COMMONWEALTH OF KENTUCKY
BEFORE THE
PUBLIC SERVICE COMMISSION

IN THE MATTER OF:

Proposed Adjustment the Wholesale Water Rates of the City of Pikeville	)	
	)	
	)	Case No. 2019-00080

TESTIMONY OF CONNIE LEA ALLEN, P.E.

Q.1 State your name.

A. Connie Lea Allen

Q.2 Where are you employed?

A. Salt River Engineering

Q.3 What is your professional relationship with Mountain Water District in this case?

A. I was hired by the Mountain Water District (MWD) to assist with analyzing the COSS and the resultant proposed rate to be charged to the MWD by Pikeville.

Q.4 What is you educational and professional background?

A. I have a Bachelor of Arts (Political Science) and a Bachelor of Science in Civil Engineering from the University of Kentucky and a Master of Business Administration from Grantham University. I am a registered Professional Engineer in Kentucky and Ohio. I am a Certified Construction

Manager. I have worked with water and sewer utilities in both an engineering design capacity and a utility finance capacity since 1990.

Q.5 What is your experience with the KY Public Service Commission?

A. I testified in Case 1998-00502 in support of the formation of the Breathitt County Water District. I assisted the wholesale utilities' attorney in challenge to the Frankfort Plant Board's proposed wholesale rate in Case 2014-00254. I was Danville's rate analyst and defended my COSS in Case 2014-00392.

Q.6 Are you familiar with the cost of service standards developed by the AWWA?

A. Yes. I have twice attended the seminar, "Financial Management: Cost of Service Rate Making" sponsored by AWWA and followed the guidance in AWWA and Water Environment Foundation (WEF) manuals in reviewing and analyzing Pikeville's cost studies.

Q.7 Have you reviewed the cost of service studies (COSS) submitted by Pikeville in this case?

A. Yes.

Q.8 Do the Pikeville COSS's conform to the AWWA standards? Explain.

A. No. The idea of cost-based rates is at the very core of a proper COSS. As stated in AWWA M-54 (p.11), "Rates should be developed so as to assign cost responsibility to each individual customer served by the utility in a way that reflects the cost incurred by the utility in serving each customer." Similar wording is found in AWWA M-1 (p. 4; 6th Ed.). Mr. Petty's methodology,

his lack of functionalization, transparency and generally-accepted allocation methods make it impossible to determine if cost-based rate principals are met. Further, errors and inconsistencies in the numbers and the inclusion of costs irrelevant to the wholesale service to MWD give me no confidence in Mr. Petty's COSS.

Q.9 What is functionalization and why is it important in the development of a valid COSS?

A. "Functionalization" refers to how costs incurred by the utility are categorized. It also refers to the way rate base is categorized. It is the first step of the cost of service process and is the identification of annual revenue requirements by function or activity (AWWA M-1, 6th Ed, p. 59). Certain costs need to be unbundled and functionalized to determine, in subsequent steps, the costs allocable to residential, commercial, industrial and wholesale customers. The analyst has to see the individual expenses in sufficient detail as to determine during what treatment or distribution activity they were incurred. For example, a water utility's operational costs will often include a line item for maintenance. The maintenance line item should be broken down into functional activities such as lines (transmission and distribution), treatment plant, meters and services, pumps, tanks, etc., so that the various functional maintenance costs can be further allocated and assigned to the customer(s) who caused them. Some such as plant maintenance expenses will be shared by all as a commodity cost; others, such as meters and services, will only be charged to retail customers. This equitable distribution of costs is only possible if the expenses are transparent and functionalized to their activity.

Q.10 How does the lack of functionalization in the Pikeville COSS affect the accuracy of the COSS?

A. Sixty-nine (69) percent of all the expenses exists within 2 of Mr. Petty's 26 line item costs ("UMG...Services" and "Public Works Water"). And, those 2 line items carry no descriptive text. Mr. Petty could have achieved a level of functionalization using information in the general ledger to categorize the expenses, but his attempt at functionalization fails for a lack of functional categories consistent with AWWA guidelines. My previous answer describes how important it is to functionalize maintenance costs. One of Mr. Petty's line items, "Repairs and Maint", is presumably where costs associated with fire protection and customer services are included—costs generally not relevant to wholesale customers—but, one cannot be certain; those costs may be in the "UMG...Services" or the "Public Works Water" line item. The lack of transparency makes the first step in a COSS impossible. Given the fact that the COSS steps build upon each other, the lack of functionalization leaves Pikeville's COSS without a sufficient foundation to substantiate the allocation and distribution steps.

Q.11 Explain "allocation" and whether the Pikeville COSS properly allocates costs.

A. Functionalized rate base and expenses should be allocated to cost components. The allocation of functionalized costs allows the analyst to then equitably split those costs according to how the customer uses or benefits from that component. The Pikeville COSS does not properly allocate costs. A good example from the Pikeville COSS is maintenance associated with the Bob Amos tank. The 100,000-gallon tank sits at approximately 1130 feet msl, fed by a booster station located on a single line feeding a recreational facility and a small

number of residential customers. Based on WRIS mapping, the discharge side of the pump, which includes the tank, does not loop back into the Pikeville distribution system. In reviewing the general ledger provided by Pikeville, one finds costs totaling almost $90,000 with "Bob Amos tank" in the detailed description. First, that cost is not distinguishable in Mr. Petty's 26 line items included in Figure 3. It is a significant cost and comparison of Mr. Petty's O&M and the test year audit O&M seem to indicate the $90,000 must be somewhere in Mr. Petty's 26 expenses. The $90,000 cost is not functionalized (tank maintenance) and because it is not assigned to tank maintenance, the analyst cannot look at that cost and determine that it should not be allocated as system-wide storage, but rather it exists as a cost to the customers who are served by the Bob Amos tank. Additionally, ideally the tank costs would be split between fire protection and distribution storage. The missed opportunity to properly allocate that cost leaves that cost in the common bag that is shared by all customers, including wholesale customers. Clearly, this results in an assignment of cost that is not fair and equitable; it is, rather, a cost subsidy by the MWD to Pikeville's retail customers. The first two steps of the COS process are the means by which analysts properly assign costs.

Q.12 What is "distribution" and how does the Pikeville COSS assign costs to MWD?

A. Distribution is the third step in AWWA's COSS process description. Staying with our Bob Amos tank example, had the $90,000 cost been properly functionalized (tank maintenance) and allocated into cost components (storage, fire protection) it could then be distributed to the customers who benefitted or caused the cost.

Q.13 Explain the impact of these three analytical steps on the validity of the Pikeville COSS.

A. Again, if we stay with the Bob Amos tank maintenance example, because the $90,000 was not functionalized, the rate analyst couldn't distinctively see it, so he couldn't assign it to the tank maintenance function where it belonged. If he couldn't assign it to the proper function, then he couldn't distinguish how much of it was to be allocated to distribution storage and fire protection and who should bear the cost associated with that allocation. Because the $90,000 was not equitably distributed as benefitting only residential and other direct city customers, it was left in the common pot and MWD was asked to pay for costs not relevant to serving potable water to wholesale customers. And, keep in mind, the Bob Amos tank maintenance costs are one example of many misallocated costs.

Q.14 What is cost causation and how does it affect the validity of a COSS?

A. "Cost causation" is a phrase used to describe the goal of requiring the customer class (or, perhaps a single customer) who causes a utility to incur a cost, to pay for that cost. The achievement of that goal results in cost-based rates. Cost-based rates are fair and equitable and minimize or eliminate inter-class subsidies. Cost causation is impossible without functionalized expenses and rate base. Additionally, the ability of the analyst to defend assignments and allocations of costs is directly proportional to the detail of the functionalization.

Q.15 Can you give examples of the inability to accurately determine cost causation?

A. There are expenses in the general ledger supplied by Pikeville that are clearly not applicable to service to MWD. Some of those expenses were the subject of questions in MWD's first data request. Pikeville responded by saying the cost wasn't included or that the information isn't relevant because the referenced costs were not included in the calculation of MWD's rates. The questions intended to show that, even if the costs weren't included in the MWD rate, how was MWD to know? General ledger items cannot be reconciled with Mr. Petty's 26 expense items in Figure 3 largely because of the lump sums attributed to "UMG...Services" and "Public Works Water." Additionally, the water system accounting is further complicated as a result of the change in procedure (Amendment 5 of Pikeville/UMG Agreement for Operations, Maintenance and Management) where Pikeville now directly pays costs associated with maintenance and repairs (originally paid by UMG) as a way of avoiding the 6 percent sales tax on materials and supplies. Practically speaking, there is virtually no transparency in Pikeville's revenue requirements.

Mr. Petty uses three allocation factors, and I am being extremely generous with the term "allocation factors". He uses a 7 percent allocation factor for the cost labeled "meters". The label is not descriptive enough. If it means replacing and repairing meters, the factor should be 0 percent as the water purchase contract is clear on the burden of that cost. If he means customer accounting or service, the factor is satisfactory.

Mr. Petty also uses a 50 percent usage factor and, whereas that may be appropriate for a commodity factor, it is not intended to be used as a catch-all allocation to avoid the effort of determining the relevance of each tank or booster to the wholesale rate. Regardless, there are inaccuracies in his calculation of the ratio. The numerator is not consistent with meter readings

supplied by Pikeville and the denominator should include total sales (as in PSC 2001-00472) from every customer served by the treatment plant.

Mr. Petty uses a 97 percent factor for allocating costs associated with lines and leak detection. In response to Question 10 of MWD's initial data request, Pikeville reveals the determination of the factor was "the product of a collaborative effort." Pikeville refers to what they call the "collaborative method" when asked to explain several questionable allocations. Keep in mind the collaborative method uses the conjectures of individuals associated with the Pikeville water utility who are without a hydraulic model, have no mapping to illustrate the various pressure zones within the system, do not know the overflow elevations of half their tanks, and either do not have or will not provide information on the piping configurations of their booster pumping stations. The lack of this basic system information makes it impossible to verify the 97 percent factor or any aspect of the components contributing to that factor. From an engineering perspective, it is inconceivable that this basic information is not available for those in responsible charge.

Q.16 Does this COSS have some of the same flaws that the PSC discussed in the final order in the 2002 rate case file by Pikeville?

A. Yes, it does. First, the PSC had difficulty in 2002 determining what percentage of the debt service was associated with the water utility. They ended up guessing on the KIA note, giving 50 percent to water and 50 percent to sewer. The 2019 COSS, again, gave no details regarding the projects funded by the various instruments of debt. In response to PSC initial questions, Pikeville submitted outstanding bond information on the payment schedules used in determining the debt service associated with the water utility. After reading the descriptions in the bond ordinances it was obvious that not only was

all the debt not relevant to MWD, but all the debt was not even relevant to the water system.

Second, the PSC stated in the 2002 order that Pikeville did not properly functionalize their power costs. According to the PSC, Pikeville allocated all the power costs to the water production function. PSC recognized that power costs are incurred in the transmission, distribution and customer functions. It is certain that Pikeville incurs electric costs in the operation of booster stations (at a minimum) that do not serve the MWD. But, as in 2002, Pikeville's electric costs are not properly functionalized.

Third, the PSC highlighted Pikeville's failure to consider the nature of MWD's demand on the municipal system. PSC explained the benefit of gathering information on how wholesale customers use the system and the generally-accepted practice of using that information in some version of the commodity-demand method for performing COSSs. The PSC even suggested alternatives if a demand study was not available. The 2019 COSS includes nothing resembling an allocation to account for diurnal demands on retail and wholesale customers. Mr. Petty simply uses a ratio of gallons purchased by WMD to total gallons sold (and only gallons sold to inside city customers) to allocate costs. Whereas a ratio of gallons purchased to total gallons sold might be acceptable for allocation of volumetric costs, such a simplistic approach to allocate all distribution costs indicates a failure to grasp the concept of cost-based rates. Lastly, PSC spent a great deal of time in 2002 concerning the method by which Pikeville estimated the percentage of lines used to serve the MWD. Without belaboring the point, in the end, the PSC calculated an inch-mile ratio of 0.3414. In the 2019 COSS, Mr. Petty estimates that "95% of the City's water lines are used by MWD." No inch-mile ratio is calculated at all and, in fact, Pikeville states they cannot explain the discrepancies in the 2002 inch-mile

numbers and the 2019 numbers provided to PSC. If Pikeville can't explain the differences, how can we rely on the 2019 numbers?

Q.17 The COSS uses a rate of $1.58/1000 gallons for all gallons sold to Mountain Water District. What is the contract rate for the test year?

A. According to the last tariff filed by Pikeville (effective 16 October 2018), Pikeville charges MWD $1.68 for the first 28,000,000 gallons, which calculates to $47,040, the minimum bill. All water purchased by MWD above 28,000,000 gallons is charged at the rate of $1.30 per 1,000 gallons.

Q.18 What is the source of the $1.58 rate?

A. I do not know.

Q. 19 Does the COSS develop a rate based on the two-step volumetric usage stated in the wholesale contract?

A. No, the proposed rate of $2.30 per 1,000 gallons seems to apply to all water sold. If it is an average of a continuing two-tier rate, then the rate for the initial 28 million gallons would have to be higher than $2.30 per 1,000 gallons. Since MWD is only contractually required to buy the first 28 million gallons, the first tier rate is critical; therefore, the rate analyst should state conclusively if Pikeville proposes a change to the rate structure.

Q.20 Does the COSS reflect the actual test year revenue using the current contract rate and actual water volumes sold at each of the two usage blocks?

A. There are some problems. First, Mr. Petty states in Figure 7 that MWD bought 463 million gallons in 2017. He doesn't say if that was calendar

year 2017 or fiscal year 2017. However, the response by Pikeville to PSC's questions indicates the 463 million gallons are from Fiscal Year 2017. Mr. Petty's FY2017 revenue from MWD of $729,785 is the product of 463,158 (1000 gallons) multiplied by $1.58 (per 1,000 gallons). Based on my calculations, I assume $1.58 per 1,000 gallons was used as an average rate of the rates assigned to the initial 28 million gallon step and the all-over 28 million gallon step.

The meter readings submitted by Pikeville in response to MWD's first data request match MWD's records of volume purchased in the test year. However, the volume purchased by MWD used in the COSS and shown in the excel spreadsheet supplied by Pikeville in response to Question 29 of PSC's initial data request are incorrect. The December 2016 volume according to Pikeville's meter readings was 33,450,000; Pikeville's COSS and excel spreadsheet report 40,016,000. Mr. Petty leans heavily on MWD gallons purchased versus Pikeville gallons sold for his allocations of cost (his 50 percent factor). Whereas, I think he applies the 50 percent usage factor in places where a more accurate and relevant factor could be used, a more accurate ratio could be obtained from the data readily available. Mr. Petty is using the factor to allocate O&M expenses on the one and only treatment and distribution works so the denominator should be all gallons sold, regardless of whether they are sold inside the city, outside the city, or to wholesale customers. Obviously, the accurate volume purchased by MWD should be used. The resulting percentage is 46.9 (456,591,000 / 973,385,000). The fact that he uses the factor in allocations of 90 percent of the total costs associated with service to MWD manifests the significance of his inaccuracy.

Q.21 Can the COSS be relied on to validate the proposed rate?

A. No, the COSS does not conform to test year data or to the actual rate or volumetric contract rates. Upon questioning by the PSC, Pikeville realized the COSS did not use the audited expenses for the test year (Fiscal Year 2017). Pikeville submitted a third version (that we're aware of) of their COSS in response to Question 16 of PSC's second data request. In the revised COSS, Pikeville's water expenses decreased 1 percent, from $2,035,282 to $2,009,651. Despite a decrease of $25,631 (11 percent) in the total revenue requirement in Figure 5 there was no change in the rate proposed for MWD by Pikeville. The decrease in operating and maintenance expense was not functionalized so there is no way to determine if MWD received the equitable share of the reduction.

Q.22 Have you been able to verify the financial information used in the COSS?

A. No, there are numerous discrepancies, some of which we have already discussed. First, the test period operating expenses in the COSS differ from the operating expenses (less depreciation) in the Fiscal Year 2017 audit. Second, the debt service information includes bonds that are not relevant to the water system and bonds that pertain to the water utility but are irrelevant to the delivery and sale of wholesale water. The analyst's description of "other income" includes tap fees, penalties and other miscellaneous fees" and says nothing about the interest earned on interest bearing CDs listed in the audit.

Generally speaking, there seems to be no correlation between the general ledger and the 26 line items Mr. Petty lists in Figure 3. The variable costs in Figure 3 are different from the variable costs in Figure 6. Finally, a summation of the meter readings provided by Pikeville indicate MWD purchased 456,592,000 gallons from Pikeville rather than the 463,000,000 in the COSS.

And, frankly, I'm skeptical of any COSS when the rate analyst says revenue that should be credited to a wholesale customer (or, any customer for that matter) is omitted from the calculations because it is "a relatively small amount..." How many other "small amounts" would we uncover if we could reconcile the general ledger entries with the contents of the 2 line items in Figure 3 that make up 69 percent of Pikeville's water operating and maintenance costs?

Q.23 Does the COSS allocate any of the Pikeville debt principal and interest to MWD?

A. Yes, but the allocation is flawed. Conservatively, only 70.5 percent of GO Bond Series 2012C could possibly pertain to MWD service. The Water and Sewer Revenue Bonds Series 2016A relates to sewer as per the bond description supplied by Pikeville. And, finally, the GO Bond Series 2017 is for the City's Hambley Athletic Complex, the wireless metering system, and sewer treatment. We don't really have a good enough description of the only relevant debt, but giving Pikeville every benefit of the doubt still reduces the applicable debt service from $205,351 (Figure 5 of the COSS) to $104,596 (70.5% of $148,363). It also reduces the debt service coverage applicable to MWD from $41,070 (Figure 5) to $20,919 (20% of $104,596).

Q.24 Has Pikeville allocated any depreciation to MWD?

A. Yes, but the calculation of depreciation is not in accordance with Commission policy of using the NARUC mid-point as the useful life. Pikeville uses 40 years, and less for some, for useful life of pipe. Using NARUC's mid-point (62.5) reduces depreciation of lines by 34 percent. Other capital items have useful lives different from NARUC as well but a total recalculation was not possible because the capital item description was not adequate to determine the

appropriate NARUC category. For example, the first entry under "Water Plant" in the inside city depreciation schedule supplied by Pikeville in response to Question 9 of PSC's first data request is described as "Raw Water Intake Fac." If that means the concrete structure housing the motor for the raw water pump, then NARUC's mid-point is a service life of 37.5 years. If it refers to the motor, pump, shaft and impellers, NARUC assigns a service life of 20 years.

Q.25 Is the calculation of depreciation the only problem with this adjustment?

A. No, the amount of depreciable assets attributable to service to MWD is significantly less than the COSS allocates. Regardless of the method of estimating the percentage of lines used to provide service to MWD, we know all the lines are not applicable to MWD, nor are all the tanks and pumps. Additionally, hydrants are included in the "lines" section and because they are a component of the city's public fire protection system, clearly they are not relevant. Finally, according to the depreciation schedules submitted in response to PSC's initial data request, the outside city customers are not charged any depreciation on the treatment plant, tanks, or pump stations.

Q.26 The COSS uses variable costs to establish the revenue requirement for the Pikeville water utility. What are variable costs and how are they different from fixed costs?

A. Mr. Petty defines fixed costs as "unrelated to the treatment and distribution of water." This definition prompted questions in MWD's initial data request aimed at learning exactly what are Pikeville's fixed costs (not just a percentage resulting from the collaborative effort). If Pikeville's fixed costs are unrelated to the treatment and distribution of water, then they are not incurred

maintaining capital or rate base that is used and useful. I was interested to learn of such capital and rate base because I wanted to determine if costs associated with it were included in costs assigned to MWD or in the calculation of allocation factors used by Mr. Petty. And, based on Pikeville's response to Question 73 of MWD's request for data, I could not make that determination.

Variable costs, according to Mr. Petty, are "those associated directly or indirectly with the treatment and distribution of water." He equates variable costs with costs in which MWD should participate.

Q.27 The COSS allocates 95% of the distribution system to MWD. Is this an accurate allocation?

A. There are two ways, which I have used, of estimating the percentage of lines belonging to the Seller used in the delivery of potable water to the wholesale customer. One is the inch-mile method as described, in detail, in PSC's final order of the 2002-00022 case. The other is a technique taught in AWWA's "Financial Management: Cost of Service Rate Making" seminar and is further explained in the participant manual. AWWA calls their technique the "Distribution Main Analysis". Mr. Petty indicated that he attended AWWA's rate making seminar on his curriculum vitae. The inch-mile method is the more common of the two and uses line diameters to make general assumptions as to the use of the lines. AWWA's distribution main analysis is also known as the "minimum system theory". It approaches the estimation more from an engineering design standpoint, recognizing that line capacity exists for various uses. The minimum system theory results in three percentages, a customer component that signifies the size to deliver a minimum demand to customers, a capacity component which is in-play for wholesale customers, and a public fire

protection component which reflects the oversize to deliver fire flows beyond the customer and capacity flows.

There are certainly other ways to estimate the percentage of the transmission/distribution system used by wholesale customers, but these two are the most common.

Q.28 How has Pikeville allocated transmission and distribution costs to MWD?

A. Despite having knowledge of the inch-mile method and the AWWA distribution main analysis, Mr. Petty opted to use conjecture to ascertain that service to MWD required the use of 95 percent of all the lines in the Pikeville system. In the response to Question 29 of MWD's initial data request Mr. Petty dismisses AWWA's distribution main analysis because "fire flow is not being considered for this report." I maintain if you do not account for public fire protection costs in a COSS you are leaving them in the common bag of costs to be shared by all customers, wholesale included, presenting another subsidy by MWD to Pikeville's retail customers.

Q.29 Looking at the inch-mile information provided by Pikeville in 2002 and the information provided in response to PSC's initial data request of Pikeville in the current PSC case, can you explain why there is a significant discrepancy in the data.

A. I cannot explain the differences in the inch-mile provided in 2002 and the information provided in response to PSC's request in the current case. I used three sources for information on the inventory of Pikeville's lines, the 2002 PSC case, the answers provided by Pikeville in the current PSC case, and the totals provided to the Kentucky Infrastructure Authority (KIA) and included in the

Water Resource Inventory System (WRIS). In comparing the 2002 and 2019 inch-mile information provided to the PSC, Pikeville indicates that the number of miles of 2, 3, 4, 6, 8 and 16-inch line decreased from 2002 to 2019. In response to MWD's initial data request, Pikeville reveals they do not know why the number of miles decreased from 2002 to 2019, but the 2019 tally is accurate. We know Pikeville installed 8,600 feet of 8-inch line as part of the Marion's Branch Industrial Park project, yet the pipe total for 8-inch pipe decreased from 24.02 miles in 2002 to 16.8 in 2019. (In addition to the 8,600 feet of 8-inch line, 15,000 feet of 10-inch line installed after 2002 and before 2019 is exclusively for service to the industrial park and should not be included in the inch-miles used by MWD.) I doubt that Pikeville pulled pipe out of the ground without replacing it. Since I had no confidence in the 2019 numbers and the WRIS totals appeared reasonable, I used them to apply AWWA's distribution main analysis. Mr. Petty claims he gets 92 percent when applying the inch-mile method; I calculated 40 percent using the footage from WRIS and the AWWA minimum system theory (distribution main analysis). The PSC calculated 0.34 for the inch-mile ratio in the 2002 rate case.

Q.30 How does the discrepancy in the inch mile data impact the results of the COSS?

A. Mr. Petty's COSS relies heavily on the estimated percentage of lines used by the MWD since he applies his 95 percent factor to costs involving lines, leak detection and depreciation. The distribution main analysis resulted in 40 percent capacity component, i.e., the part applicable to wholesale. Ignoring the issues with the application of the simplistic gallons-bought ratio, we can compare the three items, line maintenance, leak detection, and line depreciation with Mr. Petty's 95 percent factor found in Figure 8 of the COSS and the

distribution main analysis of 40 percent. The differences are even greater if the more accurate gallons purchased to gallons sold ratio is used.

item	COSS (95%)(50%)	AWWA (40%)(50%)	difference
line maintenance	$193,127	$81,316	$111,811
leak detection	$48,282	$20,329	$27,953
line depreciation	$74,808	$31,170	$43,638
		total	$183,402
divided by total gallons purchased (per COSS)			463,158,000
results in a difference, per 1,000 gallons, of			$0.396

Q.31 Does the COSS allocate booster stations to MWD?

A. Yes. Mr. Petty maintains that, because MWD purchases 50 percent of the water sold to inside city customers (he disregards the impact of outside city customers purchasing water from the same treatment works and distribution system), the MWD should pay for 50 percent of the costs associated with every booster station, regardless of the fact that many of those booster stations serve small isolated pressure zones.

Q.32 Is the allocation accurate and appropriate?

A. No. First, outside city customer demand should be included in the denominator of the ratio. I have previously discussed the inaccuracy of Mr. Petty's allocation factor. However, many of the small booster stations serve isolated areas and in no way serve MWD. Pikeville could not produce a hydraulic model or a map indicating individual pressure zones. Instead, Mr. Petty uses the "collaborative process" method to disregard system hydraulics and maintain that the effect of each booster station extends to MWD's master meters.

Q.33 Does the COSS allocate the cost of Pikeville's water storage tanks to MWD?

A. Yes it does—by the same method as the booster stations.

Q.34 Is this allocation accurate and appropriate?

A. No. Some of the tanks Pikeville claims are integral to service to MWD serve small isolated pressure zones. Without the benefit of a hydraulic model or pressure zone maps to indicate otherwise, it seems reasonable that Bob Amos, Harold's Branch, Fox Croft, and Chloe Ridge tanks are not relevant to service to MWD. Several others are questionable as well. Overflow elevations are not known for over half (10 of the 18) of the tanks listed, leading one to question the criticality of the associated storage to serving customers other than those in the immediate vicinity of the tank.

Additionally, Pikeville lists the Marion's Branch tank as one associated with service to MWD. The tank was built to serve the industrial park.

In MWD's data request, Pikeville was asked for a hydraulic model, and, if they did not have one, certain details on all tanks and booster pumping stations. Additionally, Pikeville was asked for a map showing the various pressure zones and tanks throughout the system. Pikeville could not produce either a hydraulic model or a map of pressure zones. Additionally, they did not provide information on the presence or absence of check valves in pumping station piping. They did provide operating ranges of the tanks, but without such basic information as overflow elevation, the operating ranges are useless. Further, Pikeville did not provide information on all tanks and booster stations. I have been an engineering consultant for water utilities for almost 30 years. To not have the benefit of a hydraulic model, access to pressure zone maps and the

knowledge of tank overflows and pump station piping details, would make operating a complex distribution system like Pikeville's extremely difficult.

Q.35 Are "outside" Pikeville customers allocated any of the depreciation costs?

A. Very little. According to the depreciation schedules submitted in response to PSC's initial data request, only 5 lines, 5 pieces of equipment and 1 vehicle is assigned to outside city customers despite outside city sale making up over 20 percent of Pikeville's direct sales. Pikeville states in response to MWD's initial data request that city customers "reimburses inside water for plant depreciation based on a percentage of consumption" yet no credit is given against the depreciation Pikeville charged inside city customers and the respective percentage charged to MWD.

Q.36 Is it correct to allocate all these costs to "inside customers" such as MWD?

A. It is not correct to not charge all customers their fair share of all costs, including depreciation. Pikeville claims outside city customers made a payment to satisfy their obligation to the system depreciation cost but the depreciation schedule for inside customers does not indicate a credit against plant, tanks, or booster station depreciation.

Q.37 How does the COSS differentiate between "inside" and "outside" customers?

A. The COSS only pertains to inside city expenses and revenues and rates proposed for MWD. Honestly, I do not understand the concept of separate accounting for inside city and outside city customers when they use the same

capital facilities. And, because they use the same capital, the same supplies and material, the same utilities, the same human resources, etc., I don't see how a COSS can be preformed on only the inside city revenues and expenses.

Q.38 Is there a separate rate for those customer classes?

A. Yes, but I didn't learn that from the COSS.

Q.39 Does the COSS filed in this case include the rate calculation for "outside" customers?

A. No.

Q.40 Does Pikeville have customer classes?

A. No. They do distinguish between inside city and outside city customers.

Q.41 Does it have retail, wholesale, commercial and industrial customers?

A. According to Mr. Petty, Pikeville "does not distinguish between classes of customers such as residential, commercial or industrial."

Q.42 Given the demands each class of customer places on the water system, should there be customer classes? Why, or why not?

A. Absolutely. In the 1995 rate case (PSC Case 95-296), PSC opines, "The purpose of a cost of service study is to fairly allocate expenses among different customer classes of a utility." PSC further states, "Studies that do not reflect basic ratemaking principles will not produce cost based rates." AWWA Manual M-54 discusses the importance of considering rates by

customer class and the need to maintain usage data by customer class. In M-54, AWWA identifies four "very broad" customer classes, residential, commercial, industrial and wholesale. Manual M-54 is geared toward small utilities and recognizes that, for some, it may not be necessary to establish multiple classes of customers. However, common service characteristics, demand patterns and water use are reasons given to develop customer classes. M-54 even uses the example of a university or college campus for a possible sub-group within a customer class. AWWA Manual M-1 states the purpose of a cost of service study (p. 6), "The functionalization, allocation, and distribution process of the base-extra capacity and commodity-demand methodologies are generally considered fair and equitable because both approaches result in the revenue requirements being distributed to each class in proportion to each class's contribution to the system cost components." A common theme in the AWWA guidance is the need for customer classes, given the presence of customers with different demands and usage and those groups of customers with common service characteristics.

The relevance of the issue of customer classes to the proposed rates to MWD is basic to the goal of a cost of service study. Without repeating myself too much, customers who cause costs—customers who use the system in different ways, causing different costs—should pay for those costs. The absence of an industrial class is particularly concerning because we have knowledge of extensive capital facilities that have been constructed for existing and future industrial customers. The KIA drinking water project profile includes Pikeville as the only system listed as a beneficiary of the Marion's Branch Industrial Park Water Infrastructure Project. The project included a 1,000,000 gallon water storage tank, as well as 8,600 feet of 8-inch and 15,000 feet of 10-

inch water line. The project description stated the project was to provide initial water service to the industrial park.

Capital facilities require maintenance. Mr. Elswick acknowledges that industrial customers use the system differently than residential customers. It's all about costs in the common bag that are more appropriately assigned to a particular customer class. Pikeville has an industrial park (perhaps more than one) and the city has supplied water infrastructure to provide businesses in the industrial park with ample water for sanitary and fire protection purposes. Typically, during a COSS, the costs associated with infrastructure built for industrial customers and the related operational costs would be assigned to the industrial class, thereby taken out of the common bag. Pikeville does not have an industrial class so those industrial costs remain in the common bag. Since MWD is allocated their share of the common bag, MWD is subsidizing Pikeville's existing industrial customers and the ongoing economic development campaign.

The number and type of customer classes Pikeville should establish is the city's decision. However, the rate-making impact of Pikeville's lack of customer classes is most readily apparent in the absence of an industrial customer class.

Q.43 What amount of expense related to the UMG contract has been allocated to MWD?

A. Based on the COSS, 69 percent of the total inside city operating and maintenance expense.

Q.44 Can you determine if this is an accurate allocation?

A. No. MWD and PSC have requested information and data from Pikeville to verify the allocations to MWD but, at this point, we do not have the requested information.

Q.45 How does UMG allocate expenses for water service to MWD as distinguished from its other utility service provided to Pikeville?

A. I don't have enough information to determine that. Question 69 of MWD's initial request for information asked for test year invoices from UMG to Pikeville. Pikeville's submittal included copies of master meter readings in place of the requested invoices.

Q.46 Have you developed a wholesale rate for MWD based on the information provided by Pikeville?

A. No, I don't think I can calculate a rate based on the lack of information need to do so and the lack of reliability of the information provided by Pikeville. There are too many assumptions, allocations and unverified data to complete a cost of service study.

Q.47 Does this conclude your testimony?

A. Yes.

AFFIDAVIT

COMMONWEALTH OF KENTUCKY

COUNTY OF MERCER

Affiant, Connie Lea Allen, P.E., after being first sworn, deposes and says that she is authorized to submit this testimony on behalf of Mountain Water District and that the information contained in the testimony is true and accurate to the best of her knowledge, information and belief.

Connie Lea Allen, P.E.

This instrument was produced, signed, acknowledged and declared by Connie Lea Allen, P. E. to be her act and deed the 18 day of July, 2019.

Notary Public
Registration Number: 560434

My Commission expires: 7/23/2020