to reflect my recommended revenue distribution for Met Ed.[32]

Q. DOES THIS CONCLUDE YOUR TESTIMONY AT THIS TIME?

A. Yes.

[32] Corrected Schedule CJ-6 and Corrected Schedule CJ-1-R.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission, *et. al.*	:	R-2016-2537349, *et al.*
v.	:	
Metropolitan Edison Company	:	
Pennsylvania Public Utility Commission, *et. al.*	:	R-2016-2537352, *et al.*
v.	:	
Pennsylvania Electric Company	:	
Pennsylvania Public Utility Commission, *et. at.*	:	R-2016-2537355, *et. al.*
v.	:	
Pennsylvania Power Company	:	
Pennsylvania Public Utility Commission, *et. al.*	:	R-2016-2537359, *et al.*
v.	:	
West Penn Power Company	:	

VERIFICATION

I, Clarence L. Johnson, hereby state that the facts above set forth in my Surrebuttal Testimony, OCA Statement No. 3-SR, are true and correct and that I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

Signature: _____
Clarence L. Johnson

Consultant Address: CJEnergy Consulting
3707 Robinson Avenue
Austin, TX 78722

DATED: August 31, 2016