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Issues:	Water Loss, Maintenance Expense, Employee Levels
Witness:	William Andrew Clarkson
Exhibit Type:	Rebuttal-Revenue Requirement
Sponsoring Party:	Missouri-American Water Company
Case No.:	WR-2017-0285 SR-2017-0286
Date:	January 17, 2018

MISSOURI PUBLIC SERVICE COMMISSION

CASE NO. WR-2017-0285
CASE NO. SR-2017-0286

REBUTTAL TESTIMONY
REVENUE REQUIREMENT

OF

WILLIAM ANDREW CLARKSON

ON BEHALF OF

MISSOURI-AMERICAN WATER COMPANY

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

IN THE MATTER OF MISSOURI-AMERICAN WATER COMPANY FOR AUTHORITY TO FILE TARIFFS REFLECTING INCREASED RATES FOR WATER AND SEWER SERVICE	)))))	**CASE NO. WR-2017-0285** **CASE NO. SR-2017-0286**

AFFIDAVIT OF W. ANDREW CLARKSON

W. Andrew Clarkson, being first duly sworn, deposes and says that he is the witness who sponsors the accompanying testimony entitled "Rebuttal Testimony Revenue Requirement of W. Andrew Clarkson"; that said testimony was prepared by him and/or under his direction and supervision; that if inquiries were made as to the facts in said testimony, he would respond as therein set forth; and that the aforesaid testimony is true and correct to the best of his knowledge.

W. Andrew Clarkson

State of Missouri
County of St. Louis
SUBSCRIBED and sworn to
Before me this 16th **day of** January **2018.**

Mary Beth Hercules
Notary Public

My commission expires:

MARY BETH HERCULES
Notary Public - Notary Seal
STATE OF MISSOURI
St. Louis County
My Commission Expires April 26, 2020
Commission # 96546828

REBUTTAL TESTIMONY
REVENUE REQUIREMENT
WILLIAM ANDREW CLARKSON
MISSOURI-AMERICAN WATER COMPANY
CASE NO. WR-2017-0285
CASE NO. SR-2017-0286

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REBUTTAL TESTIMONY
REVENUE REQUIREMENT

WILLIAM ANDREW CLARKSON

I. INTRODUCTION

Q. Please state your name and business address.

A. My name is William Andrew Clarkson and my business address is 727 Craig Road, St. Louis, Missouri 63141

Q. Are you the same William Andrew Clarkson who previously submitted direct testimony in this proceeding?

A. Yes.

Q. What is the purpose of your revenue requirement rebuttal testimony in this proceeding?

A. The purpose of my revenue requirement rebuttal testimony is three-fold: (1) to respond to Missouri Industrial Energy Consumers ("MIEC") witness Greg Meyer's criticisms of the Company's water loss percentages; (2) to address MIEC witness Meyer's and Staff's reductions to the Company's proposed maintenance expense; and, (3) to further support the Company's proposed employee levels in response to Staff's and Mr. Meyer's recommendations.

II. WATER LOSS

Q. Does MIEC witness Meyer make any recommendations related to water loss you would like to address?

A. Yes, Mr. Meyer specifically addresses water loss in St. Louis County. On page 29 of his direct testimony, Mr. Meyer recommends that the Commission: (1) "[r]equire MAWC to document why the water loss percentages have increased since 2012 with the ISRS rate mechanism in effect[,]"; and, (2) until the situation is adequately explained, the Commission should "[s]uspend the ISRS rate mechanism for St. Louis County until it can be determined why water losses are increasing and if the ISRS mechanism is achieving its desired goals."

Q. Do you believe Mr. Meyer's recommendation to "[r]equire MAWC to document why the water loss percentages have increased since 2012 with the ISRS rate mechanism in effect[,]" is necessary or appropriate?

A. No, I do not. ISRS has not been continuously in effect since 2012. In March 2016, a Missouri Court of Appeals decision effectively prevented the Company from availing itself of the ISRS mechanism for what turned out to be over a year. Furthermore, as both Company witness Aiton and I explain, there are a variety of factors that impact water loss and could result in increases from year to year, even when a company is aggressively addressing pipe leaks. In my direct testimony, I explain the water loss reduction efforts being performed by the Company.

Q. Is water loss something that is fully within the control of the Company?

A. No. As I explained in my direct testimony (pp. 17-25), reducing water loss is a very complex issue with many contributing factors, some of which are beyond the Company's control. Staff, recognized, for example, that NRW is not due only to leaks but also to other factors such as "theft or unauthorized use, unmetered authorized use, or other unaccounted for water." Staff Report, p. 74. Furthermore, water leak

experience is not a static phenomenon but is highly influenced by weather conditions, as Mr. Aiton explains in his rebuttal testimony. For example, in the winter of 2014, and again this winter, huge expanses of cold, Arctic air swept through parts of the United States, including Missouri. Known as a "polar vortex," these weather systems delivered record-setting low temperatures resulting in increased water main and service line breaks and NRW. Here, too, Staff recognized the effect of weather, by eliminating the "number of main breaks per month for January, February, and March 2014 due to the 'Polar Vortex' weather phenomenon" from its main break expense calculation. Staff Report, p. 69. Company witness Bowen addresses main break expense in her rebuttal testimony.

Q. Are there issues in St. Louis County that tend to lead to a higher percentage of main breaks and other leaks?

A. Yes. St. Louis also has some unique characteristics that increase the likelihood of experiencing more pipe breaks than in other areas, and consequently increasing water loss. These characteristics are further discussed by Company witness Bruce Aiton in his rebuttal testimony. For example, as discussed by Mr. Aiton, the combination of aggressive soil and some older vintage materials (such as spun cast pipe) makes the pipe in St. Louis County more susceptible to corrosion and consequently, main breaks. The St. Louis County system is also complex, as it has four different water treatment plants pumping water into the water distribution system and 19 different pressure zones within the system. As Company witness Aiton discusses in his rebuttal, at times of increased demand, higher flow and pressure can also contribute to main breaks. In addition, in St. Louis County, the Company's NRW percentage also likely reflects some water loss associated with leaking customer-owned service lines. In St. Louis

County, the customer owns the entire service line beginning at the Company's main. As such, there is generally a portion of the customer owned and maintained service line that comes before the Company's meter, and therefore, any leak on that service line would be reflected in MAWC's NRW percentage rather than its metered usage data.

Q. Do you believe Mr. Meyer's recommendation to "[s]uspend the ISRS rate mechanism for St. Louis County until it can be determined why water losses are increasing and if the ISRS mechanism is achieving its desired goals" is appropriate?

A. No, I do not. Water loss is an area where water suppliers must balance the costs of water production and the costs to reduce water loss when determining the appropriate level of investment to make in addressing water loss. As I explained in my direct testimony, the Company's water loss prevention strategy is focused on improving leak prevention, pressure management, leak detection, metering changes and testing, plant control points for flow, accounting for un-metered usages, and pipeline management.

MIEC witness Meyer wants to have it both ways. He criticizes the Company's increased NRW percentages, while recommending that the Commission deny the Company cost recovery of the very resources needed to address this complex problem. It would be inappropriate for the Commission to penalize the Company (and its customers) by suspending a much needed programs to support infrastructure replacement like ISRS.

Mr. Meyer's second recommendation suggests that a few years of NRW data is sufficient to determine whether infrastructure replacement is working to reduce water loss. It is not. It is important to understand that a decades long problem cannot be

corrected in a few years, especially when the ISRS was suspended for some of that time. Company witness Bruce Aiton further addresses Mr. Meyer's recommendations in his rebuttal testimony.

Q. Does NRW include things other than system leaks?

A. Yes. NRW is water that has been produced and is "lost" before it reaches the customer meter. It is calculated by subtracting the number of gallons of water sold from the number of gallons of water delivered to the distribution system and is made up of the following components: (1) unbilled authorized consumption (firefighting); (2) apparent losses (ranging from theft of service to estimated bills); and, (3) real losses (from flushing activities and leaking infrastructure). Evaluating the effectiveness of the Company's water loss efforts simply based on a percentage ignores that the Company loses water for reasons other than its leaking infrastructure. A few examples are noted above.

Q. Are there any other factors that should be taken into account when reviewing a percentage of water loss?

A. Yes. Looking at a percentage of water loss when the Company is in a declining use environment contains a fundamental flaw for purposes of evaluating the system's condition. When water sales are declining (MAWC's have been at a rate of almost 2% per year for the past 10 years), metered usage and system delivery will both be lower. If losses remain at the same volumetric level, however, MAWC's NRW percentage would necessarily appear to be increasing. The approach of measuring NRW as a percentage of system delivery does not adequately represent the impact of the Company's efforts to reduce water loss.

Q. Is there another way to evaluate water loss beyond the use of NRW?

A. Yes. The infrastructure leakage index ("ILI") is a performance indicator of real (physical) water loss from water distribution systems. ILI provides a means to quantify leakage losses and identify major loss categories. The four key factors which influence real water losses in distribution systems are: (1) the speed and quality of repairs; (2) pipeline and asset management - renewal of the water network; (3) active leakage control; and (4) pressure management.

ILI focuses on real losses related to leaking infrastructure rather than numbers that vary based on a variety of factors, several of which are unrelated to leaking infrastructure but can also affect NRW. As such, ILI is a leading benchmarking leakage performance indicator used in international performance comparisons. As noted above, ILI is a performance indicator of real (leakage) losses at the current operating pressure. Mathematically it is the ratio of current annual real losses ("CARL") to unavoidable annual real losses ("UARL"). This tool can be valuable in helping the Company determine how to balance the costs of water production and the costs to reduce water loss when determining the appropriate level of investment to make in addressing water loss.

Generally, a rating under 2 notes that the system has minimal leakage and recommends careful analysis to identify cost-effective improvements to the water distribution system. A rating under 4 notes the ILI is moderate and that there is potential to improve leakage, and a rating between 4 and 8 recommends that the utility intensify its leakage reduction efforts.

The ILI for MAWC's St. Louis system increased from 2012 through 2016, ultimately reaching a 4.20 ILI in 2016, the year in which MAWC lost its ability to utilize the ISRS. These results demonstrate that the Company should do more to address water loss, not less. As I discuss in my direct testimony, the Company significantly enhanced its water loss reduction efforts in 2017 and the results show that they have been effective – the ILI for the St. Louis system in 2017 is 4.01. The ILI data supports the Company's continued efforts to reduce water loss. It is important that MAWC continue to have access to the ISRS to replace its aging infrastructure and enhance its preventative maintenance activities as proposed in this case to continuing improving the system's ILI.

III. MAINTENANCE EXPENSE

Q. Do witnesses from Staff and MIEC address the Company's proposed maintenance expense?

A. Yes. MIEC witness Meyer, using a five-year average, simply cuts MAWC's maintenance expense because it is higher than the Company has incurred in the last few years. Commission Staff reduces the Company's main break expense by carving out the impact of the 2014 polar vortex and reduces the Company's tank painting and inspection costs by using a five-year average of such cost. Company witness Nikole Bowen addresses Staff's calculations in her rebuttal testimony. In my rebuttal testimony, I will address the Company's proposed enhancement of its maintenance activities.

Q. Is it appropriate to use a five-year average, as suggested by OPC witness Meyer, to establish the Company's maintenance expense?

A. No, it is not. In this case, using historical data to establish maintenance expense going forward does not appropriately reflect the expense the Company will incur during the rate year. As I discuss in my direct testimony, the Company plans to increase its level of plant maintenance, valve operation, hydrant maintenance and flushing, and tank painting from current levels in an effort to establish and sustain a more cost effective level of service for our customers over the long term. For example, valves should be regularly exercised, hydrants should be regularly maintained and flushed, and tanks should be painted to maintain the integrity of the Company's water distribution system.

Q. Please discuss the Company's valve inspection and operation program.

A. The Company has developed a valve inspection and operation program that significantly scales up its valve maintenance activities from historical levels. The goal of the program is ultimately to exercise approximately 30,000 valves per year.[1] The Company exercised less than 1,000 valves in 2013, just over 500 valves in 2014, approximately 2,100 valves in 2015, and approximately 2,700 valves in 2016. This is less than an optimal level of maintenance to achieve and sustain a more cost effective level of service for our customers over the long term. As I explain in my direct testimony, proactively exercising valves on a routine basis will help to reduce the time it takes to repair a main break as well as limiting the number of customers whose service is affected by the main break.

[1] In my direct testimony, I noted that the program would ultimately result in the inspection and operation of approximately 34,000 valves each year. I made an error in my calculation and that number should be 30,000. That reduces the number of FTEs we anticipate needing to sustain the program from 13 to 12, but does not change the level of FTEs requested in this case.

Q. Is the increased activity associated with this valve inspection and operation program underway?

A. Yes. The Company has already begun ramping up its efforts - exercising over 10,000 valves during 2017 – and plans to continue doing so. The historical level of valve inspection and operation is, therefore, not reflective of either the Company's current levels (>10,000 per year) or its planned increase to a level of 30,000 valves per year and it should not be used to set rates in this proceeding.

Q. Please discuss the Company's hydrant maintenance program.

A. The Company has developed a hydrant maintenance program that increases the level of hydrant inspections from once every two years to every year, implements annual flushing of the system, and increases the level of hydrant painting to approximately 2,000 hydrants per year.

Q. What is the status of the Company's hydrant painting program?

A. The Company painted less than 500 hydrants in 2014 and 2015. This is significantly less than the level that is optimal to sustain a more cost effective level of service for our customers over the long term. In 2016, the Company painted 2,757 hydrants in an effort to ramp up its hydrant painting activities, specifically focusing on hydrants that still have lead based paint.

Q. Why is hydrant painting important?

A. Below is an example of a hydrant that has not been painted in well over a decade, and another that was painted last year. The contrast is stark.

As I explain in my direct testimony, if painting is not done consistently, hydrants can develop surface corrosion that not only looks bad, but can lead to performance problems in the long term. The Company is seeking a level of hydrant painting expense that supports a more cost effective level of service for our customers over the long term.

Q. How is hydrant flushing important?

A. Historically, the Company's flushing activities focused on addressing water quality issues as they arose. Proactive system flushing scours pipes to remove sediment, scale, and biofilm and moves high-velocity water through pipes in a single direction to improve hydraulic and water quality conditions. The Company plans to perform proactive system flushing to improve its systems' hydraulic and water quality conditions.

Q. Is the historical level of hydrant maintenance reflective of the Company's proposed hydrant maintenance cost?

A. No the Company plans to increase the level of hydrant inspections from once every two years to every year, implement annual flushing of the system, and increases the level of hydrant painting. Consequently, the historical level of hydrant maintenance is not reflective of the Company's current or planned activities and should not be used to set rates in this proceeding.

Q. Please discuss the Company's tank inspection and painting activities.

A. MAWC inspects each tank the third year after painting, the fifth year after painting, and then every five years after that. The Company uses inspection report results to identify which tanks need to be painted and develop a schedule for having them painted. Historically, the Company has deferred tank painting beyond the period recommended by inspection reports. For example, the Company incurred less than $1 million on tank painting expense annually in 2014, 2015 and 2016.

Water storage tanks are critical to the Company's operations for the safe delivery of water and for fire protection. The Company prioritizes its tank painting based on those inspections. In 2017, the Company incurred approximately $1.25 million in tank painting expense, and expects to incur approximately $3.3 million in 2018, and $1.6 million in 2019. The cost of tank painting varies each year, partially based on the size of tank. Company witness Nikole Bowen calculates the average level of spend based on the Company's planned tank painting activities in her direct testimony and further addresses this issue in her rebuttal testimony.

Much like MAWC's other maintenance expenses, the historical level of tank painting expense is not reflective of the Company's current or planned activities and should not be used to set rates in this proceeding.

IV. EMPLOYEE LEVELS

Q. Do witnesses from Staff and MIEC address the Company's proposed employee levels?

A. Yes. Both Staff and MIEC witness Meyer use MAWC's employee level as of June 30, 2017, to establish their respective proposed revenue requirements. MIEC witness Meyer goes on to recommend that the Commission include "only employees that have actually been hired as of the true-up cut-off date in this case" in the revenue requirement.[2] Company witness Bowen explains the impact of Staff's proposed employee level on the Company's labor and labor-related costs in her rebuttal testimony.

Q. MIEC witness Meyer also states that it "appears unlikely" that MAWC will achieve its proposed employee levels based on historical employee levels. Do you believe it is unlikely?

A. No. First, recent historical employee levels are not reflective of the employee levels the business has identified to provide safe and reliable service in the most cost-effective way to best serve the long-term interests of our customers. Mr. Meyer notes a declining level of employees over the past several years, but fails to consider some of the factors that contribute to that decline. For example, as I mentioned in my direct testimony,

[2] Meyer Dir., p. 22, ll.3-4.

following the loss of ISRS early in 2016, the Company decided that it would keep the employee complement existing at that time but not fill open positions arising throughout the year as a result of attrition. The Company regularly evaluates its needs and the number of employees proposed in this case is based upon each department's and functional area's plans to continue providing safe, adequate, reliable and affordable service to our customers. This includes resources necessary to support the Company's infrastructure replacement program and enhanced preventative maintenance program, both of which are in the long-term interests of our customers.

Q. Has MAWC realized its projected employee levels in this case?

A. Yes. The Company projected 696 full time equivalent ("FTE") and 12 summer employees in this case. As of December 31, 2017, MAWC had 694 FTE employees. One additional FTE is scheduled to begin work on January 24, 2018, and an offer has been made to fill a position in the engineering department to complete the full complement of FTEs identified by the Company in this case. MAWC also employed twelve (12) temporary summer employees during the summer of 2017, and plans to continue to do so going forward. As such, it is reasonable to include the full request of 696 FTEs and 12 temporary summer employees in this case, as it is both consistent with the actual employee count and is the most cost-effective way to best serve the long-term interests of our customers.

Q. Does this conclude your revenue requirement rebuttal testimony?

A. Yes, it does.